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URBAN ARBORICULTURE

Arboricultural Impact Assessment (AIA)

114 Old Pittwater Road, Brookvale NSW 2100

Report prepared by: Synertree Pty Ltd.

Report prepared for: Fabrik Property Pty Ltd

Arboriculture Australia 2024 MEMBER

ISA QUALIFICATIONS TREE RISK ASSESSMENT

QTRA REGISTERED USER

PROJECT ADDRESS

Address	114 Old Pittwater Road Brookvale NSW 2100
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CLIENT INFORMATION

Client	Fabrik Property Pty Ltd
Client Address	Level 5, 50 Holt Street Surry Hills NSW 2010
Project Manager	Derek Pal

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DOCUMENT DISCLAIMER

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1 ASSESSMENT SUMMARY

The proposed works include modifications to the existing carparking bays and installation of a new tenancy lift. A total of twenty-one (**21**) prescribed trees were assessed as part of this impact assessment. The proposal includes the removal of one high category tree and two low category trees.

High-Category Trees to be Removed:

- One (**1**) tree will require removal due to a major Structural Root Zone (SRZ) encroachment. Works proposed within the Tree Protection Zone (TPZ) and SRZ include the demolition of the existing surfaces and curb, an estimated cut exceeding 200mm to meet levels throughout the driveway area and installation of seven new parking bays.

High-Category Trees to be Retained:

- Seventeen (**17**) trees (Trees 2,3,4,5,6,7,8,11,12,13,14,15,16,16a,17,18 & 20) will remain viable to be retained under the proposal; Trees 2,3,4,5,6,7 and 8 could potentially be adversely affected through disturbance to their TPZ if adequate tree protection is not utilised during the development. Trees 11,12,13,14,15,16,16a,17,18 & 20 are outside of the development footprint.

Low-Category Trees to be Removed:

- Two (**2**) trees (Trees 9 & 10) will require removal to facilitate the proposal. The demolition of surfaces, grade changes estimated at 200mm, and construction of curbs and a retaining wall will be conducted within the SRZ of these trees.

Low-Category Trees to be Retained:

- One (**1**) tree, No. 19 will remain viable to be retained under the proposal and is outside of the development footprint.

Mitigation Measures:

- An offset strategy should be imposed by the Consent Authority to compensate for the loss of trees.
- Proper implementation of tree protection measures is crucial for minimising any adverse impact on the retained trees during the development process, a detailed Tree Protection Plan is supplied within Appendix D.

2 INTRODUCTION

2.1 Instruction.

This Arboricultural Impact Assessment (AIA) has been prepared for Fabrik Property Pty Ltd (hereafter referred to as the "Client") to evaluate the tree population within 114 Old Pittwater Road, Brookvale NSW 2010 (hereafter referred to as the "Study Site"). This report investigates the impact of the proposed works on prescribed trees of the Study Site and provides the following information to guide their appropriate management throughout the development process:

- A schedule of the relevant trees that are likely to be affected by the proposed works which includes basic tree data and a condition assessment (refer to Appendix C: Tree schedule).
- An appraisal of the impact of the proposal on trees (refer to IMPACT ASSESSMENT & Appendix D: Tree Management Plan).
- A preliminary Tree Management Plan (TMP) setting out appropriate protective measures and management guidelines for trees to be retained (refer to Appendix D: Tree Management Plan).

2.2 Purpose of this report.

This report analyses the impact of the development proposal on trees with additional guidance on their appropriate management including protective measures. Its primary purpose is for the consent authority to review the tree information in support of the planning submission and for its use as a basis for issuing a planning consent or engaging in further discussions towards that end. Within this planning process it will be available for inspection by people other than tree experts, so the information is presented to be helpful to those without a detailed knowledge of the subject.

2.3 Scope of this report.

This report is only concerned with the twenty-one (**21**) trees located within the Study Site as depicted within TMP-01 Tree Survey, Appendix D. It takes no account of other trees, shrubs or groundcovers within the Study Site unless stated otherwise. It includes a preliminary TMP based on the site visit and the documents/drawings provided, listed below in Section 2.4.

2.4 Documents & information provided.

Synertree Pty Ltd was issued the following documents and files to undertake this assessment:

2.4.1 Site Survey Plans by CMS Surveyors:

- 230919_22759detail 1.pdf
- 22759detail 1.dwg

2.4.2 Architectural Plans by Reid Campbell:

- 1230047_A0001 - COVER PAGE (B).pdf
- 1230047_A0001._COVER PAGE(B).dwg
- 1230047_A0002 - EXISTING SITE PLAN (B).pdf
- 1230047_A0002._EXISTING SITE PLAN(B).dwg
- 1230047_A0003 - DEMOLITION PLAN - GROUND & L1 (B).pdf
- 1230047_A0003._DEMOLITION PLAN - GROUND & L1(B).dwg
- 1230047_A0004 - DEMOLITION PLAN - ROOF PARKING (B).pdf
- 1230047_A0004._DEMOLITION PLAN - ROOF PARKING(B).dwg
- 1230047_A1001 - FLOOR PLANS - GROUND & L1 (B).pdf
- 1230047_A1001._FLOOR PLANS - GROUND & L1(B).dwg
- 1230047_A1002 - FLOOR PLANS - ROOF PARKING (B).pdf
- 1230047_A1002._FLOOR PLANS - ROOF PARKING(B).dwg
- 1230047_A2001 - LIFT PLAN & SECTION DETAILS (B).pdf
- 1230047_A2001._LIFT PLAN & SECTION DETAILS(B).dwg

2.5 Tree Management Plans

The TMP plan set within Appendix D is derived from the following plans:

- TMP-01 Tree Survey is derived from:
  - Site Survey 22759detail 1.dwg.
- TMP-03 Tree Removal and Demolition Plan is derived from:
  - 22759detail 1.dwg
  - 1230047_A0003._DEMOLITION PLAN - GROUND & L1(B).dwg
- TMP-04 Impact Appraisal is derived from:
  - 22759detail 1.dwg
  - 1230047_A0003._DEMOLITION PLAN - GROUND & L1(B).dwg
  - 1230047_A1001 - FLOOR PLANS - GROUND & L1 (B).pdf
- TMP-05 Tree Protection Plan is derived from:
  - 22759detail 1.dwg

2.6 Further explanations.

To make this report easier to use, its emphasis is on keeping the main text concise with minimal background explanations. Where appropriate, further explanations and information are included as appendices, with a plan showing the impact assessment as shown within the Tree Management Plan (Refer to Appendix D: Tree Management Plan).

2.7 Relevant Legislation.

In preparing this report, the author has considered the objectives of:

- State Environment Planning Policy (Biodiversity and Conservation) 2021.
- Warringah Local Environmental Plan 2011.
- Warringah Development Control Plan (DCP) 2011.
- Australian Standard 4970-2009 Protection of Trees on Development Sites.

2.8 Qualifications & experience.

This report is based on site observations and provided information. All conclusions have been reached considering the experience and qualifications of the onsite assessor as outlined within Appendix A: Qualifications of the on-site assessor.

2.9 Site visit and collection of data.

2.9.1 Site visit

An unaccompanied site visit was conducted on September 17th, 2024. All observations were performed from ground level, and tree dimensions were estimated unless specifically noted otherwise. Access to the trees on-site was unrestricted.

2.9.2 Collection of basic data

Each tree was inspected with basic data collected including; genus, species, diameter at base (DAB), diameter at breast height (DBH), structural root zone (SRZ), TPZ, height, vigour, condition, age class and estimated life expectancy (ELE), (refer to Appendix C: Tree schedule for the basic data and methodology for collection of basic data). Each tree was then allocated to one of four retention value categories 'AA,' 'A,' 'Z' or 'ZZ' (see 3.1 and Appendix B: TreeAZ categories methodology)

3 USING THE DATA TO ASSIST LAYOUT DESIGN

3.1 The TreeAZ method of tree assessment.

The TreeAZ method of assessing trees is a method of tree assessment that determines the retention value of trees in the planning process. Simplistically, trees assessed as potentially important are categorised as 'A' and those assessed as less important are categorised as 'Z' (refer to Appendix B: TreeAZ categories methodology or visit www.treeaz.com for further explanation of TreeAZ).

In the context of a new development, all the 'Z' trees can be discounted as a material constraint in layout design, however all the 'A' trees are important, and they should dictate the design constraints. This simple categorisation of trees is suitable for use by the architect to optimise the retention of the best trees in the context of other material considerations.

3.2 Estimating the preliminary tree constraints.

Constraints imposed by the 'A' category trees are estimated, considering the TPZ and SRZ for each tree as per section 3 of the *Australian Standard 4970-2009 Protection of Trees on Development Sites*[1] (AS-4970-2009), which specifies the following two zones:

3.2.1 Tree Protection Zone (**Zone 1**)

As described within *Clause 3.1 AS-4970-2009*, the TPZ is a combination of the root area (below ground) and crown area (above ground) requiring protection. The TPZ is an area isolated from construction disturbance, so that the tree remains viable. In some cases, it may be possible to encroach into or make variations to the theoretical TPZ (see Figure 2) for an example of a minor encroachment. TPZs are calculated by multiplying the diameter at breast height by twelve. This results in a setback distance radially from the trunk. Further factors for consideration are outlined below:

3.2.1.1 Determining the TPZ:

- The TPZ should not be less than 2m nor greater than 15m (Except where crown protection is required).
- The TPZ incorporates the structural root zone (SRZ).
- The TPZ of palms, other monocots, cycads, and tree ferns should be not less than 1m outside the crown projection.

3.2.1.2 A Minor Encroachment

As described within *Clause 3.3.2 AS-4970-2009,* if the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere (see Figure 2) and contiguous with the TPZ. Variations must be made by the project arborist.

3.2.1.3 A Major Encroachment

As described within *Clause 3.3.3 AS-4970-2009*, a major encroachment is greater than 10% of the TPZ area or inside the SRZ. In this situation the project arborist must demonstrate that the tree would remain viable. This may require root investigation by non-destructive methods or the use of tree sensitive construction methods. The project arborist should consider the following factors:

- The location and distribution of any roots to be determined through non-destructive investigation methods (AirSpade®, Hydro Vacuum or hand digging). Regardless of the method, roots must not be cut, bruised, or frayed during the process. It is imperative that the exposed roots are kept moist, covered with hessian and the excavation back filled as soon as possible.
- The potential loss of root mass resulting from the encroachment: number and size of roots.
- Tree species and tolerance to root disturbance & Age, vigour, and size of the tree.
- Lean and stability of the tree. Note: Roots on the tension side are likely to be most important for supporting the tree and are likely to extend for a greater distance.
- Soil characteristics and volume, topography, and drainage.
- The presence of existing or past structures or obstacles affecting root growth.
- Design factors. Tree sensitive construction measures such as pier and beam, suspended slabs, cantilevered building sections, screw piles and contiguous piling can minimize the impact of encroachment.
- When siting a structure near to a tree, the future growth of the tree, both above and below ground should be considered. Precautions should be taken at the planning and design stage to minimise potential conflict between trees and new structures. When the root zone is reactive clay, techniques such as localized pier and beam (bridged), screw pile footings or root and soil moisture control barriers may be appropriate to minimize effects on structures.

[1] *Standards Australia 2009. Australian Standard: Protection of trees on development sites, AS 4970 (2009), Standards Australia, Sydney.*

- Collaboration may be required between the project arborist and the geotechnical or structural engineer.

3.2.1.4 Encroachment into the tree protection zone.
Encroachment into the tree protection zone is sometimes unavoidable. An example of a TPZ encroachment by area is shown below (see Figure 2) to assist in reducing the impact of such incursions.

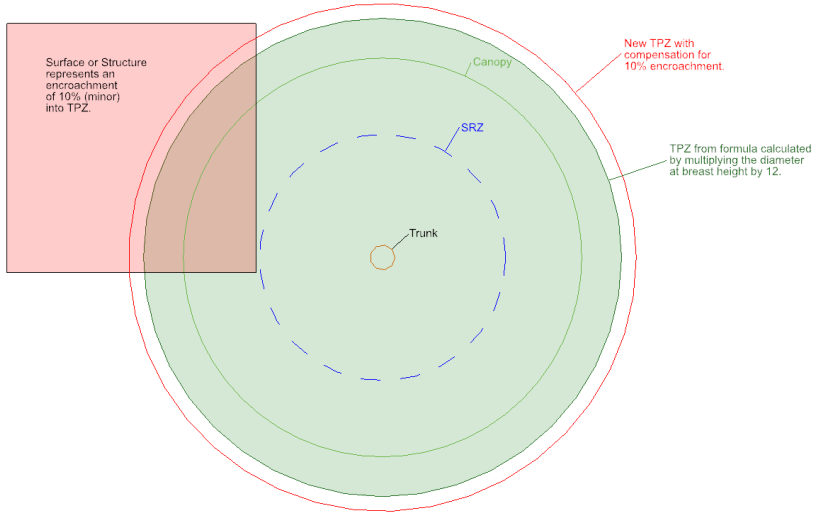

Figure 1. Example of minor encroachment.

