



ARBORICULTURAL IMPACT ASSESSMENT

4 WOLLOMBI ROAD, BILGOLA PLATEAU 2107

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Prepared for: Wade Orth

8/01/2024

EXECUTIVE SUMMARY

Complete Arborcare has been commissioned by Wade Orth to produce an Arboricultural Impact Assessment (AIA) regarding the proposed development upon Lot 217/-/DP16902, No.4 Wollombi Road Bilgola Plateau 2107.

Six (6) x trees adjacent and upon the subject site were assessed to produce this report.

Following an assessment of construction impacts (detailed in section 7 of this report) the following recommendations (detailed in section 9 of this report) have been developed.

- 9.1 To determine possible impact upon trees T1-T2, non-destructive root investigation will be required. If roots are discovered that can be pruned (which are to be $\leq 50\text{mm } \varnothing$) pruning methods must be undertaken in accordance with Section 9 (Root Pruning) of AS 4373-2007. If roots $> 50\text{mm } \varnothing$ are uncounted, appropriate arboricultural advice will be provided.
- 9.2 It is recommended that stem installation upon trees T6 will be required. This protection is to be compliant with clause 4.5.2 (Trunk and branch protection) of the Australian Standard (AS) 4970-2009, Protection of Trees on Development Sites (see Appendix C).
- 9.3 Any pruning work must be undertaken by an arborist with a minimum AQF level 3 standing and be conducted in accordance with AS 4373-2007, Pruning of Amenity Trees and the current Code of Practice: Amenity tree Industry 1998.

CONTENTS

4 Wollombi Road, Bilgola Plateau 2107	0
Executive Summary	i
1. Introduction	3
2. Legislation Requirements	3
3. The Site	4
4. Method	5
5. Observations	6
6. Tree Retention Values	7
7. Construction Impacts	8
8. Documents used in the Preparation of this Report	8
9. Recommendations/Conclusions	8
10. Limitations on the Use of this Report	9
11. Assumptions	9
12. References	9
Relevant Appendices - Appendix A: Glossary Of Terms	10
Appendix B: Significance of a Tree, Assessment Rating System* (IACA 2010) – S.T.A.R.S. ©	11
Appendix C: Example of Stem Tree Protection	13

1. INTRODUCTION

- 1.1 Complete Arborcare has been commissioned by Wade Orth to produce an Arboricultural Impact Assessment (AIA) regarding the proposed development upon Lot 217/-/DP16902, No.4 Wollombi Road Bilgola Plateau 2107 (here after mentioned as the subject site).
- 1.2 This AIA is to be part of a Development Application (DA). It has been prepared following the guidelines provided in Australian Standard (AS) 4970-2009, Protection of Trees on Development Sites and AS 4373-2007, Pruning of Amenity Trees.

2. LEGISLATION REQUIREMENTS

- 2.1 The subject site is zoned C4: Environmental Living (NSW Government - Planning & Environment 2019).
- 2.2 NBC (Northern Beaches Council, 2017) considers a tree to be:
 - (a) any palm or woody perennial plant greater than five (5) metres in height or any palm or woody perennial plant with a canopy greater than 10 m in width; or
 - (b) any native palm or native woody perennial plant at any stage of its lifecycle that is 0.5 metres or greater in height and is within any area mapped by Council as containing:
 - Threatened and High Conservation Habitat.
 - Wildlife Corridors .
 - Native Vegetation known or potential habitat for threatened species, populations or ecological communities
- 2.3 State Environmental Planning Policy (Biodiversity & Conservation) 2021 (NSW Government, 2021) has been considered in the preparation of this report. The aims of the policy are to;
 - (a) *to protect the biodiversity values of trees and other vegetation in non-rural areas of the State, and*
 - (b) *to preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.*

