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- Australian Institute of Horticulture
- Arboriculture Australia
- International Society of Arboriculture (USA)
- Australian Chapter of International Society of Arboriculture

Arboricultural Impact Assessment

Project	**22 - 24 Angle Street** **Balgowlah NSW 2093** Ref: 2023-1200 Job: 66504
Client	**Steve Gillespie** 22 - 24 Angle Street Balgowlah NSW 2093
Client Contact	**Steve Gillespie** M: 0402 904 800 E: swgillespie@hotmail.com
Prepared by	**Sir William D Home T/A Dr Treegood** Level 5 Arborist Diploma Horticulture Diploma Horticulture (Arboriculture) Certificate Horticulture Certificate Tree Surgery

Table of Contents

1 Summary

1.1 Ten (10) trees were assessed on site and Tree 6 – – Lagerstroemia indica, is proposed for removal to allow the construction of a driveway and access for the site.

1.2 Tree 5 - Eucalyptus in neighbouring property will have no impact from the proposed works.

1.3 Tree 1 - Macadamia, Tree 2 - Viburnum, Tree 3 - Jacaranda, and Tree 4 – Bauhinia, are growing on the boundary of the council and will have incursions into the Tree Protection Zone (TPZ). This TPZ incursion will be reduced by the boundary fence and the courtyard fence has been constructed of a pier and beam nature and is used for timber fencing colour bond fencing and equivalent fencing. The courtyard will not be a solid concrete slab it will be constructed of pavers laid upon gap-graded soils or fill material which contains no silt, clay, or find materials. Gap grade soils will still allow yeah and water penetration to the subsoils and will compact to engineering standards. Pavers are to be laid upon this material and sand is used to fill in between the pavers which will allow gas and water exchange to the subsoils.

1.4 Tree 9 – Lagerstroemia, growing in neighbour's garden, will have an incursion into the Tree Protection Zone (TPZ) but it must be noted that structures will be removed within this existing Tree Protection Zone (TPZ) and there will be a minimum impact. Tree 8 - Bangalow will have 0% incursion in its Tree Protection Zone (TPZ), this specimen can be preserved in the scope of works.

1.5 A temporary tree protection zone is to be installed during construction works the zones are to be mulched and fenced off where possible.

2 Aims of the Report

2.1 The aim is to carry out a site assessment on 10 trees growing in and around the property and give a Landscape significant rating and suitability for preservation for the proposed development site. The drawings have been updated where the property has been reduced in size in rear property in front of property.

3 Method

In preparation of this report, a ground level visual tree assessment (VTA[1]) was undertaken.

3.1 No aerial (climbing) inspections, woody tissue testing, or tree root mapping were undertaken as part of the preparation of this report.

3.2 Heights, widths were estimated by eye from ground level. By putting a given measurement on the trunk (of two metres with a tape measure) and standing back at an appropriate distance where the top of the tree and based the tree can be seen, and also same measurement was used to determine the width of the tree. diameter tape was used to take measurements of diameter of trunk at 1.4 metres. Where the diameters were estimated due to man-made structures or access to neighbouring property was not available, an A4 piece of paper was used or the clipboard which has 30-centimetre markings, or a tape was placed next the trunk of the tree.

3.3 The comments and recommendations contained in this report are based on findings from the site inspection. Common names have been used in site inspections in Section 5 of report. botanical names have been used in site assessment sheets with common names section 12.

3.4 This report has been prepared in accordance with AS4970-2009 – Protection of Trees on Development Sites.

3.5 SULE categories L=long, tree that appears to be returnable within an acceptable level of risk for more than 40 years. M=medium, a tree that appears to be returnable within acceptable level risk for 15 - 40 years. SH=short, Tree that appears to be returnable within acceptable level risk for 5- 15 years. R= remove, a tree with a high level of risk that would need to be removed within the next five years (listed weed trees will also be given the removal category). SM= young or small trees, U=unstable.

[1] VTA-Visual Tree Assessment undertaken by tree professionals is a recognised (International Society of Arboriculture) systematic method of identifying tree characteristics as hazard potential. Journal of Arboriculture, Vol. 22, No. 6, Nov. 1996. VTA is also an assessment method described by Claus Mattheck in the Body Language of Trees – a handbook for failure analysis. The Stationery Office, London (1994).

3.6 Long SULE (A) structurally sound trees located in positions that can accommodate future growth. (B) storm damage or defects trees that could be made suitable for retention in the long term by remedial tree surgery. (C) Trees all the species significant for historical, commemorative or rarity reasons that would warrant extraordinary efforts to secure their long-term retention.

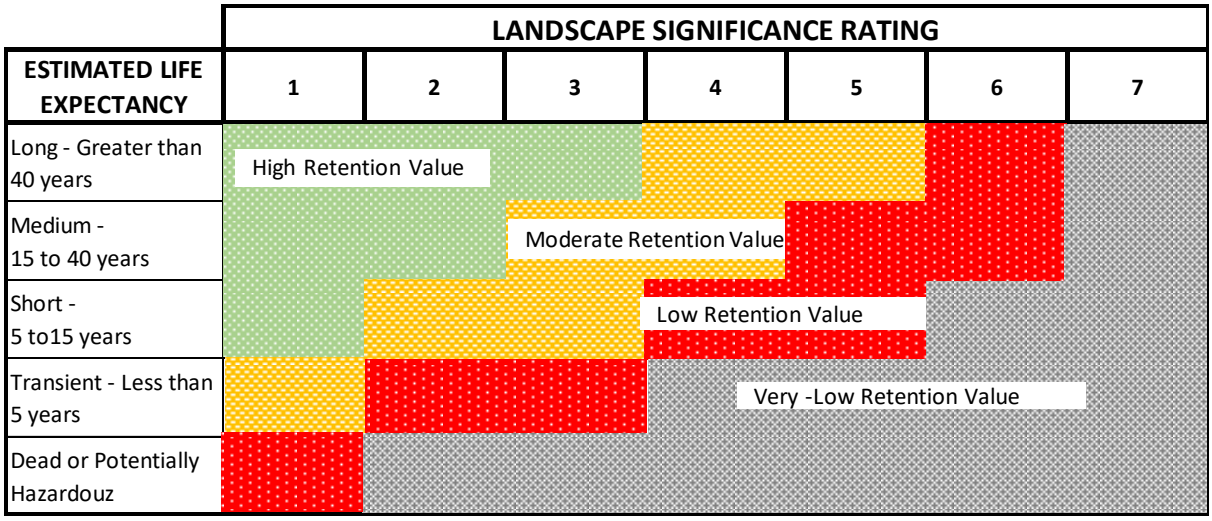
3.7 Medium SULE (A) trees that may only live between 15 and 40 more years. (B) Trees that may live for then 40 years but would be removed to allow the safe development of more suitable individuals. (C) Trees that may live for more than 40 years but would be removed during the course of normal management for safety or nuisance reasons. (B) Storm damage or defect trees maybe made suitable for retention in the medium turn by remedial work.

3.8 Short SULE (A) trees that may only live between 5 and 15 more years. (B) Trees that may live for more than 15 years but would be removed to allow the safe development of more suitable individuals. (C) my live for more than 15 years but would be removed during the course of normal management for safety or nuisance reasons. (D) Storm damaged or defective trace that require substantial media work to make safe and are only suitable for attention in the short term.

3.9 Remove SULE rating. (A) dead tree. (B) Dying or suppressed and declining trees fruit disease or inhospitable conditions. (C) dangerous tree through instability or recent loss of adjacent trees. (D) dangerous tree through structural defects including cavities, decay, including bark, wounds, or poor form. (E) Damage trees that are considered unsafe to retain. (F) Trees that will become dangerous after removal of other trees for the reasons given in points(A) to (E).

Young or small Trees SULE rating. (A) trees which are less than five metres in height. (B) trees which are over 5 in height but less than 15 years old.

TABLE 1 – TREE RETENTION VALUES – ASSESSMENT METHODOLOGY



THE FOLLOWING TABLE DESCRIBES THE IMPLICATIONS OF THE RETENTION VALUES ON SITES LAYOUT AND DESIGN

3.10 TABLE 2 – TREE RETENTION PRIORITIES

RETENTION VALUE	RECOMMENDED ACTION
"HIGH"	These trees considered worthy of preservation as such careful consideration should be given to their retention as a priority. Proposed site design and placement of building and infrastructure should consider the recommended setbacks as discussed in the following section (refer also Appendix 2) to avoid any adverse impact on the trees. In addition to Tree Protection Zones, the extent of the canopy (canopy drip-line) should also considered, particularly in relation to high rise developments. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable.
"MODERATE"	The retention of these trees is desirable, but not essential. These trees should be retained as part of any proposed development if possible. However, these trees are considered less critical for retention. If these trees must be removed, replacement planting should be considered in accordance with Council's Tree Replenishment Policy to compensate for loss of amenity (refer also Section 9).
"LOW"	These trees are not considered to potentially to worthy of any special measures to ensure their preservation, due to current health, condition, or suitability. They do not have any special ecological, heritage or amenity value or these values are substantially diminished due to their SULE. These trees should not be considered as a constraint to the future development of the site.
"VERY LOW"	These trees are considered potentially hazardous or very poor specimens or may be environmental or noxious weeds. The removal of these trees is therefore recommended regardless of the implications of any proposed development.

Tree Age Classification recorded as one of six (6) categories:

a) Y - Young. Recently planted or establishing tree that could be transplanted without specialist equipment, ie up to 12-14 cms stem girth.
b) S/M - Semi-mature. An established tree but one which has not reached its potential ultimate height and has significant growth potential.
c) M - Mature. A mature specimen with limited potential for any significant increase in size but with a reasonable safe useful life expectancy.
d) O/M - Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.
e) V - Veteran. An over-mature specimen of high value due to either its age, size and/or ecological significance
f) D - Dead.

LANDSCAPE SIGNIFICANCE

(1) ***Methodology for Determining Landscape Significance***

A. The significance of a tree in the landscape is a combination of its environmental, heritage and amenity values. Whilst these values may be fairly subjective and difficult to assess consistently, some measure is necessary to assist in determining the retention value of each tree. To ensure a consistent approach, the assessment criteria shown in Appendix 1 have been used in this assessment.

B. A rating has been applied to each tree to give an understanding of the relative significance of each tree in the landscape and to assist in determining priorities for retention, in accordance with the following categories:

1. **Significant**
2. **Very High**
3. **High**
4. **Moderate**
5. **Low**
6. **Very Low**
7. **Insignificant**