3.2.2 Structural Root Zone (**Zone 2**)
As described within *Clause 3.3.5* AS-4970-2009, the SRZ is a radial distance from the centre of a tree's trunk, where it is likely that structural, woody roots would be encountered. The distance is calculated above the trunk buttress at ground level. The SRZ may also be influenced by natural or built structures, such as rocks and footings. The SRZ only needs to be calculated when a major encroachment (>10%) into a TPZ is proposed.

4 IMPACT ASSESSMENT

4.1 Summary of the impact on trees

Synertree has assessed the impact of the proposal on trees by the extent of disturbance within the SRZ and TPZ as shown within Drawing No. TMP-04_Impact Appraisal (refer to Appendix D: Tree Management Plan). All trees that may be affected by the development proposal are listed below in Table 1.

Impact	Reason	Important trees		Unimportant trees	
		AA	A	Z	ZZ
Trees to be removed.	Demolition of surfaces, cut exceeding 200mm and retaining walls.		1	9 &10	
Retained trees that may be affected through TPZ disturbance.	Demolition of surfaces, regrading and installation of surfaces.		2,3,4,5,6,7,8,11,12,13,14,15, 16,16a,17,18 & 20.	19	

Table 1

4.1.1 Category A trees to be removed.
The proposed works will necessitate the removal of one (**1**) high category tree (Tree No. **1**). The level of encroachment for this tree is proposed within the SRZ (refer to Drawing No. TMP-04_Impact Appraisal Appendix D: Tree Management Plan). This level of encroachment is a major encroachment as defined by *AS4970-2009,* leaving the tree unviable for retention.

4.1.1.1 Tree 1 proposed impact.
Works proposed within the TPZ and SRZ include the demolition of the existing surfaces and curb, a cut estimated at 200mm to reduce levels to meet the existing surfaces throughout the driveway and installation of seven new parking bays.

4.1.2 Category A trees to be retained.
Seventeen (**17**) category A trees (Trees **2,3,4,5,6,7,8,11,12,13,14,15,16,16a**,**17**,**18** & **20**) will remain viable to be retained under the proposal; however, could potentially be adversely affected through disturbance to their TPZ if adequate tree protection is not utilised during the development. Trees **11,12,13,14,15,16,16a,17, 18** & **20** are outside of the development footprint.

4.1.3 Category Z trees to be removed.
The proposed works will necessitate the removal of two (**2**) low category trees (Trees **9** & **10**). The level of encroachment for these trees is proposed within the SRZ (refer to Drawing No. TMP-04_Impact Appraisal Appendix D: Tree Management Plan). This level of encroachment is a major encroachment as defined by *AS4970-2009,* leaving the tree unviable for retention.

4.1.3.1 Tree 9 proposed impact.
Works proposed within the TPZ and SRZ include the demolition of the existing footpath within the SRZ, a cut estimated at 200mm within the SRZ to reduce levels to the existing surfaces throughout the parking bays and driveway and installation of one new parking bay.

4.1.3.2 Tree 10 proposed impact.
Works proposed within the TPZ and SRZ include the demolition of the existing garden bed, and construction of a new curb or retaining wall section and new surfaces linking to the new lift.

4.1.4 Category Z trees to be retained.
One (**1**) category Z tree (Tree 19) will remain viable to be retained under the proposal and is outside of the development footprint.

4.2 Proposal to mitigate any impact.

4.2.1 Protection of retained trees.
The successful retention of trees within the study site depends on the quality of tree protection and the administrative procedures to ensure protective measures remain in place throughout the development. This is best achieved through a detailed Arboricultural Tree Management Plan, that can be specifically referred to within the planning conditions. (refer to Appendix D: Tree Management Plan).

4.3 New Planting.

In the context of the loss of one high category and two low category trees, an offset strategy should be imposed within the conditions of consent.

5 REFERENCES

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Robinson L, 2003. 'Field Guide to the Native Plants of Sydney,' third ed, Kangaroo Press, Kenthurst NSW.

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Safe Work NSW (1998), Code of Practice for the Amenity Tree Industry.

Standards Australia 2007. Australian Standard: Pruning of amenity trees, AS 4373 (2007), Standards Australia, Sydney.

Standards Australia 2009. Australian Standard: Protection of trees on development sites, AS 4970 (2009), Standards Australia, Sydney.

Standards Australia 2003 Australian Standard: Soils for Landscaping and Garden Use, AS 4419 (2003), Standards Australia, Sydney.

Standards Australia 2003, Compost, Soil Conditioners and Mulches, AS 4454 (2003), Standards Australia, Sydney.

State Environmental Planning Policy (Biodiversity and Conservation) 2021.

6 Appendix A: Qualifications of the on-site assessor

Qualifications:

- Certificate III in Horticulture (Arboriculture) @ Canberra Institute of Technology 2002-2004
- Diploma of Arboriculture (AHC50516) @ TAFE NSW 30 August 2018-2019
- Quantified Tree Risk Assessment (QTRA), Registered licensee No. 6067 @ Richmond College NSW 22nd & 23rd August 2019
- Quantified Tree Risk Assessment (QTRA) Advanced User Training Registered licensee No. 6067 @ Richmond College NSW 18th March 2020
- International Society of Arboriculture (ISA) Tree Risk Assessment Qualification (TRAQ) November 2023.

Practical experience:

I have been involved within the Arboricultural industry for more than 15 years, initially studying and being employed as a climbing Arborist where I developed practical skills and expertise recognised within the industry. With career development and further study in the field I progressed to a consulting Arborist trained in Quantified Tree Risk Assessment and consulting on development projects including state significant developments. As the Director and senior consultant for Synertree Pty Ltd, I have consulted on hundreds of Arboricultural projects.

If you require any further information, please contact me on the details listed below.

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Director + AQF-5 Arborist

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Quantified Tree Risk Assessor,
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7 Appendix B: TreeAZ categories methodology

Category Z: Unimportant trees not worthy of being a material constraint.

Local policy exemptions: Trees that are unsuitable for legal protection for local policy reasons including size, proximity, and species.

Z1	Young or insignificant small trees, i.e., below the local size threshold for legal protection, etc
Z2	Too close to a building, i.e., exempt from legal protection because of proximity, etc
Z3	Species that cannot be protected for other reasons, i.e., scheduled noxious weeds, out of character in a setting of acknowledged importance, etc

High risk of death or failure: Trees that are likely to be removed within 10 years because of acute health issues or severe structural failure.

Z4	Dead, dying, diseased or declining
Z5	Severe damage and/or structural defects where a high risk of failure cannot be satisfactorily reduced by reasonable remedial care, i.e., cavities, decay, included bark, wounds, excessive imbalance, overgrown and vulnerable to adverse weather conditions, etc
Z6	Instability, i.e., poor anchorage, increased exposure, etc

Excessive nuisance: Trees that are likely to be removed within 10 years because of unacceptable impact on people.

Z7	Excessive, severe, and intolerable inconvenience to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e., dominance, debris, interference, etc
Z8	Excessive, severe, and intolerable damage to property to the extent that a locally recognized court or tribunal would be likely to authorize removal, i.e., severe structural damage to surfacing and buildings, etc.

Good management: Trees that are likely to be removed within 10 years through responsible management of the tree population.

Z9	Severe damage and/or structural defects where a high risk of failure can be temporarily reduced by reasonable remedial care, i.e., cavities, decay, included bark, wounds, excessive imbalance, vulnerable to adverse weather conditions, etc.
Z10	Poor condition or location with a low potential for recovery or improvement, i.e., dominated by adjacent trees or buildings, poor architectural framework, etc.
Z11	Removal would benefit better adjacent trees, i.e., relieve physical interference, suppression, etc.
Z12	Unacceptably expensive to retain, i.e., severe defects requiring excessive levels of maintenance, etc.

NOTE: Z trees with a high risk of death/failure (**Z4**, **Z5** & **Z6**) or causing severe inconvenience (Z7 & Z8) at the time of assessment and need an urgent risk assessment can be designated as **ZZ**. **ZZ** trees are likely to be unsuitable for retention and at the bottom of the categorization hierarchy. In contrast, although **Z** trees are not worthy of influencing new designs, urgent removal is not essential and they could be retained in the short term, if appropriate.

Category A: Important trees suitable for retention for more than 10 years and worthy of being a material constraint.

A1	No significant defects and could be retained with minimal remedial care
A2	Minor defects that could be addressed by remedial care and/or work to adjacent trees
A3	Special significance for historical, cultural, commemorative or rarity reasons that would warrant extraordinary efforts to retain for more than 10 years
A4	Trees that may be worthy of legal protection for ecological reasons (Advisory requiring specialist assessment)

NOTE: Category **A1** trees that are already large and exceptional or have the potential to become so with minimal maintenance, can be designated as **AA** at the discretion of the assessor. Although all **A** and **AA** trees are sufficiently important to be material constraints, **AA** trees are at the top of the categorization hierarchy and should be given the most weight in any selection process.

TreeAZ is designed by Barrell Tree Consultancy (www.barrelltreecare.co.uk) and is reproduced with their permission.

8 Appendix C: Tree schedule

NOTE: Colour annotation is AA & A category trees with green background; Z & ZZ category trees with blue background;

Trees to be removed in red text.

Tree ID	Qty	Genus Species (Common Name)	Stem DIA @BASE (m)	Trunk DIA (m)	SRZ	TPZ	Canopy (N,S,E,W)	Height (m)	Vigour	Condition	E.L.E	Age Class	Tree AZ Category	Encroachment %	Encroachment Level	Remove or Retain
1	1	Eucalyptus saligna (Sydney Blue Gum)	0.8	0.6	3.0	**7.2**	8.3, 11.3, 13.4, 11	15-20	GOOD	GOOD	>40	MATURE	A1 No significant defects and could be retained with minimal remedial care	42%	Major	**Remove**
2	1	Eucalyptus microcorys (Tallowwood)	0.65	0.5	2.8	**6.0**	4, 7.5, 7.1, 9.3	15-20	GOOD	GOOD	>40	MATURE	A1 No significant defects and could be retained with minimal remedial care	0%	Nil	**Retain & Protect**
3	1	Eucalyptus microcorys (Tallowwood)	0.45	0.45	2.4	**5.4**	3.4, 5.8, 8.7, 6.6	15-20	GOOD	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
4	1	Eucalyptus microcorys (Tallowwood)	0.45	0.4	2.4	**4.8**	3.7,7.9,8.2	15-20	GOOD	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
5	1	Eucalyptus microcorys (Tallowwood)	0.45	0.4	2.4	**4.8**	6.9,7.7,3.5,10.1	15-20	GOOD	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
6	1	Eucalyptus microcorys (Tallowwood)	0.65	0.6	2.8	**7.2**	9.3,4.5,8.3,9.5	15-20	GOOD	GOOD	>40	MATURE	A1 No significant defects and could be retained with minimal remedial care	0%	Nil	**Retain & Protect**
7	1	Casuarina glauca (Swamp-Oak)	0.3	0.25	2.0	**3.0**	44,3,3,3	10-15	GOOD	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
8	1	Eucalyptus saligna (Sydney Blue Gum)	0.55	0.5	2.6	**6.0**	10.3,15,6,6	15-20	GOOD	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	7%	Minor	**Retain & Protect**
9	1	Eucalyptus saligna (Sydney Blue Gum)	0.5	0.4	2.5	**4.8**	10.3,5,6,6	15-20	GOOD	POOR	<1-15	MATURE	Z10 Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc	17%	Major	**Remove**
10	1	Eucalyptus saligna (Sydney Blue Gum)	0.55	0.5	2.6	**6.0**	5.8,5.8,7,3	15-20	GOOD	POOR	<1-15	MATURE	Z10 Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc	15.40%	Major	**Remove**
11	1	Casuarina glauca (Swamp-Oak)	0.3	0.25	2.0	**3.0**	1,3,5,0	10-15	LOW	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
12	1	Casuarina glauca (Swamp-Oak)	0.4	0.35	2.3	**4.2**	6,5,6,3	10-15	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
13	1	Casuarina glauca (Swamp-Oak)	0.4	0.3	2.3	**3.6**	5,4,6,2	10-15	LOW	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
14	1	Casuarina glauca (Swamp-Oak)	0.35	0.35	2.1	**4.2**	5,.5,2,2	10-15	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
15	1	Casuarina glauca (Swamp-Oak)	0.2	0.2	1.7	**2.4**	5,0,3,3	5-10	LOW	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
16	1	Casuarina glauca (Swamp-Oak)	0.6	0.45	2.7	**5.4**	6,2,5,4	15-20	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
16a	1	Casuarina glauca (Swamp-Oak)	0.3	0.25	2.0	**3.0**	5,0,2,2	10-15	LOW	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
17	1	Casuarina glauca (Swamp-Oak)	0.4	0.35	2.3	**4.2**	6,2,6,6	15-20	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
18	1	Casuarina glauca (Swamp-Oak)	0.6	0.55	2.7	**6.6**	10,4,6,6	15-20	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**
19	1	Casuarina glauca (Swamp-Oak)	0.25	0.25	1.8	**3.0**	4,1,2,2	10-15	LOW	POOR	<1-15	MATURE	Z10 Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc	0%	Nil	**Retain & Protect**
20	1	Casuarina glauca (Swamp-Oak)	0.45	0.4	2.4	**4.8**	6,2,5,6	15-20	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	**Retain & Protect**

Methodology for collection of tree basic data.

