

ARBORICULTURAL IMPACT ASSESSMENT- STATE SIGNIFICANT DEVELOPMENT APPLICATION

**Prepared for MHR Lindfield Investments Pty
Ltd ATF MHR Lindfield Trust 9.05.2025**

Prepared by Lee Hancock Consulting Arborist AQF Level 5
lee@leehancockarborist.com.au

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1.Introduction

The Arboricultural Impact Assessment report was appointed by MHR Lindfield Investments Pty Ltd ATF MHR Lindfield Trust to accompany a State Significant Development Application that comprises the construction and operational use of a nine (9) storey residential flat building (RFB) and ancillary land uses to support the functions intended for the Site.

1.1 The Proposal

The Proposal comprises the construction and operational use of a nine (9) storey residential flat building (RFB) and ancillary land uses to support the functions intended for the Site. The Proposal will exemplify and showcase a State-of-the-Art and modernised residential development that complements the desired future streetscape character; and builds on the fundamental necessities required to achieve local, regional and state planning/strategic objectives with respect to the shortage of housing opportunities and housing affordability.

1.2 Sites Identification

Street Address	Legal Description
• 24 Middle Harbour Road	Lot 14 DP5374
• 26 Middle Harbour Road	Lot 1 DP119944 Lot 14 DP5374
• 28 Middle Harbour Road	Lot 1 DP1192386 Lot 1 DP312386 Lot 16 DP5374 Lot 768 DP752031

2. Aim

The aim of this Arboricultural Impact Assessment (AIA) is to undertake a Visual Tree Assessment (VTA), to determine the impact of the proposed development on trees, and where appropriate, provide guidance and recommend tree sensitive protection methods to minimise adverse impacts.

2.1 All trees included in the site survey are numbered and assessed by the Author as the basis for deciding which trees are suitable for retention.

For each tree they have been assessed for.

- a) Correct botanical identification and common name.

- b) Health and vigour
- c) Structure
- d) Dimensions, height, crown spread and DBH.
- e) Age class
- f) Estimated life expectancy
- g) Heritage and /or cultural matters
- h) Ecological and habitat matters
- i) The location relative to existing site features
- j) Other matters to the site
- k) Retention value

2.2 Tree protection controls for Kuringai Council Local Government Area apply to any tree or palm, whether it is a native or an exotic species that:

- has a height equal to or exceeding four meters.
- any tree or mangrove vegetation located on public land, irrespective of size.
- forms part of a heritage item, or that is within a heritage conservation area.
- forms part of an Aboriginal object, or that is within an Aboriginal place of heritage significance.
- is listed on the NSW Heritage Register.

The author is aware of and will comply with the determining authorities Kuringai Council,'KLEP - 2015' = Ku-ring-gai Local Environmental Plan 2015,'KLEP LC 2012' = Ku-ring-gai Local Environmental Plan (Local Centres) 2012,'KPSO' = Ku-ring-gai Planning Scheme Ordinance, Tree Preservation Order.

2.3 Wildlife Habitat

Some of the trees are local native species.

2.3.1 Noxious Plants and Environmental Weeds

One of the trees assessed are scheduled as weeds by the Biosecurity Act 2015.

2.3.2 Terrestrial Biodiversity LEP

Lot 28 is mapped on the Terrestrial Biodiversity LEP layer.

2.3.3 Threatened species& Ecological Communities

Some of the subject trees are listed as NSW Threatened Species Scientific Committee or form part of Endangered Ecological Communities (EEC's) under the provisions of the Biodiversity *Conservation Act 2016*.

2.3.4 Heritage Conservation Area

The site is partially in Trafalgar Avenue Heritage Conservation Area.

2.3.5 Significant Tree Register

None of the trees are nominated on Kuringai Councils Register of Significant Trees

Table 1. Documents Provided

PLAN/DOCUMENT	PREPARED BY	DWG/REF NO	DATED
Architectural Drawings	DKO Architects	DA000,001,002,003,100,101,102, ,200,201,202,400,401,900.	April 2025
Surveyor	CMS Surveyors Pty Ltd	23693	13.08.2024
Landscape Architect	Landform	LD- DA 000,010,100,102,103,104,900	May 2025
Ecologist	Ecological Australia	Belinda Failes	May 2025
Civil Engineer	Xavier Knight	250213 C000 00-1, CO2001-1,3001-1, 3003-1,5101-1,5201-1,5301-1 9001-1	May 2025

3. Site Analysis

The Site comprises a total area of 4,757m². The site is square in shape and is 65m wide, with a depth between 70 -80m. The site is zoned as R2 Low Density Residential under KLEP2015. There is a Riparian Corridor Category 3A. Middle Harbour South Flood overland. Middle Harbour North Draft overland flow.

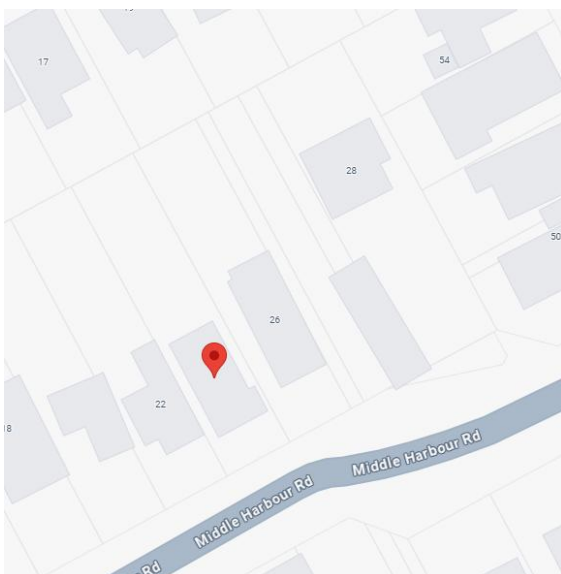
3.1 To the south, east, north and west are residential properties similar in scale and design to the residential properties located within the Site, with the immediate surrounding area also being zoned as R2 Low Density Residential.

3.2 Further north and west is Lindfield Town Centre, which includes a variety of uses and a higher density of development, including further height, comprising R3 Medium Density Residential, R4 High Density Residential and E1 Local Centre zones. Lindfield railway station is approximately 500m to the northwest of the Site, which offers regular services to the Sydney Central Business District (CBD).

3.3 The Site is located approximately 330m east of the Pacific Highway, which is a major arterial route, providing regular buses servicing the Lindfield Learning Village, Killara, Gordon and Chatswood. The Site is approximately 15km from the Sydney CBD.

3.4 The soils and geology are formed from Glenorie soil landscape occurs north of the Parramatta River on the Hornsby Plateau in Baulkham Hills, Hornsby, Ku-ring-gai, and Ryde local government areas. The soil landscape is underlain by Wianamatta Group Ashfield Shale and Bringelly Shale formations.