3. THE SITE

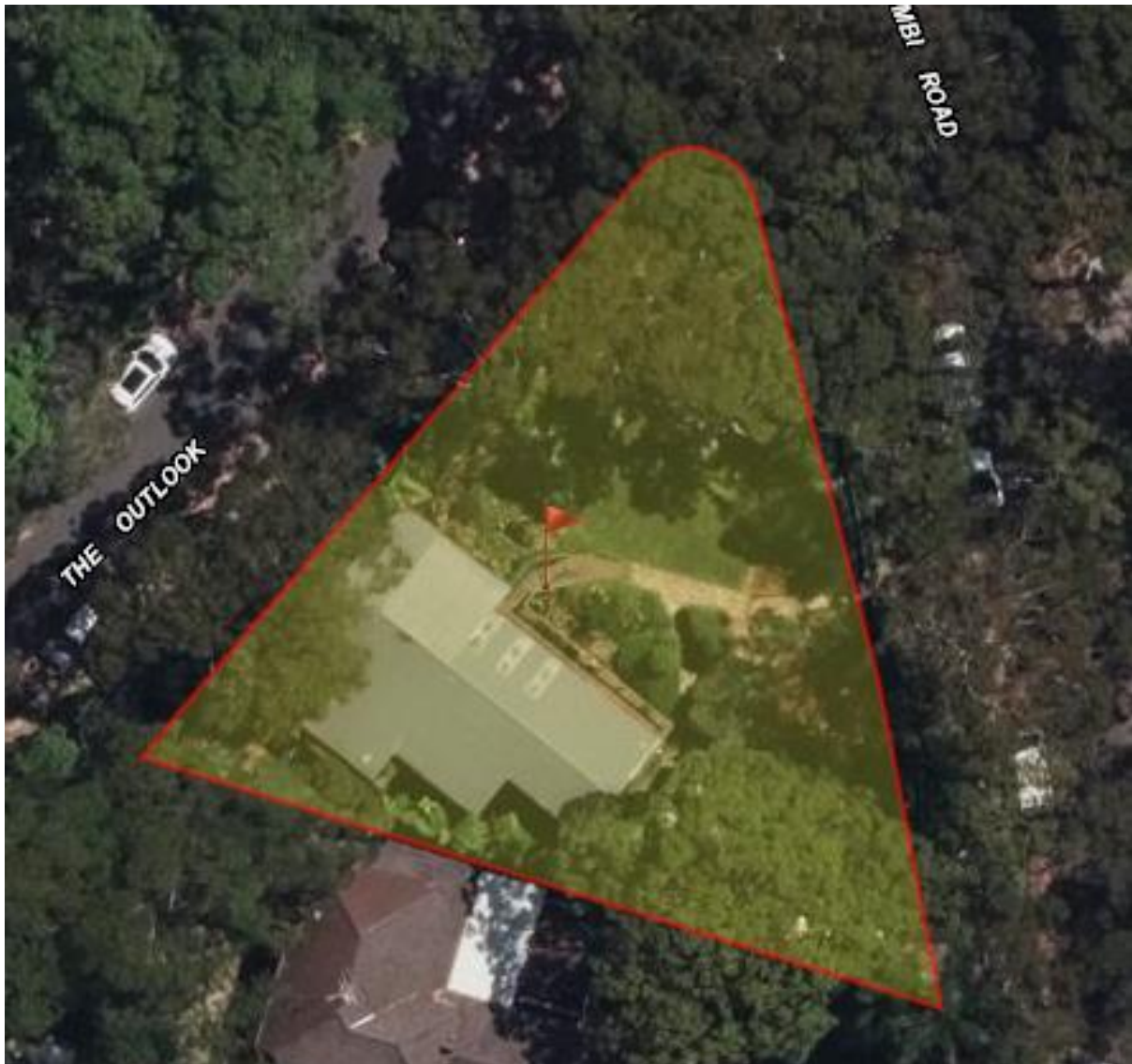


Figure 1: The subject site outlined in red (SIX Maps).

4. METHOD

- 4.1 The subject site & tree/s were visually assessed from ground level on the 12th November 2024. The *Genus/species* of the subject trees were recorded as well as dimensions of Diameter at Breast Height (DBH) and Diameter at Base (DAB), along with crown and canopy width. Height and age of the trees were estimated as well as the percentage of deadwood. The subject trees were given a condition / vigour rating and signs and symptoms of pests and diseases were noted (if apparent). Structural defects were looked for and comments recorded.
- 4.2 Calculations have been made using guidelines supplied in AS 4970-2009, specifically in relation to:
- Tree Protection Zone (TPZ)
 - Structural Root Zone (SRZ)
 - Estimated Live Crown Size (ELCS)
- 4.3 The trees have been allocated a landscape significance rating of Low, Medium or High using the *IACA Significance of a Tree, Assessment Rating System (STARS)*© (IACA, 2010). Stars assessment criteria includes:
- Condition and Vigour
 - Form, species specific
 - Provenance, age and botanical significance
 - Heritage and Ecological significance
 - Size, shape, and local amenity value
 - Restrictions to tree growth
- Appendix B contains the assessment criteria in full.
- 4.4 The trees have been given a Useful Life Expectancy (ULE) rating, categorised as either:
- Long – 40+ years
 - Medium – 15-40 years
 - Short – 5-15 years
 - Consider for removal - <5 years
- 4.5 Any vegetation not mentioned in this report was either defined as not to be a prescribed tree (due to its dimensions), exempt species, within two (2) metres of an existing approved building and/or had no TPZ encroachments.

5. OBSERVATIONS

5.1 Listed in Table 1 below are observations from the subject tree relating to:

- Health and condition
- Deadwood. An overall % has been estimated
- Structural defects and comments
- Any signs/symptoms of pest and disease attack

Tree No.	Common Name <i>Genus/species</i>	Health/Condition	Dead wood %	Structural Defects	Pests/ Disease
1	Sydney Red Gum <i>Angophora costata</i>	F/F	≤5	Stem inclusion	None observed
2	Japanese Maple <i>Acer palmatum</i>	F/G	<5	None observed	None observed
3	Scribbly Gum <i>Eucalypts haemastoma</i>	F/F	≤10	None observed	None observed
4	Sydney Red Gum <i>Angophora costata</i>	F/F	≤10	None observed	None observed
5	Sydney Red Gum <i>Angophora costata</i>	G/G	<5	None observed	None observed
6	Gum Tree <i>Eucalyptus spp.</i>	F/F	≤5	Stem decay	None observed

Table 1: Tree Observations

5.2 Listed in Table 2 below are measurements from the subject tree relating to:

- Age
- Tree height
- Lowest scaffold branch
- Canopy spread – measured to the North, East, South and West (N,S,E,W)
- Diameter at breast height (DBH)
- Diameter above buttress (DAB)