GROUND BASED VISUAL TREE ASSESSMENT (VTA): The subject tree(s) were assessed using the Visual Tree Assessment criteria as described in *The Body Language of Trees- A Handbook for Failure Analysis* and the methodology outlined within this section. The assessment was limited to a visual examination of the subject tree(s) from ground level only, unless specified within the TMP under 'Arborist Comments.' No internal diagnostic or tissue testing will be undertaken as part of a ground based visual assessment, unless specified.

TREE DIMENSIONS AND LOCATIONS: Tree trunk diameters, heights and defect heights were estimated. The location of the subject tree(s) will be determined from supplied plans, plotted on the supplied plans, or indicated on an aerial photo/map. Trees not shown on supplied plans will be plotted in their approximate location only and or measured from identified infrastructure.

Glossary: Definitions for terminology.

VIGOUR ASSESSMENT: Ability of a tree to sustain its life processes. This is independent of the condition of a tree but may impact upon it. Vigour can appear to alter rapidly with change of seasons (seasonality) e.g., dormant, deciduous, or semi-deciduous trees. Vigour can be categorized as:

- Good Vigour: Ability of a tree to maintain and sustain its life processes. This may be evident by the typical growth of leaves, crown cover and crown density, branches, roots and trunk and resistance to predation. This is independent of the condition of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.
- High Vigour: Accelerated growth of a tree due to incidental or deliberate artificial changes to its growing environment that are seemingly beneficial, but may result in premature aging or failure if the favourable conditions cease, or promote prolonged senescence if the favourable conditions remain, e.g. water from a leaking pipe; water and nutrients from a leaking or disrupted sewer pipe; nutrients from animal waste, a tree growing next to a chicken coop, or a stock feed lot, or a regularly used stockyard; a tree subject to a stringent watering and fertilising program; or some trees may achieve an extended lifespan from continuous pollarding practices over the life of the tree.
- Low Vigour: Reduced ability of a tree to sustain its life processes. This may be evident by the atypical growth of leaves, reduced crown cover and reduced crown density, branches, roots and trunk, and a deterioration of their functions with reduced resistance to predation. This is independent of the condition of a tree but may impact upon it, and especially the ability of a tree to sustain itself against predation.
- Dormant Tree Vigour: Determined by existing turgidity in lowest order branches in the outer extremity of the crown, with good bud set and formation, and where the last extension growth is distinct from those most recently preceding it, evident by bud scale scars. Good vigour during dormancy is achieved when such growth is evident on most branches throughout the crown.

AGE: Most trees have a stable biomass for the major proportion of their life. The estimation of the age of a tree is based on the knowledge of the expected lifespan of the taxa in situ divided into three distinct stages of measurable biomass, when the exact age of the tree from its date of cultivation or planting is unknown and can be categorized as:

- Young: Tree aged less than <20% of life expectancy, in situ.
- Mature: Tree aged 20-80% of life expectancy, in situ.
- Over-mature: Tree aged greater than >80% of life expectancy, in situ, or
- Senescent: with or without reduced vigour and declining gradually or rapidly but irreversibly to death.

PERIOD OF TIME: The life span of a tree in the urban environment may often be reduced by the influences of encroachment and the dynamics of the environment and can be categorized as:

- Short Term: A period less than <1 – 15 years,
- Medium Term: A period 15 – 40 years, and
- Long Term: A period greater than >40 years.

CONDITION ASSESSMENT: A tree's crown form and growth habit, as modified by its environment (aspect, suppression by other trees, soils), the stability and viability of the root plate, trunk, and structural branches (first (1st) and possibly second (2nd) order branches), including structural defects such as wounds, cavities or hollows, crooked trunk or weak trunk/branch junctions and the effects of predation by pests and diseases. These may not be directly connected with Vigour, and it is possible for a tree to be of good Vigour but in poor condition. Condition can be categorized as:

- Good Condition: Tree is of good habit, with crown form not severely restricted for space and light, physically free from the adverse effects of predation by pests and diseases, obvious instability, or structural weaknesses, fungal, bacterial or insect infestation and is expected to continue to live in much the same condition as at the time of inspection provided conditions around it for its basic survival do not alter greatly. This may be independent from or contributed to by vigour.
- Fair Condition: Tree is of good habit or misshapen, a form not severely restricted for space and light, has some physical indication of decline due to the early effects of predation by pests and diseases, fungal, bacterial, or insect infestation, or has suffered physical injury to itself that may be contributing to instability or structural weaknesses, or is faltering due to the modification of the environment essential for its basic survival. Such a tree may recover with remedial works where appropriate, or without intervention may stabilise or improve over time, or in response to the implementation of beneficial changes to its local environment. This may be independent from or contributed to by vigour.
- Poor Condition: Tree is of good habit or misshapen, a form that may be severely restricted for space and light, exhibits symptoms of advanced and irreversible decline such as fungal, or bacterial infestation, major die-back in the branch and foliage crown, structural deterioration from insect damage e.g. termite infestation, or storm damage or lightning strike, ring barking from borer activity in the trunk, root damage or instability of the tree, or damage from physical wounding impacts or abrasion, or from altered local environmental conditions and has been unable to adapt to such changes and may decline further to death regardless of remedial works or other modifications to the local environment that would normally be sufficient to provide for its basic survival if in good to fair condition. Deterioration physically, often characterised by a gradual and continuous reduction in vigour but may be independent of a change in vigour, but characterised by a proportionate increase in susceptibility to, and predation by pests and diseases against which the tree cannot be sustained. Such conditions may also be evident in trees of advanced senescence due to normal phenological processes, without modifications to the growing environment or physical damage having been inflicted upon the tree. This may be independent from or contributed to by vigour.
- Dead: Tree is no longer capable of performing any of the following processes or is exhibiting any of the following symptoms:
    - Processes. Photosynthesis via its foliage crown (as indicated by the presence of moist, green, or other coloured leaves); Osmosis (the ability of the root system to take up water); Turgidity (the ability of the plant to sustain moisture pressure in its cells); Epicormic shoots or epicormic strands in Eucalypts (the production of new shoots as a response to stress, generated from latent or adventitious buds or from a lignotuber).
    - Symptoms. Permanent leaf loss: Permanent wilting (the loss of turgidity which is marked by desiccation of stems leaves and roots); Abscission of the epidermis (bark desiccates and peels off to the beginning of the sapwood).

ESTIMATED LIFE EXPECTENCY: ELE gives an estimation of how long a tree is likely to remain viable within the landscape based on species, stage of life cycle, health, contribution to the local environment, amenity values, conflicts with adjacent infrastructure and risk to the community. The ELE is also based on the site conditions not significantly being altered and any prescribed maintenance recommendations such as Crown maintenance and Deadwood removal. The age class of the assessed tree is dependent on known species characteristics and longevity in the urban environment and partially aids in the assessment of the ELE:

- Long >40 years,
- Medium 15-40 years,
- Short <1-15 years, and
- Dead.

STRUCTURAL ROOT ZONE (SRZ): The SRZ is described in AS-4970 is the area around the base of a tree required for the tree's stability in the ground. Severance of structural roots within the SRZ is not recommended as it may lead to the destabilisation and/or demise of the tree.

TREE PROTECTION ZONE (TPZ):

- As described within AS-4970 is a combination of the root area and crown area requiring protection. It is an area isolated from construction disturbance, so that the tree remains viable. TPZ's are calculated by multiplying the diameter at breast height by twelve. This result is a setback distance radially from the trunk. In some cases, it may be possible to encroach into or make variations to the theoretical TPZ.
- A Minor Encroachment is less than 10% of the area of the TPZ and is outside the SRZ. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.
- A Major Encroachment is greater than 10% of the TPZ or inside the SRZ. In this situation the Project Arborist must demonstrate that the tree would remain viable. This may require root investigation by non-destructive methods or the use of sensitive construction methods.

From: Draper BD and Richards PA 2009, Dictionary for Managing Trees in Urban Environments, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.

9 Appendix D: Tree Management Plan

-Refer to the following pages for the Tree Management Plan by Synertree Pty Ltd dated 8th of November 2024

TREE MANAGEMENT PLAN

TENANCY LIFT & CARPARKING

114 Old Pittwater Road, Brookvale NSW 2100

INTRODUCTION

This Tree Management Plan (TMP) sets out general principles that must be followed when working within a Tree Protection Zone (TPZ). The purpose of this guidance is to demonstrate to Council that the tree protection issues have been properly considered and to provide a written record of how they will be implemented. This TMP must be kept onsite, and form part of the site-specific induction. All contractors and site workers must be briefed on these specifications prior to commencing work on-site. All individuals operating on site, and specifically those working within a TPZ must be supervised by the Project Arborist, and are expected to receive a comprehensive briefing based on this guidance.

What is a Tree Protection Zone (TPZ)?
A TPZ is the area surrounding trees where disturbance must be minimised if they are to be successfully retained. All TPZs close to the construction area are illustrated within this TMP. Damage to roots or degradation of the soil through compaction and/or excavation within TPZs is likely to cause serious damage. Any work or operations within a TPZ must be carried out with great care if trees are to be successfully retained. As described within Australian Standard 4970 'Protection of Trees on Development Sites 2009' (AS-4970) the TPZ is a combination of the root area and crown area requiring protection. A TPZ is calculated by multiplying the diameter at breast height by twelve (12). This result is a setback distance radially from the trunk. The TPZ is an area isolated from construction disturbance, so that the tree remains viable. In some cases, it may be possible to encroach into or make variations to the theoretical TPZ.

What is an encroachent into the TPZ?
A 'Minor Encroachment' is an encroachment that is less than <10% of the area of the TPZ and remains outside of the SRZ. The area lost to this encroachment should be compensated for elsewhere and be contiguous with the TPZ.
A 'Major Encroachment' is an encroachment that is greater than >10% of the TPZ or inside the SRZ. In this situation the project arborist must demonstrate that the tree would remain viable. This may require root investigation by non-destructive methods or the use of tree sensitive construction methods.

TPZ considerations.
(a) The TPZ is not less than 2m nor greater than 15m (Except where crown protection is required).
(b) The TPZ incorporates the structural root zone (SRZ).
(c) The TPZ of palms, monocots, cycads, and tree ferns should be not less than 1m outside the crown projection.

What is a Structural Root Zone (SRZ)?
The SRZ is described in AS-4970 is the area around the base of a tree required for the tree's stability in the ground. A larger area is required to maintain a viable tree. Severance of structural roots within the SRZ must be avoided, as it may lead to the destabilisation and/or demise of the tree. The SRZ only needs to be calculated when a major encroachment into a TPZ is proposed. There are many factors that affect the size of the SRZ (e.g., tree height, crown area, soil type and soil moisture). The SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress.

SRZ Considerations.
(a) R(srz) is the structural root zone radius.
(b) The SRZ for trees less than 0.15m diameter is 1.5m.
(c) The SRZ formula does not apply to palms, other monocots, cycads, and tree ferns.
(d) This does not apply to trees with an asymmetrical root plate.

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Drawing List

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114 Old Pittwater Road, Brookvale NSW 2100

CLIENT
Fabrik Property Pty Ltd
Level 5, 50 Holt Street Surry Hills NSW 2010

DATE
08/11/2024

SCALE @ A3
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DRAWING
Cover Page & Drawing List

DRAWING NO.
TMP-00

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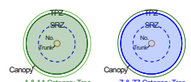
LEGEND (TreeAZ)



NOTE (TreeAZ)

The TreeAZ method of assessing trees is a method of tree assessment that determines the retention value of trees in the planning process. Simplistically, trees assessed as potentially important are categorised as 'A' and those assessed as less important are categorised as 'Z'. In the context of a new development, all the 'Z' category trees are discounted as a material constraint in the layout design. All the 'A' category trees are potentially important, and they dicate the design constraints. This simple categorisation of trees is suitable for use by the Architect to optimise the retention of the best trees in the context of other material considerations. Further explanation of TreeAZ can be found in Appendix 2, and at www.treeaz.com.

