WYER & CO

LANDSCAPE DA DOCUMENTATION - REV 03 - 21.08.23

5 - 7 LOWER WYCOMBE ROAD, NEUTRAL BAY, NSW 2089

COUNCIL REQUIREMENT'S - NORTH SYDNEY COUNCIL DEVELOPMENT APPLICATION

THE LANDSCAPE PLAN IS IN GENERAL ACCORDANCE WITH COUNCIL PLANNING CONTROLS:
- NORTH SYDNEY LEP (NORTH SYDNEY LOCAL ENVIRONMENTAL PLAN 2013)
- NORTH SYDNEY DCP (NORTH SYDNEY DEVELOPMENT CONTROL PLAN 2013)

PART A - GENERAL REQUIREMENTS,
PART B - SECTION 1 - RESIDENTIAL DEVELOPMENT,
PART B - SECTION 16 - TREE AND VEGETATION MANAGEMENT

- STATE ENVIRONMENTAL PLANNING POLICY NO. 65 - DESIGN QUALITY FOR RESIDENTIAL APARTMENT DEVELOPMENT
- NSW PLANNING AND ENVIRONMENT - APARTMENT DESIGN GUIDE (2015)

CONTROLS
SITE AREA: 1,306 m²

LANDSCAPE AREA REQUIRED
40% OF THE SITE AREA = 522 m²

LANDSCAPE AREA ACHIEVED
549 m² (42%)

ARBORICULTURAL ASSESSMENT - REFER TO ARBORICULTURAL ASSESSMENT AS REQUIRED

LANDSCAPE INSTALLATION SPECIFICATION

TREE REMOVAL
- Tree surgery, pruning or tree removal works are to be overseen by a qualified arborist, if specified by arborists report.
- Tree protection to be installed for trees to be retained as per arborist / council's specifications.

TREES TO BE RETAINED
- Refer to arborist report for recommended tree protection.

PLANTER BEDS
- Soil for plantings over slab or contained areas. Minimum soil depths for planting on any slab:
- Large trees: Min 1200mm excluding 75mm mulch
- Medium trees: Min 1000mm excluding 75mm mulch
- Small trees: Min 800mm excluding 75mm mulch
- Shrubs: Min 500-600mm excluding 75mm mulch
- Groundcovers: Min 300-450mm excluding 75mm mulch
- Turf: Min 200mm
- Suitable drainage implemented through use of ag lines, drainage flow cell and geotech fabric.
- Soil to be ANL Planter Box Mix, or equivalent. Blend of soil, coarse sand, graded ash, nepean sand, composted sawdust, botany humus and composted pine bark.
- Soil to be between 20-50mm below top of retaining wall height, to allow for dropping.

TURFING
- Turf to be laid on minimum 100mm turf underlay.
- Turf underlay to be ANL Sand / Soil Blend, or equivalent.
- Turf to be Sir Walter Buffalo (Registered PBR), supplied by President Turf, or equivalent.

MULCHING
- Place mulch to minimum depth of 75mm, clear of plant stems, and rake to an even surface flush with the surrounding finished levels and consistent in depth.
- Trees in lawn areas to have 750mm diameter of mulch surrounding.
- Mulch for general garden areas, pots, and planters to be Australian Native Landscapes (ANL) Greenlife Mulch and Compost', or equivalent.

TREE PLANTING
- Excavate holes in accordance with dimension of container. The depth of the holes is to be equivalent to the container height plus 100mm and the width of the hole is to be twice that of the container.
- Locate tree to centre of hole and backfill with soil. Firm about root ball.
- All plant material, 45 Litres or over, to be staked.

IRRIGATION
- Automated irrigation system to be implemented. Reputable irrigation brands are to be sourced.
- Use drip lines with emitters at 300mm spacing's for all garden beds.
- Use pop-up spray heads for all lawn areas. Pop-up spray heads are to be spaced according to product specification.
- Conceal irrigation below the mulch layer in planting areas and 150mm below the surface of turf areas. Conceal all components including pipework, fittings, valves, and control equipment.