Figure 1. R2 Low Density Residential under KLEP2015. Figure 2. Existing site Context and Surrounding Area



Background

The proposed redevelopment of the Site will deliver essential housing supply, choice, and affordability to meet the needs of Ku-ring-gai's growing population. Strategically positioned near key transport links and services, the Proposal will provide convenient access to jobs while aligning with the locality's strategic goals. By redeveloping and renewing the existing land, the Proposal aims to revitalise the area, enhancing its contribution to the community's long-term growth and sustainability.

4. Discussion

An assessment of each tree was made using the Visual Tree Assessment (VTA) procedure. The subject trees were assessed from the ground. No aerial inspection has been undertaken as part of this assessment. The initial point of reference in assessing the impacts of the proposed development is AS4970 (2009) '*Protection of trees on development sites*'.

4.1 Each tree has been provided with an identification number for reference purposes denoted on the Tree Location Plan. This discussion will focus primarily on the trees that will experience conflicts with the proposed development. This report will then guide the site layout and design process showing the spatial requirements and constraints the trees have imposed on the site.

28 Middle Harbour Road, Lindfield

Tree 1. *Liquidambar styraciflua* (Liquidamber)

Large mature exotic located boundary of 28 and 26 Middle Harbour Road, in good form and vigour, tree is in the footprint of the proposed development, it does not seem feasible to retain tree. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 2. *Cupressus sempervirens* 'Stricta' (Italian Cypress)

Located front of site, mature to overmature exotic tree in fair form and vigour, this tree should not be considered a constraint to any future development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 3. *Cupressus sempervirens* 'Stricta' (Italian Cypress)

Located front of site, mature to overmature exotic tree in fair form and vigour, this tree should not be considered a constraint to any future development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 4. *Cupressus sempervirens* 'Stricta' (Italian Cypress)

Located front of site mature exotic tree in very poor form and vigour, this tree should not be considered a constraint to any future development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 5. *Cupressus sempervirens* ‘Stricta’ (Italian Cypress)

Located front of site large mature exotic tree not considered worthy of any special measures for its retention. Rated as moderate as moderate landscape significance and amenity value. Low retention value.

Tree 6. *Pittosporum undulatum* (Sweet Pittosporum)

Mature native tree located corner of northeast boundary; tree is nominated for removal not considered worthy of any special measures for its retention. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 7. *Pittosporum undulatum* (Sweet Pittosporum)

Located near Tree 6. native tree is nominated for removal not considered worthy of any special measures for its retention. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 8. *Phoenix canariensis* (Canary Island Date Palm)

Semi mature exotic Palm in good form and vigour, the proposed site design and placement of buildings and infrastructure should consider lessening any mitigating issues in relation to trees. Rated as high landscape significance and amenity value. High retention value.

Tree 9. *Syzygium paniculatum* (Magenta Lilly Pilly)

Mature native tree in good form and vigour, shall not adversely affect the tree, when tree sensitive protection methodologies are implemented. Rated as high landscape significance amenity and ecological value. High retention value.

Tree 10. *Phoenix canariensis* (Canary Island Date Palm)

Semi mature exotic Palm in good form and vigour, the supplied concept plans show a 6m setback on the northeast boundary. Palm can be retained with little impact to the above and below ground parts of the Palm when tree sensitive protection methodologies are implemented. Rated as High landscape significance and amenity value. High retention value.

Tree 11. *Syncarpia glomulifera* (Turpentine)

Mature native tree in good form and vigour, located northeast boundary. Rated as High landscape significance amenity and ecological value. High retention value.

Tree 12. *Phoenix canariensis* (Canary Island Date Palm)

Semi mature exotic tree located northeast boundary in good form and vigour, Rated as high landscape significance and amenity value. High retention value.

Tree 13. *Livistona chinensis* (Chinese Cabbage Fan Palm)

Located offsite adjoining property exotic Palm in good form and vigour, the supplied plans show Palm is remote from any proposed works. Rated as high landscape significance and amenity value. High retention value.

Tree 14. *Livistona chinensis* (Chinese Cabbage Fan Palm)

Located offsite adjoining property exotic Palm in good form and vigour, the supplied plans show Palm is remote from any proposed works. Rated as high landscape significance and amenity value. High retention value.

Tree 15. *Syncarpia glomulifera* (Turpentine)

Large mature native tree very close to existing residence, appears in good form and vigour. Will require pruning to accommodate scaffolding. Rated as high landscape significance and amenity value. High retention value.

Tree 16. *Syncarpia glomulifera* (Turpentine)

Mature native tree very close to existing residence, appears in good form and vigour, tree may require pruning to allow for scaffolding. Rated as high landscape significance and amenity value. High retention value.

Tree 17. *Livistona chinensis* (Chinese Cabbage Fan Palm)

Semi mature exotic Palm located adjacent to existing building, appears in good form and vigour, The supplied plans show the 6 metres setback from boundary which will allow the Palm to be retained and protected throughout all stages of the development. Rated as High landscape significance and amenity value. High retention value.

Tree 18. *Syncarpia glomulifera* (Turpentine)

Mature native tree located northeast boundary adjacent to existing building, appears in good form and vigour. Rated as high landscape significance and amenity value. High retention value.

Tree 19. *Jacaranda mimosifolia* (Jacaranda)

Located offsite northeast boundary exotic tree in good condition appears healthy and structurally stable, the supplied plans show the six-metre setback will not adversely affect the long- term viability of the tree. Rated as High landscape significance and amenity value. High retention value.

Tree 20. *Ulmus parvifolia* (Chinese Weeping Elm)

Located northwest boundary exotic tree with two stems are visible from adjacent rear yard, the six-metre setback proposed will not adversely impact the long-term viability of the trees. Rated as high landscape significance and amenity value. High retention value.

Tree 21. *Lophostemon confertus* (Brush Box)

Mature native tree located western boundary smothered by vine, near to existing residence, the supplied concept plans show tree will be adversely impacted upon by the proposed development. Rated as high landscape significance amenity and ecological value. Low retention value.

Tree 22. *Phoenix canariensis* (Canary Island Date Palm)

Mature exotic Palm in good form and vigour, located western boundary, the supplied concept plans show Palm is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 23. *Lophostemon confertus* (Brush Box)

Mature native tree located western boundary, in good form and vigour, the supplied concept plans show Palm is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 24. *Syzygium paniculatum* (Magenta Lilly Pilly)

Mature native tree located western boundary appears structurally stable and in good health, the supplied concept plans show Palm is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 25. *Ficus macrocarpa* var. *hilli* (Hills Weeping Fig)

Large exotic mature tree showing large prop roots travelling 14 metres to Middle Harbour Road, *Ficus* spp. especially the *Ficus macrocarpa* is extremely invasive. They damage not only sewer pipes and drains but also paths, walls, and building foundations. Tree should not be considered a constraint to any future development. Moderate landscape significance and amenity value. Low retention value.