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DRAWING
Tree Survey (TreeAZ)

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TMP-01-S1

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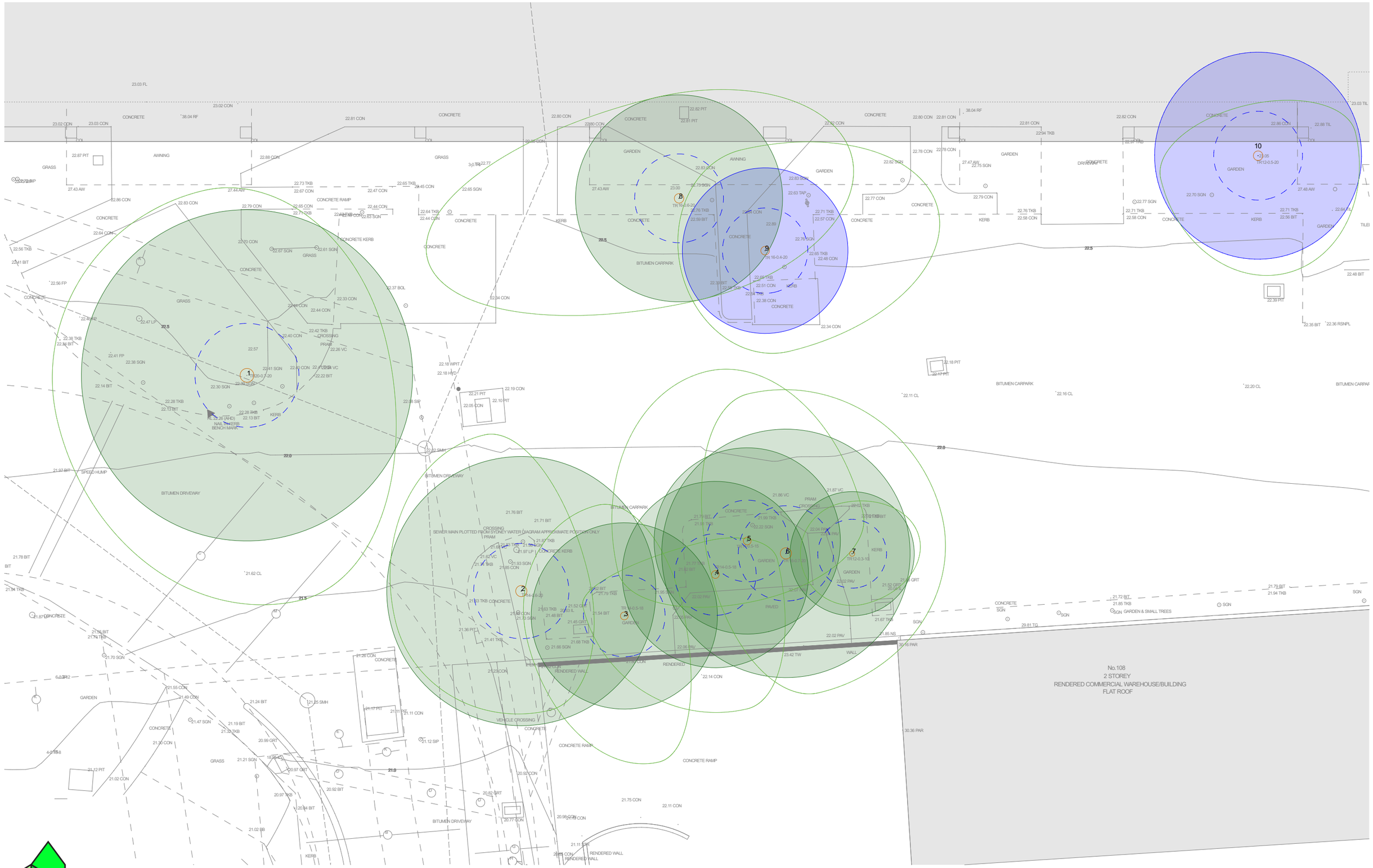

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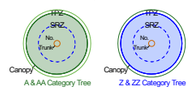

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DRAWING
Tree Survey (TreeAZ)

DRAWING NO.
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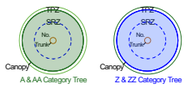
LEGEND (TreeAZ)



NOTE (TreeAZ)

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DRAWING
Tree Survey (TreeAZ)

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TREE SCHEDULE

Tree ID	Qty	Genus Species (Common Name)	Stem DIA @BASE (m)	Trunk DIA (m)	SRZ	TPZ	Canopy (N,S,E,W)	Height (m)	Vigour	Condition	E.L.E	Age Class	Tree AZ Category	Encroachment %	Encroachment Level	Remove or Retain
1	1	Eucalyptus saligna (Sydney Blue Gum)	0.8	0.6	3.0	7.2	8.3, 11.3, 13.4, 11	15-20	GOOD	GOOD	>40	MATURE	A1 No significant defects and could be retained with minimal remedial care	42%	Major	Remove
2	1	Eucalyptus microcorys (Tallowwood)	0.65	0.5	2.8	6.0	4, 7.5, 7.1, 9.3	15-20	GOOD	GOOD	>40	MATURE	A1 No significant defects and could be retained with minimal remedial care	0%	Nil	Retain & Protect
3	1	Eucalyptus microcorys (Tallowwood)	0.45	0.45	2.4	5.4	3.4, 5.8, 8.7,6.6	15-20	GOOD	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
4	1	Eucalyptus microcorys (Tallowwood)	0.45	0.4	2.4	4.8	3.7,7.9,8.2	15-20	GOOD	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
5	1	Eucalyptus microcorys (Tallowwood)	0.45	0.4	2.4	4.8	6.9,7.7,3.5,10.1	15-20	GOOD	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
6	1	Eucalyptus microcorys (Tallowwood)	0.65	0.6	2.8	7.2	9.3,4.5,8.3,9.5	15-20	GOOD	GOOD	>40	MATURE	A1 No significant defects and could be retained with minimal remedial care	0%	Nil	Retain & Protect
7	1	Casuarina glauca (Swamp-Oak)	0.3	0.25	2.0	3.0	44,3,3,3	10-15	GOOD	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
8	1	Eucalyptus saligna (Sydney Blue Gum)	0.55	0.5	2.6	6.0	10.3,15,6,6	15-20	GOOD	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	7%	Minor	Retain & Protect
9	1	Eucalyptus saligna (Sydney Blue Gum)	0.5	0.4	2.5	4.8	10.3,5,6,6	15-20	GOOD	POOR	<1-15	MATURE	Z10 Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc	17%	Major	Remove
10	1	Eucalyptus saligna (Sydney Blue Gum)	0.55	0.5	2.6	6.0	5.8,5.8,7,3	15-20	GOOD	POOR	<1-15	MATURE	Z10 Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc	15.40%	Major	Remove
11	1	Casuarina glauca (Swamp-Oak)	0.3	0.25	2.0	3.0	1,3,5,0	10-15	LOW	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
12	1	Casuarina glauca (Swamp-Oak)	0.4	0.35	2.3	4.2	6,5,6,3	10-15	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
13	1	Casuarina glauca (Swamp-Oak)	0.4	0.3	2.3	3.6	5,4,6,2	10-15	LOW	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
14	1	Casuarina glauca (Swamp-Oak)	0.35	0.35	2.1	4.2	5,.5,2,2	10-15	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
15	1	Casuarina glauca (Swamp-Oak)	0.2	0.2	1.7	2.4	5,0,3,3	5-10	LOW	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
16	1	Casuarina glauca (Swamp-Oak)	0.6	0.45	2.7	5.4	6,2,5,4	15-20	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
16a	1	Casuarina glauca (Swamp-Oak)	0.3	0.25	2.0	3.0	5,0,2,2	10-15	LOW	FAIR	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
17	1	Casuarina glauca (Swamp-Oak)	0.4	0.35	2.3	4.2	6,2,6,6	15-20	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
18	1	Casuarina glauca (Swamp-Oak)	0.6	0.55	2.7	6.6	10,4,6,6	15-20	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect
19	1	Casuarina glauca (Swamp-Oak)	0.25	0.25	1.8	3.0	4,1,2,2	10-15	LOW	POOR	<1-15	MATURE	Z10 Poor condition or location with a low potential for recovery or improvement, i.e. dominated by adjacent trees or buildings, poor architectural framework, etc	0%	Nil	Retain & Protect
20	1	Casuarina glauca (Swamp-Oak)	0.45	0.4	2.4	4.8	6,2,5,6	15-20	LOW	GOOD	15>40	MATURE	A2 Minor defects that could be addressed by remedial care and/or work to adjacent trees	0%	Nil	Retain & Protect

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08/11/2024

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Tree Schedule

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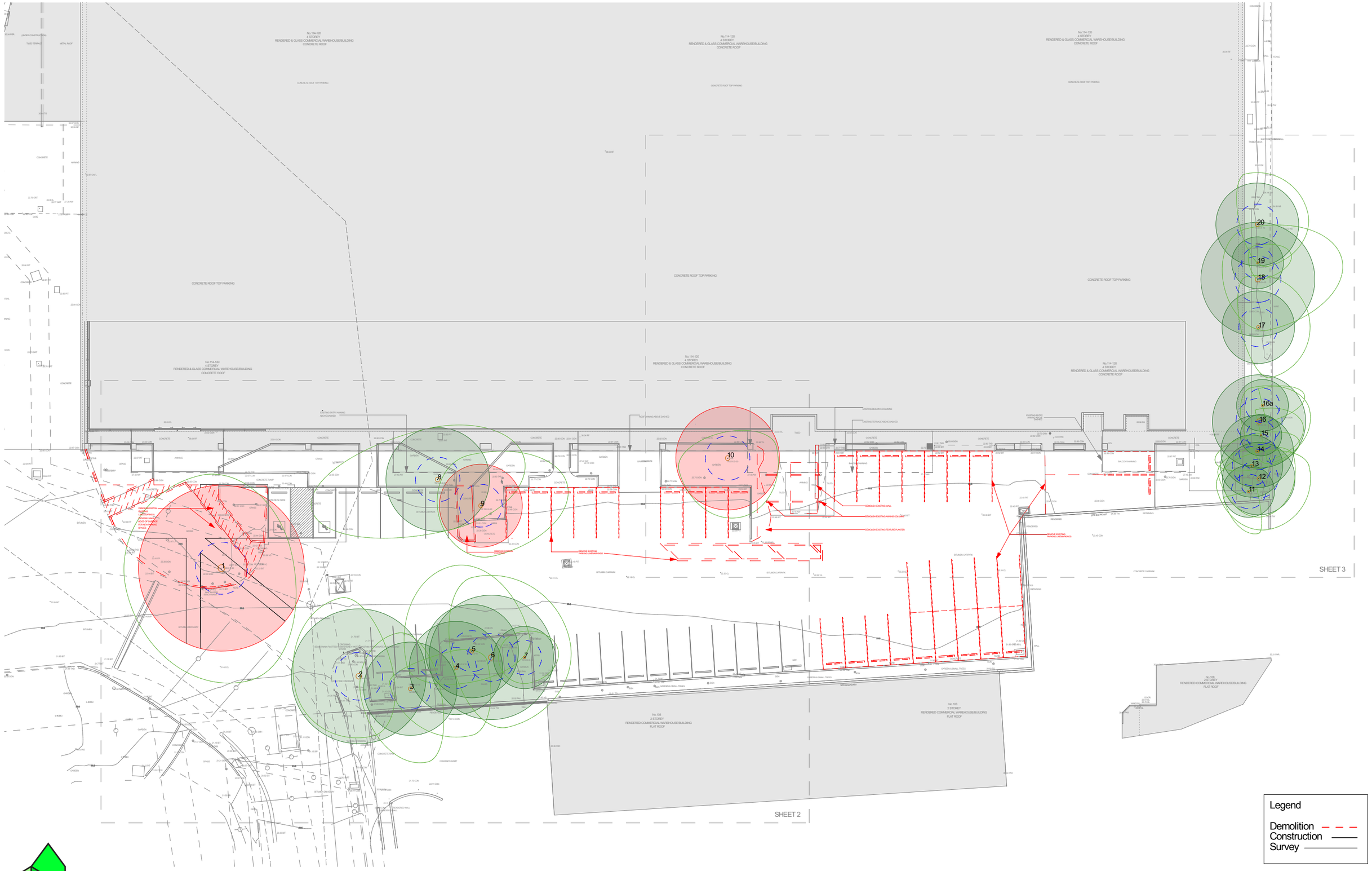