Tree No.	<i>Genus/species</i>	Age	Height (m)	Spread (m)				DBH (cm)	DAB (cm)
				N	S	E	W		
1	<i>Angophora costata</i>	M	15	6	6	6	6	82	88
2	<i>Acer palmatum</i>	M	6	3	3	3	3	26	38
3	<i>Eucalyptus haemastoma</i>	M	12	2	5	4	2	52	60
4	<i>Angophora costata</i>	M	13	4	6	6	6	65	75
5	<i>Angophora costata</i>	M	14	8	0	8	8	85	90
6	<i>Eucalyptus spp.</i>	M	15	5	5	6	4	83	87

Table 2: Tree Measurements

5.3 Listed in Table 3 Below are calculations from the subject trees relating to:

- Tree Protection Zone (TPZ)
- Structural Root Zone (SRZ)
- Estimated Live Crown Size (ELCS)

Tree No.	Genus/species	SRZ (m)	TPZ (m)	Estimated Live Crown Size (m ²)
1	<i>Angophora costata</i>	3.14	9.84	100
2	<i>Acer palmatum</i>	2.2	3.12	25
3	<i>Eucalyptus haemastoma</i>	2.67	6.24	35
4	<i>Angophora costata</i>	2.93	7.8	90
5	<i>Angophora costata</i>	3.17	10.2	100
6	<i>Eucalyptus spp.</i>	3.11	9.96	90

Table 3: Tree Calculations

6. TREE RETENTION VALUES

6.1 Trees have been allocated a retention value using the priority Matrix in the *IACA Significance of a Tree, Assessment Rating System (STARS)©* (IACA, 2010). The Matrix uses the Landscape Significance rating combined with the Useful Life Expectancy (ULE) to determine a retention value of either;

- Priority for Retention (High) – All measures must be taken to retain and protect these trees. If the guidelines set out in AS4970-2009 Protection of trees on development sites cannot be used to protect the trees, design modification or re-location of the proposed development should be considered.
- Consider for Retention (Medium) – Retention of these trees should remain a priority. If the trees are adversely affecting the proposed development and all protection measures have been considered but are not viable, removal can be considered.
- Consider for Removal (Low) – Retention of these trees is not important. No modification to design should be considered for their retention.
- Priority for Removal – Trees in an irreversible decline, weed species or hazardous trees. These trees should be removed.

Tree No.	Genus/Species	Landscape Significance Rating	Useful Life Expectancy	Retention Value
1	<i>Angophora costata</i>	High	Medium-short	Medium
2	<i>Acer palmatum</i>	Low	Medium-short	Low
3	<i>Eucalyptus haemastoma</i>	Medium	Medium	Medium
4	<i>Angophora costata</i>	Medium	Medium	Medium
5	<i>Angophora costata</i>	High	Long	High
6	<i>Eucalyptus spp.</i>	Medium	Medium-short	Medium

Table 4: Tree Retention Values

7. CONSTRUCTION IMPACTS

7.1 Listed in table 5 below are likely impacts from the proposed construction upon the trees.

Tree No.	Proposed encroachments into TPZ and/or canopy	Likely Impacts from the proposed construction (Discussion)
1	A major 20-25% TPZ/SRZ encroachment. No canopy encroachment will be required.	As the proposed dwelling will be constructed upon piers, it has concluded that no long-term tree impact will occur from the completed works.
2	A major 20-25% TPZ/SRZ encroachment. Minor canopy pruning may be required on the northern face.	As the proposed dwelling will be constructed upon piers, it has concluded that no long-term tree impact will occur from the completed works.
3-5	Minor <10% TPZ encroachments. No canopy encroachments will be required.	It has concluded that no long-term tree impact will occur from the completed works.
6	No TPZ or canopy encroachments.	It has concluded that no long-term tree impact will occur from the completed works.

Table 5: Construction Impacts

8. DOCUMENTS USED IN THE PREPARATION OF THIS REPORT

8.1 Listed in Table 6 below are documents used in the preparation of this report.

Document type	Source/ Author	Title	Date	Summary
Plan	RK Designs	The Site and Roof Plan	7/11/2024	The site and roof plan shown over the proposed development (issue E).
Plan	Modular Engineers PL	Stormwater Design Plans	18/12/2024	Drawing No.ST002 of stormwater design plan shown over the proposed development (Rev C).
Plan	Complete Arborcare	TPZ/SRZ Plan	20/11/2024	TPZ/SRZ plan shown over the proposed development.

Table 6: Documents used in the preparation of this report

9. RECOMMENDATIONS/CONCLUSIONS

- 9.1 To determine possible impact upon trees T1-T2, non-destructive root investigation will be required. If roots are discovered that can be pruned (which are to be ≤50mm ø) pruning methods must be undertaken in accordance with Section 9 (Root Pruning) of AS 4373-2007. If roots >50mmø are uncounted, appropriate arboricultural advice will be provided.
- 9.2 It is recommended that stem installation upon trees T6 will be required. This protection is to be compliant with clause 4.5.2 (Trunk and branch protection) of the Australian Standard (AS) 4970-2009, Protection of Trees on Development Sites (see Appendix C).
- 9.3 Any pruning work must be undertaken by an arborist with a minimum AQF level 3 standing and be conducted in accordance with AS 4373-2007, Pruning of Amenity Trees and the current Code of Practice: Amenity tree Industry 1998.