Tree 26. *Cupressus* spp.

Located onsite near Tree 1. Exotic tree is in fair form and vigour, the supplied plans show tree is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

26 Middle Harbour Road, Lindfield

Tree 27 *Malus* spp. (Crab Apple)

Located front entrance to subject site, exotic small tree in good form and vigour, the supplied plans show small tree will be adversely affected by the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 28. *Lagerstroemia indica* (Crepe Myrtle)

Mature exotic tree located growing within a form hedge of *Murraya paniculata* (Sweet Jasmine) northern boundary, the supplied plans show tree will be adversely impacted upon by the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 29. *Sasanqua camellia* (Camellia)

Small exotic tree located on Northern boundary of 24 & 26 Middle Harbour Road; tree is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 30. *Jacaranda mimosifolia* (Jacaranda)

Located on western boundary of subject site, exotic tree in good form and vigour, the supplied plans show tree is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 31. *Prunus* spp. (Ornamental Cherry)

Small ornamental exotic tree located rear yard of subject site; tree is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 32. *X Cupressocyparis leylandii* (Leylandii)

An informal screening exotic hedge round the existing Gazebo, in good form and vigour. The supplied concept plans hedge is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 33. *Sasanqua camellia* (Camellia)

Informal exotic tree hedge growing northeast boundary for screening purposes, the supplied concept plans hedge is in the footprint of the proposed development. Rated as moderate landscape significance and amenity value. Low retention value.

Tree 34. *Ligustrum lucidum* (Large leaf Privet)

Tree is located rear of existing shed; Biosecurity Weed is recommended for removal.

Tree 35. *Syzygium* spp. x7

Located offsite rear northwest boundary, overhanging existing swimming pool, a 1.5m high sandstone retaining wall separates the native trees offsite, it is considered the existing levels are above the existing ground level, will not be adversely affected by the six-metre setback for the proposed development. Rated as high landscape significance amenity and ecological value. High retention value.

Tree 36. *Cyathea australis* (Rough Tree Fern)

Semi mature native Tree Fern in good form and vigour the Palm is in the existing retaining wall rear of subject site. The supplied plans show pool and retaining wall will be removed to accommodate new plantings in six metres setback. Rated as moderate landscape significance amenity and ecological value. Low retention value.

Tree 37. *Waterhousia floribunda* (Weeping Lily Pilly)

Mature native tree located in rear northwest boundary site, appears in good form and vigour, rated as high landscape significance amenity and ecological value. High retention value.

Tree 38. *Pittosporum undulatum* (Sweet Pittosporum)

Mature native tree located northwest rear boundary, in good form and vigour, Rated as high landscape significance amenity and ecological value. High retention value.

Tree 39. *Pittosporum undulatum* (Sweet Pittosporum)

Mature native tree adjacent to Tree 38 northwest rear boundary, in good form and vigour, the supplied plans show tree is in the footprint of the proposed development. Rated as moderate landscape significance amenity and ecological value. High retention value.

STREET TREES

24 Middle Harbour Road, Lindfield

Tree 40 *Polyspora axillaris* (Fried Egg Plant)

Mature tree in fair form and vigour, the tree is nominated for retention and protection throughout all stages of the proposed development.

Tree 41. *Jacaranda mimosifolia* (Jacaranda)

Mature tree in fair form and vigour, the tree is nominated for retention and protection throughout all stages of the proposed development.

26 Middle Harbour Road

Tree 42 *Jacaranda mimosifolia* (Jacaranda) 28 Middle Harbour Road

Semi mature exotic tree in poor form and vigour, tree has less than 5% foliage, it appears to be dying. Rated as low landscape significance and amenity value. Low retention value.

Tree 43 *Robinia pseudoacacia* (Black Locust)

Mature tree in poor form and vigour, the tree is nominated for retention and protection throughout all stages of the proposed development.

28 Middle Harbour Road

Tree 44 *Jacaranda mimosifolia* (Jacaranda) 28 Middle Harbour Road

Semi mature exotic tree in poor form and vigour, tree has less than 5% foliage, it appears to be dying. Rated as low landscape significance and amenity value. Low retention value.

Tree 45 *Syncarpia glomulifera* (Turpentine)

Large mature native multi stemmed tree located northeast corner of 28 Middle Harbour Road, in good form and vigour, the tree is nominated for retention and protection throughout all stages of the proposed development.

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Table 3 Impact Assessment Schedule 28, 26 & 24 Middle Harbour Road, Lindfield

TREE No	LOCATION	GENUS & SPECIES	HEIGHT	CANOPY SPREAD	DBH (mm)	DGL (mm)	SRZ (m)	TPZ (m)	LANDSCAPE SIGNIFICANCE	RETENTION VALUE	COMMENTS
	28 Middle Harbour Road Lindfield										
1	Front of site	<i>Liquidambar styraciflua</i> (<i>Liquidambar</i>)	22	45	920	1110	3.5	11.04	High	Low	Footprint of proposed development. Remove
2	Front of site	<i>Cupressus sempervirens</i> "stricta"	10	15	370	380	2.2	4.44	Moderate	Low	Footprint of proposed development. Remove
3	Front of site	<i>Cupressus sempervirens</i> "stricta"	11	15	330	300	2.0	3.96	Moderate	Low	Footprint of proposed development. Remove
4	Front of site	<i>Cupressus sempervirens</i> "stricta"	8	10	170	200	1.7	2.04	Moderate	Low	Footprint of proposed development. Remove
5	Front of site	<i>Cupressus sempervirens</i> "stricta"	19	20	600	600	2.7	7.2	Moderate	Low	Footprint of proposed development. Remove
6	Corner of site northeast	<i>Pittoporum undulatum</i> (<i>Sweet Pittoposrum</i>)	14	20	240/290	490	2.5	5.4	Moderate	Low	Footprint of proposed development. Remove
7	front fence northeast corner	<i>Pittoporum undulatum</i> (<i>Sweet Pittoposrum</i>)	16	20	340	420	2.3	4.08	Moderate	Low	Footprint of proposed development. Remove
8	Northeast boundary	<i>Phoenix canariensis</i> (<i>canary Island Date palm</i>)	6	15	560	560	2.6	6.72	High	Retain	Retain
9	Northeast boundary	<i>Syzygium paniculatum</i>	22	40	570	840	3.1	6.84	High	High	Retain
10	North east boundary	<i>Phoenix canariensis</i> (<i>canary Island Date palm</i>)	7	15	560	560	2.6	6.72	High	High	Retain
11	Northeast boundary	<i>Syncarpia glomulifera</i> (<i>Turpentine</i>)	23	40	850	950	3.2	10.2	High	High	Retain
12	Northeast boundary	<i>Phoenix canariensis</i> (<i>Canary Island Date Palm</i>)	6	15	650	650	2.8	7.8	high	High	Retain
13	North east boundary	<i>Livistona chinensis</i> (<i>Chinese Cabbage palm</i>)	11	10			0.0	0	High	Retain	offsite no impact from proposed development.