Legend

Demolition
Construction
Survey

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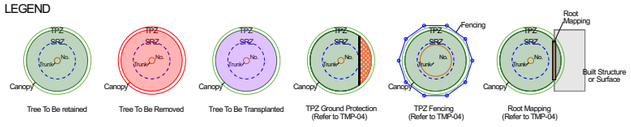

Tree To Be retained | Tree To Be Removed | Tree To Be Transplanted | TPZ Ground Protection (Refer to TMP-04) | TPZ Fencing (Refer to TMP-04) | Root Mapping (Refer to TMP-04)

PROJECT
Tenancy Lift and Carparking
114 Old Pittwater Road, Brookvale NSW 2100

CLIENT
Fabrik Property Pty Ltd
Level 5, 50 Holt Street Surry Hills NSW 2010

DATE
08/11/2024

SCALE @ A3
1:400

DRAWING
Tree Removal & Demolition Plan

DRAWING NO.
TMP-03-S1

NORTH

REVISION
A

DEMOLISH PARTIAL EXISTING LANDSCAPING & PATHWAY. MAKE GOOD OF SURFACE FOR NEW PARKING SPACES

REMOVE EXISTING FOOTPATH

REMOVE EXISTING PARKING LINEMARKINGS

EXISTING ENTRY AWNING ABOVE DASHED

ROOF AWNING ABOVE DASHED

No.108
2 STOREY
RENDERED COMMERCIAL WAREHOUSE/BUILDING
FLAT ROOF

Legend

Demolition

Construction

Survey

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08/11/2024

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DRAWING
Tree Removal & Demolition Plan

DRAWING NO.
TMP-03-S2

NORTH

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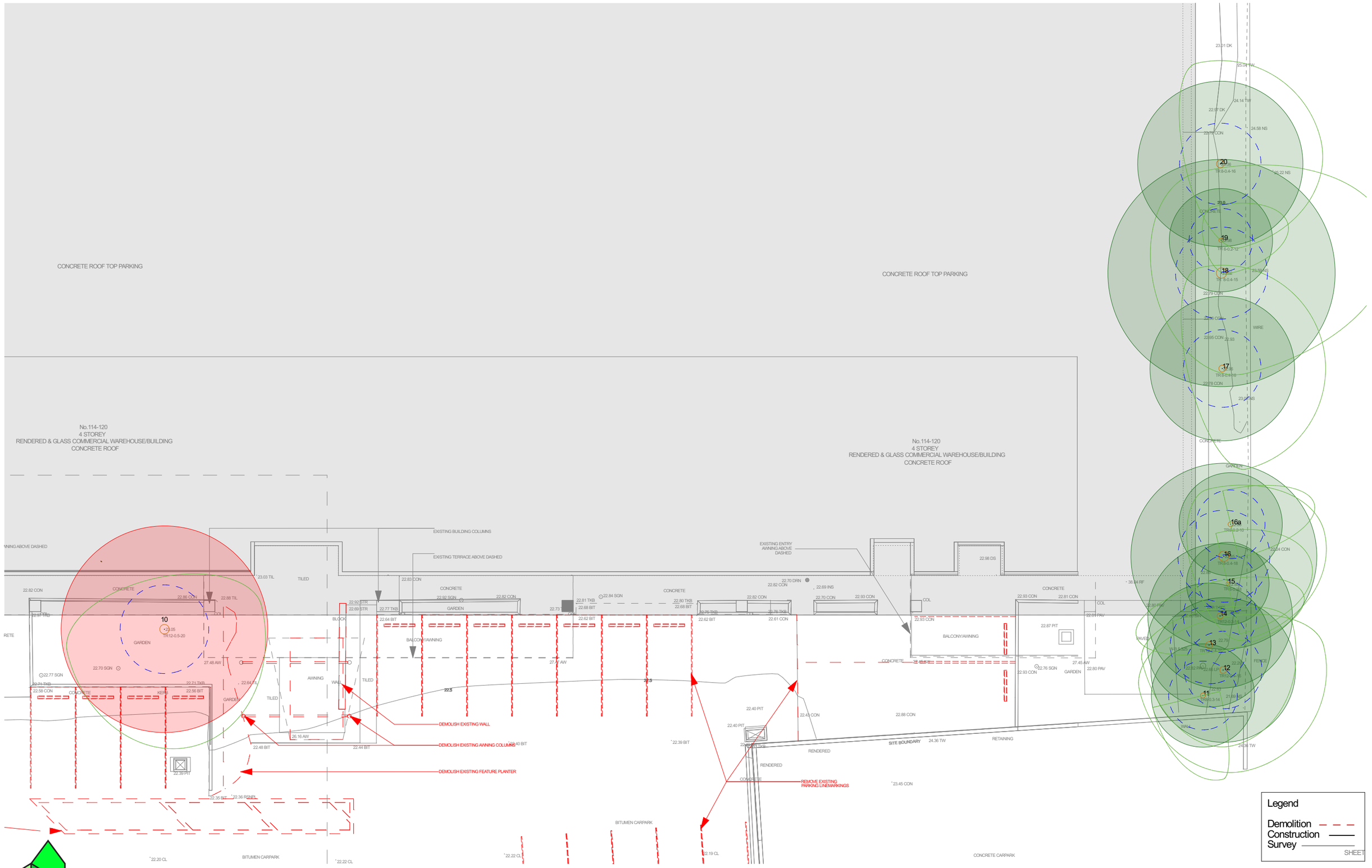

Legend

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SHEET

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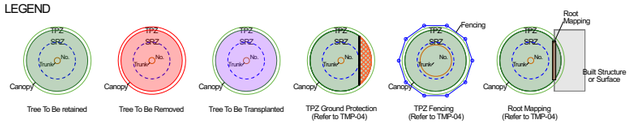

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08/11/2024

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DRAWING
Tree Removal & Demolition Plan

DRAWING NO.
TMP-03-S3

NORTH

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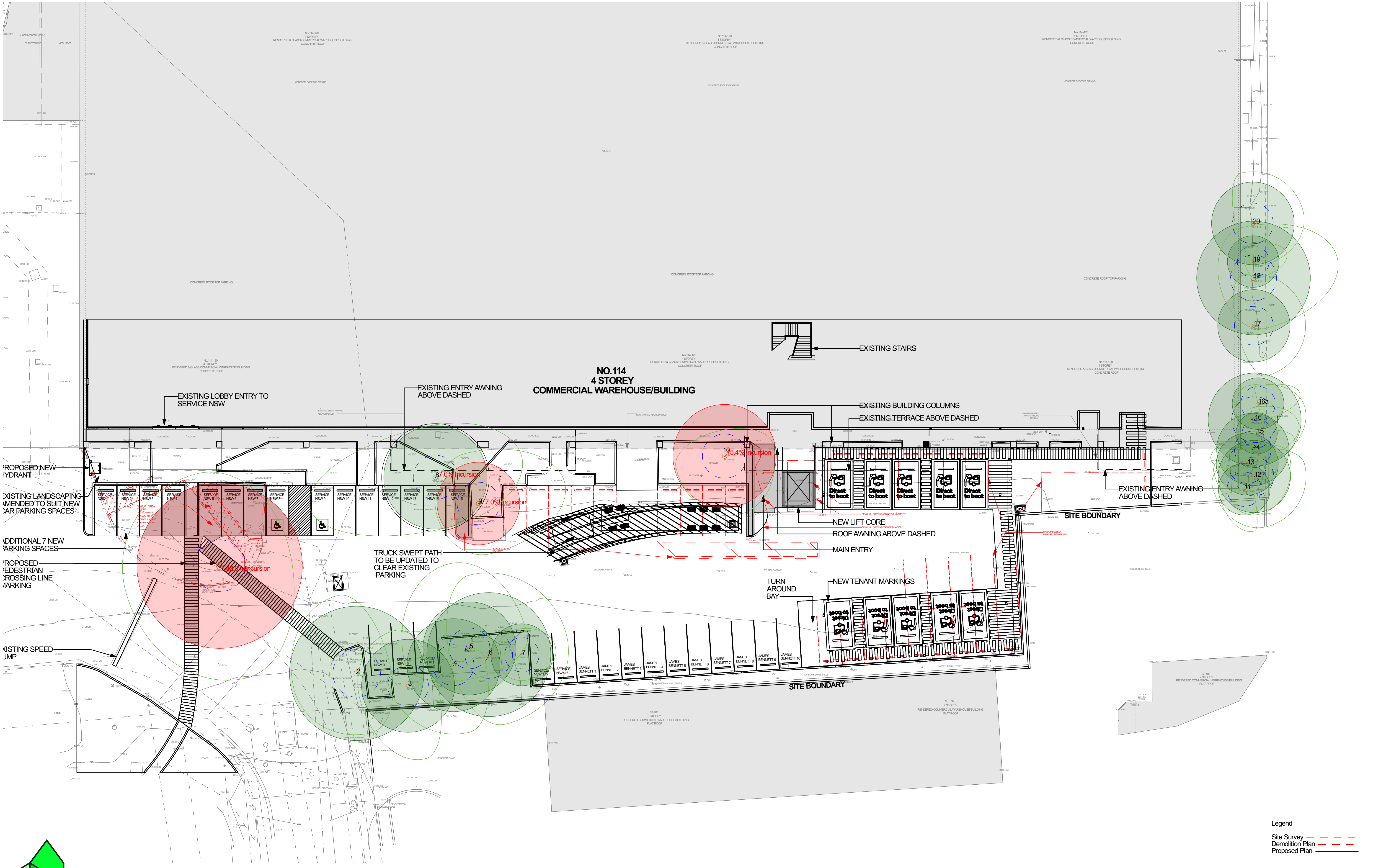

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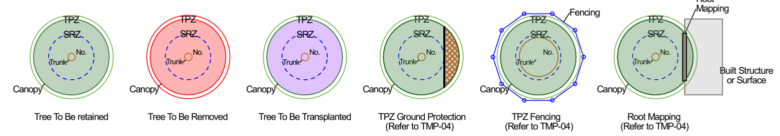

PROJECT
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CLIENT
Fabrik Property Pty Ltd
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08/11/2024

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DRAWING
Impact Appraisal

DRAWING NO.
TMP-04-S1

NORTH

REVISION
A

EXISTING LOBBY ENTRY TO SERVICE NSW

EXISTING ENTRY AWNING ABOVE DASHED

4 STOREY COMMERCIAL WAREHOUSE/BUILDING

TRUCK SWEPT PATH TO BE UPDATED TO CLEAR EXISTING PARKING

TURN AROU BAY

SERVICE NSW 1
SERVICE NSW 2
SERVICE NSW 3
SERVICE NSW 4
SERVICE NSW 5
SERVICE NSW 6
SERVICE NSW 7
SERVICE NSW 8
SERVICE NSW 9
SERVICE NSW 10
SERVICE NSW 11
SERVICE NSW 12
SERVICE NSW 13
SERVICE NSW 14
SERVICE NSW 15
SERVICE NSW 16
SERVICE NSW 17
SERVICE NSW 18
SERVICE NSW 19
SERVICE NSW 20

JAMES BENNETT 1
JAMES BENNETT 2
JAMES BENNETT 3
JAMES BENNETT 4
JAMES BENNETT 5
JAMES BENNETT 6
JAMES BENNETT 7
JAMES BENNETT 8
JAMES BENNETT 9

DEMOLISH PARTIAL EXISTING LANDSCAPING & PATHWAY, MAKE GOOD OF SURFACE FOR NEW PARKING SPACES

REMOVE EXISTING FOOTPATH

REMOVE EXISTING RETAINING WALL

42.0% Incursion

7.0% Incursion

17.0% Incursion

15.4% Incursion

No.108
2 STOREY
RENDERED COMMERCIAL WAREHOUSE/BUILDING
FLAT ROOF

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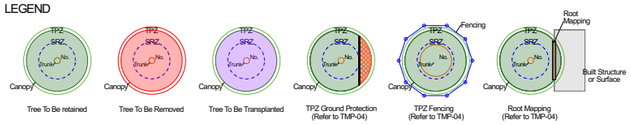