(2) *Landscape Significance Rating Table*

RATING	HERITAGE VALUE	ECOLOGICAL VALUE	AMENITY VALUE
1. SIGNIFICANT	The subject tree is listed as a Heritage Item under the Local Environment Plan (LEP) with a local, state or national level of significance or is listed on Council's Significant Tree Register	The subject tree is scheduled as a Threatened or Vulnerable Species as defined under the provisions of the *Biodiversity Conservation Act 2016* (NSW) or the *Environment Protection and Biodiversity Conservation Act 1999*.	The subject tree has a very large live crown size exceeding 300m² with normal to dense foliage cover, is located in a visually prominent position in the landscape, exhibits very good form and habit typical of the species
	The subject tree forms part of the curtilage of a Heritage Item (building /structure /artefact as defined under the LEP) and has a known or documented association with that item	The tree is a locally indigenous species, representative of the original vegetation of the area and is known as an important food, shelter or nesting tree for endangered or threatened fauna species	The subject tree makes a significant contribution to the amenity and visual character of the area by creating a sense of place or creating a sense of identity
	The subject tree is a Commemorative Planting having been planted by an important historical person (s) or to commemorate an important historical event	The subject tree is a Remnant Tree, being a tree in existence prior to development of the area	The tree is visually prominent in view from surrounding areas, being a landmark or visible from a considerable distance.
2. VERY HIGH	The tree has a strong historical association with a heritage item (building/structure/artefact/garden etc) within or adjacent the property and/or exemplifies a particular era or style of landscape design associated with the original development of the site.	The tree is a locally-indigenous species, representative of the original vegetation of the area and is a dominant or associated canopy species of an Endangered Ecological Community (EEC) formerly occurring in the area occupied by the site.	The subject tree has a very large live crown size exceeding 200m²; a crown density exceeding 70% (normal-dense), is a very good representative of the species in terms of its form and branching habit or is aesthetically distinctive and makes a positive contribution to the visual character and the amenity of the area
3. HIGH	The tree has a suspected historical association with a heritage item or landscape supported by anecdotal or visual evidence	The tree is a locally-indigenous species and representative of the original vegetation of the area and the tree is located within a defined Vegetation Link / Wildlife Corridor or has known wildlife habitat value	The subject tree has a large live crown size exceeding 100m²; The tree is a good representative of the species in terms of its form and branching habit with minor deviations from normal (e.g. crown distortion/suppression) with a crown density of at least 70% (normal); The subject tree is visible from the street and surrounding properties and makes a positive contribution to the visual character and the amenity of the area
4. MODERATE	The tree has no known or suspected historical association, but does not detract or diminish the value of the item and is sympathetic to the original era of planting.	The subject tree is a non-local native or exotic species that is protected under the provisions of the local or state planning controls (Development Control Plan etc).	The subject tree has a medium live crown size exceeding 40m²; the tree is a fair representative of the species, exhibiting moderate deviations from typical form (distortion/suppression etc) with a crown density of more than 50% (thinning to normal); and The tree is visible from surrounding properties, but is not visually prominent – view may be partially obscured by other vegetation or built forms. The tree makes a fair contribution to the visual character and amenity of the area.
5. LOW	The subject tree detracts from heritage values or diminishes the value of a heritage item	The subject tree is scheduled as exempt (not protected) under the provisions of the local or state planning controls (DCP etc) due to its species, nuisance or position relative to buildings or other structures.	The subject tree has a small live crown size of less than 40m² and can be replaced within the short term (5-10 years) with new tree planting
6. VERY LOW	The subject tree is causing significant damage to a heritage Item.	The subject tree is listed as an Environment Weed Species in the relevant Local Government Area, being invasive, or is a known nuisance species.	The subject tree is not visible from surrounding properties (visibility obscured) and makes a negligible contribution or has a negative impact on the amenity and visual character of the area. The tree is a poor representative of the species, showing significant deviations from the typical form and branching habit with a crown density of less than 50% (sparse).
7. INSIGNIFICANT	The tree is completely dead and has no known heritage value (or any habitat value)	The tree is scheduled as a potential 'Biosecurity Risk' ('Priority Weed' – formerly 'Noxious Weed') within NSW or within the relevant Local Government Area under the provisions of the *Biosecurity Act 2015*	The tree is completely dead and represents a potential hazard.

Ref:- Morton, A (2006) **Determining the Retention Value of Trees on Development Sites**
TreeNet - Proceedings of the 7th National Street Tree Symposium 2006 Government of South Australia Department for Transport, Energy and Infrastructure

4 Site Observations

4.1 Trees 1, 2, 3, 4, are growing in front of the property on council land. Trees 5, growing on neighbouring property on the eastern boundary. Tree 6, growing on the eastern boundary middle of a block. Trees 7, 8, 9, are growing at the rear of the block on the northern side. Tree 10, growing in the neighbour's garden on the western boundary.

4.2 Tree 1 - Macadamia spp, has a height of 7 meters with a canopy spread of 2 meters x 3 meters and is mature in age. It has a TPZ of 2.4 meters and has a suppressed canopy with 20% canopy cover. Has a short SULE classification with a low landscape significant rating. This specimen has a lopsided canopy with limited canopy cover.

4.3 Tree 2 - Viburnum odoratissimum, has a height of 6 meters with a canopy spread of 6 meters x 5 meters and is mature in age. It has a TPZ of 2.4 meters and a short SULE rating.

4.4 Tree 3 – Jacaranda mimosifolia, has a height of 12 meters with a canopy spread of 10 meters x 6 meters. The canopy is predominantly growing over the property of 24A and is mature in age. It has a TPZ of 8.4 meters and an SRZ of 2.63 meters. This tree has a health rating of 3 out of 5 and a structural rating of 3 out of 5. It has a SULE rating of moderate and a moderate Landscape significant rating. It has three main leaders, one of the leaders is dead and the canopy has been shaped multiple times to give powerline clearance.

4.5 Tree 4 – Bauhinia purpurea, has a height of 12 meters with a canopy spread of 10 meters x 10 meters which is one-sided. It has a TPZ of 7.2 meters and an SRZ of 3.17 meters. Has a health and structural rating of 3 out of 5 with only 35% canopy cover. It has been given a moderate SULE rating and has a moderate Landscape significant rating. This tree has two small cavities at 1 meter and 1.2 meters on the eastern side. It has a one-sided canopy and has two storm damages at the 10 meters mark over powerlines.

4.6 Tree 5 – Eucalyptus robusta, has a height of 16 meters with a canopy spread of 10 meters and has an age classification of over mature. It has a TPZ of 7.2 meters and an SRZ of 2.93 meters. This tree has a poor health rating and structural rating of only 2 out of 5. It has a SULE classification of Short and a landscape significance rating of low. The main leader of this tree has been removed and two brackets fruiting bodies can be seen growing underneath the section where the branch has been removed there is major dieback in the upper canopy.

4.7 Tree 6 – Lagerstroemia indica, a semi-mature specimen for a height of 7 meters in a canopy spread of 4 meters x 6 meters. It has a TPZ of 2.4 meters and a long SULE rating and a landscape significant rating of Low.

4.8 Tree 7 – Pittosporum tenuifolium, has a height of 7 meters with a canopy spread of 6 meters and is mature in age. It has a TPZ of 2.4 meters. This tree has a SULE rating of Short and a landscape significance rating of Low.

4.9 Tree 8 – Archontophoenix cunninghamiana, has a height of 10 meters with a TPZ of 3.6 meters. It has a SULE classification of Long and a moderate Landscape significant rating.

4.10 Tree 9 – Lagerstroemia indica, growing in neighbouring property, has a height of 9 meters with a canopy spread of 8 meters x 6 meters which is predominantly in neighbouring property. It has a TPZ of 8.04 meters. with a SULE classification of long and a moderate Landscape significant rating. Southern canopy has been locked in the past.

4.11 Tree 10 – Yucca elephantipes, growing in neighbours, has a height of 4 ½ meters with a canopy spread of 2 meters and has a TPZ of 3.6 meters. It has a SULE classification of Removal and a landscape significant rating of Low. The specimen is impacting on neighbour's garage roof.

5 Conclusions

5.1 Tree 6 – Lagerstroemia indica, is to be removed as it falls within the proposed footprint of the driveway.

5.2 Council trees are to be retained - Tree 1 - Macedonia, has zero incursion into the Tree Protection Zone (TPZ) and no incursion into the Structural Root Zone . There is an existing driveway that is to be removed.

5.3 Tree 2 – Viburnum, has no incursion into Tree Protection Zone (TPZ) and Structural Root Zone (SRZ).

5.4 Tree 3 – Jacaranda, has a TPZ incursion of 9.69% and zero incursion into the Structural Root Zone.

5.5 Tree 4 – Bauhinia, has a Tree Protection Zone (TPZ) incursion of 11.04% and a Structural Root Zone (SRZ) incursion of 7.1%. This tree has a moderate Landscape significant rating and it must be noted, this rating would change once all the storm damage is removed from the other canopy. This tree has two small cavities, one at 1.1 meters and the second at 1.2 meters.

5.6 There is no impact on neighbouring Tree 5 – Eucalyptus. It must be noted, this tree is on the decline and has a low Landscape significance.

5.7 Tree 9 - Lagerstroemia neighbour's tree has 1.94% incursion into the Tree Protection Zone (TPZ) and no incursion into the Structural Root Zone (SRZ).t must be noted, there are retaining walls already existing in this Tree Protection Zone (TPZ).

5.8 Tree 10 – Yucca, growing in the neighbouring property will have an incursion into the Tree Protection Zone (TPZ) of 7.32% and SRZ incursion of 0.93%. It must be noted that this tree species give a higher Tree Protection Zone (TPZ) than showing due to the specimen holding water in their trunks.

5.9 Tree 7 - Pittosporum has a TPZ incursion of 0.11% and no SRZ incursion.

5.10 Tree 8 - Archontophoenix, has no incursion into the TPZ. It must be noted, palm trees when being transplanted have an incursion into their Structural Root Zone (SRZ), as they have a fibrous roots system that tolerates impact.

6 Recommendations

6.1 The front boundary wall next to Trees 1, 2, 3, and 4 should be created on a lightweight construction where it has a pier and beam post system similar to color bond fencing or timber fencing or equipment.

6.2 The front porch yards are to be paved with pavers that allow water and gas exchange e.g. pavers that are backfilled with sand and laid upon gap-graded soils for road bases that contain no silt, clay, or finds. Gap-grated soils and road bases allow gas and water exchange.

6.3 The fencing of the courtyard should be of a lightweight construction on a pier and be footings e.g. color bond fencing timber fencing and equipment and equivalent. This way it eliminates the need for hard concrete strip footings.

6.4 Tree Protection Zone (TPZ) is to be set up around trees to be preserved. The zones are to be fenced off during construction works and mulch with woodchip and leaf litter to 100 to 150 mm thick.

6.5 If access is needed into the zones running boards or equivalent should be laid on the soil surface to prevent compaction.

6.6 Underground services EG gas , water, power and other utility services should be installed in a tree friendly manner. This is where excavation is monitored by AQF level 5 arborist. And excavation carried out by hand tools which could be aided by the use of the air spade or vac truck follow guidelines for excavation at rear of this report as seen in Section 14 of this report

7 Tree Assessment Survey Sheets

7.1 Page 1

1.0 Tree Assessment Survey Sheet

Client: STEVE GILLESPIE
Job: #66504
Page number: 1/1
Version: 0.1

LOCATION: 22 -24 ANGLE STREET BALGOWLAH

WEATHER : OVERCAST/RAIN

Tree #	Species Botanical name Common name	Trunk Diameter @1.4m CM	Trunk Diameter (buttress) CM	Height MT	Width MT	Age	TPZ MT SRZ	Health 1 = Poor 5 = Excel	Structure 1 = Poor 5 = Excel	Canopy Cover %	Crown Class	SULE Landscape Signicance Rating	Tree Surgery	Suitability for Preservation	Comments
1	*Macadamia SPP*	20	32 cm	7	2 x 3	M	2.4 2.05	5	3	20%	S	Sh Low	8	LOW	- Lopped side canopy - Limited canopy cover
2	*Viburnum odoratissimum* Sweet viburnum	8, 10, 10, 10	45 cm	6	6 x 5	M	2.4 2.37	4	3	25%	I	Sh Low	8	LOW	- Has been lopped for power line clearance
3	*Jacaranda mimosifolia* Jacaranda	38	58 cm	12	10 x 6	M	8.4 2.63	3	3	20%	C	M Moderate	1	MODERATE	- 3 leaders growing over 24A, one is dead - Has been shape to grow around power line
4	*Bauhinia purpurea* Singapore orchid tree	50, 27	90 cm	12	10 x 10 *one side*	M	7.2 3.17	3	3	35%	D	M Moderate	8, 1	MODERATE	- 2 small cavity at 1 meters, 1.2 meters on eastern side, one sided canopy - 2x storm damage at 10 meters over power lines
5	*Eucalyptus robusta* Swamp mahogany	62	75 cm	16	10	OM	7.2 2.93	2	2	60%	D	Sh Low	1, 3, 4, 15, 16	MODERATE to LOW	- Die back in upper canopy - Main leader has been removed - 2x bracket fruiting bodies where old leader been removed
6	*Lagerstroemia indica* Crape myrtle	10, 11. 8	20 cm	7	4 x 6	SM	2.4 1.68	5	4	50%	C	L Low	8	MODERATE	- Rubbing and crossing at 3 meters
7	*Pittosporum tenuifolium* James Stirling	15, 8, 6, 8	32 cm	7	6	M	2.4 2.05	5	4	80%	D	Sh Low	8	MODERATE	- Was lopped at 4 meters to 5 meters
8	*Archontophoenix cunninghamiana* Bangalow	25	45 cm	10	2	M	3.6 2.37	5	5	90%	D	L Moderate		MODERATE	- 4 Trees growing together - Has an exposed roots
9	*Lagerstroemia indica* Crape myrtle	30, 40, 50	80 cm	9	8 x 6	M	8.04 3.01	4	4	50%	C	L Moderate		MODERATE	- Southern canopy has been lopped in the past - Dead leader upper canopy - Misshapen canopy
10	*Yucca elephantipes* yucca	30	60 cm	4 1/2	2	M	3.6 2.61	5	4	30%	D	R Low	8	LOW	- Impacted on roof of garage

Tree surgery:

1. Deadwood. **2**. Reshape Crown. **3**. Wound repair. **4**. Insect control. **5** Improve soil conditions (mulch, fertility, aeration etc).
6.Investigate cavities. **7**.Thin crown, consider installation of cabling/bracing and or retain and fence off for public safety.
8.Line clearance of structures or service wires. **9**. Remove attached plant.**10**.Root girdling. **11** Remove. **12**. No tree surgery required.
13. Requires tree protection measures. *Refer to accompanying report. **14**. Borer damage. **15**.Fungal or bacterial damage. **16**. Monitor.