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14	North east boundary	<i>Livistona chinensis</i> (Chinese Cabbage palm)	5	10	200	200	1.7	2.4	High	Retain	offsite no impact from proposed development.
15	North east boundary	<i>Syncarpia glomulifera</i> (Turpentine)	23	45	660	760	2.9	7.92	High	High	Retain
16	Northeast boundary	<i>Syncarpia glomulifera</i> (Turpentine)	23	45	670	770	3.0	8.04	High	High	Retain
17	Northeast boundary	<i>Livistona chinensis</i> (Chinese Cabbage palm)	8	10	180	200	1.7	2.16	High	High	Retain
18	North east boundary	<i>Syncarpia glomulifera</i> (Turpentine)	24	40	760	860	3.1	9.12	High	High	Retain
19	Northeast boundary	<i>Jacaranda mimosifolia</i> (Jacaranda)	10		no access	no access	no access	#VALUE!	High	Retain	Unable to access offsite Retain
20	Western boundary	<i>Ulmus parvifolia</i> (Chinese Weeping Elm)	12	20	no access	no access	NO Access	#VALUE!	High	Retain	Two Trees unable to access offsite retain
21	Western boundary	<i>Lophostemon confertus</i> (Brush Box)	18	45	910	1110	3.5	10.92	Low	Low	Footprint of proposed development.Remove

22	Western boundary	<i>Phoenix canariensis</i> (Canary Island Date Palm)	7	20	430	530	2.5	5.16	Low	Low	Footprint of proposed development.Remove
23	Western boundary	<i>Lophostemon confertus</i> (Brush Box)	18	45	730	830	3.1	8.76	Low	Low	Footprint of proposed development.Remove
24	Western boundary	<i>Syzygium paniculatum</i>	18	45	790	890	3.2	9.48	Low	Low	Footprint of proposed development.Remove
25	Western boundary	<i>Ficus microcarpa</i> var. <i>hillii</i> (Hills Weeping Fig)	18	60	1091	1500	3.9	13.092	Low	Low	Footprint of proposed development.Remove
26	Western boundary	<i>Cupressus</i> spp.	15	25	360	400	2.3	4.32	Low	Low	Footprint of proposed development.Remove
TREE No	LOCATION	GENUS & SPECIES	HEIGHT	CANOPY SPREAD	DBH (mm)	DGL (mm)	SRZ (m)	TPZ (m)	LANDSCAPE SIGNIFICANCE	RETENTION VALUE	COMMENTS
	26 Middle Harbour Road Lindfield										
27	Front	<i>Malus</i> spp.	5	15			0.0	0	Low	Low	Footprint of proposed development
28	Boundary 24-26	<i>Lagerstroemia indica</i> (Crepe Myrtle)	6	15			0.0	0	Low	Low	Footprint of proposed development
29	Boundary 24-26	(<i>Camellia</i>)	5	10			0.0	0	Low	Low	Footprint of proposed development
30	Boundary 24-26	<i>Jacaranda mimosifolia</i> (Jacaranda)	17	30	500	600	2.7	6	Low	Low	Footprint of proposed development
31	Back yard	<i>Prunus pendula</i> 'Pendula Rosea	4	6	220	320	2.1	2.64	Low	Low	Footprint of proposed development

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32	NE Boundary	<i>× Cupressocyparis leylandii (Leyland Cypress)</i>	8				0.0	0	Low	Low	Hedge A. Footprint of proposed development
33	NE Boundary	<i>Sasanqua camellia (Camellia)</i>	4	40			0.0	0	Low	Low	Footprint of proposed development
34	Northern boundary	<i>Ligustrum lucidum (Large leaf Privet)</i>	9	12			0.0	0	Low	Low	Biosecurity Weed remove
35	Northern boundary	<i>Syzygium spp.</i>	12	40			0.0	0	Low	Low	Footprint of proposed development
36	Western boundary	<i>Cyathea australis (Rough Tree Fern)</i>	6				0.0	0	Low	Low	Footprint of proposed development
TREE No	LOCATION	GENUS & SPECIES	HEIGHT	CANOPY SPREAD	DBH (mm)	DGL (mm)	SRZ (m)	TPZ (m)	LANDSCAPE SIGNIFICANCE	RETENTION VALUE	COMMENTS
	24 Middle Harbour Road Lindfield										
37	Northern boundary	<i>Waterhousia floribund</i>	18	25	830	900	3.2	9.96	Moderate	High	Possible retention
38	Northern boundary	<i>Pittosporum undulatu</i>	18	20	220	250	1.8	2.64	High	High	Retain
39	Northern boundary	<i>Pittosporum undulatum (Sweet Pittosporum)</i>	18	30	430	460	0.0	5.16	High	high	Retain
TREE No	LOCATION	GENUS & SPECIES	HEIGHT	CANOPY SPREAD	DBH (mm)	DGL (mm)	SRZ (m)	TPZ (m)	LANDSCAPE SIGNIFICANCE	RETENTION VALUE	COMMENTS
	Street Trees 24 M	Middle Harbour Road									
40		<i>Polyspora axillaris (Fried Egg Plant)</i>					0.0	0	Retain	Retain	Retain and protect
41		<i>Jacaranda mimosifolia (Jacaranda)</i>					0.0	0	Retain	Retain	Retain and protect
	Street 26						0.0	0			
42		<i>Melaleuca viminalis (Bottle Brush)</i>					0.0	0	Remove	Remove	Poor form remove
43		<i>Robinia pseudoacacia (Black Locust)</i>					0.0	0	Remove	Remove	Weed wise weed remove
	Street 28						0.0	0			
44		<i>Jacarandamimosifolia (Jacaranda)</i>					0.0	0	Remove	Remove	Very poor health
45		<i>Syncarpia glomulifera (Turpentine)</i>					0.0	0	Remove	Remove	Retain

5. Conclusion

The site analysis has collected all relevant data in assessing the condition of 45 trees on and offsite, an assessment of their health and vigour, estimated life expectancy, significance in the landscape and amenity value have been recorded.