10. LIMITATIONS ON THE USE OF THIS REPORT

This report is to be utilised in its entirety only. Any written or verbal submission, report or presentation that includes statements taken from the findings, discussions, conclusions or recommendations made in this report, may only be used where the whole of the original report (or a copy) is referenced in, & directly attached to that submission, report or presentation.

11. ASSUMPTIONS

Care has been taken to obtain information from reliable resources. All data has been verified insofar as possible; however, the author of this report can neither guarantee nor be responsible for the accuracy of information provided by others.

Unless stated otherwise:

Information contained in this report covers only the trees that were examined & reflects the condition of the trees at the time of inspection.

The inspection was limited to visual examination of the subject trees without dissection, excavation, probing or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.

This report does not represent or contain a tree risk assessment.

12. REFERENCES

IACA, 2010. *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia. [Online] Available at: www.iaca.org.au [Accessed 19th June 2015].

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Standards Australia, 2009. AS 4970-2009, Protection of trees on development sites. Sydney: Standards Australia.

Standards Australia, 2007. AS 4373-2007, Pruning of Amenity Trees Sydney: Standards Australia.

RELEVANT APPENDICES - APPENDIX A: GLOSSARY OF TERMS

Photographs – all images have been taken from metromap.

Common Name/*Genus species* - the common name and genus/ species of the tree.

Age Class- assessment of the trees current age.

Immature (IM) - refers to a tree at growth stages between immaturity and full size.

Semi-mature (SM) - refers to a full-sized tree with some capacity for further growth.

Mature (M) - refers to a full-sized tree with some capacity for further growth.

Over-mature (OM) - a mature tree has reached a near stable size (biomass) above and below the ground. Trees can have a Mature Age Class for > 90% of their life span. Over-mature (**OM**) trees show symptoms of irreversible decline and decreasing biomass.

Live Stag (LS) - refers to a tree in a significant state of decline. This is the last stage of a tree prior to death.

Height - estimated overall height of the tree.

Diameter at Breast Height (DBH) - the trunk diameter at breast height (in metres) of the tree, 1.4 meters above ground level.

Diameter above the Buttress (DAB) - refers to the tree trunk diameter measured above the root buttress and is used to calculate the radius of the SRZ.

Tree Protection Zone (TPZ) - is a “No Go Zone” surrounding a tree to aid in its ability to cope with disturbances associated with construction works. Tree protection involves minimising root damage that is caused by activities such as construction. Tree protection also reduces the chance of a tree’s decline in health or death & the possibly damage to structural stability of the tree from root damage.

Structural Root Zone (SRZ) – the structural root zone is the area required for the tree’s stability. A larger area is required to maintain a viable tree. The SRZ is only needed to be calculated when a major encroachment into the TPZ is proposed. There are many factors that affect the size of the SRZ (e.g. tree height, crown area, soil type, soil moisture). The SRZ may also be influenced by natural or built structures, such as rock and footings.

Health - Good (G), Fair (F) or Poor (P) – this refers to the trees vigour as exhibited by the crown density, leaf colour, presence of epicormic shoots, ability to withstand disease invasion and the degree of dieback.

Condition – Excellent (E), Very Good (VG), Good (G), Fair (F), Declining (D), Poor (P), Very Poor (VP). this refers to the tree’s form & growth habit, as modified by its environment (aspect suppression by other tree/s, soils,) & the state of the scaffold (i.e. trunk & major branches), including structural defects such as cavities, crooked trunks or weak trunk/branch junctions. These are not directly connected with health & it is possible for a tree to be healthy but in poor condition/vigour.

Deadwood – this refers to any whole limb that no longer contains living issues (i.e. living leaves & /or bark). Some dead wood is common in a number of species.

Crown Spread - the greatest width from drip line to drip line of a branch across the trees crown.

Estimated Live Crown Size (ELCS) - the area of the crown as viewed from one aspect.

Epicormic Growth - these are advantageous shoots that grow from secondary bud development. They are an indicator that the tree has/or is under stress.

APPENDIX B: SIGNIFICANCE OF A TREE, ASSESSMENT RATING SYSTEM* (IACA 2010) – S.T.A.R.S. ©

Significance of a Tree, Assessment Rating System* (IACA 2010) – S.T.A.R.S. ©

The landscape significance of a tree is an essential criterion to establish the importance that a particular tree may have on a site. However, rating the significance of a tree becomes subjective and difficult to ascertain in a consistent and repetitive fashion due to assessor bias. It is therefore necessary to have a rating system utilising structured qualitative criteria to assist in determining the retention value for a tree. To assist this process all definitions for terms used in the *Tree Significance - Assessment Criteria* and *Tree Retention Value - Priority Matrix*, are taken from the IACA Dictionary for Managing Trees in Urban Environments 2009.

This rating system will assist in the planning processes for proposed works, above and below ground where trees are to be retained on or adjacent a development site. The system uses a scale of *High*, *Medium* and *Low* significance in the landscape. Once the landscape significance of an individual tree has been defined, the retention value can be determined. An example of its use in an Arboricultural report is shown as Appendix A.



Tree Significance - Assessment Criteria

High Significance in landscape

- The tree is in Good condition and Good vigour.
- The tree has a form typical for the species;
- The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age;
- The tree is listed as a Heritage Item, Threatened Species or part of an endangered ecological community or listed on Councils Significant Tree Register;
- The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity;
- The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values;
- The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa *in situ* - tree is appropriate to the site conditions.