Age classification:

Y - Young
SM - Semi Mature
M - Mature
OM - Overmature

Crown Class

D - Dominant
C- CoDominant
I - Intermediate
S- Suppressed

SULE

L = Long
M = Medium
Sh = Short
R = Remove
Sm = Small
U = Unstable

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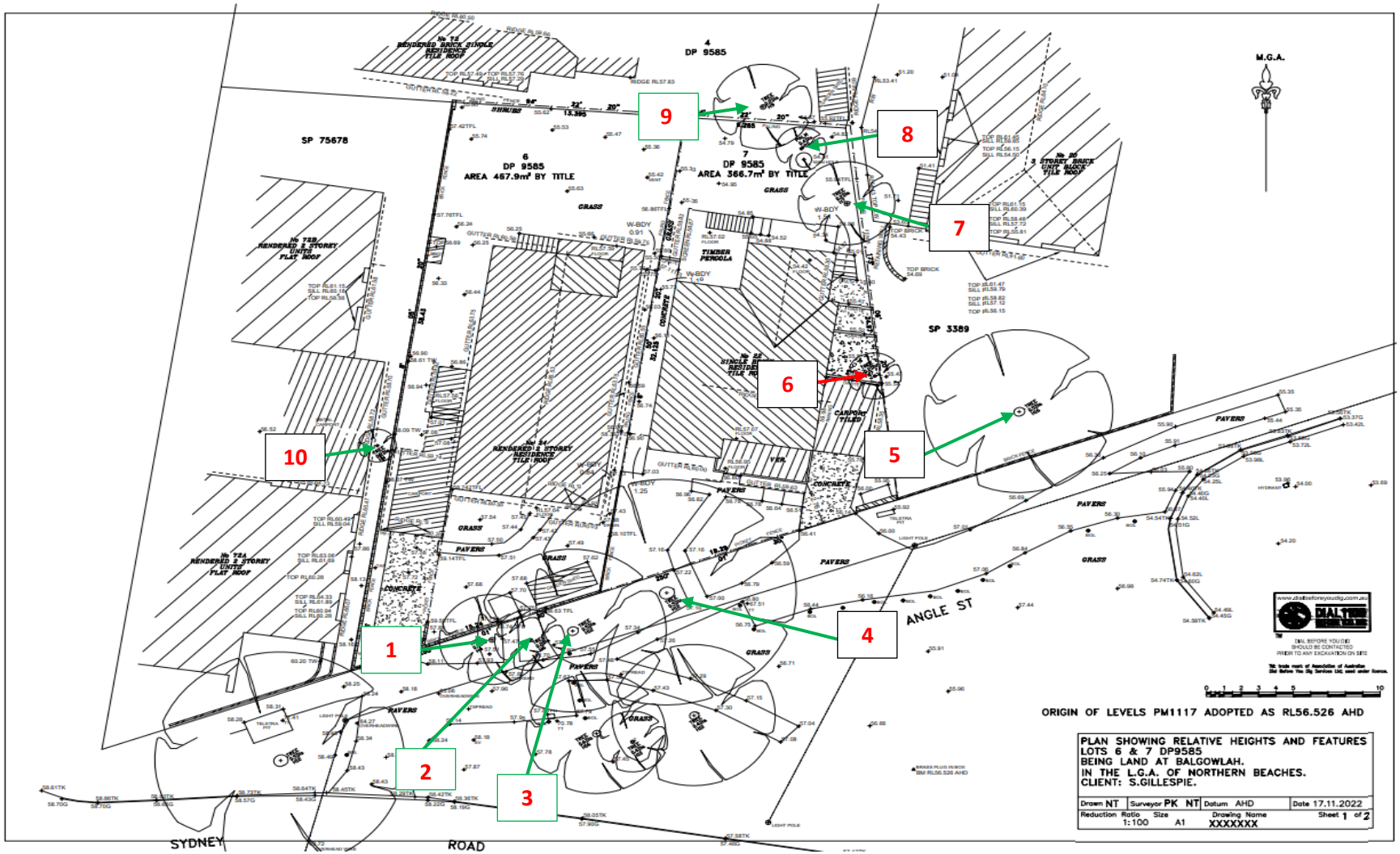
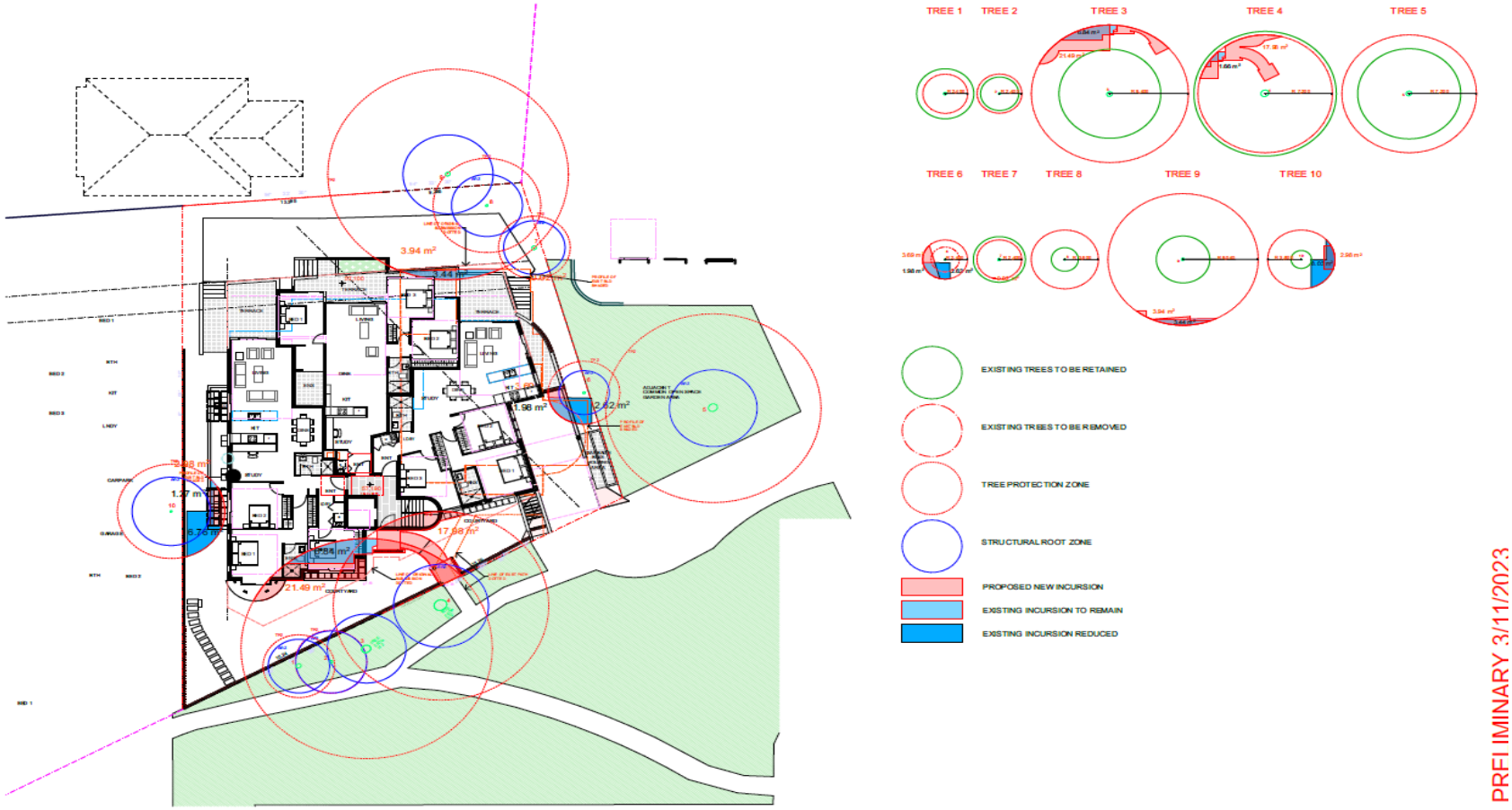
8 Survey