EXISTING TREE SCHEDULE

TREE NO.	GENUS SPECIES	COMMON NAME	HEIGHT	CANOPY	CALLIPER	ACTION/COMMENT
E01	Corymbia citriodora	Lemon Scented Gum	20000	16000	560	Retain
E02	Corymbia citriodora	Lemon Scented Gum	15000	7000	310	Retain
E03	Melaleuca quinquenervia	Broad-leaved Paperbark	10000	7000	400	Retain
E04	Corymbia citriodora	Lemon Scented Gum	20000	16000	600	Retain
E05	Corymbia citriodora	Lemon Scented Gum	9000	2000	140	Remove
E06	Corymbia citriodora	Lemon Scented Gum	18000	12000	400	Retain
E07	Casuarina cunninghamiana	River She Oak	15000	7000	460	Retain
E08	Casuarina cunninghamiana	River She Oak	5000	4000	150	Remove
E09	Acacia implexa	Hickory Wattle	5000	3000	200	Remove
E10	Casuarina cunninghamiana	River She Oak	5000	3000	120	Remove
E11	Casuarina cunninghamiana	River She Oak	7000	7000	270	Remove
E12	Casuarina cunninghamiana	River She Oak	5000	6000	160	Remove
E13	Casuarina cunninghamiana	River She Oak	7000	8000	320	Remove
E14	Corymbia citriodora	Lemon Scented Gum	18000	18000	660	Retain
E15	Tristaniopsis laurina	Water Gum	6000	5000	130	Remove
E16	Tristaniopsis laurina	Water Gum	8000	12000	620	Retain
E17	Sapium sebifera	Chinese Tallowood	8000	9000	320	Remove
E18	Melaleuca quinquenervia	River She Oak	10000	9000	500	Remove
E19	Sapium sebifera	Chinese Tallowood	5000	5000	240	Retain
E20	Melaleuca quinquenervia	River She Oak	9000	2000	90	Remove
E21	Melaleuca quinquenervia	River She Oak	9000	2000	80	Remove

PLANT SCHEDULE

ID	QTY	BOTANICAL NAME	COMMON NAME	SCHEDULED SIZE	MATURE SPREAD	MATURE HEIGHT	REMARKS
Trees							
Bin	4	Banksia integrifolia	Coastal Banksia	75L	3.5 - 6.0m	5.0 - 10.0m	Native
Tla	9	Tristaniopsis laurina	Water Gum	75L	3.0 - 6.0m	5.0 - 10.0m	Native
Palms - Cycads							
Hf	5	Howea forsteriana	Kentia Palm	75L	3.0 - 5.0m	5.0 - 10.0m	Native
Pro	6	Phoenix roebelenii	Dwarf Date palm	75L	2.0 - 4.0m	4.0 - 5.0m	
Shrubs							
Abr	39	Alocasia brisbanensis	Elephant's Ear	200mm	1.0 - 1.5m	1.0 - 2.0m	Native
Asm	70	Acmena smithii 'Sublime'	Lilly Pilly	45L	2.0 - 3.0m	4.0 - 6.0m	Native
Br	16	Bauera rubioides	River Dog Rose	200mm	0.5 - 1.0 m	0.3 - 1.5 m	Native
Cds	10	Carissa 'Desert Star'	Dwarf Natal Plum	200mm	1.0 - 2.0m	1.0 - 2.0m	
Coa	54	Correa alba	Correa	200mm	1.5 - 2.0 m	1.5 - 2.0m	Native
Dex	16	Doryanthes excelsa	Gymea Lily	200mm	1.0 - 2.0m	1.0 - 3.0m	Native
Pa	94	Plectranthus argentatus	Silver Plectranthus	200mm	1.0 - 1.5m	0.5 - 1.0m	Native
Pml	23	Plectranthus 'Mona Lavender'	Mona Lavender	200mm	0.5 - 0.8m	0.6 - 0.8m	
Ris	136	Raphiolepis indica 'Snow Maiden'	Indian Hawthorn	200mm	0.4 - 0.6m	0.7 - 1.0m	
Wfr	12	Westringia fruticosa	Coastal Rosemary	200mm	1.5 - 2.0m	1.5 - 2.0m	Native
Grasses							
Dca	237	Dianella caerulea	Blue Flax Lily	140mm	0.4 - 0.6m	0.7 - 0.9m	Native
Ljr	208	Liriope muscari 'Just Right'	Lily Turf	140mm	0.3 - 0.6m	0.3 - 0.5m	
Llo	146	Lomandra longifolia	Mat Rush	140mm	0.7 - 1.0m	0.7 - 1.0m	Native
Ngr	136	Neomarica gracilis	Walking Iris	175mm	0.5 - 0.6m	0.5 - 0.6m	
Groundcovers							
Dr	54	Dichondra repens	Kidney Weed	140mm	0.7 - 1.0m	0.0 - 0.3m	Native
Hsc	54	Hibbertia scandens	Golden Guinea Flower	140mm	1.0 - 2.0m	0.2 - 0.5m	Native
Ro	64	Rosmarinus officinalis 'Prostratus	Rosemary	140mm	0.5 - 1.0m	0.0 - 0.3m	
Ta	38	Trachelospermum asiaticum	Japanese star jasmine	140mm	1.0 - 2.0m	0.2 - 0.5m	
Vh	452	Viola hederacea	Native Violet	140mm	1.0 - 2.0m	0.0 - 0.3m	Native
Zt	44	Zoysia tenuifolia	Korean Grass	100mm	0.3 - 0.5m	0.0 - 0.3m	
Succulents							
Atb	11	Agave 'Tennyson Blue'	Tennyson Blue Agave	200mm	0.7 - 1.0m	0.7 - 1.0m	
Ferns							
Aau	19	Asplenium australasicum	Birds Nest Fern	200mm	0.5 - 1.5m	0.5 - 1.5m	Native
Bsl	31	Blechnum 'Silver Lady'	Silver Lady Fern	200mm	0.9 - 1.2m	0.7 - 0.9m	
Cdu	12	Calochlaena dubia	Soft Bracken	200mm	0.7 - 1.5m	0.7 - 1.5m	Native
Total:	**2000**						