6. Recommendation

The proposed development will necessitate the removal of trees numbered 1, 2, 3, 4, 5, 6, 7, 21,22, 23, 24, 25, 26, 27,28, 29, 30, 31, 32, 34, 35 & 36.

Approved tree removal shall be carried out prior to site establishment. Tree removal work shall be carried out by an experienced Certified AQF Level 3 Arborist in accordance with Safe Work Australia Code of Practice 'Guide to Managing Risks of Tree Trimming and Removal Work'.

6.1 Trees that are nominated for retention are 8, 9,10,11,12, 13, 14,15, 16, 17,18, 19, 20, 37, 38 & 39 located northeast boundary that could be retained under the current Plans. The remaining trees are located offsite 13,14, 19, 20, 35. The proposed plans show trees will not be adversely affected by the proposed development given their setbacks from the boundaries.

6.2 Tree 9,15,16, 18 & 37 it is recommended that non – destructive root mapping is undertaken to locate any woody roots greater than 40mm in diameter, this will determine whether the tree can be retained and protected during the proposed development.

6.3 Trees 19 & 20 were not able to be assessed no access was provided on the day of assessment. Their Structural Root zones and Tree Protection Zones could not be measured.

6.4 Tree 45 *Syncarpia glomulifera* (Turpentine) Street Tree the proposed new driveway and crossover, shall be constructed at existing soil levels to mitigate any issues with root damage, the driveway will be constructed compliant with Councils specifications.

6.4 Replacement Planting

To compensate for the loss of amenity value, replacement planting should be considered by Land +Form Landscape Architects. To improve the urban forest values of the site ensuring the new tree planting will provide sustainability into the foreseeable future.

- The trees should have a minimum 10m height at maturity to compensate for the loss of existing trees.
- The planting size shall be 75 litres and compliant with the AS2373 *Tree Stock and Specifications for Landscape Use*.

- Planted by a qualified horticulturalist or arborist AQF Certificate 3.
- The replacement plantings must be planted in such a manner as to promote good health during the establishment period, and must be maintained, as far as practicable to ensure tree growth into maturity.

28 Middle Harbour Road, Lindfield

7. Images

Plate 1. Tree 1. *Liquidambar styraciflua* (Liquidamber) Trees 2. *Cupressus sempervirens* 'Stricta' (Italian Cypress)



Plate 2. Tree 3, 4,& 5 *Cupressus sempervirens* ‘Stricta’ (Italian Cypress)



No Images Trees 10,11,12,13,14,15,16,17,& 18.

Plate 3.

Tree 6. & 7 *Pittosporum undulatum* (Sweet Pittosporum) Tree 8. *Phoenix canariensis* (Canary Island Date Palm) & Tree 9. *Syzygium paniculatum* (Magenta Lilly Pilly)



Plate 4. **Tree 19. *Jacaranda mimosifolia* (Jacaranda)**



Plate 5. **Tree 20. *Ulmus parvifolia* (Chinese Elm)**



Plate 6. Tree 21. *Lophostemon confertus* (Brush Box) Tree 22. *Phoenix canariensis* (Canary Island Date Palm) Tree 24. *Syzygium paniculatum* (Magenta Lilly Pilly)



Plate 7. Tree 25. *Ficus microcarpa* var. *hilli* (Hills Weeping Fig)



Plate 8.

Tree 26. *Cupressus* spp.



26 Middle Harbour Road, Lindfield

Plate 9. Tree 28. *Lagerstroemia indica* (Crepe Myrtle)



Plate 10. **Tree 30. *Jacaranda mimosifolia* (Jacaranda)**



Plate 11.

Tree 32. X *Cupressocyparis leylandii* (Leylandii)



Plate 12.

Tree 33. *Sasanqua camellia* (Camellia)



24 Middle Harbour Road, Lindfield

Plate 13.

Tree 37. *Waterhousia floribunda* (Weeping Lily Pilly) Tree 38 *Pittosporum undulatum* (Sweet Pittosporum)

Tree 39. *Pittosporum undulatum* (Sweet Pittosporum)



8. References

AS 4970 *'Protection of trees on development sites.* (2009)

Mattheck, C. & Breloer, H. (1994) *The Body Language of Trees.*

Morton, A. Earthscape Horticultural Services -Tree Retention Values

N. Matheny and James R. Clark, *'Trees and Development A technical Guide to Preservation of Trees During Land Development'.*

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Disclaimer

The author, Lee Hancock Consulting Arborist takes no responsibility for actions taken and their consequences, contrary to those expert and professional instructions given as recommendations pertaining to safety by way of exercising our responsibility to our client and the public as our duty of care commitment to mitigate or prevent hazards from arising, from a failure moment in full or part, from a structurally deficient or unsound tree or a tree likely to be rendered thus by its retention and subsequent modifications to its growing environment either above or below ground contrary to our advice.

This report is a recommendation only. In no way does it guarantee any actions by the determining authorities.

9. Methodologies

9.1 Visual Tree Assessment (VTA)

A technique developed by (Mattheck & Breloer) was conducted on all trees from the ground. The technique involves identification of the Genus and Species of trees on the site. The Diameter at Breast Height (DBH) 1.4m above ground level determined from the circumference of the trunk divided by π (π). Tree height (m) Diameter at Ground Level (DAGL), Canopy spread (m) in four cardinal points (north, south, east, west) Structural integrity, Amenity value, Indigenous/ Endemic value, Health, and vigor of trees.

9.2 Useful Life Expectancy (ULE)

An assessment procedure has been developed by (Barrell, J.D.) 1993 ‘by which trees on a site are accurately recorded and designated according to their suitability for retention in the short, medium or long term’. This methodology is a measure of the “sustainability” of the remaining contribution in years that the tree can provide in the context of the site.

9.3 Landscape Significance

The significance of trees in the landscape is assessed in determining their retention values in three categories. Heritage Value reflects Historical significance, Ecological Value maintains biodiversity values and Amenity values contributes to the character of the landscape.

9.4 Tree Retention Values

A rating was given to each tree on site; the information gathered was then processed by evaluating the health and vigour, the remaining useful life expectancy (ULE), plus their significance in the landscape. A retention value for each tree was then evaluated ranging from High, Moderate, Low and Very Low.

9.5 Structural Root Zone (SRZ)

SRZ is the measurement of the area around the base of the tree. Measurements are taken at the centre of the trunk; a radial measurement is calculated in meters. This process determines the trees’ structural stability. The formula is $SRZ \text{ radius} = (D \times 50) \times 0.64$ D = trunk diameter, in meters.

9.5.1 Determining Structural Root Zones

As defined in AS 4970 Section 1.4.5 the SRZ is ‘the area around the base of a tree required for the tree’s stability in the ground. The woody root growth and soil cohesion in this area are necessary to hold the tree upright.’ The SRZ area has been calculated as specified in Section 3.3.5 of AS 4970.