8.1 Figure 1

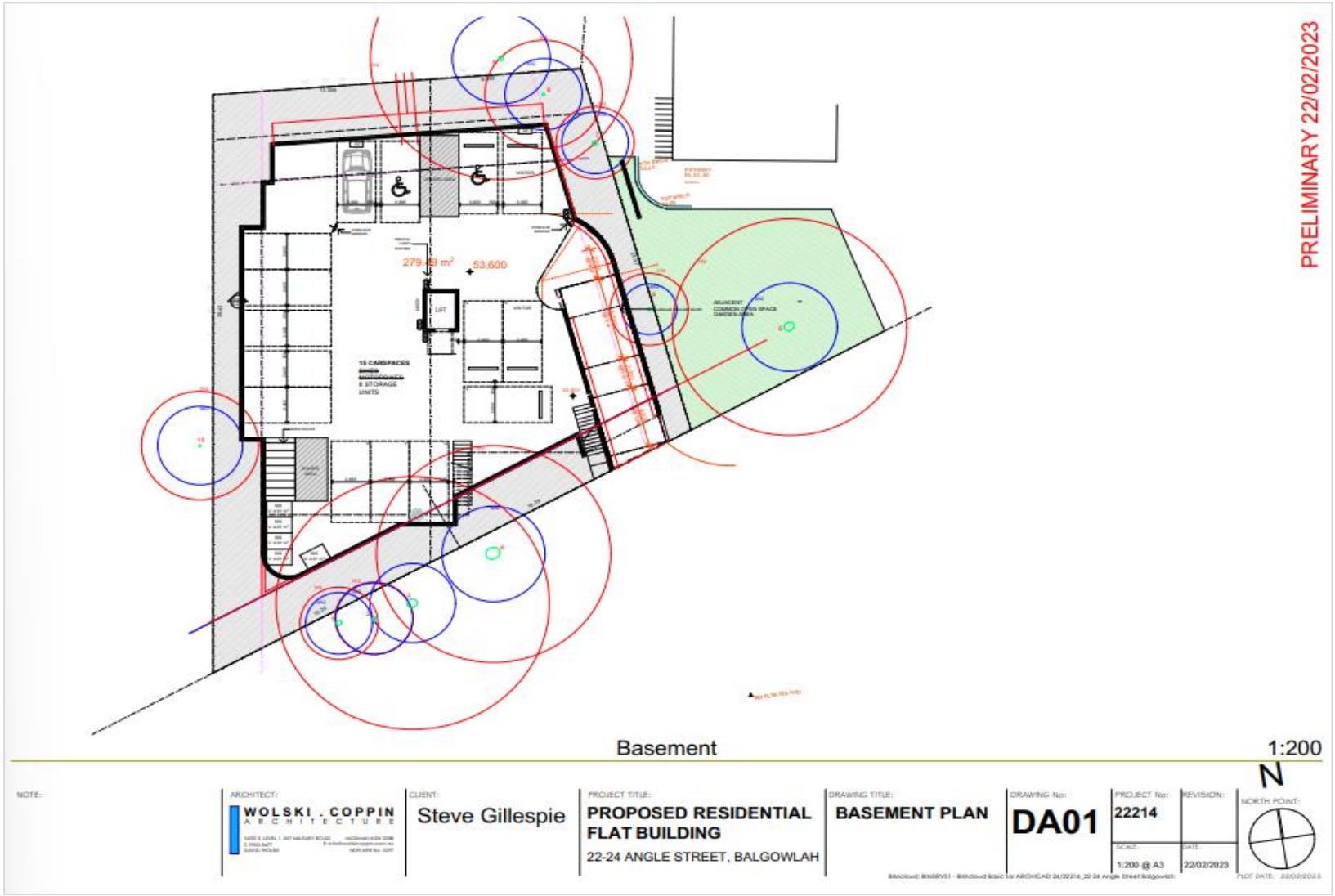


9 Site Plans

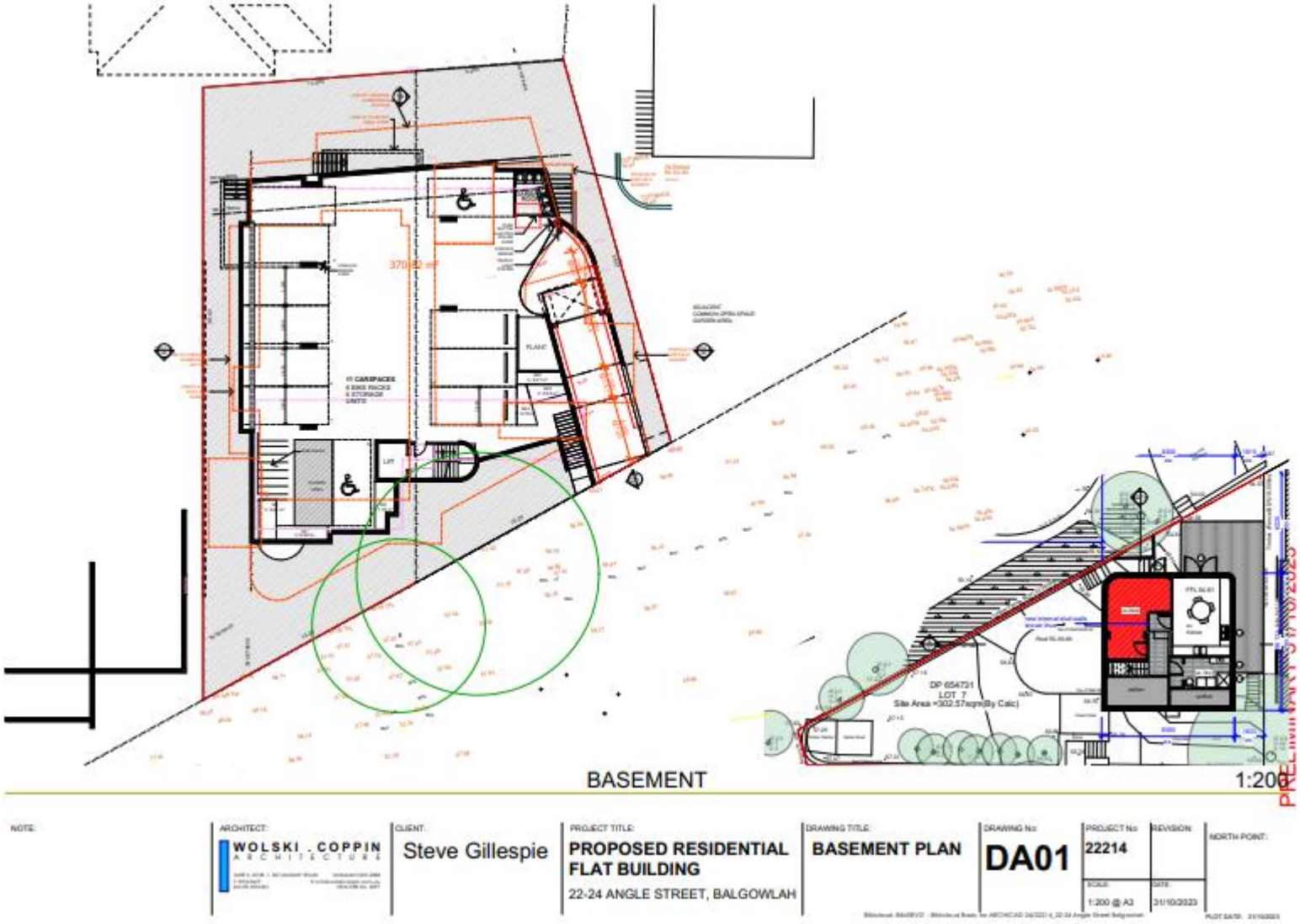
9.1 Figure 1 – TPZ & SRZ CALCULATION – DRW# SK14/ DATED 3/11/2023



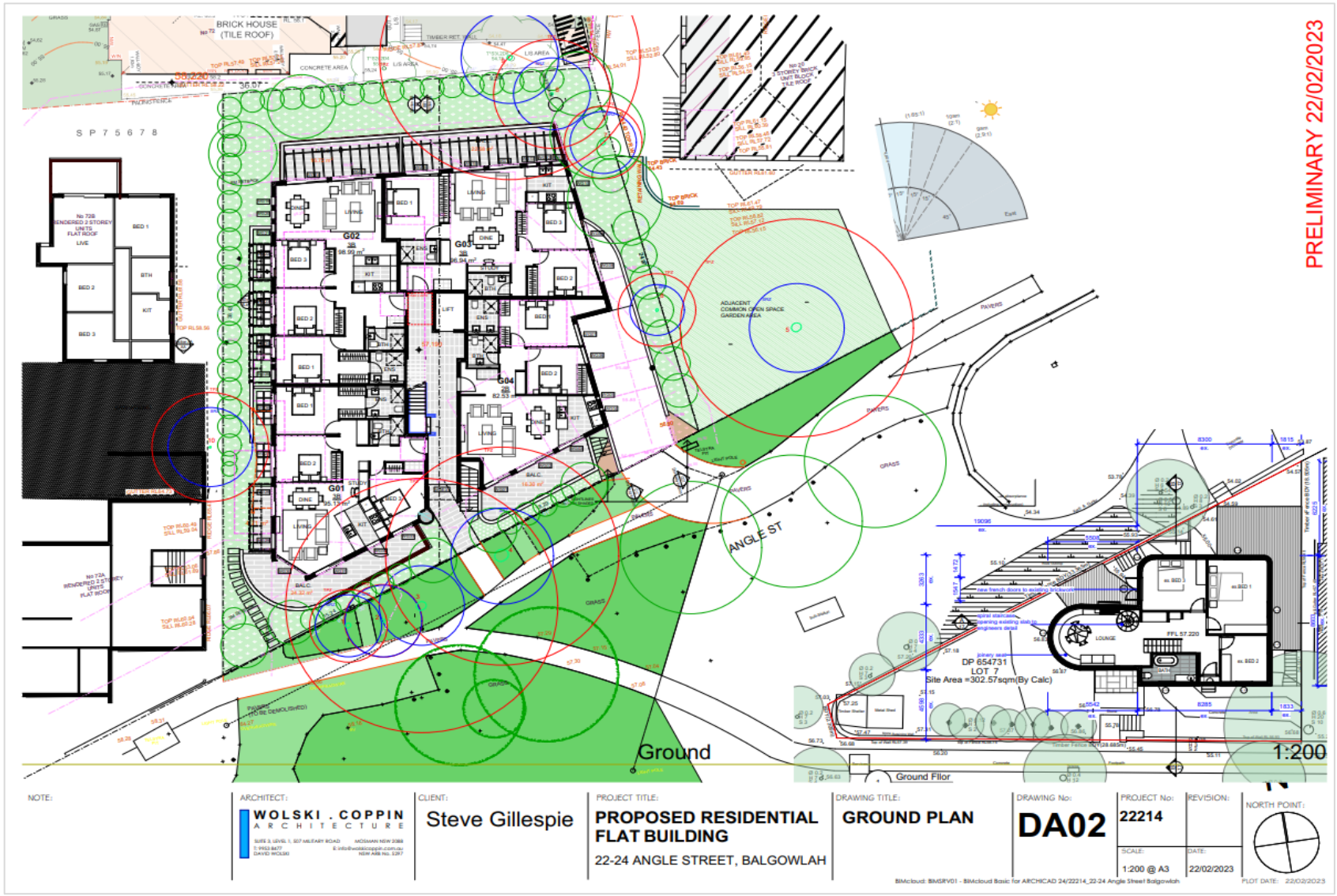
9.2 Figure 2– BASEMENT PLAN - DA01/ DATED 22/02/2023 has been updated as seen in figure 9.2 B



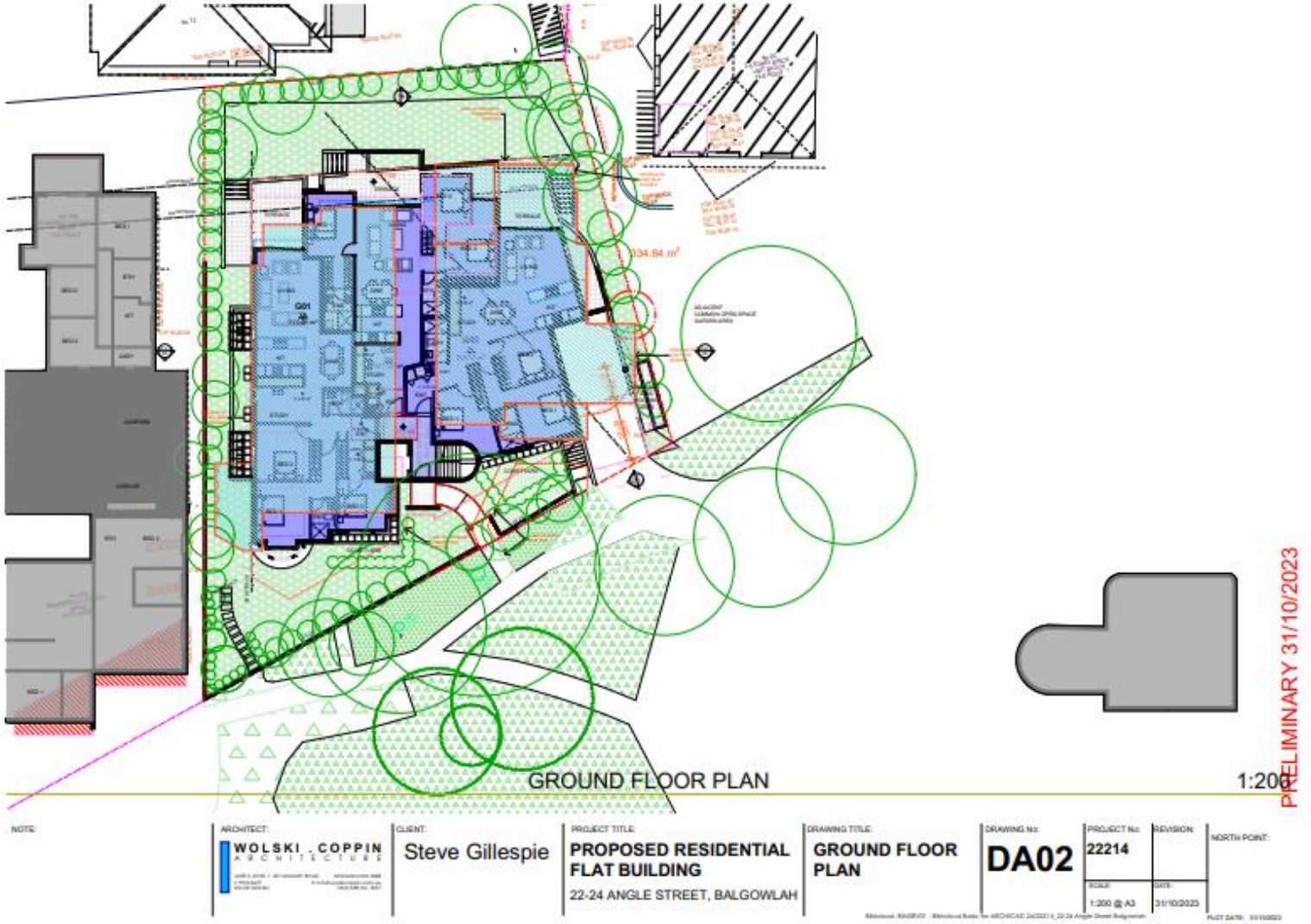
9.2B figure 2B basement plans DA 01 dated 31/10/2023 have been updated with a increased set back from rear boundary an front boundary