NATIVE PLANT SPECIES PROPOSED = 17
NATIVE PLANT SPECIES PERCENTAGE = 60.7%

9 LOWER WYCOMBE RD
3 STOREY RENDERED HOUSE

EXISTING KENTIA PALM RELOCATED FROM FORSHORE SHOWN BLUE

LOWER WYCOMBE RD

PENTHOUSE

POOL
9.0m x 3.5m

LAWN
48m²

STORAGE

NEUTRAL BAY

SAND
HAYES STREET BEACH

3 LOWER WYCOMBE RD
2 & 3 STOREY BRICK AND STONE
WEATHERBOARD HOUSE

EI1 EI2 EI3 EI4 EI5 EI6 EI7 EI8 EI9 EI10 EI11 EI12 EI13 EI14 EI15 EI16 EI17 EI18 EI19 EI20 EI21

E01 E02 E03 E04 E05 E06 E07 E08 E09 E10

LEGEND

- TREES TO BE RETAINED
- TREES TO BE REMOVED
- TREES TO BE TRANSPLANTED
- TREE PROTECTION ZONE (TPZ)
- STRUCTURAL ROOT ZONE (SRZ)

PROJECT
VERGOME PTY LTD
5-7 LOWER WYCOMBE ROAD,
NEUTRAL BAY 2089

DRAWING TITLE
DEVELOPMENT APPLICATION
Existing Tree Plan

DRAWN BY	DATE	JOB NUMBER	DRAWING NUMBER
MF	21.08.23	22.073	DA-01

REVISION 03

SCALE 1:100 @ A1

WYER & CO

9 LOWER WYCOMBE RD
3 STOREY RENDERED HOUSE

NEW WALL CONSTRUCTED WITHIN FOOTPRINT OF EXISTING WALL, MINIMISING IMPACTS TO EXISTING TREE NO. 14

EXISTING KENTIA PALM RELOCATED FROM FORSHORE SHOWN BLUE

NATIVE PALMS TO PROVIDE A SENSE OF SCALE AND FRAME DESIRABLE VIEWS

NATIVE HEDGE TO PROVIDE A LANDSCAPE BUFFER AND ENHANCE PRIVACY BETWEEN NEIGHBOURING PROPERTIES

NATIVE CANOPY TREES TO ENHANCE PRIVACY BETWEEN NEIGHBOURING PROPERTY

LOWER WYCOMBE RD

DRIVEWAY CROSSOVER TO ARCHITECTS / CIVIL ENGINEERS DETAIL

DWARF FEATURE PALMS TO SOFTEN PROPOSED BUILT FORM

PROPOSED NEW STREET TREE TO REPLACE EXISTING TREE REMOVED

BIN STORE AND HYDRANT BOOSTER TO ARCHITECTS DETAIL

NATIVE CANOPY TREES TO SOFTEN BUILT FORM AND SUPPLEMENT TREES PROPOSED FOR REMOVAL

EXISTING VEGETATION RETAINED

EXISTING ROCK OUTCROPS TO BE RETAINED

EXISTING SEA WALL TO BE RAISED TO ALIGN WITH ADJOINING PROPERTY

EXISTING NEUTRAL BAY KAYAK SHARE CLUB STORAGE

EXISTING VEGETATION RETAINED

NATIVE CANOPY TREE TO SOFTEN BUILT FORM AND SUPPLEMENT TREES PROPOSED FOR REMOVAL

NEUTRAL BAY

SAND
HAYES STREET BEACH

PENTHOUSE