Medium Significance in landscape

- The tree is in Fair-Good condition and Good or Low vigour;
- The tree has form typical or atypical of the species;
- The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area
- The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street,
- The tree provides a fair contribution to the visual character and amenity of the local area,
- The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa *in situ*.

Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;
- The tree has form atypical of the species;
- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,
- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,
- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,
- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa *in situ* - tree is inappropriate to the site conditions,
- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,
- The tree has a wound or defect that has potential to become structurally unsound.

Environmental Pest / Noxious Weed Species

- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,
- The tree is a declared noxious weed by legislation.

Hazardous/Irreversible Decline

- The tree is structurally unsound and/or unstable and is considered potentially dangerous,
- The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.

Note: The assessment criteria are for individual trees only, however, can be applied to a monoculture stand in its entirety e.g. hedge.

Institute of Australian Consulting Arboriculturists (IACA 2010), *IACA Significance of a Tree, Assessment Rating System (STARS)*, www.iaca.org.au

Table 1.0 Tree Retention Value - Priority Matrix.

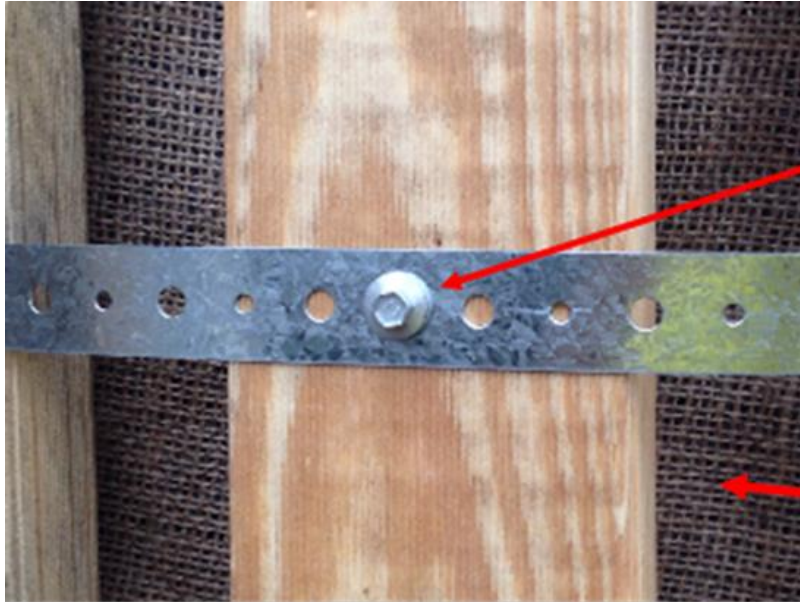
		Significance				
		1. High	2. Medium	3. Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest / Noxious Weed Species	Hazardous / Irreversible Decline
Estimated Life Expectancy	1. Long >40 years					
	2. Medium 15-40 Years					
	3. Short <1-15 Years					
	Dead					
Legend for Matrix Assessment						
	Priority for Retention (High) - These trees are considered important for retention and should be retained and protected. Design modification or re-location of building/s should be considered to accommodate the setbacks as prescribed by the Australian Standard AS4970 <i>Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented e.g. pier and beam etc if works are to proceed within the Tree Protection Zone.					
	Consider for Retention (Medium) - These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.					
	Consider for Removal (Low) - These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.					
	Priority for Removal - These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.					

USE OF THIS DOCUMENT AND REFERENCING The IACA Significance of a Tree, Assessment Rating System (STARS) is free to use, but only in its entirety and must be cited as follows', 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, Australia, www.iaca.org.au

REFERENCES Australia ICOMOS Inc. 1999, *The Burra Charter –The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites, www.icomos.org/australia Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists(IACA), CSIRO Publishing, Collingwood, Victoria, Australia. Footprint Green Pty Ltd 2001, *Footprint Green Tree Significance & Retention Value Matrix*, Avalon, NSW Australia, www.footprintgreen.com.au IACA 2010, *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturists, www.iaca.org.au

APPENDIX C: EXAMPLE OF STEM TREE PROTECTION

Wherever stems and branches are to be protected, timber boards are to be used with padding underneath that will protect damage to the tree bark. All stem and branch protection timbers are to be strapped to the subject tree. Examples of stem protection are shown below.