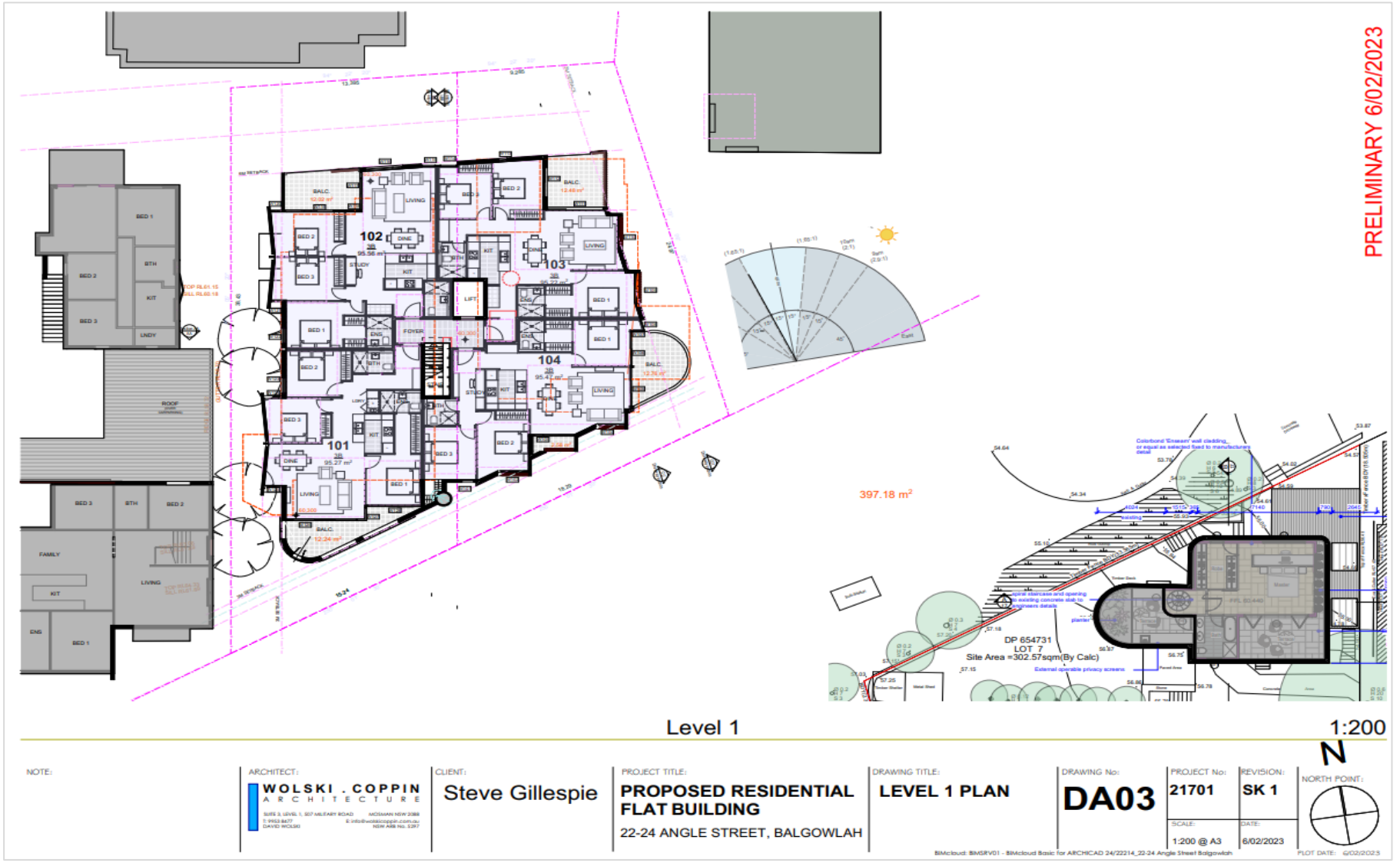
9.3 Figure 2 – GROUND PLAN – DA01 – REV. SK 1 / DATED 22/02/2023



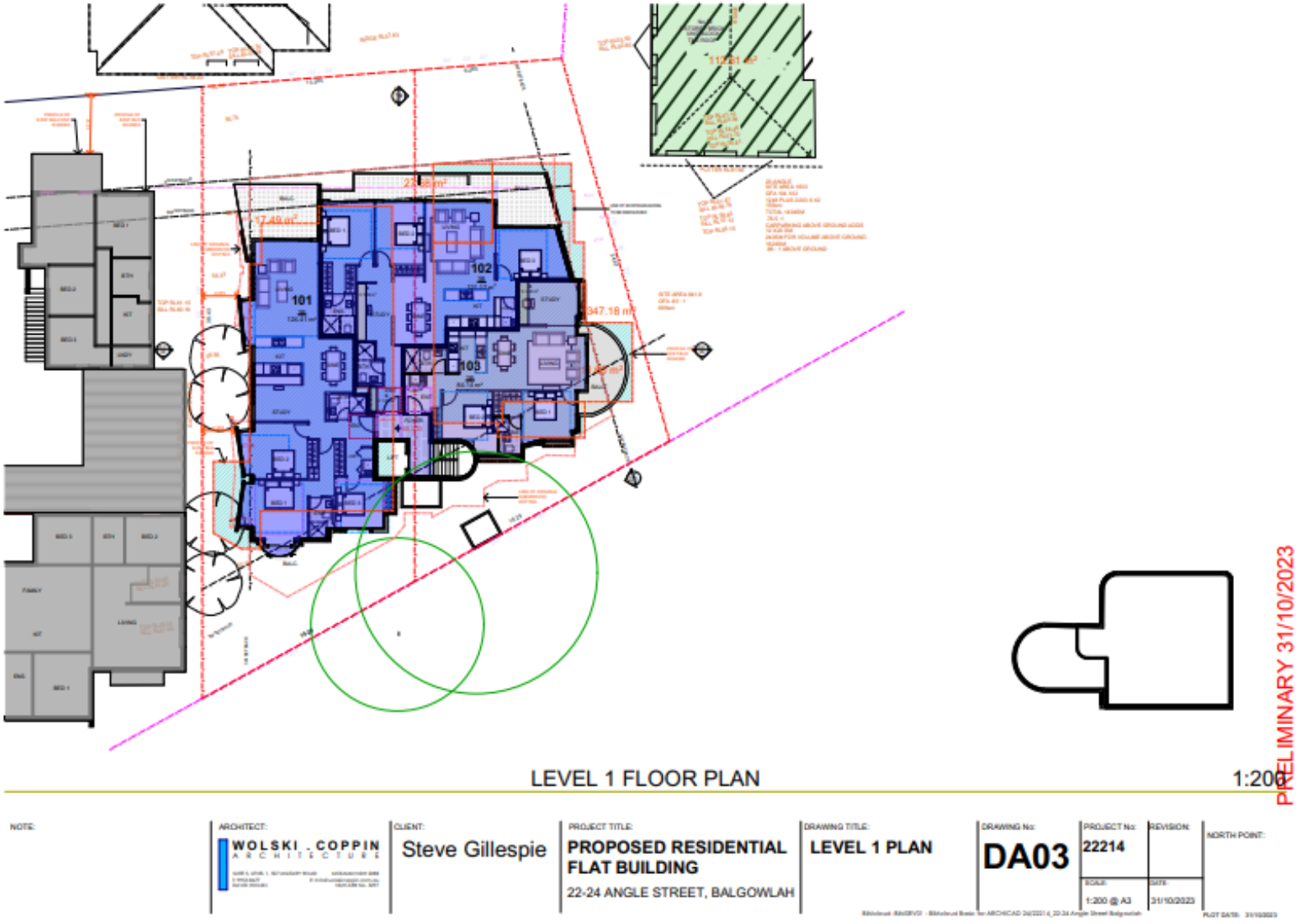
9.4 Figure 2B – GROUND PLAN – DA02 – REV. SK 1 / DATED 31 /10/2023 plans have been updated to retain council trees in front of property and footprint has been modified to be smaller at front and rear property which has increased the tree protection zones.



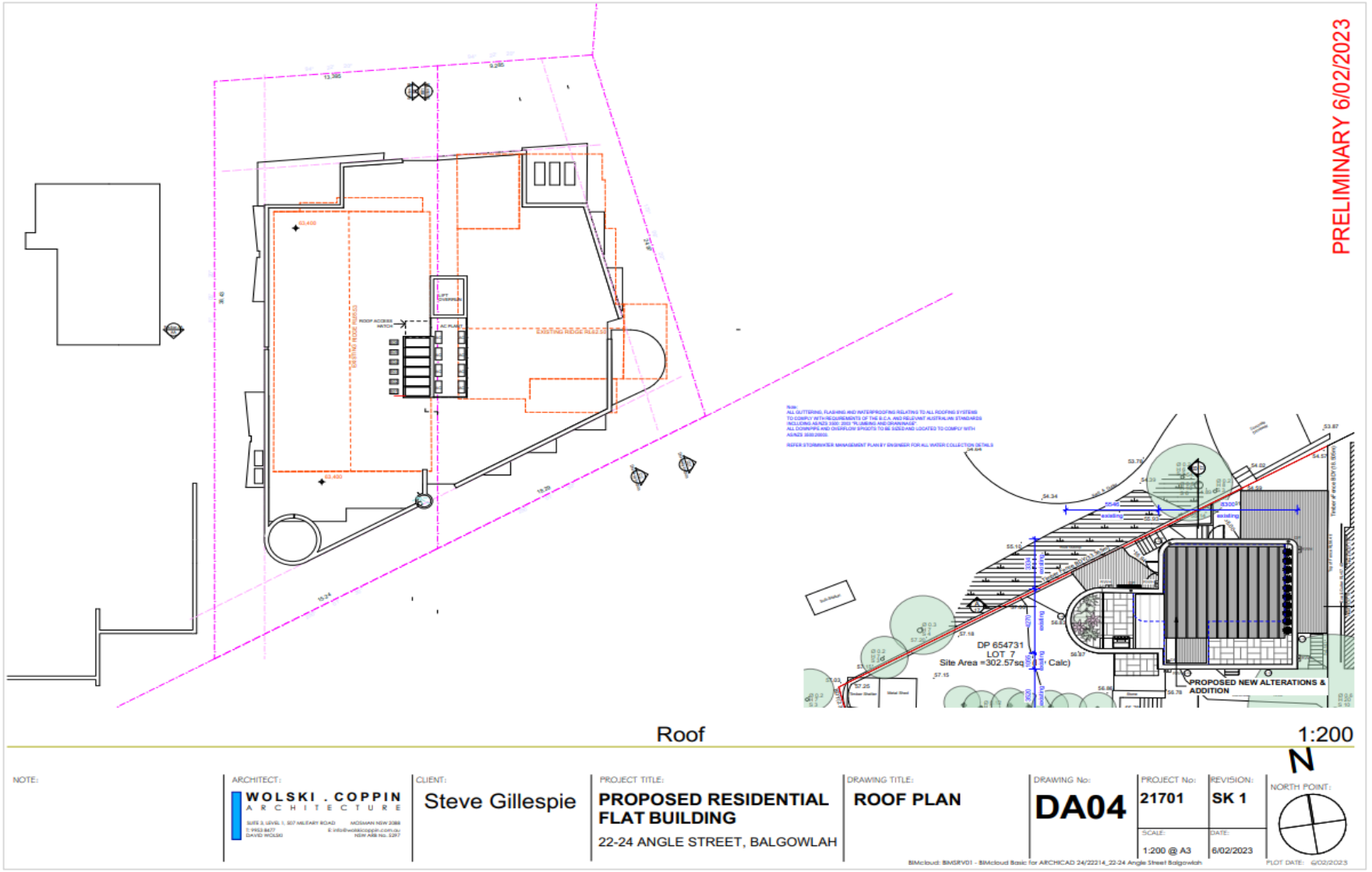
9.5 Figure 3 – LEVEL 1 PLAN – DA03 – REV. SK 1 / DATED 06/02/2023 these drawings had been modified as seen in 9.6 figure 3B