RL 19.80

POOL
9.0m x 3.5m

LAWN
48m²

STORAGE

3 LOWER WYCOMBE RD
2 & 3 STOREY BRICK AND STONE
WEATHERBOARD HOUSE

LEGEND

- BOUNDARY LINE
- EXISTING BUILDING FOOTPRINT
- STRUCTURE ABOVE
- DEMOLITION
- EXISTING ROCK OUTCROP TO BE RETAINED
- EL. 35.40 EXISTING LEVELS
- ETOW 35.40 EX. TOP OF WALL LEVELS
- ETOR 35.40 EX. TOP OF ROCK LEVELS
- RL 35.40 PROPOSED LEVELS
- TOW 35.40 TOP OF WALL LEVELS
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- EXISTING VEGETATION TO BE RETAINED
- EXISTING WALLS RETAINED
- PROPOSED STONE WALL
- STEEL GARDEN EDGE
- LAWN SIR WALTER BUFFALO
- PAVING TO ARCHITECTS SPECIFICATION
- CRAZY PAVING TO ARCHITECTS SPECIFICATION

PROJECT
VERGOME PTY LTD
5-7 LOWER WYCOMBE ROAD,
NEUTRAL BAY 2089

DRAWING TITLE
DEVELOPMENT APPLICATION
Landscape Masterplan

DRAWN BY: MF
REVISION: 03
DATE: 21.08.23
SCALE: 1:100 @ A1
JOB NUMBER: 22.073
DRAWING NUMBER: DA-02

WYER & CO

9 LOWER WYCOMBE RD
3 STOREY RENDERED HOUSE

LOWER WYCOMBE RD

NEW WALL CONSTRUCTED WITHIN FOOTPRINT OF EXISTING WALL, MINIMISING IMPACTS TO EXISTING TREE NO. 14

6-Raphiolepis indica 'Snow Maiden'

1-Banksia integrifolia

7-Correa alba

19-Trachelospermum asiaticum

7-Plectranthus 'Mona Lavender'

8-Dianella caerulea

10-Dianella caerulea

6-Liriope muscari 'Just Right'

5-Raphiolepis indica 'Snow Maiden'

65-Viola hederacea

9-Liriope muscari 'Just Right'

7-Raphiolepis indica 'Snow Maiden'

CAR LIFT AND DRIVEWAY TO ARCHITECT/ENGINEERS DETAIL

14-Liriope muscari 'Just Right'

19-Trachelospermum asiaticum

8-Dianella caerulea

3-Phoenix roebelenii

DWARF FEATURE PALMS TO SOFTEN PROPOSED BUILT FORM

8-Raphiolepis indica 'Snow Maiden'

1-Tristaniopsis laurina

7-Correa alba

10-Raphiolepis indica 'Snow Maiden'

12-Liriope muscari 'Just Right'

BIN STORE AND HYDRANT BOOSTER TO ARCHITECTS DETAIL

6-Lomandra longifolia

NATIVE HEDGE TO PROVIDE A LANDSCAPE BUFFER AND ENHANCE PRIVACY BETWEEN NEIGHBOURING PROPERTIES

19-Acmena smithii 'Sublime'