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DRAWING NO.
TMP-04-S2

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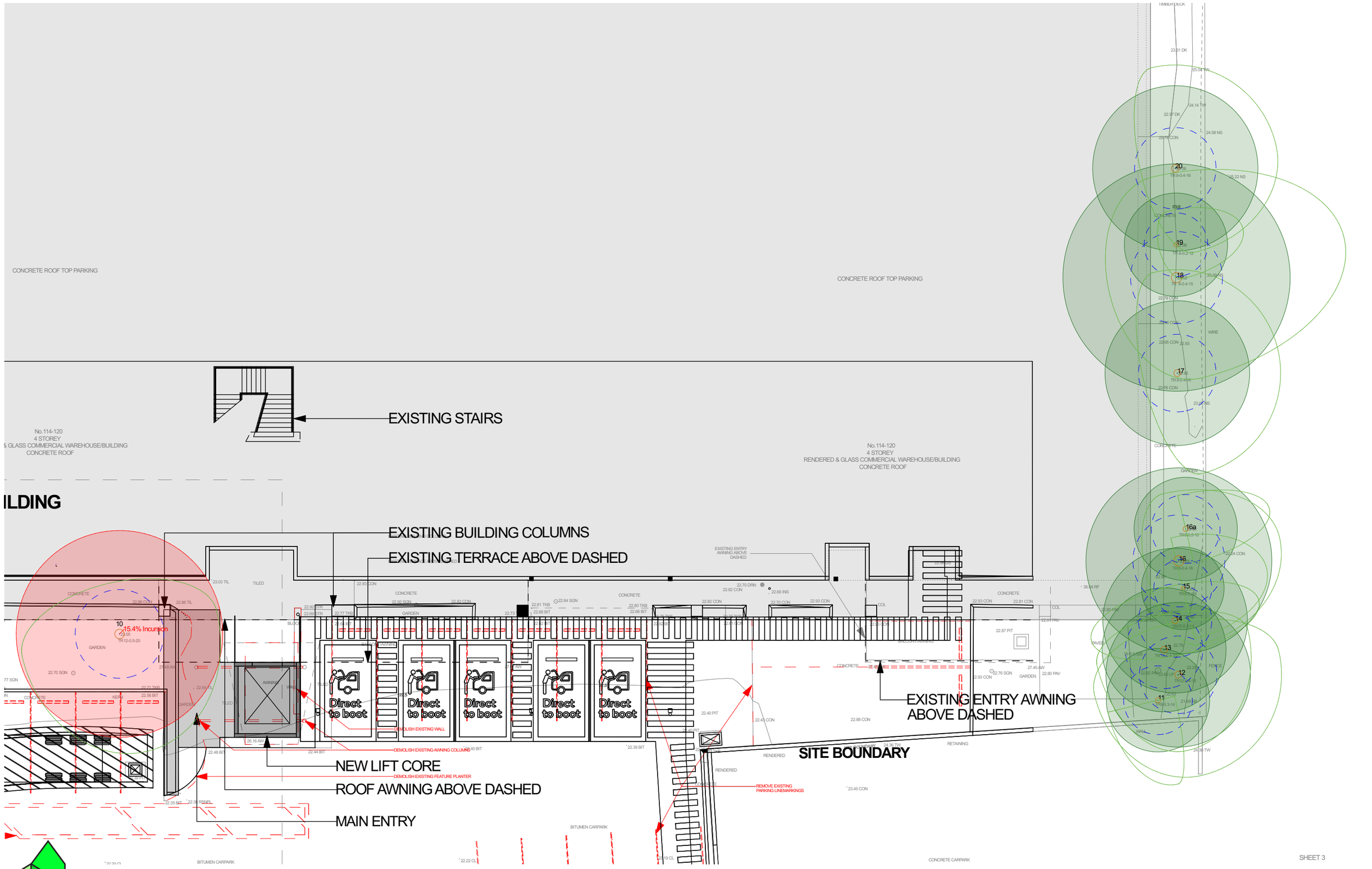

SHEET 3

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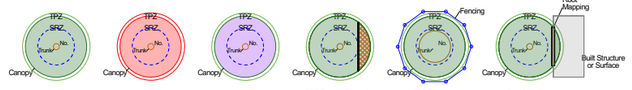

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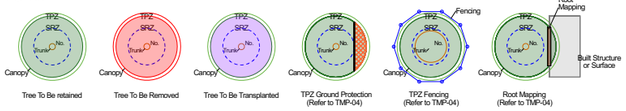

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DRAWING
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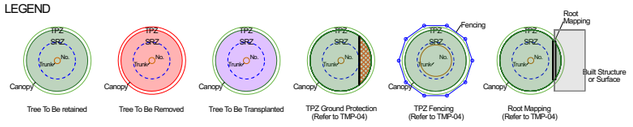

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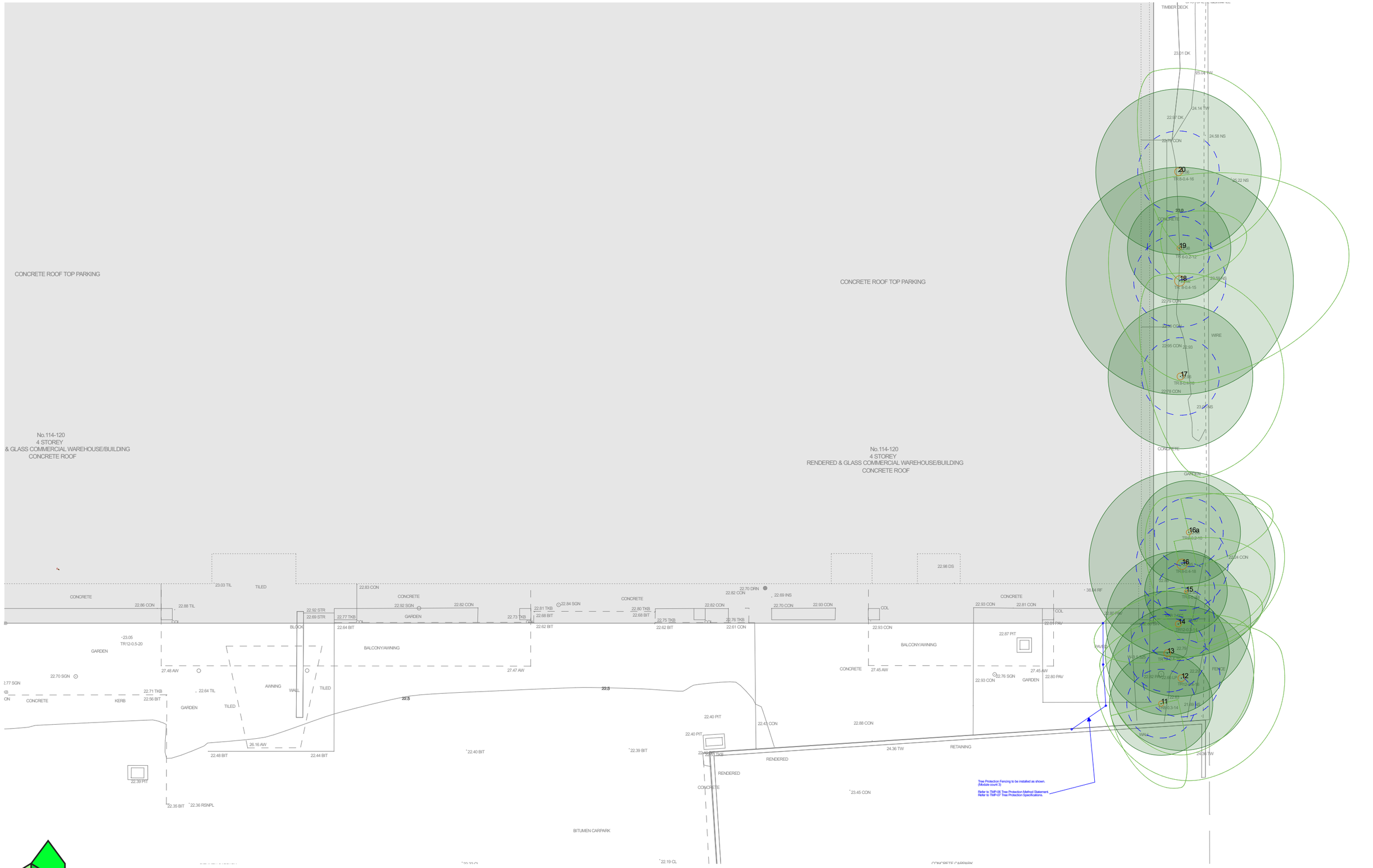

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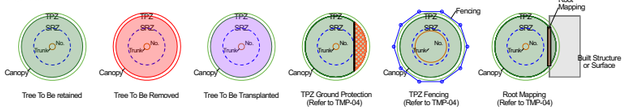

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TMP-05-S3

NORTH

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A

METHOD STATEMENT

GUIDANCE 1: ARBORIST (AQF-5) RESPONSIBILITIES

(a) An AQF-5 Arborist must be engaged as the project arborist prior to any works being conducted onsite. The project arborist must also do the following:
- (i) Conduct a pre-start meeting with the project manager and contractor to discuss the establishment of tree protection measures prior to any works starting onsite.
- (ii) Inspect and certify the tree protection measures that have been installed as specified within this TMP, including a written certificate that must be supplied to the Chief Certifying Authority prior to any works being conducted onsite.
- (iii) Conduct monthly compliance inspections with written a certificate delivered to the chief certifying authority as well as any requirements specified by Council.
- (iv) The project arborist must supervise all works within a TPZ.
- (v) Where compliance has been breached, the project arborist must notify the project manager immediately and in writing where a 'Stop Work Order' must be issued to the contractor. The project arborist must then compile a statement for issue to the chief certifying authority outlining the damage or impact and recommendations for remediation.
- (vi) The project arborist must conduct a final tree protection certification and document the status of the protected trees for compliance with the conditions of consent.

GUIDANCE 2: TREE PROTECTION ZONE (TPZ)

(a) Before the commencement of works, Tree Protection Zone (TPZ) must be established around all trees to be retained not less than the distance indicated within the TPZ schedule shown in Appendix C and this TMP.
(b) Tree protection must be installed and maintained in accordance with AS-4970-2009 the TPZ schedule within Appendix C and this TMP.
(c) Tree Protection Fencing must be installed and maintained prior to the commencement of any works and in accordance with the following:
- (i) Consist of a 1.8-metre-high fully supported chainmesh protective fencing, secured and fastened to prevent movement shall be installed at the perimeter of the TPZ. Woody roots must not be damaged or destroyed during the establishment or maintenance of the fencing.
- (ii) The area within the fencing shall be mulched to a depth of 75mm and kept free of weeds and grass for the duration of works.
- (iii) Tree Protection Signage shall be attached facing outwards in a visible position identifying the name and contact details of the site Arborist. All signs must remain in place throughout all work on site.
- (iv) Tree Protection Fencing must not be relocated unless written approval is obtained from the Site Arborist and a copy is provided to Council which outlines alternate protection measures required to ensure all trees remain viable and confirmation that the relocation of the fencing will not impact the tree/s.

(d) The ground surface protection must be installed if construction access is required through any TPZ and must consist of the following:
- (i) Protected with boarding (i.e. scaffolding board or plywood sheeting or similar material), placed over a layer of mulch to a depth of at least 75mm and geotextile fabric.
- (ii) The protective boarding must be left in place for the duration of the construction and development.

(e) The following works must be excluded from within any TPZs:
- (i) Excavation (except for localised siting of piers / demolition of the concrete slab).
- (ii) Soil cut or fill including trenching.
- (iii) Soil cultivation, disturbance, or compaction.
- (iv) Stockpiling, storage or mixing of materials.
- (v) The parking, storing, washing, and repairing of tools, equipment, and machinery.
- (vi) The disposal of liquids and refuelling.
- (vii) The disposal of building materials.
- (viii) The siting of offices or sheds.
- (ix) Any action leading to the impact on tree health or structure.

(f) Any trenching works for services / hydraulics / drainage etc must not be undertaken within any Tree Protection Zone (TPZ) unless approved by Council. Alternative installation methods for services, such as directional boring/drilling, or redirection of services shall be employed.
(g) All work undertaken within or above the TPZ must be:
- (i) Carried out in accordance with a work methodology statement prepared by an Arborist (minimum AQF Level 5).
- (ii) Supervised by a qualified Consultant Arborist (minimum AQF Level 5)

GUIDANCE 3: TREE PROTECTION DURING CONSTRUCTION

(a) Stockpiling, storage or mixing of materials, washing of equipment, vehicle parking, disposal of liquids, machinery repairs and refuelling, disposal of building materials such as cement slurry, siting of offices or sheds and the lighting of fires, must not occur within 12 metres of the trunk of any tree (including trees in adjoining properties).
(b) Any excavations within the TPZ must be undertaken using non- destructive methods (such as by hand or with an Airspade) to ensure no tree roots greater than 40mm diameter are damaged, pruned or removed.
(c) Footings shall be relocated / realigned if any tree root greater than 40mm in diameter is encounter during excavations. A minimum of 150mm clearance shall be provided between the tree root and footing.
(d) All excavations located within the TPZ must be supervised by a qualified Consultant Arborist, who holds the Diploma in Horticulture (Arboriculture), Level 5 under the Australian Qualification Framework.
(e) All root pruning must be undertaken by a qualified Arborist with a minimum AQF level 3.