9.6 Tree Protection Zone (TPZ)

This area is specified above and below the ground at a given distance from the trunk to protect tree roots and canopy to protect the viability and stability of a tree retained on site where there is a potential for the tree to be damaged by development.

9.6.1 Determining Tree Protection Zones

As defined in AS 4970 Section 1.4.7 the TPZ is ‘a specified area above and below ground and at a given distance from the trunk set aside for the protection of a tree’s roots and crown (canopy) to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by development’. The TPZ is the root zone/canopy area required for vigour and long -term viability. The TPZ area has been calculated as specified in Section 3.2 of AS 4970.

9.7 Variations to the TPZ – Minor

If there are no other options a minor encroachment ($\leq 10\%$) into the TPZ area may be acceptable provided the incursion does not impact the SRZ. Examples of how minor encroachments can be configured are given in Appendix X. Refer to Section 3.3.2 of AS 4970 for additional details relating to minor encroachments. AS 4970 states that the area lost to the encroachment must be compensated for elsewhere and must be contiguous with the TPZ.

9.8 Variation to the TPZ – Major

Should major encroachments ($> 10\%$) of the TPZ be proposed it must be demonstrated by The Project Arborist that the tree will remain viable into the long term. Demonstration of viability may include non - destructive methods of root investigation and should be made in consideration of the following factors as listed in Section 3.3.4 of AS 4970:

Landscape Significance Rating

	Landscape Significance Rating						
Estimated Life Expectancy	1	2	3	4	5	6	7
Long - Greater than 40 Years	High Retention Value						
Medium- 15 to 40 Years			Moderate Retention Value				
Short - 5 to 15 years					Low Ret. Value		
Transient - Less than 5 Years				Very Low Retention Value			
Dead or Potentially Hazardous							

Tree Retention Values

RETENTION VALUE	RECOMMENDED ACTION
“High”	1. These trees considered worthy of preservation; as such careful consideration, should be given to their retention as a priority. 2. Proposed site design and placement of buildings and infrastructure should consider lessening any mitigating issues in relation to trees. 3. In addition, the extent of the canopy (canopy dripline) should also be considered, particularly in relation to high rise developments. Significant pruning of the trees to accommodate the building envelope or temporary scaffolding is generally not acceptable.
“Moderate”	1. The retention of these trees is desirable. 2. These trees should be retained as part of any potential development if possible, however the trees are considered less critical for retention. 3. If these trees must be removed, replacement planting should be considered in accordance with Council’s Tree Replacement Policy to compensate for loss of amenity.
“Low”	4. These trees are not considered to worthy of any special measures to ensure their preservation, due to current health, condition, or suitability. They do not have any special ecological, heritage or amenity value, or these values are substantially diminished due to their ULE. 5. These trees should not be considered as a constraint to the potential development of the site.
“Very Low”	1. These trees are considered potentially hazardous or very poor specimens or may be environmental or noxious weeds. 2. The removal of these trees is therefore recommended regardless of the implications of any proposed development.

10. Tree Protection Specifications

The tree protection measures included in this plan, are to be implemented prior to, during and after the exterior refurbishment phase, including landscape construction of the project to ensure the long- term survival of the trees.

The aim is to ensure that specifications site specific and that the whole Tree Protection Plan can be implemented as part of the conditions of consent.

10.1 Certification Reporting

Following each stage, Site establishment, Construction and Landscape Construction. The Project Arborist shall prepare a statement of compliance certifying whether the works have been completed in compliance with this plan and the conditions of development consent Kuringai Council relating to Tree Protection. If conditions have been breached, remedial action shall be recommended to minimise any further adverse effect on the tree's health.

10.2 Appointment of a Project Arborist

An Arborist with an AQF Level 5 Diploma in Arboriculture with experience in tree protection on construction sites should be engaged prior to the commencement of work on the site. If conditions have been breached, remedial action shall be recommended to minimise any further adverse effect on the tree's health.

10.3 The Project Arborist must submit to the Principal Certifying Authority a certification/statement stating that all installed tree protection measures are in accordance with Inner West Council conditions are consistent with the intentions of the Australian Standard *Protection of Trees on Development Sites* AS 4970 (2009)

Compliance certificate will then be issued to the Principal Certifier by the Project Arborist

10.4 Tree Protection Fence

Tree protection fence to be installed , prior to construction. Tree Protection fencing to be chain link fencing of 1.8m high suitably clamped and braced to prevent sideways movement held in place with concrete feet.

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

- Modification of existing soil levels
- Cultivation of soil
- Storage of materials, plant, or equipment
- Preparation of chemicals, including preparation of cement products
- Parking of vehicles and plant
- Refuelling
- Wash down and cleaning of equipment
- Physical damage to tree

10.5. Signage - Tree Protection Zone

To be displayed around the edge of all TPZ fenced off areas and visible within the development site. To remind construction workers and sub-contractors Tree Protection Zone area is out of bounds.



10.6 Mulch

The use of mulch is a vital component of successfully protecting and retaining trees on development sites (Green and Young 1995). Maintaining the TPZ, greater emphasis should be placed on appropriate use of mulches prior to, during and post both construction and development. A general recommendation concerning mulching the area of the TPZ to a depth of 75-100mm with Composts, Soil Conditioners and Mulches (AS4454-2012)

10.6 Ground Protection

Ground protection within and outside of tree protection zones to prevent soil compaction and root damage. Layer of permeable geotextile fabric beneath a layer of mulch or crushed rock below rumble boards shall be installed prior to works commencing.

10.7 Trunk protection Street Trees

Trunk Protection by way of Timber planks (50mmx 100mm or similar) shall be placed around tree trunks. The timber planks shall be spaced at 100mm intervals, and must be fixed against the trunk secured together with 2mm galvanised wire. These shall be strapped around the trunk (not fixed in anyway) to avoid mechanical injury or damage. Trunk protection should be installed prior to any site works and maintained in good condition for the duration of the construction period. The hessian and timber planks must not be fixed to the tree in any instance or in any fashion.

Figure 1. Indicative Trunk Protection



10.8 Temporary Infrastructure

Site sheds, Waste disposal and Stock piling areas to be placed outside the Tree Protection Zone.

10.9 Haul Route vehicles accessing site 28, 26, 28 Middle Harbour Road

10.9.1 Plant and Equipment

Light weight plant equipment such as small rubber tracked excavators and the demolition material for excavations removed to stockpiling area using small tipper trucks (2-3 tonne maximum).

10.9.3 Underground services

Installing underground services should be routed outside of TPZ. When this is unavoidable services installed by directional drilling or manually excavated trenches.