6-Dianella caerulea

2-Doryanthes excelsa

10-Lomandra longifolia

11-Neomarica gracilis

18-Viola hederacea

3-Alocasia brisbanensis

7-Neomarica gracilis

12-Neomarica gracilis

GROUND FLOOR

RL 14.00

ETOW 14.97

EL 13.56

EL 13.16

RL 14.00

ETOW 12.87

RL 13.40

RL 10.20

RL 13.40

RL 13.40

RL 13.40

EL 13.44

EL 13.05

EL 13.10

EL 11.60

EL 11.71

EL 11.71

ETOW 12.21

EL 10.41

ETOR 9.81

ETOR 5.60

EL 10.80

EL 10.40

EL 6.40

EL 1.58

RL 2.35

EBOR 9.23

RL 6.36

RL 1.267

RL 3.7

RL 1.63

EL 10.18

ETOW 9.64

EL 3.92

RL 5.95

EL 9.72

EL 3.35

RL 1.517

POOL
9.0m x 3.5m

LAWN
48m²

RL 1.113

EL 9.63

EL 7.40

RL 7.03

EL 2.88

ETOW 9.48

EL 6.00

STORAGE

ETOR 6.94

ETOW 5.09

EL 1.56

RL 1.417

RL 1.267

RL 7.10

EL 6.02

RL 7.03

ETOW 4.98

ETOW 5.14

EL 1.56

EL 1.44

ETOW 1.47

EL 9.21

ETOW 6.09

ETOW 2.03

EL 7.30

ETOW 6.85

RL 7.00

EL 3.69

ETOW 6.11

EL 9.65

EL 7.00

ETOW 2.02

ETOW 8.88

EL 5.79

NEUTRAL BAY

SAND
HAYES STREET BEACH

EXISTING RETAINING WALL RETAINED

NATIVE HEDGE TO PROVIDE A LANDSCAPE BUFFER AND ENHANCE PRIVACY BETWEEN NEIGHBOURING PROPERTIES

LOWER WYCOMBE RD

4-Plectranthus argentatus

7-Raphiolepis indica 'Snow Maiden'

12-Dianella caerulea

4-Alocasia brisbanensis

SUSPENDED SLAB TO BE UTILISED WITHIN SRZ OF TREES NO 2 & 3 TO MINIMISE IMPACTS TO LONG-TERM TREE HEALTH

2-Tristaniopsis laurina

25-Acmena smithii 'Sublime'

86-Viola hederacea

3-Doryanthes excelsa

26-Dianella caerulea

16-Plectranthus 'Mona Lavender'

14-Plectranthus argentatus

8-Alocasia brisbanensis

3-Asplenium australasicum

3 LOWER WYCOMBE RD
2 & 3 STOREY BRICK AND STONE WEATHERBOARD HOUSE

LEGEND

- BOUNDARY LINE
- EXISTING BUILDING FOOTPRINT
- STRUCTURE ABOVE
- DEMOLITION
- EXISTING ROCK OUTCROP TO BE RETAINED
- + EL. 35.40 EXISTING LEVELS
- + ETOW 35.40 EX. TOP OF WALL LEVELS
- + ETOR 35.40 EX. TOP OF ROCK LEVELS
- + RL 35.40 PROPOSED LEVELS
- + TOW 35.40 TOP OF WALL LEVELS
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- EXISTING VEGETATION TO BE RETAINED
- EXISTING WALLS RETAINED
- PROPOSED STONE WALL
- STEEL GARDEN EDGE
- LAWN SIR WALTER BUFFALO
- PAVING TO ARCHITECTS SPECIFICATION
- CRAZY PAVING TO ARCHITECTS SPECIFICATION