GUIDANCE 4: TREES APPROVED FOR REMOVAL

(a) Only trees detailed within the conditions of consent are approved for removal. Tree removal must not occur until the Construction Certificate has been issued or as specified within the conditions of consent.
(b) All tree removal works must be carried out by a qualified Arborist, with a minimum Level 3 AQF in arboriculture and in accordance with WorkCover's Code of Practice – Amenity Tree Industry.

GUIDANCE 5: TREE PRUNING

(a) A 'Pruning Specification Report' prepared by a qualified Arborist (AQF Level 5) must be submitted to and approved by Council's Area Planning Manager prior to the issuing of the Construction Certificate. The report must include:
- (i) Number of branches and orientation, branch diameter, percentage of canopy to be pruned/removed.
- (ii) Photos with individual branches which are recommended for pruning/removal to be clearly marked. (Please note reports which include photos with a single vertical line as the area recommended for pruning will not be accepted).
- (iii) A maximum of 5% canopy removal and maximum of 100mm diameter branches will be permitted by Council.
- (iv) Pruning work must be specified in accordance with Australian Standard 4373–2007, Pruning of Amenity Trees.
- (v) Tree removal must not be recommended in this report.
- (vi) All approved tree pruning works must be carried out by a qualified Arborist, with a minimum Level 3 AQF in arboriculture and in accordance with Work Cover Code of Practice – Amenity Tree Industry.
- (vii) Any pruning works carried out under this consent must not result in the death of the tree, the creation of a hazard or in excessive or inappropriate amounts of pruning, which result in the overall shape of the tree becoming unbalanced and/or unstable.
- (viii) The consent from Council's Tree Management Officer must be obtained prior to the undertaking of any additional tree pruning works or pruning of any tree roots greater than 40mm in diameter.

GUIDANCE 6: CROWN PROTECTION

Tree crowns may be injured by machinery such as excavators, drilling rigs, cranes, trucks, hoarding installation, and scaffolding. The TPZ may need to include additional protection of the above ground parts of the tree. Where crown protection is required, it will usually be located at least one metre outside the perimeter of the crown. The erection of scaffolding may require an additional setback from the edge of the crown. Crown protection may include pruning, tying-back of branches or other measures. If pruning is required, requirements are specified in AS-4373 and should be undertaken before the establishment of the TPZ.

GUIDANCE 7: STREET TREE PROTECTION

All street trees directly outside the site must be retained and protected in accordance with the AS-4970. All street trees must be protected during the construction works as follows:
(a) Tree trunk and major limb protection must be undertaken prior to the commencement of any works. The protection must be installed and certified by a qualified Arborist (AQF level 3) and must include:
- (i) An adequate clearance, minimum 250mm, must be provided between the structure and tree branches, limbs, and trunks always.
- (ii) Tree trunk/s and/or major branches, must be protected by wrapped hessian or similar material to limit damage.
- (iii) Timber planks (35mm x 90mm or similar) must be placed around tree trunk/s. The timber planks must be spaced at 100mm intervals and must be fixed against the trunk with tie wire, or strapping. The hessian and timber planks must not be fixed to the tree in any instance, or in any fashion.
- (iv) Tree trunk and major branch protection is to remain in place for the duration of construction and development works and must be removed at the completion of the project.
- (v) All hoarding support columns are to be placed a minimum of 300mm from the edge of the existing tree pits/setts, so that no sinking or damage occurs to the existing tree setts. Supporting columns must not be placed on any tree roots that are exposed.
- (vi) Young street trees shall be protected by installing three (3) wooden takes around the edge of the tree pit. Hessian shall be wrapped around the stakes. If existing stakes are already in place, these shall suffice as tree protection.
- (vii) Temporary signs, or any other items, shall not be fixed or attached to any street tree.
- (viii) Materials or goods, including site sheds, must not be stored, or placed around or under the tree canopy or within two (2) metres of tree trunks or branches of any street trees.
- (ix) Any excavation within any area known to or suspected of having street tree roots greater than 40mm diameter must be undertaken by hand.
- (x) Any trenching works for services/hydraulics/drainage etc must not be undertaken within 12 metres of any street tree. Alternative installation methods for services, such as directional boring/drilling, or redirection of services shall be employed where large woody roots greater than 40mm diameter are encountered during the installation of any services.
- (xi) Existing sections of kerbs adjacent to any street tree must not be removed without approval from the Council's Tree Management Officer.
- (xii) Any damage sustained to street tree/s because of construction activities (including demolition) must be immediately reported to the Council's Tree Management Officer. Any damage to street trees due to construction activities may result in a prosecution under the Local Government Act 1993 & the Environmental Planning & Assessment Act 1979.

- (vi) Young street trees shall be protected by installing three (3) wooden takes around the edge of the tree pit. Hessian shall be wrapped around the stakes. If existing stakes are already in place, these shall suffice as tree protection.
- (vii) Temporary signs, or any other items, shall not be fixed or attached to any street tree.
- (viii) Materials or goods, including site sheds, must not be stored, or placed around or under the tree canopy or within two (2) metres of tree trunks or branches of any street trees.
- (ix) Any excavation within any area known to or suspected of having street tree roots greater than 40mm diameter must be undertaken by hand.
- (x) Any trenching works for services/hydraulics/drainage etc must not be undertaken within 12 metres of any street tree. Alternative installation methods for services, such as directional boring/drilling, or redirection of services shall be employed where large woody roots greater than 40mm diameter are encountered during the installation of any services.
- (xi) Existing sections of kerbs adjacent to any street tree must not be removed without approval from the Council's Tree Management Officer.
- (xii) Any damage sustained to street tree/s because of construction activities (including demolition) must be immediately reported to the Council's Tree Management Officer. Any damage to street trees due to construction activities may result in a prosecution under the Local Government Act 1993 & the Environmental Planning & Assessment Act 1979.

GUIDANCE 8: NON-DESTRUCTIVE ROOT INVESTIGATION

Exploratory root investigation must be undertaken by a qualified Arborist (minimum AQF Level 5) in the following circumstances:
a) Prior to the demolition of any structure within the SRZ of a tree.
b) Prior to the demolition of any structure that will result in a major encroachment.
c) Where services are proposed through a TPZ.
d) Where a structure is proposed within a TPZ that will result in a major encroachment.

GUIDANCE 9: INSTALLING SERVICES WITHIN A TPZ

For the purposes of this guidance, services are considered as structures. All services should be routed outside the TPZ. If underground services must be routed within the TPZ, they should be installed by directional drilling or in manually excavated trenches using non-destructive methods. The directional drilling bore should be at least 600 mm deep. The project arborist should assess the likely impacts of boring and bore pits on retained trees. The bore pits should be excavated outside of the TPZ. Excavation to upgrade existing services or install new services in TPZs may damage retained trees and should only be chosen as a last resort. If excavation emerges as the preferred option, the decision should be reviewed by the project Arborist before any work is carried out. If excavation is agreed, all digging should be done carefully and follow the guidance set out above.

GUIDANCE 10: EXCAVATION WITHIN A TPZ

Any approved excavation must be carried out carefully through non-destructive methods such as 'hydro-vacuum excavation' (sucker truck) or 'Air spade' and must be supervised by the project arborist. Non-destructive means no damage is to occur to roots greater than 40mm diameter and fine feeder roots where possible. It's important that Hydro-vacuum compressed air jets must not exceed 100psi at the attachment head. Excavated roots should be wrapped in hessian immediately once uncovered to limit adverse impact to the bark or wood of roots. All soil removal must be undertaken with care to minimise the disturbance of roots beyond the immediate area of excavation. Where possible, flexible clumps of smaller roots, including fibrous roots, should be retained if they can be displaced temporarily or permanently beyond the excavation without damage. If digging by hand, a fork should be used to loosen the soil and help locate any substantial roots. Exposed roots to be removed should be cut cleanly with sharp saw or secateurs 10–20cm behind the final face of the excavation. Roots temporarily exposed must be protected from direct sunlight, drying out and extremes of temperature by appropriate covering.

GUIDANCE 11: DEMOLITION OF SURFACES OR STRUCTURES WITHIN A TPZ

Definitions of surfaces and structures
For the purposes of this guidance, the following broad definitions apply:

Surfaces: Any hard surface used as a vehicular road, parking or pedestrian path including tarmac, solid stone, crushed stone, compacted aggregate, concrete, and timber decking. This does not include compacted soil with no hard covering.

Structures: Any man-made structure above or below ground including service pipes, walls, gate piers, buildings, and foundations. Typically, this would include drainage structures, carports, bin stores and concrete slabs that support buildings.

Demolition and access.
Roots frequently grow adjacent to, and beneath existing surfaces/structures so great care is needed during access and demolition. Damage can occur through physical disturbance of roots and/or the compaction of soil around them from the weight of machinery or repeated pedestrian passage. This is not generally a problem whilst surfacing/structures are in place because they spread the load on the soil beneath and further protective measures are not normally necessary. However, once they are removed and the soil below is newly exposed, damage to roots becomes an issue and the following guidance must be observed:
a) No vehicular or repeated pedestrian access into TPZs unless on existing hard surfacing or custom designed ground protection.
b) Regular vehicular and pedestrian access routes must be protected from compaction with temporary ground protection as set out in AS4970-2009.
c) TPZs exposed by the work must be protected as set out in AS4970-2009 until there is no risk of damage from the development activity.
d) Removal of surfacing/structures.
e) Removing existing surfacing/structures is a high-risk activity for any adjacent roots and the following guidance must be observed:
f) Appropriate tools for manually removing debris may include a pneumatic breaker, crowbar, sledgehammer, pick, mattock, shovel, spade, trowel, fork, and wheelbarrow. Secateurs and a handsaw
g) must also be available to deal with any exposed roots that have to be cut.

GUIDANCE 11: DEMOLITION OF SURFACES OR STRUCTURES WITHIN A TPZ (Cont.)

- h) Machines with a long reach may be used if they can work from outside TPZs or from protected areas within TPZs. They must not encroach onto unprotected soil in TPZs.
- i) Debris to be removed from TPZs manually must be moved across existing hard surfacing or temporary ground protection in a way that prevents compaction of soil. Alternatively, it can be lifted out by machines provided this does not disturb TPZs.
- j) Great care must be taken throughout these operations not to damage roots.
- k) If appropriate, leaving below ground structures in place should be considered if their removal may cause excessive root disturbance.

GUIDANCE 12: INSTALLING SURFACES WITHIN A TPZ

Basic principles.
New surfacing is potentially damaging to trees because it may require changes to existing ground levels, result in localised soil structure degradation and/or disrupt the efficient exchange of water and gases in and out of the soil. Mature and over-mature trees are much more prone to suffer because of these changes than young and maturing trees. Adverse impact on trees can be reduced by minimising the extent of these changes in TPZs. Generally, the most suitable surfacing will be relatively permeable to allow water and gas movement, load spreading to avoid localised compaction and require little or no excavation to limit direct damage. The actual specification of the surfacing is an engineering issue that needs to be considered in the context of the bearing capacity of the soil, the intended loading, and the frequency of loading. The detail of product and specification are beyond the scope of this guidance and must be provided separately by the appropriate specialist.

Establishing the depth of excavation and surfacing gradient. The precise location and depth of roots within the soil is unpredictable and will only be known when careful digging starts on site. Ideally, all new surfacing in TPZs should be no-dig, i.e., requiring no excavation whatsoever, but this is rarely possible on undulating surfaces. New surfacing normally requires an evenly graded sub-base layer, which can be made up to any high points with granular, permeable fills such as crushed stone or sharp sand. This sub-base must not be compacted as would happen in conventional surface installation. Some limited excavation is usually necessary to achieve this and need not be damaging to trees if carried out carefully and large roots are not cut. Tree roots and grass roots rarely occupy the same soil volume at the top of the soil profile, so the removal of a turf layer up to 50mm is unlikely to be damaging to trees. It may be possible to dig to a greater depth depending on local conditions, but this would need to be assessed by an arboriculturist if excavation beyond 5cm is anticipated. On undulating surfaces, finished gradients/levels must be planned with sufficient flexibility to allow on-site adjustment if excavation of any high points reveals large, unexpected roots near the surface. If the roots are less than 40mm in diameter, it would normally be acceptable to cut them, and the gradient formed with the preferred minimal excavation of up to 5cm. However, if roots over 40mm in diameter are exposed, cutting them may be too damaging and further excavation may not be possible. If that is the case, the surrounding levels must be adjusted to take account of these high points by filling with suitable material. If this is not practical and large roots have to be cut, the situation should be discussed with the project Arborist before a final decision is made.

Base and finishing layers.
Once the sub-base has been formed, the load spreading construction is installed on top without compaction. In principle, the load spreading formation will normally be cellular and filled with crushed stone although the detail may vary with different products. Suitable surface finishes include washed gravel, permeable tarmac or block pavers set on a sand base. However, for lightly loaded surfacing of limited widths (<3m) such as pedestrian paths, pre-formed concrete slabs may be appropriate if the sub-base preparation is as set out above. In some situations, limited width floating concrete rafts constructed directly on the soil surface may be acceptable, but the design must not include any strip-dug supports.