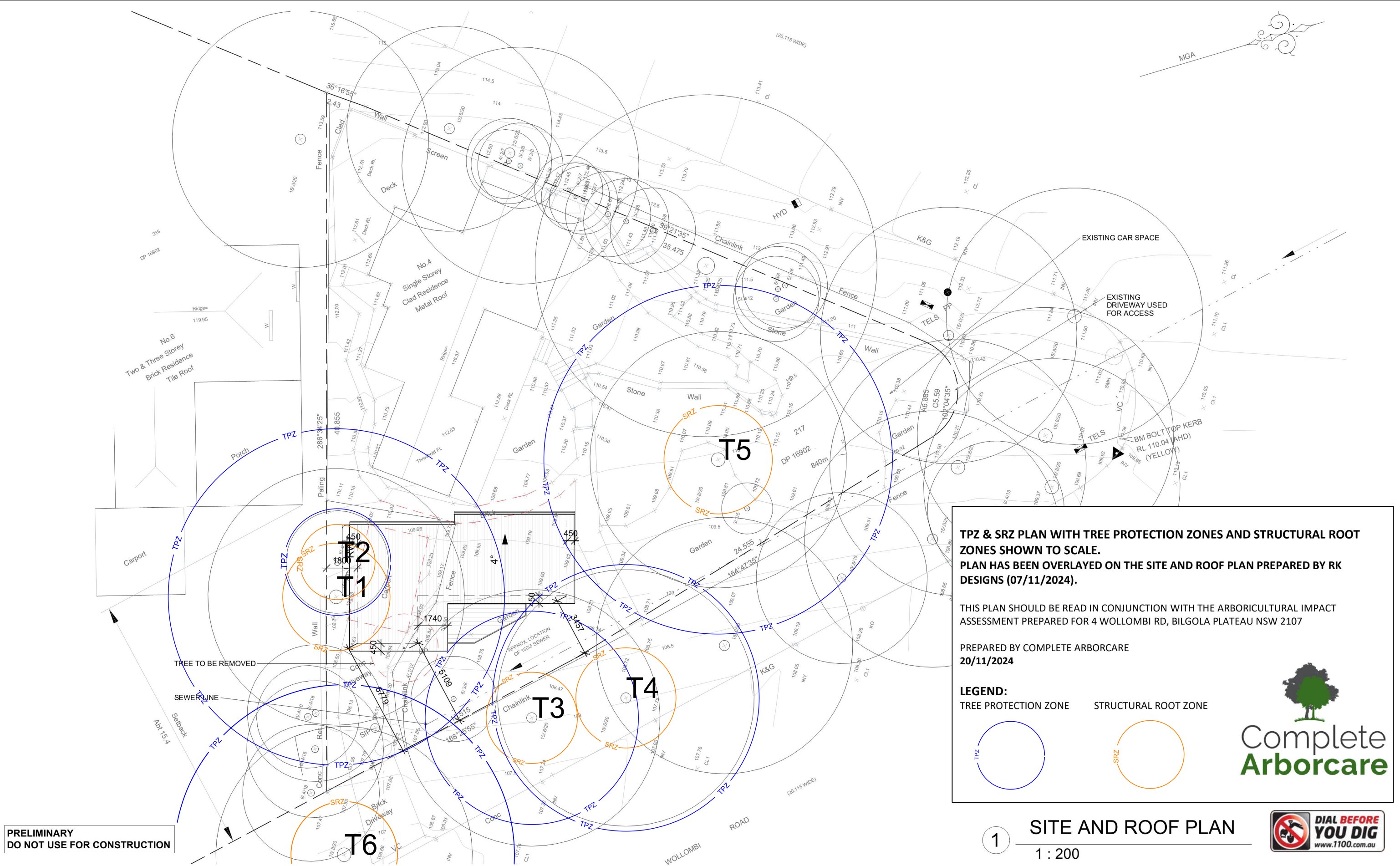
Boards held in Place by steel strapping.

Hessian is used as padding to prevent damage to the trees bark.



Spacing between timber is to be greater than 75mm

Timber planks are to be no less than 50 x 25mm



PRELIMINARY
DO NOT USE FOR CONSTRUCTION

GENERAL NOTES

- . All dimensions are to be confirmed on site by the builder/subcontractor, any incongruities must be reported to the Designer before commencement of any work.
- . No Survey has been made on the boundaries, all bearings, distances and areas have been taken from the contour survey plan. A Survey must be carried out to confirm the exact boundary locations.
- . No construction work shall commence until a site survey confirming the site boundaries has been completed. The contractor is to ensure that the boundary setbacks are confirmed and used, the boundary setbacks take precedence over all other dimensions. The Survey work must be performed by a registered Surveyor.
- . In the event of encountering any discrepancies on these drawings, specification or subsequent instructions issued, the Builder/Subcontractor shall contact the designer before proceeding further with any work.
- . All construction, control joints and expansion joints in the wall, floors, other locations shall be in strict accordance with the Structural Engineering details. No joints or breaks other than specified, are allowed without written permission from the Engineer.
- . Measurements for the fabrication of secondary components such as, windows, doors, internal frames, structural steel components and the like, are not to be taken from these documents. Measurements must be taken on site to suit the work as constructed.
- . All structural components shall be in strict accordance to details and specifications as prepared by a structural engineer.
- . All existing structures need to be examined for structural adequacy, and it is the Contractor's responsibility to ensure that a certificate of structural adequacy is available prior to the start of any work.

drawn	date	issue	description
LS	05/08/24	A	ISSUE FOR DA
LS	30/08/24	B	ISSUE FOR DA
LS	06/09/24	C	ISSUE FOR DA
LS	27/09/24	D	ISSUE FOR DA
LS	07/11/24	E	ISSUE FOR DA

project

PROPOSED CONSTRUCTION OF A GRANNY FLAT AT 4 WOLLOMBI ROAD BILGOLA PLATEAU NSW 2107 LOT 217 DP16902

client

WADE ORTH

project no

24-47

date

05/08/24

sheet no.