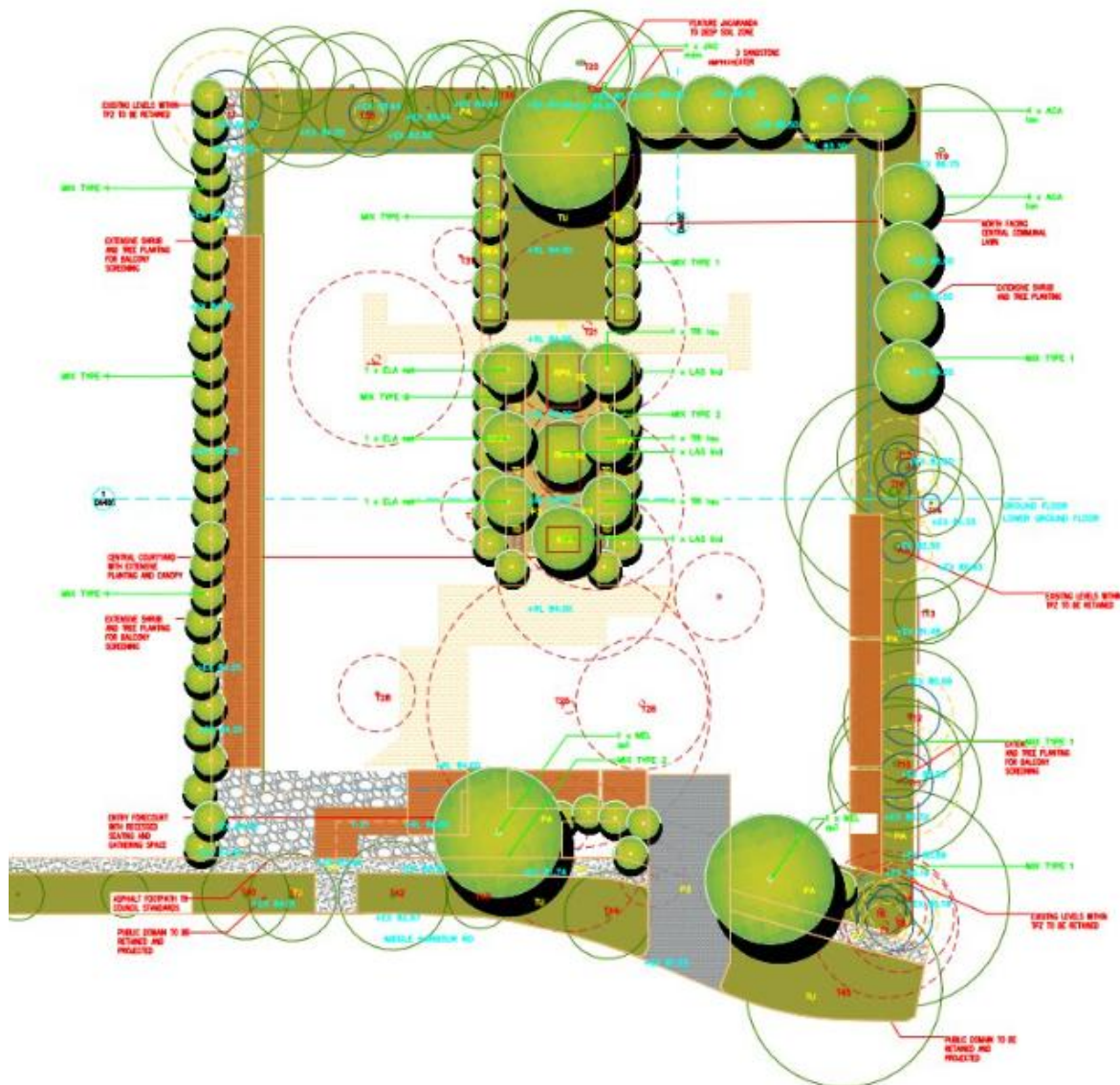
10.9.4 Landscape Construction

The landscape plan to be checked for compliance with the tree protection plan. Project Arborist to approve the staged removal of protection measures required to allow for landscape works. This includes the installation of paving, irrigation, installing and planting.

10.9.5 Post Construction Phase

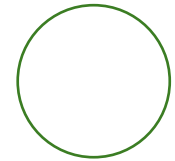
On completion of construction and landscaping works. Project Arborist to assess tree condition and provide certification of tree protection. Following final inspection Project Arborist should certify that the completed works have been conducted in compliance with the approved plans and specifications for tree protection.

Appendix A. Tree Location Plan

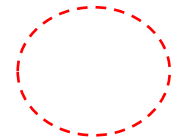


Legend:

Retain

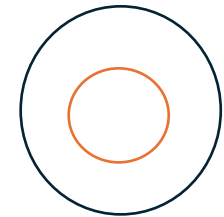


Remove



TPZ – Blue

SRZ - Orange



Appendix B. Tree Protection / Management Plan

The Tree Protection Plan outlines and provides guidance on the principles of tree protection measures, to assist in protecting Trees onsite and offsite throughout all stages of the development. This information follows the Standards Australia AS4970-2009 *Protection of Trees on Development Sites*.

HOLD POINT: Approved Tree Removal

A) Prior to site establishment, approved tree removal works shall be undertaken by AQF Level 3 Arborist. Trees numbered 1, 2,3, 4, 5, 6, 7, 21,22, 23, 24, 25, 26, 27, 28, 29, 30, 31,32, 34, 36.

Tree removal work shall be carried out by an experienced Certified AQF Level 3 Arborist in accordance with Safe Work Australia Code of Practice 'Guide to Managing Risks of Tree Trimming and Removal Work'.

HOLD POINT: Tree Protection Fencing Trees numbered 8, 9,10,11,12,15,16,17 18, 37, 38 & 39

B) Prior to the commencement of any works Tree protection zone of the listed trees below are to be fenced off at the specified radius from the centre of trunk to prevent damage from plant and equipment, no activities or material stored within fenced areas.

Tree Protection Zone

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

- Modification of existing soil levels
- Cultivation of soil
- Storage of materials, plant, or equipment
- Preparation of chemicals, including preparation of cement products
- Parking of vehicles and plant
- Refuelling
- Wash down and cleaning of equipment
- Physical damage to tree



Mulch Tree Protection zones

C) To be applied in TPZ minimum 75 -100mm using material that complies with Australian Standard® 4454-2003 Composts, soil conditioners and mulches. Refer: to Tree Location Plan for areas for mulch application Indicative Trunk protection Tree

HOLD POINT: Trunk Protection installed prior to site establishment Street Trees

Trees prior to the commencement of any works Trunk protection installed to Street Trees 40,41,42,43,44,45.