Edge retention.
Conventional kerb edge retention set in concrete filled excavated trenches is likely to result in damage to roots and should be avoided. Effective edge retention in TPZs must be custom designed to avoid any significant excavation into existing soil levels. For most surfaces, the use of pre-formed edging secured by metal pins or wooden pegs is normally an effective way of minimising any adverse impact on trees from the retention structure.

Installing new surfacing on top of existing surfacing.
In some instances, existing surfacing can be retained and used as a base for new surfacing. Normally, this will not result in significant excavation that could expose roots so special precautions are not necessary. However, if large roots already protrude above the proposed sub-base level, then the precautions and procedures set out above must be observed.

GUIDANCE 13: INSTALLING STRUCTURES WITHIN A TPZ

Basic principles
New structures in TPZs are potentially damaging to trees because they may disturb the soil and disrupt the existing exchange of water and gases in and out of it. Mature and over-mature trees are much more prone to suffer because of these changes than young and maturing trees. Adverse impact on trees can be reduced by minimising the extent of these changes in TPZs. This can be done by constructing the main structures above ground level on piled supports and redirecting water to where it is needed. The detailed design and specification of such structures is an engineering issue that should be informed and guided by the project Arborist. Conventional strip foundations in the TPZ for any significant structure may cause excessive root loss and are unlikely to be acceptable. However, disturbance can be significantly reduced by supporting the above ground part of the structures on small diameter piles/piers or cast floor slabs set above ground level. The design should be sufficiently flexible to allow the piles to be moved if significant roots are encountered in the preferred locations.

Small sheds and bin stores.
These light structures do not normally require substantial foundations and can have permeable bases. Ideally, their bases should be of a no-dig, load-spreading construction set directly on to the soil surface. They require a flat base and so an undulating site will need levelling to provide a suitable surface. Excavation of any high points by up to 5cm and filling depressions with permeable fill to provide a flat base will normally be acceptable provided no roots greater than 4cm in diameter need to be cut. If large roots are found, the preferred course of action would be to raise the base level of the structure by filling rather than cutting roots. However, if this is not practical and large roots have to be cut, the situation should be discussed with the project Arborist before a final decision is made. Above the base, there will often be a protective covering fixed onto a frame that can rise directly from the base or be fixed to supports either banged into the ground or set in carefully dug holes. Provided the supports are well spaced, i.e., greater than 1.5m apart, and of a relatively narrow diameter, i.e., not more than 15cm, it is unlikely they will cause any significant disturbance to TPZs.

GUIDANCE 14: INSTALLING SOFT LANDSCAPING WITHIN A TPZ

For the purposes of this guidance, soft landscaping includes the re-profiling of existing soil levels and covering the soil surface with new plants or an organic covering (mulch). It does not include the installation of solid structures or compacted surfacing. Soft landscaping activity after construction can be extremely damaging to trees. No significant excavation or cultivation, especially by rotovators, should occur within TPZs. Where new designs require levels to be increased to tie in with new structures or the removal of an existing structure has left a void below the surrounding ground level, good quality and relatively permeable topsoil should be used for the fill. It should be firmed into place but not over compacted in preparation for turfing or careful shrub planting. Ideally, all areas within SRZs should be kept at the original ground level and have a mulched finish rather than grass to reduce the risk of mowing damage.

GUIDANCE 15: INSTALLING IRRIGATION WITHIN A TPZ

Smart Irrigation Must be installed to each TPZ below the mulch layer as follows:
a.) Install Rain Bird XFA Dripline at 0.4m spacing and line spacing 0.4m on the existing soil.
b.) The system should be controlled with a 24 hour timer to run for 60 minutes 06:00-07:00 and 18:00-19:00 daily.

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GENERAL NOTES

PROJECT
Tenancy Lift and Carparking
114 Old Pittwater Road, Brookvale NSW 2100

DATE
08/11/2024

DRAWING
Tree Protection Method Statement

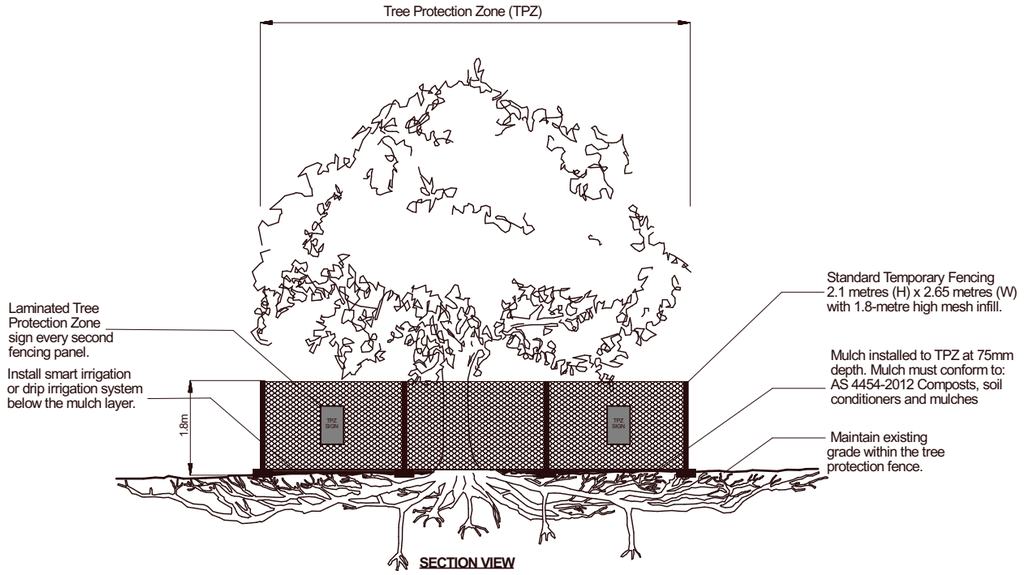
NORTH

CLIENT
Fabrik Property Pty Ltd
Level 5, 50 Holt Street Surry Hills NSW 2010

SCALE @ A3
N/A

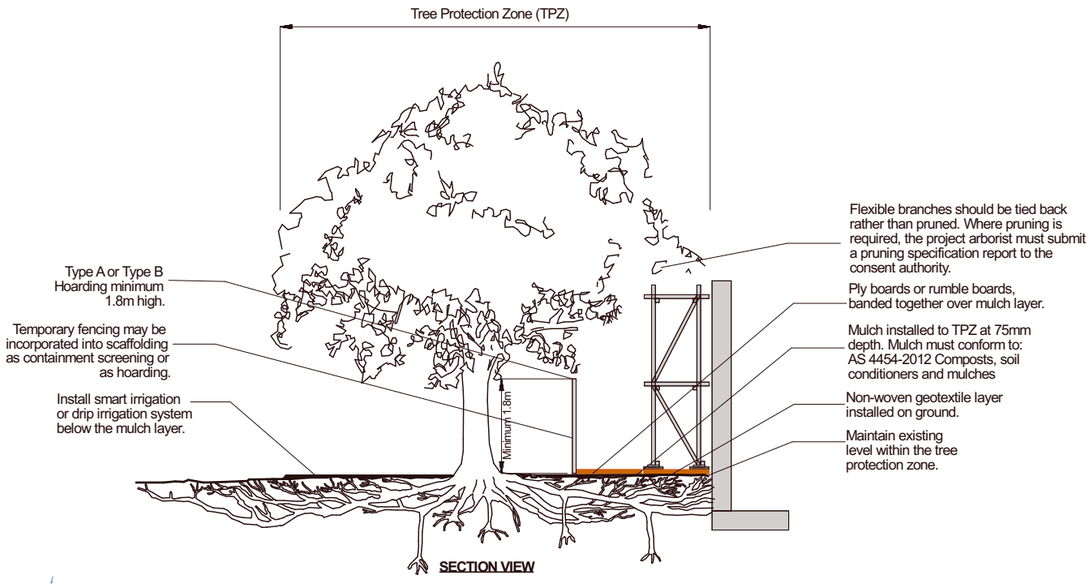
DRAWING NO.
TMP-06

REVISION
A



S-1 TREE PROTECTION FENCING

Synertree Pty Ltd©



S-3 SCAFFOLD PROTECTION

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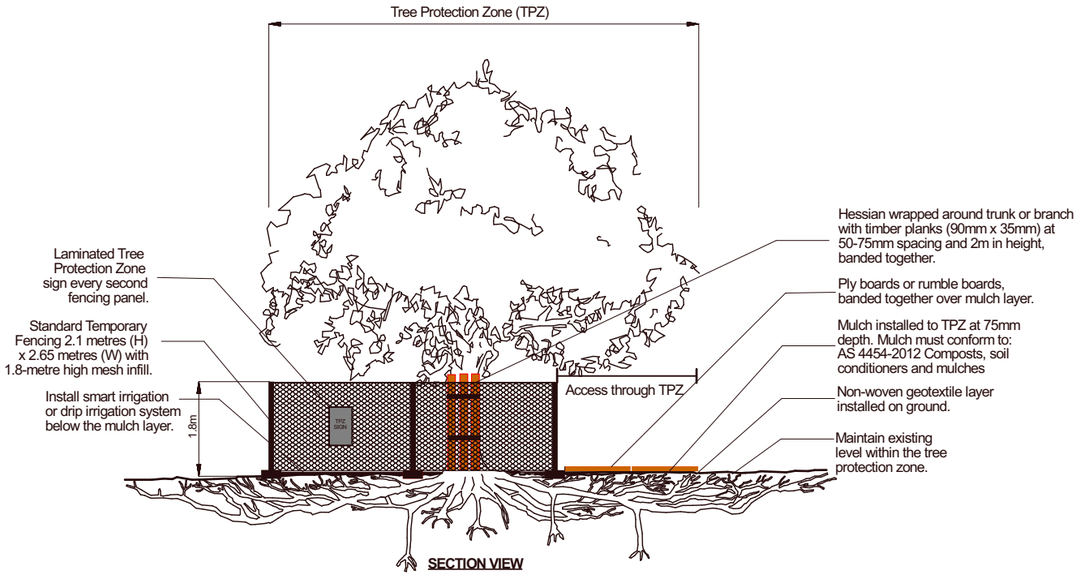

S-2 TRUNK, BRANCH & GROUND PROTECTION

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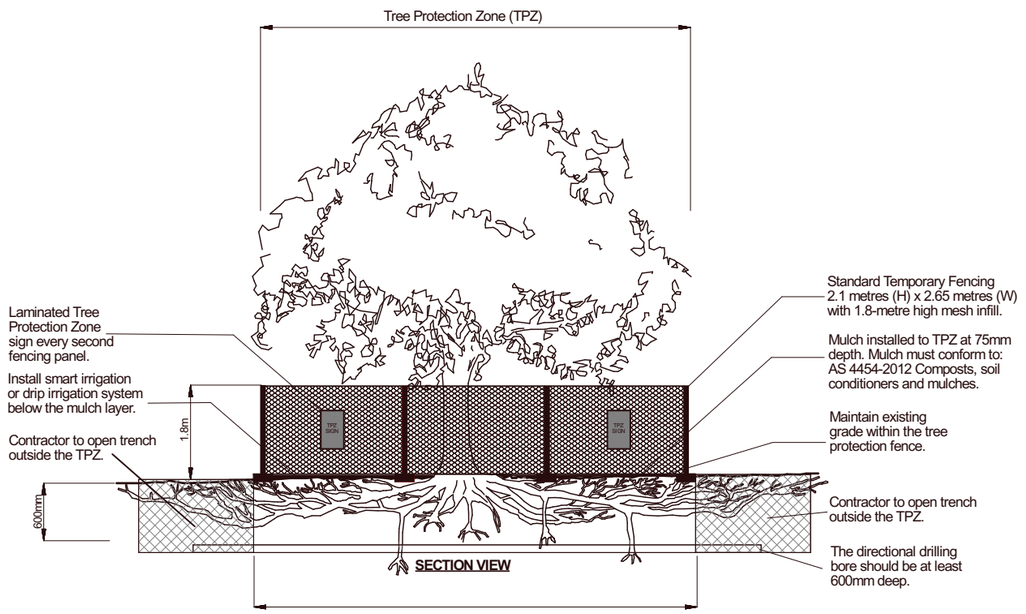

S-4 TREE PROTECTION - BORING BELOW THE TPZ

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GENERAL NOTES

PROJECT
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DATE
08/11/2024

DRAWING
Tree Protection Specifications

NORTH

CLIENT
Fabrik Property Pty Ltd
Level 5, 50 Holt Street Surry Hills NSW 2010

SCALE @A3
N/A

DRAWING NO.
TMP-07

REVISION
A