1

scale @ A3

1 : 200

issue

E

checked

?

drawing

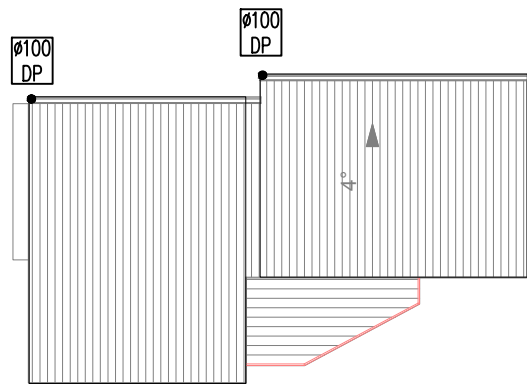
SITE AND ROOF PLAN

true north

Bungalow Homes

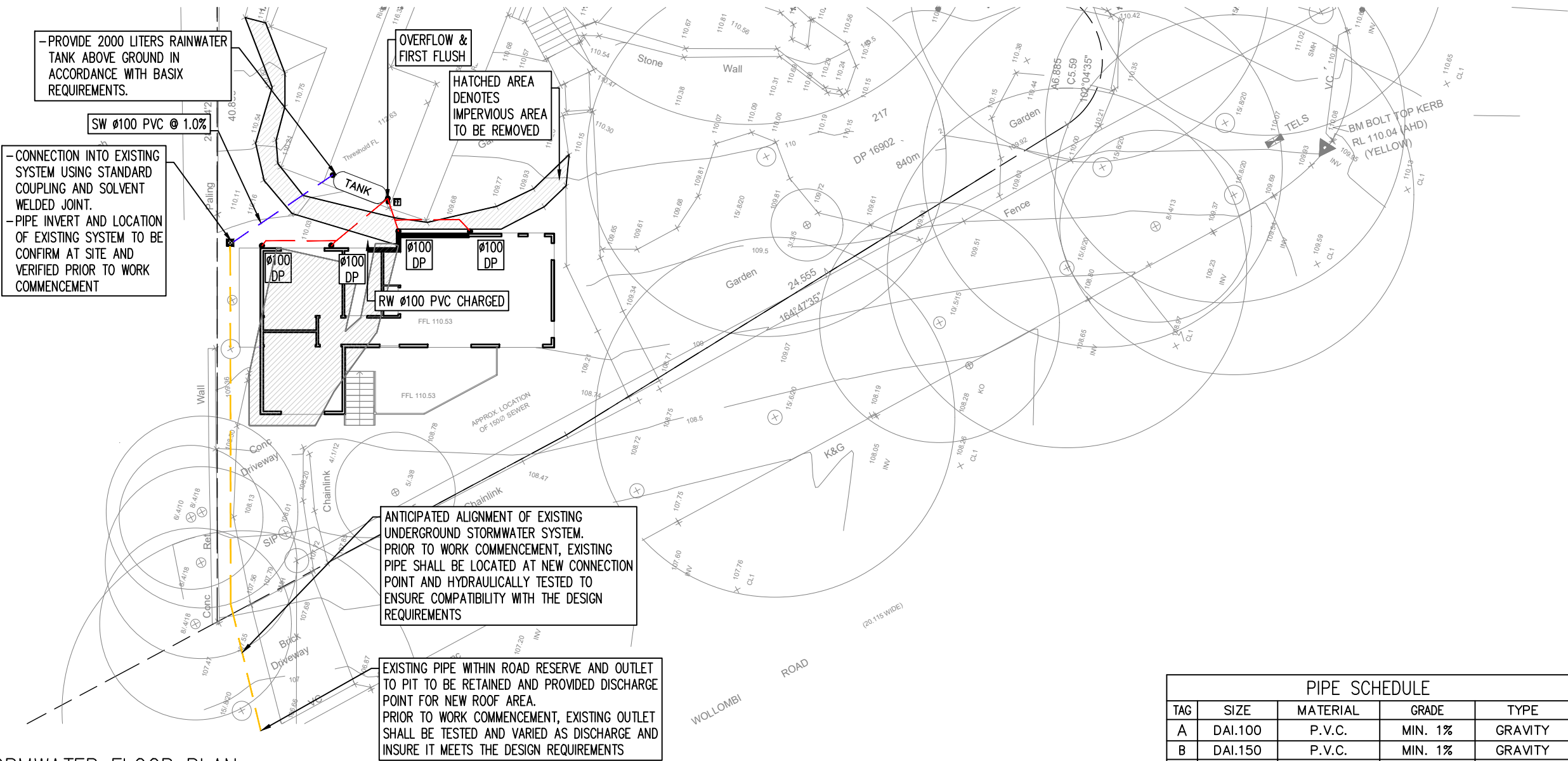
ACCREDITED
BUILDING DESIGNER

6/7 Parkes Street,
Parramatta NSW 2150
www.rkdesigns.com.au
admin@rkdesigns.com.au
02 9633 4797
abn. 68 659 200 389
spaces designed for life



STORMWATER ROOF PLAN
SCALE: 1:200

	Number Req'd	Number Used	Gutter Area?	Gutter Width?	Gutter Depth?
90 Dia:	1.19	2	5430	115	58
100 Dia:	0.94	1	10324	140	75
150 Dia:	0.38	1	10324	175	69
225 Dia:	0.15	1	10324	250	52
300 Dia:	0.08	1	10324	325	42