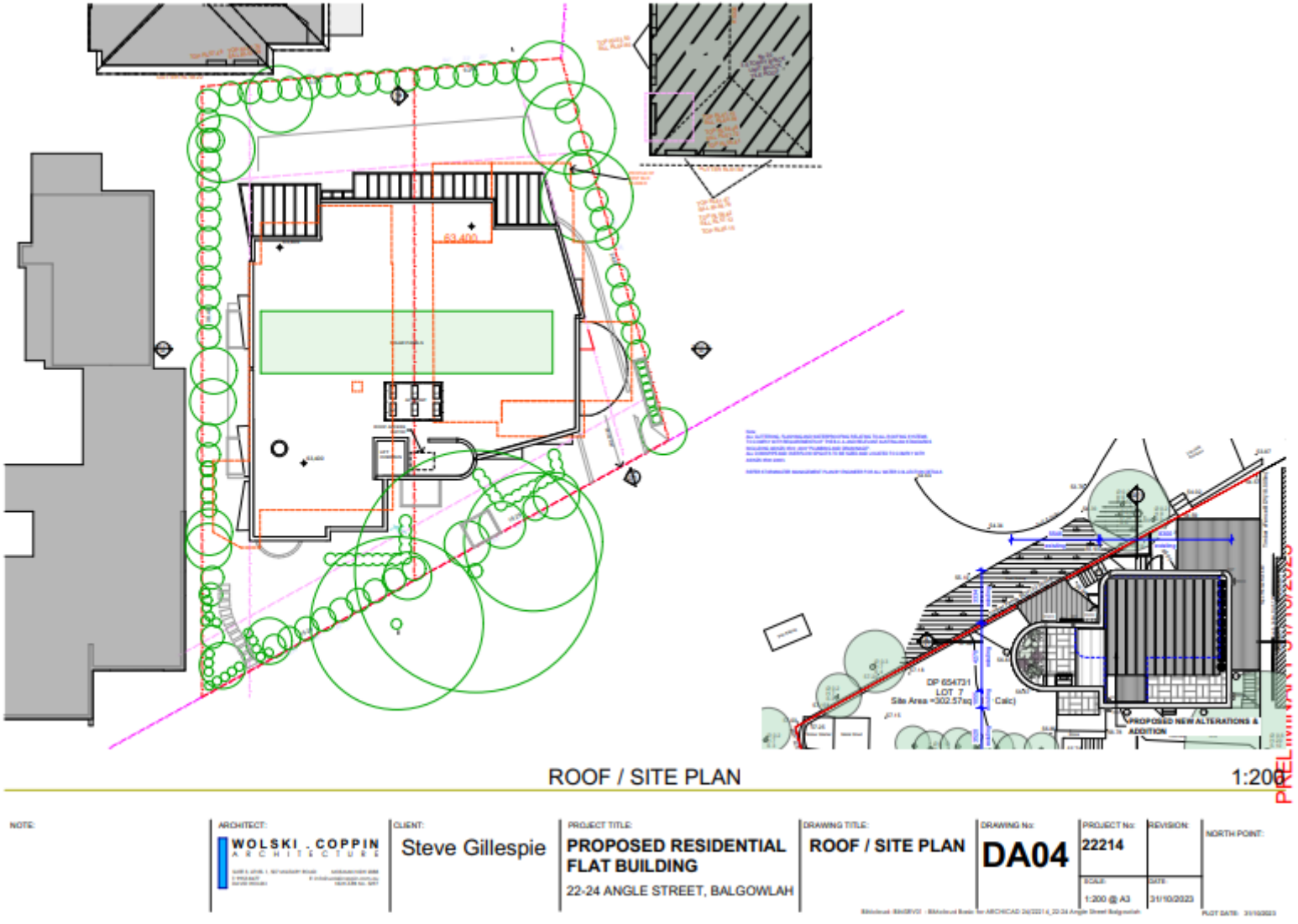
9.6 Figure 3B – LEVEL 1 PLAN – DA03 – REV. SK 1 / DATED 31/10/2023



9.7 Figure 4 – ROOF PLAN – DA014 – REV. SK 1 / DATED 06/02/2023



9.8 Figure 4B – ROOF PLAN – DA014 – REV. SK 1 / DATED 31/10/2023



9.9 Figure 5 – ELEVATIONS 1 – DA05 – REV. SK 1 / DATED 31/10/2023

SOUTH ELEVATION 1:200

NORTH ELEVATION 1:200

PRELIMINARY 31/10/2023

NOTE:

ARCHITECT: WOLSKI . COPPIN ARCHITECTURE

CLIENT: Steve Gillespie

PROJECT TITLE: PROPOSED RESIDENTIAL FLAT BUILDING
22-24 ANGLE STREET, BALGOWLAH

DRAWING TITLE: ELEVATIONS 1

DRAWING No: DA05

PROJECT No: 22214

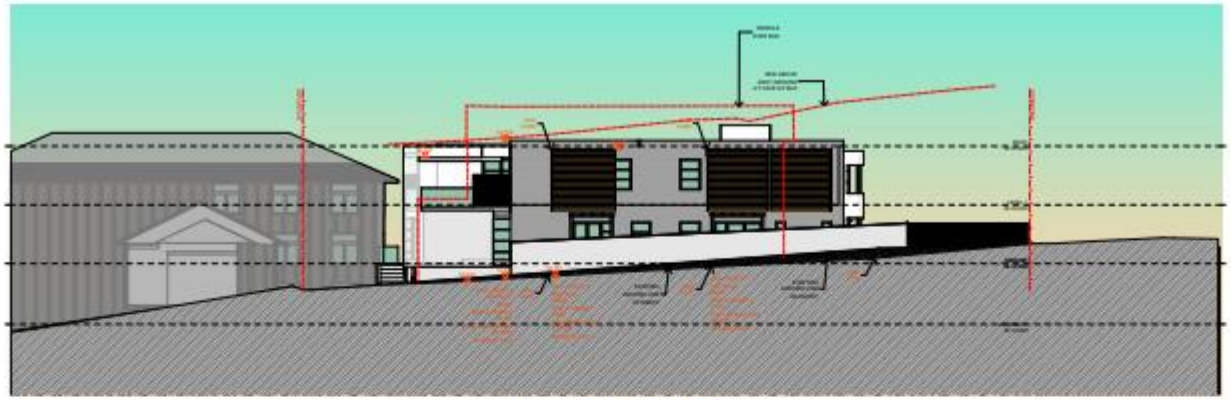
REVISION:

NORTH POINT:

SCALE: 1:200 @ A3

DATE: 31/10/2023

9.10 Figure 6 – ELEVATIONS 2 – DA06 – REV SK 1 / DATED 06/02/2023



WEST ELEVATION 1:200

1 EAST ELEVATION 1:200

PRELIMINARY 31/10/2023

NOTE:

ARCHITECT: WOLSKI . COPPIN ARCHITECTURE

CLIENT: Steve Gillespie

PROJECT TITLE: PROPOSED RESIDENTIAL FLAT BUILDING
22-24 ANGLE STREET, BALGOWLAH

DRAWING TITLE: ELEVATIONS 2

DRAWING No: DA06

PROJECT No: 22214

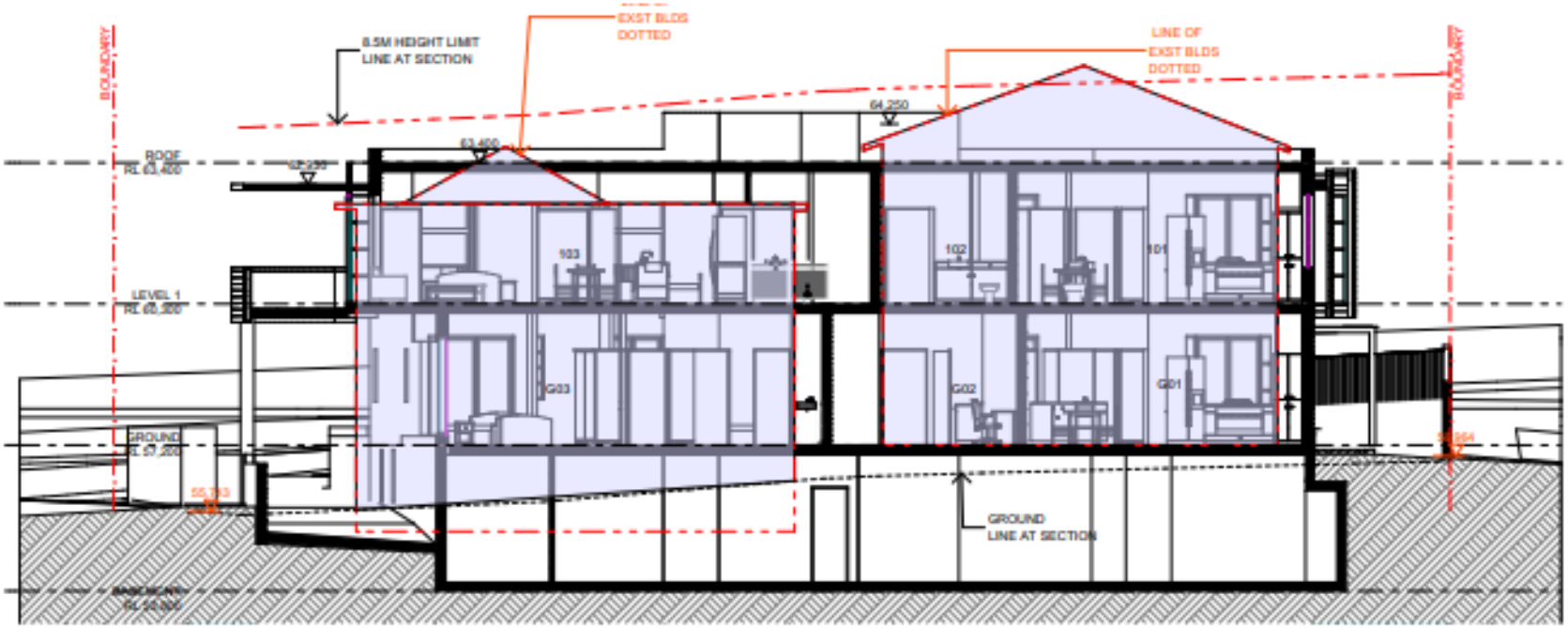
REVISION:

NORTH POINT:

SCALE: 1:200 @ A3

DATE: 31/10/2023

9.11 Figure 7 – SECTION AA – DA07 – REV. SK 1 / DATED 31/10/2023



PRELIMINARY 31/10/2023

ARCHITECT: WOLSKI . COPPIN ARCHITECTURE

CLIENT: Steve Gillespie

PROJECT TITLE: PROPOSED RESIDENTIAL FLAT BUILDING
22-24 ANGLE STREET, BALGOWLAH

DRAWING TITLE: SECTION AA

DRAWING No: DA07

PROJECT No: 22214

REVISION:

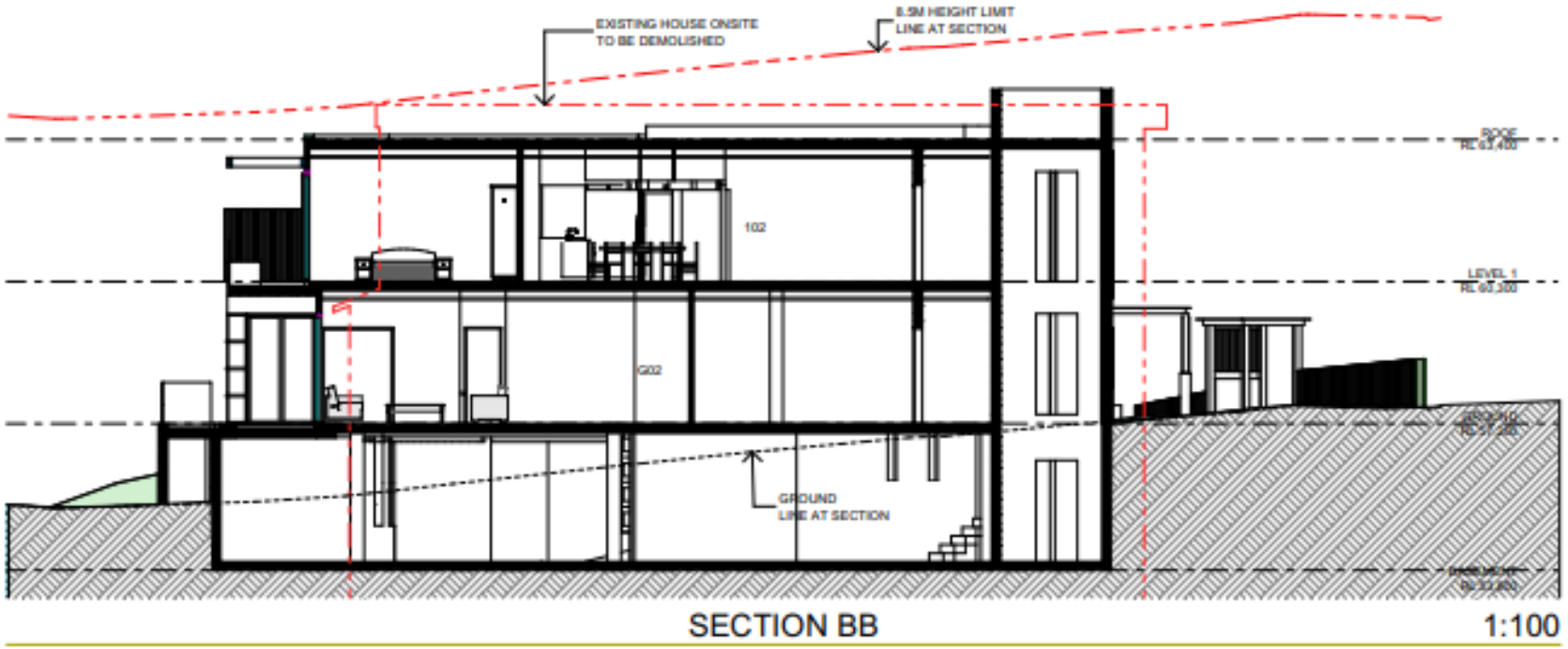
NORTH POINT:

SCALE: 1:100 @ A3

DATE: 31/10/2023

PLOT DATE: 31/10/2023

9.12 Figure 8 – SECTION BB – DA08 – REV. SK 1 / DATED 31/10/2023



10 Tree Protection Zone & Structural Root Zone Tables

PROJECT ADDRESS
22- 24 ANGLE STREET, BALGOLWAH - REVISED SCHEME

WOLSKI . COPPIN
ARCHITECTURE

TREE PROTECTION & STRUCTURAL ROOT ZONE TABLES

DATE: 03.11.2023

TREE NUMBERS	TREE PROTECTION ZONE			STRUCTURAL PROTECTION ZONE		
	TPZ AREA	TPZ IMPACTED	TOTAL PERCENTAGE	SRZ AREA	SRZ IMPACTED	TOTAL PERCENTAGE
1	18.10	0.00	**0.00%**	13.20	0.00	**0.00%**
2	18.10	0.00	**0.00%**	17.65	0.00	**0.00%**
3	221.67	21.49	**9.69%**	21.73	0.00	**0.00%**
4	162.86	17.98	**11.04%**	31.57	2.24	**7.10%**
5	162.86	0.00	**0.00%**	26.97	0.00	**0.00%**
6	18.10	3.69	**20.39%**	8.87	0.83	**9.36%**
7	18.10	0.02	**0.11%**	13.20	0.00	**0.00%**
8	40.72	0.00	**0.00%**	40.72	0.00	**0.00%**
9	203.08	3.94	**1.94%**	28.46	0.00	**0.00%**
10	40.72	2.98	**7.32%**	21.40	0.20	**0.93%**

11 Photographs

PHOTO 1

Tree 1 Macadamia

PHOTO 2

Tree 1 Macadamia

Tree 2 Viburnum

PHOTO 3

Tree 3

PHOTO 4

Tree 2 Tree 1 Tree 3

PHOTO 5

Tree 4

PHOTO 6

Tree 4

PHOTO 7

Tree 4 – Old storm damage at 10 meters.

PHOTO 8

Tree 4 – Cambium damage or split

PHOTO 9

Tree 5 – Dieback upper canopy

PHOTO 10

Tree 5 – Two bracket fungus where main trunk has been removed.

PHOTO 11

Tree 4 – Old storm damage northern side at 10 meters

PHOTO 12

Tree 6 – Crate myrtyl – rubbing and crossing at 3 meters

PHOTO 13

PHOTO14

Tree 8 – Bangalow and Tree 4 are growing together

PHOTO 15

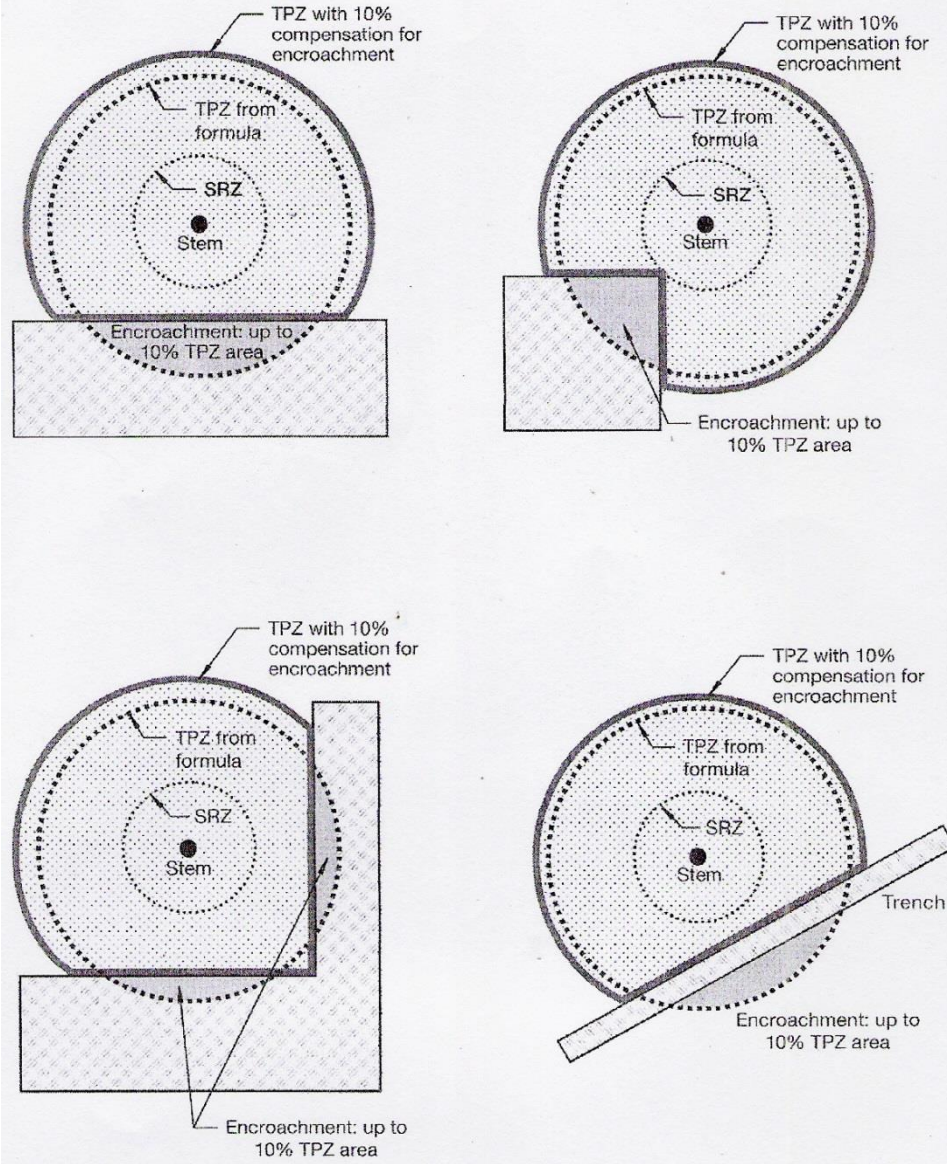
Tree 9

PHOTO 16

Tree 10 - Yucca

11 (TPZ)Acceptable Incursions to the Tree Protection Zone (TPZ)

APPENDIX 2 – ACCEPTABLE INCURSIONS TO THE TREE PROTECTION ZONE (TPZ)



NOTE: Less than 10% TPZ area and outside SRZ. Any loss of TPZ compensated for elsewhere.

REF:- Council of Standards Australia (August 2009)
AS 4970 – 2009 – Protection of Trees on Development Sites
Standards Australia, Sydney

12 Tree and Trunk Protection Methodology

Tree Protection Fencing

The trees to be retained should be protected by means of fencing prior to commencement of demolition (including tree removal) or bulk earthworks.

The protection fencing should be immovable. It should be constructed from 1.8-metre-high chain link suspended on 2.4m x 45mm galvanised steel pipe.

The area within should be kept free of all building materials, contaminants and other debris. It should not be used for storage of any building materials.

Mulching

The area within the protective fencing should be mulched to a depth greater than 75mm and not exceeding 100millimetre using a leaf mulch or 25-millimetre eucalypt chip. The mulch should be free of weed seeds and other contaminants. If construction access is required within the tree's dripline, outside the protective fencing, heavier mulch should be spread to a depth no greater than 100 millimetres to reduce soil compaction.

Trunk Protection

Trunk protection of hardwood timbers should be used to protect the tree's trunk where construction is proposed. This should be fastened around the trunk with hoop iron strapping or similar, and padded with carpet underlay or equivalent

Mulching within Tree Protection Zone

13 Tree Protection Photograph

14 Guidelines for Excavating near Trees to be preserved.

1.1 Monitor the excavation work within a five plus metre radius of the tree. Excavation in this zone is to be done using hand tools, not an excavator.

a) An arborist must monitor all excavation works within the TPZ.
b) Use hand tools to carry out ay work within the drip zone of the tree.
c) Excavation work can be also done with Air Knit or Air Spade.

1.2 An arborist must cut any roots to be removed with a clean sharp handsaw.

a) Cut all roots with clean equipment that is specifically designed to cut roots not with impacted tool.
b) Do not cut large roots (>30mm diameter) closer than halfway from drip line to the trunk.
c) Severance of structural roots of 25mm or more in diameter is not permitted without prior permission of the arborist.

1.3 Wrap any roots found in damp cloth.

a) Protect roots that are exposed during excavation from drying out – wrap etc.
b) Immediately wrap all tree roots uncovered in dampened jute matting or equivalent sacking made or natural fibre cloth, until backfilling takes place. Hessian fibre or Hessian sack. Tree roots must not remain exposed.
c) Clumps of fibrous roots must not be severed/cut and need to be retained as per wrapping instructions in 'b'. Arborist must inspect to give guidelines.

1.4 Any area within five metres of the tree trunk (limited) should not be used to storage or mixing of building materials as this could change the microorganisms in the soil.

a) Do not store equipment, materials, or chemical based solutions in the TPZ.
b) Do not use heavy machinery within the protection zone.
c) No vehicle access without the agreement of the arborist.
d) If vehicle access require measure must be put in place to prevent compaction.

1.5 Any footing in the zone of the roots is to be built with a pier and beam construction with the aim to give 100mm clearance of the roots.

Keep the original soil level – RL – where possible – with no disturbance of the soil, including level changes or compaction, within the TPZ without prior consultation with the arborist.

a) Make no changes that will alter the amount of water infiltration surrounding or within the TPZ without the consent of the arborist.

1.6 Any paving installed must allow air and water penetration to the root zone. The pavers must have sand placed between them and not cement as cement would prevent air flow to the root location.

1.7 If any roots are found in this zone, the pavers are to be raised by the placement of washed sand over the roots. This RL should be determined at an early stage of the construction so that the pavers do not go above the damp course of the house.

15 Tree Root Protection.

Timber placed over root system to prevent compaction.

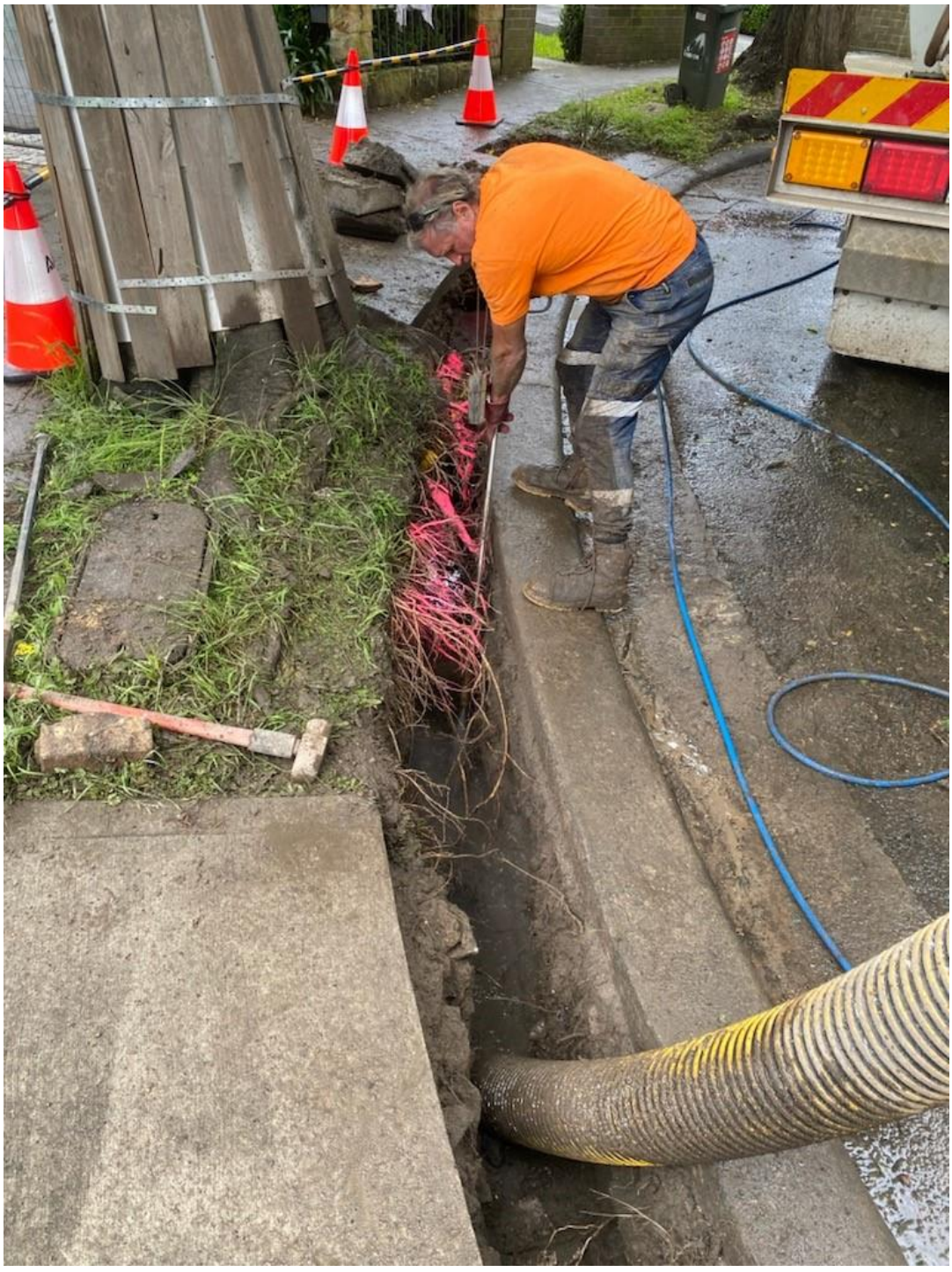
Ground protection for tree roots in Tree Protection Zone – temporary driveway placed within TPZ to prevent compaction.