PROJECT
VERGOME PTY LTD
5-7 LOWER WYCOMBE ROAD,
NEUTRAL BAY 2089

DRAWING TITLE.
DEVELOPMENT APPLICATION
Landscape Plan - Ground Floor

DRAWN BY	DATE	JOB NUMBER	DRAWING NUMBER
MF	21.08.23	22.073	DA-03

REVISION 03

SCALE 1:100 @ A1

WYER & CO

9 LOWER WYCOMBE RD
3 STOREY RENDERED HOUSE

NATIVE HEDGE TO PROVIDE A LANDSCAPE BUFFER AND ENHANCE PRIVACY BETWEEN NEIGHBOURING PROPERTIES

8-Acmena smithii 'Sublime'
3-Doryanthes excelsa
10-Raphiolepis indica 'Snow Maiden'
1-Tristaniopsis laurina
30-Liriope muscari 'Just Right'
24-Viola hederacea
14-Dianella caerulea
8-Liriope muscari 'Just Right'

LOWER WYCOMBE RD

RL 10.20
RL 10.20
11-Neomarica gracilis
18-Viola hederacea
3-Alocasia brisbanensis
7-Neomarica gracilis
12-Neomarica gracilis
RL 10.20

LOWER GROUND FLOOR
RL 10.20

STORAGE

POOL
9.0m x 3.5m

LAWN
48m²

NEUTRAL BAY

SAND
HAYES STREET BEACH

LOWER WYCOMBE RD

3 LOWER WYCOMBE RD
2 & 3 STOREY BRICK AND STONE WEATHERBOARD HOUSE

LEGEND

- BOUNDARY LINE
- EXISTING BUILDING FOOTPRINT
- STRUCTURE ABOVE
- DEMOLITION
- EXISTING ROCK OUTCROP TO BE RETAINED
- + EL 35.40 EXISTING LEVELS
- + ETOW 35.40 EX. TOP OF WALL LEVELS
- + ETOR 35.40 EX. TOP OF ROCK LEVELS
- + RL 35.40 PROPOSED LEVELS
- + TOW 35.40 TOP OF WALL LEVELS
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- EXISTING VEGETATION TO BE RETAINED
- EXISTING WALLS RETAINED
- PROPOSED STONE WALL
- STEEL GARDEN EDGE
- LAWN SIR WALTER BUFFALO
- PAVING TO ARCHITECTS SPECIFICATION
- CRAZY PAVING TO ARCHITECTS SPECIFICATION

PROJECT
VERGOME PTY LTD
5-7 LOWER WYCOMBE ROAD,
NEUTRAL BAY 2089

DRAWING TITLE.
DEVELOPMENT APPLICATION
Landscape Plan - Lower Ground Floor

DRAWN BY: MF
DATE: 21.08.23
JOB NUMBER: 22.073
DRAWING NUMBER: DA-04
REVISION: 03
SCALE: 1:100 @ A1

WYER & CO

9 LOWER WYCOMBE RD
3 STOREY RENDERED HOUSE

LOWER WYCOMBE RD

NATIVE HEDGE TO PROVIDE A LANDSCAPE BUFFER AND ENHANCE PRIVACY BETWEEN NEIGHBOURING PROPERTIES
6-Alocasia brisbanensis
23-Liriope muscari 'Just Right'
23-Dianella caerulea
15-Correa alba
11-Blechnum 'Silver Lady'
34-Viola hederacea
11-Bauera rubioides
2-Phoenix roebelenii
14-Plectranthus argentatus
18-Dianella caerulea
3-Howea forsteriana

NATIVE CANOPY TREES TO ENHANCE PRIVACY BETWEEN NEIGHBOURING PROPERTY
3-Banksia integrifolia
61-Lomandra longifolia

13-Acmena smithii 'Sublime'
2-Howea forsteriana
EXISTING KENTIA PALM RELOCATED FROM FORSHORE SHOWN BLUE
24-Plectranthus argentatus
3-Doryanthes excelsa
4-Tristaniopsis laurina
3-Asplenium australasicum
15-Correa alba
11-Dianella caerulea
5-Bauera rubioides
12-Calochlaena dubia

BASEMENT LEVEL 1
FL 7.10

EXISTING STAIRS TO BE REMOVED AND REPLACED
13-Dichondra repens
1-Phoenix roebelenii

NATIVE CANOPY TREE TO SOFTEN BUILT FORM AND SUPPLEMENT TREES PROPOSED FOR REMOVAL

9-Alocasia brisbanensis
15-Plectranthus argentatus
27-Liriope muscari 'Just Right'
10-Dianella caerulea
5-Acmena smithii 'Sublime'
28-Viola hederacea