STORMWATER FLOOR PLAN
SCALE: 1:200

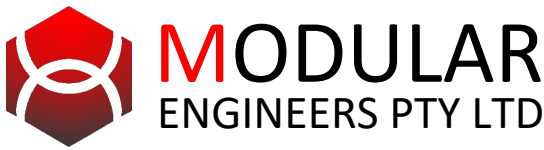
- NOTES:
- DRAINAGE**
- ALL PIPES TO BE LAID ON 75mm SAND BED WITH THE BARRELS FULLY SUPPORTED
 - 100mm AND 150mm DIAMETER PIPES TO BE LAID ON MINIMUM 1% GRADE
 - MINIMUM DEPTH OF COVER FOR PIPES NOT SUBJECT TO VEHICULAR LOADING TO BE 300mm
 - ALL DRAINAGE PIPES LAID UNDER PAVEMENT SHALL BE REINFORCED CONCRETE WITH RUBBER RING JOINTS
 - BACKFILL TRENCHES WITH COMPACTED SAND OR APPROVED AGGREGATE MATERIAL
 - ALL PITS TO HAVE 600x600mm INTERNAL DIMENSIONS (U.N.O.)
 - SILT ARRESTORS TO HAVE 900x900mm INTERNAL DIMENSIONS
 - HEAVY DUTY GALV. STEEL GRATES AND COVERS ARE TO BE PROVIDED IN TRAFFICABLE AREAS
 - HEEL & WHEELCHAIR SAFE GRATE COVERS ARE TO BE PROVIDED IN PEDESTRIAN AREAS
 - PIT GRATE TO BE TYPE WELDLK OR APPROVED EQUIVALENT
 - ALL PITS GREATER THAN 900mm DEEP SHALL BE PROVIDED WITH A CHILD-PROOF LOCKING CLIP
 - ALL PITS SHALL BE MAINTAINED REGULARLY
 - ALL PITS TO BE BENCHED MIN. 20mm TO INVERT OF OUTLET
 - 100 SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK TO BE PROVIDED IN ALL LANDSCAPED AREAS & BEHIND RETAINING WALLS AND CONNECTED TO THE NEAREST STORMWATER PIT.
 - COMPRESSIVE STRENGTH f_c FOR CAST IN SITU CONCRETE TO BE A MINIMUM OF 20MPa AT 28 DAYS
 - PROVIDE CLEANING EYES TO ALL DOWNPIPES NOT DIRECTLY CONNECTED TO PITS
 - ISOLATED JOINTS TO BE PROVIDED TO ISOLATE CONCRETE PAVEMENTS FROM PITS
 - ALL TRENCH GRATES PROVIDED SHALL HAVE A MINIMUM CLEAR WIDTH OF 200mm
 - STORMWATER DRAINAGE CONNECTIONS TO THE MAIN SYSTEM SHALL BE TO THE REQUIREMENTS AND THE SATISFACTION OF LOCAL COUNCIL

- UPPER LEVEL**
- INSTALL 65mm uPVC SPITTER PIPES 20mm ABOVE SURFACE LEVEL FOR BALCONY AND CONCRETE ROOF AREAS TO ALLOW FOR EMERGENCY OVERFLOW INCASE OF BLOCKAGES DURING HEAVY STORMS. PLUMBER TO CONFIRM LOCATION DURING CONSTRUCTION.
 - BALCONY, TERRACE & CONCRETE ROOF AREAS TO BE FITTED WITH RAINWATER OUTLETS AND CONNECTED TO NEAREST DOWNPIPE WHERE REQUIRED (TYP).
 - DOWNPIPES (DP) SHOWN ON PLAN ARE TO BE 100mm uPVC OR 100x75 U.N.O. (TYP).
 - CHARGED DOWNPIPES SHOWN ON PLAN MUST BE SEWER GRADE 100mm uPVC WITH ALL JOINTS SOLVENT WELDED TO A LEVEL 1200mm ABOVE THE RAINWATER TANK INLET R.L. (TYP).
 - PROPOSED DOWNPIPE LOCATIONS ARE NOMINAL AND TO BE CONFIRMED DURING CONSTRUCTION (TYP).
 - INSTALL DOWNPIPE WITH SPREADER PIPE (SP) (IF REQUIRED) TO DISPERSE STORMWATER ONTO LOWER ROOF AREAS EFFECTIVELY.

PIPE SCHEDULE				
TAG	SIZE	MATERIAL	GRADE	TYPE
A	DAI.100	P.V.C.	MIN. 1%	GRAVITY
B	DAI.150	P.V.C.	MIN. 1%	GRAVITY
X	DAI.100	P.V.C.	CHARGE	TO RWT/PIT
D	200X100	GALV. STEEL	MIN. 1%	TO KERB
E	EXISTING	EXISTING	EXISTING	EXISTING

SIZE: A3 0 10 20 30 40 50 60 70 80 90 100 110 120

REVISIONS					APPROVED BY	
REV.	DATE	DESCRIPTION	D.P.ENG.	DFT.	ALI AL-OBAIDI	
A	05-DEC-2024	ISSUED FOR CDC	S.R.	S.R.	MSc, BSc, MIE Aust, CP Eng, NER, NPER (No. 5358554),	
B	16-DEC-2024	ISSUED FOR CDC	S.R.	S.R.	RPEQ(28316),	
C	18-DEC-2024	ISSUED FOR CDC	S.R.	S.R.	PE(Victoria) No. 0007689, PDP0000072, PRE0000191, DEP0000203	



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