Trunk Protection by way of Timber planks (50mmx 100mm or similar) shall be placed around tree trunks.

The timber planks shall be spaced at 100mm intervals,

and must be fixed against the trunk secured together with 2mm galvanised wire.

These shall be strapped around the trunk (not fixed in anyway) to avoid mechanical injury or damage.

Trunk protection should be installed prior to any site works and maintained in good condition for the duration of the construction period.



Ground protection

D) Street Trees retained shall have crushed rock below rumble boards that have a suitable thickness to prevent soil compaction.

Tree Protection Signage

E) Prior to commencement of any works, tree protection signage is to be attached to the tree protection fencing, displayed in a prominent position. The name and address of Developer and Project Arborist.



Site Management

F) Materials and Waste storage, site sheds and temporary services shall not be located within the TPZ.

Table 2. Tree Structural Root Zones SRZ and Tree Protection Zones TPZ

Tree	Genus Species	SRZ	TPZ	Tree Management
8	<i>Phoenix canariensis</i> (Canary Island Date palm)	2.6mR	6.7mR	Trunk and Ground protection prior to site establishment
9	<i>Syzygium paniculatum</i> (Magenta Lilly Pilly)	3.1mR	6.8mR	Non-destructive method of locating woody roots to determine location of tree roots. Prior to site establishment.
10	<i>Phoenix canariensis</i> (Canary Island Date palm)	2.6mR	6.7mR	Trunk and Ground protection prior to site establishment
11	<i>Syncarpia glomulifera</i> (Turpentine)	3.2mR	10.2mR	Non-destructive method of locating woody roots to determine location of tree roots. Prior to site establishment.
12	<i>Phoenix canariensis</i> (Canary Island Date palm)	2.8mR	7.8mR	Trunk and Ground protection prior to site establishment
15	<i>Syncarpia glomulifera</i> (Turpentine)	2.9mR	7.9mR	Non-destructive method of locating woody roots to determine location of tree roots. Prior to site establishment.
16	<i>Syncarpia glomulifera</i> (Turpentine)	3.0mR	8.0mR	Non-destructive method of locating woody roots to determine location of tree roots. Prior to site establishment.
17	<i>Livistona chinensis</i> (Chinese Cabbage Palm)	1.7mR	2.6mR	Trunk and Ground protection prior to site establishment
18	<i>Syncarpia glomulifera</i> (Turpentine)	3.2mR	9.1mR	Non-destructive method of locating woody roots to determine location of tree roots. Prior to site establishment. Pruning of overhanging branches.
37	<i>Waterhousia floribunda</i> (Weeping Lilly Pilly)	3.2mR	9.9mR	Non-destructive method of locating woody roots to determine location of tree roots. Prior to site establishment
38	<i>Pittosporum undulatum</i> (Sweet Pittosporum)	1.8mR	2.6mR	Within the 6 metre setback Tree should remain viable, trunk protection installed prior to site establishment.
39	<i>Pittosporum undulatum</i> (Sweet Pittosporum)	2.0mR	5.1mR	Within the 6-metre set back Tree should remain viable, trunk protection installed prior to site establishment.

G) Scaffolding shall not be located within the TPZ. Scaffolding shall not be in contact with the tree. As necessary this shall be achieved by erecting scaffolding around branches. Branches shall be tied back and protected as deemed necessary by the Project Arborist.

Works within the Tree Protection Zones Tree 9, 11, 15, 16, 18, 37, 38 & 39.

H) Root Mapping undertaken to locate any woody roots to determine location of tree roots that may be damaged by the proposed development.

HOLD POINT: Project Arborist to supervise Structure Demolition phase of development.

I) Demolition of existing structures within the TPZ shall be supervised by the Project Arborist. Machinery is to be excluded from the TPZ unless operating from the existing slabs, pavements or areas of ground protection. Machinery should not contact the tree's roots, trunk, branches and crown.

J) Machinery is to be excluded from the TPZ unless operating from the existing slabs, pavements or areas of ground protection. Machinery should not contact the tree's roots, trunk, branches and crown.

HOLD POINT: Project Arborist to supervise driveway and crossover construction.

K) Driveway and crossover to be constructed at existing soil levels to mitigate any issues with the trees' root system.

L) Remedial Tree Works pre and post development.

Project Arborist to conduct VTA of all surveyed trees to assess and record Health, Vigour and condition.

Where damage has occurred to trees retained Council shall be contacted with a remedial action report prepared by Project Arborist.

Table 3. Construction Inspection Schedule

Arboricultural Action	Programming	Extent of Arboricultural Input	Signed Off (Project Arborist)
Pre-start meeting with Project Manager and Demolition Contractor team to discuss any emerging issues, tree removal , pruning works and tree protection Establishment	Before any activities start onsite.	- Meeting with relevant members of the project managers team to explain the Extent of tree constraints, i.e. Architect, Site Manager, engineer, landscape architect, contractor, etc - Review working space requirements to consider fencing and ground protection adjustments to improve site functionality. - REVIEW site setup i.e. site office equipment storage, plant, cranes. - Review post consent layout changes that may affect trees. - Confirm Tree protection measures acceptable.	
Tree removal and /or pruning works	Before tree protection established	- Project Arborist to provide pruning specification if required. - Project Arborist to supervise tree removal or pruning works undertaken by AQ F Cert 111 Arborist.	
Installation of tree protection measures as per this site specification for agreement with the consent authority	Post tree removal or tree pruning and prior to contractor site occupation	- Tree protection fence installed - Site fencing can be installed by the contractor as per this specification	

Table 4 Works Schedule and Responsibilities.

HOLD POINT 1	Programming	Extent of Arboricultural Input	Signed off (Project Arborist)
Tree Protection certification	Before hand over to contractor and site occupation	- Project Arborist to inspect all tree protection measures. - Conduct a VTA of all surveyed trees to assess and record health, vigour and condition. - Produce a certification document outlining observations and compliance.	
HOLD POINT 2.			
Pre- Demolition and construction meeting with contractor	Before hand over to contractor and site occupation.	- Meeting with Project managers team i.e. Architect ,site manager engineers landscape architect. - Review site setup i.e. site office, equipment storage, plant, cranes. - Review works proposed in TPZ's Review post consent layout changes that may affect trees.	
Site inspections	During the demolition or construction phases.	Project Arborist shall conduct inspections of the site to conduct compliance checks as specified by the consent authority.	
Tree Protection Measures removed	Post demolition and prior to handing over the project completed and or occupation certificate.	Removal of tree protection to be approved by the Project Arborist	
HOLD POINT 3.			
Final Certification		- Project Arborist to conduct a final certification - Conduct a VTA of all surveyed trees to assess and record Health, Vigour and Condition. - Provide A certification document outlining observations and any recommendations.	