9-Hibbertia scandens
8-Plectranthus argentatus
12-Westringia fruticosa
22-Hibbertia scandens
7-Asplenium australasicum
20-Blechnum 'Silver Lady'
12-Liriope muscari 'Just Right'
2-Doryanthes excelsa
41-Dichondra repens
EXISTING ROCK OUTCROPS TO BE RETAINED
40-Lomandra longifolia
19-Viola hederacea
10-Correa alba
15-Dianella caerulea
23-Hibbertia scandens

EXISTING SEA WALL TO BE RAISED TO ALIGN WITH ADJOINING PROPERTY

EXISTING NEUTRAL BAY KAYAK SHARE CLUB STORAGE
EXISTING VEGETATION RETAINED
13-Raphiolepis indica 'Snow Maiden'
3-Doryanthes excelsa
1-Tristaniopsis laurina
11-Dianella caerulea
30-Viola hederacea
12-Liriope muscari 'Just Right'
28-Raphiolepis indica 'Snow Maiden'
27-Dianella caerulea
35-Liriope muscari 'Just Right'
6-Asplenium australasicum
15-Plectranthus argentatus

NEUTRAL BAY
SAND
HAYES STREET BEACH

POOL
9.0m x 3.5m
LAWN
48m²
STORAGE

3 LOWER WYCOMBE RD
2 & 3 STOREY BRICK AND STONE
WEATHERBOARD HOUSE

LOWER WYCOMBE RD

LEGEND

- BOUNDARY LINE
- EXISTING BUILDING FOOTPRINT
- STRUCTURE ABOVE
- DEMOLITION
- EXISTING ROCK OUTCROP TO BE RETAINED
- EL. 35.40 EXISTING LEVELS
- ETOW 35.40 EX. TOP OF WALL LEVELS
- ETOR 35.40 EX. TOP OF ROCK LEVELS
- RL 35.40 PROPOSED LEVELS
- TOW 35.40 TOP OF WALL LEVELS
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- EXISTING VEGETATION TO BE RETAINED
- EXISTING WALLS RETAINED
- PROPOSED STONE WALL
- STEEL GARDEN EDGE
- LAWN SIR WALTER BUFFALO
- PAVING TO ARCHITECTS SPECIFICATION
- CRAZY PAVING TO ARCHITECTS SPECIFICATION

PROJECT
VERGOME PTY LTD
5-7 LOWER WYCOMBE ROAD,
NEUTRAL BAY 2089

DRAWING TITLE.
DEVELOPMENT APPLICATION
Landscape Plan - Basement 01

DRAWN BY	DATE	JOB NUMBER	DRAWING NUMBER
MF	21.08.23	22.073	DA-05

REVISION 03
SCALE 1:100 @ A1

WYER & CO

9 LOWER WYCOMBE RD
3 STOREY RENDERED HOUSE

LOWER WYCOMBE RD

LOW WATER USE PLANTING TO CASCADE OVER FRONT FACADE, SOFTENING THE BUILT FORM AS VIEWED FROM THE STREET

12-Rosmarinus officinalis 'Prostratus
11-Raphiolepis indica 'Snow Maiden'
4-Rosmarinus officinalis 'Prostratus
7-Carissa 'Desert Star'

11-Rosmarinus officinalis 'Prostratus
10-Raphiolepis indica 'Snow Maiden'

11-Neomarica gracilis
6-Alocasia brisbanensis
52-Viola hederacea
12-Neomarica gracilis
19-Neomarica gracilis

LEVEL 01

POOL
9.0m x 3.5m

LAWN
48m²

STORAGE

NEUTRAL BAY

SAND
HAYES STREET BEACH

LOWER WYCOMBE RD

3 LOWER WYCOMBE RD
2 & 3 STOREY BRICK AND STONE
WEATHERBOARD HOUSE

LEGEND

- BOUNDARY LINE
- EXISTING BUILDING FOOTPRINT
- STRUCTURE ABOVE
- DEMOLITION
- EXISTING ROCK OUTCROP TO BE RETAINED
- + EL. 35.40 EXISTING LEVELS
- + ETOW 35.40 EX. TOP OF WALL LEVELS
- + ETOR 35.40 EX. TOP OF ROCK LEVELS
- + RL 35.40 PROPOSED LEVELS
- + TOW 35.40 TOP OF WALL LEVELS
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- EXISTING VEGETATION TO BE RETAINED
- EXISTING WALLS RETAINED
- PROPOSED STONE WALL
- STEEL GARDEN EDGE
- LAWN SIR WALTER BUFFALO
- PAVING TO ARCHITECTS SPECIFICATION
- CRAZY PAVING TO ARCHITECTS SPECIFICATION