Root protection by placing timbers on top of existing soil levels and held together with iron strapping.

Timbers held together by iron hoop strapping and placed on top of existing soil levels to prevent compaction to Tree Protection Zone.

16 Excavation with Vac truck within Tree Protection Zone

Photo 1



A Vac truck is used to expose roots so services can be placed underneath tree roots.

Photo 2

Roots have been exposed and painted to highlight location so that services can be placed underneath tree roots without impact to tree roots

16 Root Pruning Methodology

Expose roots with hand tools or air spade or air knife. Clean roots with water or soft brush. Cover exposed roots and soil and prevent foot traffic in area. A trained arborist should inspect toots before pruning or removing roots.

Cover the roots with wetted rags or natural fibre. Then cover with soil where possible if left exposed for more than one day, or as soon as possible in extreme weather conditions. The natural fibre will break down in time and can be left on roots or buried.

Clean cut any roots found with a clean and sharp handsaw. The saw or secateurs should be cleaned by dipping in bleach or methylated spirits, or use alcohol wipes, to clean the saw. This can be done after each cut and must be done if pruning roots of different trees. This will minimise the spreading of pathogens or disease.

Drench the exposed soil with water and mulch soil surface with wood chips and leaf litter, not pine bark or palm fronds.

Hydrophobic soil may need wetting agent applied to aid in water penetration.

Cover the exposed soil along the excavation line with jute matting or hessian and apply water to the covering material once a day minimum in cool weather and up to 3 times per day in hot or windy conditions, until the trench is back filled. Hold jute matting in place with pegs or equivalent.

18 References

Urban, J. (2008) *Up by Roots*

Matheny, N. and Clark, J. (1998) *Trees and Development*

19 Glossary

Absorbing roots – common term describing the fine, non-woody, short-lived roots that absorb water and mineral nutrients and that are often infected with beneficial organisms.

Aerobic – a biochemical process or condition occurring in the presence of oxygen.

Air knife – device that directs a jet of highly compressed air to excavate and loosen soil. Used within the root zone of trees or near underground structures such as pipes and wires to avoid or minimize damage to the roots or structure.

Anaerobic – biological process that occurs in the absence of oxygen.

Bark – protective outer covering of branches and stems that arises from the cork cambium or cambium.

Basal (or trunk) flare – the increased diameter where the roots and trunk meet (also known as the root flare or buttress).

Bifurcation – Tree fork - A tree fork is a bifurcation in the trunk of a tree giving rise to two roughly equal diameter branches. These forks are a common feature of tree crowns. The wood grain orientation at the top of a tree fork is such that wood cells interlock to provide sufficient mechanical support.

Branch collar – area where a branch joins another branch or trunk that is created by the over-lapping vascular tissues from both the branch and the trunk. Typically enlarged at the base of the branch.

Broad-leaved – trees whose foliage is flat and broad.

Buttress root – roots at the trunk base that help support the tree and equalize mechanical stress.

Cambium – thin layer(s) of meristematic cells that give rise (outward) to the phloem and (inward) to the xylem, increasing steam and root diameter.

Central leader – the main stem, trunk, or bole.

Clay – (1) soil particles with a typical grain size less than 0.002 millimetre (USDA classification) and less than 0.005 AASHTO Classification. (2) A soil predominantly composed of such particles.

Compaction – compression of the soil that breaks down soil aggregates and reduces soil volume and total pore space, especially macrospore space.

Compartmentalization – natural defence process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms.

Compost – (1) (noun) organic matter that has been intentionally subjected to decay processes and is more or less decomposed. (2) (verb) To subject organic matter to decay and decomposition processes.

Compression – action of forces to squeeze, crush, or push together any material(s) or substance(s). Contrast with tension.

Coppicing – to cut back (a tree or shrub) to ground level periodically to stimulate growth.

Cork cambium – meristematic tissue from which the corky, protective outer layer of bark is formed.

Crown (or canopy) – the leaves and branches of a tree.

Deciduous – Trees that lose their leaves each year.

Decurrent – trees that lack a central leader; the crown is composed of a number of equal-sized branches.

Dripline – the edge of the canopy

D.C.P. – Development Control Plan

Epicormic branches – shoot arising from a latent or adventitious bud (growth point).

Evergreen – trees that maintain foliage throughout the year.

Expanding clay – clay that tends to expand when wet and then, when drying, contracts more than other particles in the soil.

Field capacity – maximum soil moisture content following the drainage of water due to the force of gravity.

Gap-graded – soil with some particles coarse and some fine but without any significant amount of intermediate-sized fine and very fine sand particles.

Girdling root – root that encircles all or part of the trunk of a tree or other roots and constricts the vascular tissue and inhibits secondary growth and the movement of water.

Heart rot – any of several types of fungal decay of tree heartwood, often beginning with infected wounds in the living portions of wood tissue.

Heartwood – wood that is altered (inward) from sapwood and provides chemical defence against decay-causing organisms and continues to provide structural strength to the trunk. Trees may or may not have heartwood.

Hyphae – long, root-like, filamentous cells of a fungus.

Inclusion - A narrow or appressed junction between two or more branches where bark formation continues to develop, gradually pushing the adjacent limb out from the primary one causing severe stress on the internal wood structure.

Infiltration – movement of water penetrating the soil surface and into the soil. Contrast with percolation.

Lateral roots – roots that branch from larger primary roots.

Loam – soil texture classification containing some proportion of each of the tree major soil particle types (sand, silt, and clay). Has good qualities for plant growth.

Multi-trunked – tree with more than one trunk arising at or near the ground.

Percolation – movement of water through the soil. Contrast with infiltration.

Phloem – plant vascular tissue that transports sugar and growth regulators. Situated on the inside of the bark, just outside the cambium. Is bidirectional (transports up and down). Contrast with xylem.

Pollarding – specialty pruning technique in which a tree with a large-maturing form is kept relatively short. Starting on a young tree, pruning cuts are made at the same point in the tree, resulting in the development of callus knobs at the cut height. Requires regular (usually annual) removal of the sprouts arising from the cuts.

Psyllid – tiny sap sucking insects which attack mostly native plants such as lily pilly.

Reaction wood – wood formed in leaning or crooked trunks and stems as a means of counteracting the effects of gravity.

Root crown – the point at which the trunk and buttress roots meet.

Root plate – area under the ground around the base of the tree where the roots taper away from the trunk (see zone of rapid taper). The area of the primary roots that structurally support the forces on the tree.

R.L – Reduced level.

Scaffold branches – the major structural support branches that attach to the trunk.

Sapwood – outer wood (xylem) that is active in longitudinal transport of water and minerals.

Soil – surface layers of sand, silt, clay, and organic material on the surface of the earth that support plants. More generally, the material between the rocky parts of the planet and the atmosphere composed of fine – to coarse-grained mineral material.

Soil amendment – item added to the soil to improve certain aspects of the soil's condition.

Suckers – shoot arising from the roots.

S.R.Z. – Structural Root Zone

Taper – the change in diameter associated with height or length; related to strength.

Tap root – central, vertical root growing directly below the main stem or trunk that may or may not persist into plant maturity; rarely exists in nursery-produced plants.

Tension – in mechanics, the action of forces to stretch or pull apart any material or substance.

Trunk flare or root flare – transition zone from trunk to roots, above the ground where the trunk expands begins to expand to the form root structures that support the tree.

T.P.Z - Tree Protection Zone.

Xylem – main water – and mineral-conducting (unidirectional, up only) tissue in trees and other plants. Provides structural support. Arises (inward) from the cambium and becomes wood after lignifying. Contract with phloem.

Zone of rapid taper – area around the base of the tree under the ground where the roots taper away from the trunk. The taper reflects the stresses within the root generated by wind and gravity.

20 Expert Witness Code of Conduct

UNIFORM CIVIL PROCEDURE RULES 2005, as of 1st December 2021

Schedule 7 Expert witness code of conduct

(Rule 31.23)

1 Application of code

This code of conduct applies to any expert witness engaged or appointed—

(a) to provide an expert's report for use as evidence in proceedings or proposed proceedings, or

(b) to give opinion evidence in proceedings or proposed proceedings.

2 General duties to the Court

An expert witness is not an advocate for a party and has a paramount duty, overriding any duty to the party to the proceedings or other person retaining the expert witness, to assist the court impartially on matters relevant to the area of expertise of the witness.

3 Content of report

Every report prepared by an expert witness for use in court must clearly state the opinion or opinions of the expert and must state, specify or provide—

(a) the name and address of the expert, and

(b) an acknowledgement that the expert has read this code and agrees to be bound by it, and

(c) the qualifications of the expert to prepare the report, and

(d) the assumptions and material facts on which each opinion expressed in the report is based (a letter of instructions may be annexed), and

(e) the reasons for and any literature or other materials utilised in support of each such opinion, and

(f) (if applicable) that a particular question, issue or matter falls outside the expert's field of expertise, and

(g) any examinations, tests or other investigations on which the expert has relied, identifying the person who carried them out and that person's qualifications, and

(h) the extent to which any opinion which the expert has expressed involves the acceptance of another person's opinion, the identification of that other person and the opinion expressed by that other person, and

(i) a declaration that the expert has made all the inquiries which the expert believes are desirable and appropriate (save for any matters identified explicitly in the report), and that no matters of significance which the expert regards as relevant have, to the knowledge of the expert, been withheld from the court, and

(j) any qualification of an opinion expressed in the report without which the report is or may be incomplete or inaccurate, and

(k) whether any opinion expressed in the report is not a concluded opinion because of insufficient research or insufficient data or for any other reason, and

(l) where the report is lengthy or complex, a brief summary of the report at the beginning of the report.

4 Supplementary report following change of opinion

(1) Where an expert witness has provided to a party (or that party's legal representative) a report for use in court, and the expert thereafter changes his or her opinion on a material matter, the expert must forthwith provide to the party (or that party's legal representative) a supplementary report which must state, specify or provide the information referred to in clause 3(a), (d), (e), (g), (h), (i), (j), (k) and (l), and if applicable, clause 3(f).

(2) In any subsequent report (whether prepared in accordance with subclause (1) or not), the expert may refer to material contained in the earlier report without repeating it.

5 Duty to comply with the court's directions

If directed to do so by the court, an expert witness must—

(a) confer with any other expert witness, and

(b) provide the court with a joint report specifying (as the case requires) matters agreed and matters not agreed and the reasons for the experts not agreeing, and

(c) abide in a timely way by any direction of the court.

6 Conferences of experts

Each expert witness must—

(a) exercise his or her independent judgment in relation to every conference in which the expert participates pursuant to a direction of the court and in relation to each report thereafter provided, and must not act on any instruction or request to withhold or avoid agreement, and

(b) endeavour to reach agreement with the other expert witness (or witnesses) on any issue in dispute between them, or failing agreement, endeavour to identify and clarify the basis of disagreement on the issues which are in dispute.