PROJECT
VERGOME PTY LTD
5-7 LOWER WYCOMBE ROAD,
NEUTRAL BAY 2089

DRAWING TITLE
DEVELOPMENT APPLICATION
Landscape Plan - Level 01

DRAWN BY	DATE	JOB NUMBER	DRAWING NUMBER
MF	21.08.23	22.073	DA-06

REVISION 03

SCALE 1:100 @ A1

WYER & CO

9 LOWER WYCOMBE RD
3 STOREY RENDERED HOUSE

LOWER WYCOMBE RD

TOUGH, LOW MAINTENANCE
PLANTING TO ENHANCE PRIVACY
WHILST FRAMING DESIRABLE VIEWS

20-Zoysia tenuifolia
4-Agave 'Tennyson Blue'
6-Lomandra longifolia
6-Rosmarinus officinalis 'Prostratus
12-Dianella caerulea
9-Lomandra longifolia
24-Zoysia tenuifolia

LOW WATER USE PLANTING TO
CASCADE OVER FRONT FACADE,
SOFTENING THE BUILT FORM AS
VIEWED FROM THE STREET

12-Rosmarinus officinalis 'Prostratus
11-Raphiolepis indica 'Snow Maiden'
4-Rosmarinus officinalis 'Prostratus
3-Carissa 'Desert Star'

10-Neomarica gracilis
24-Neomarica gracilis

PENTHOUSE
RL 19.80

POOL
9.0m x 3.5m

LAWN
48m²

STORAGE

11-Rosmarinus officinalis 'Prostratus
10-Raphiolepis indica 'Snow Maiden'

NEUTRAL BAY

SAND
HAYES STREET BEACH

4-Rosmarinus officinalis 'Prostratus
14-Dianella caerulea
14-Viola hederacea
7-Agave 'Tennyson Blue'

6-Lomandra longifolia
41-Viola hederacea
12-Dianella caerulea
8-Lomandra longifolia

TOUGH, LOW MAINTENANCE AND LOW
WATER USE PLANTING TO ALL GREEN ROOFS

LOWER WYCOMBE RD

3 LOWER WYCOMBE RD
2 & 3 STOREY BRICK AND STONE
WEATHERBOARD HOUSE

LEGEND

- BOUNDARY LINE
- EXISTING BUILDING FOOTPRINT
- STRUCTURE ABOVE
- DEMOLITION
- EXISTING ROCK OUTCROP TO BE RETAINED
- + EL 35.40 EXISTING LEVELS
- + ETOW 35.40 EX. TOP OF WALL LEVELS
- + ETOR 35.40 EX. TOP OF ROCK LEVELS
- + RL 35.40 PROPOSED LEVELS
- + TOW 35.40 TOP OF WALL LEVELS
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- EXISTING VEGETATION TO BE RETAINED
- EXISTING WALLS RETAINED
- PROPOSED STONE WALL
- STEEL GARDEN EDGE
- LAWN SIR WALTER BUFFALO
- PAVING TO ARCHITECTS SPECIFICATION
- CRAZY PAVING TO ARCHITECTS SPECIFICATION

PROJECT
VERGOME PTY LTD
5-7 LOWER WYCOMBE ROAD,
NEUTRAL BAY 2089

DRAWING TITLE.
DEVELOPMENT APPLICATION
Landscape Plan - Penthouse

DRAWN BY	DATE	JOB NUMBER	DRAWING NUMBER
MF	21.08.23	22.073	DA-07

REVISION 03
SCALE 1:100 @ A1

WYER & CO

REQUEST TO BREACH HEIGHT CONTROL PURSUANT TO CLAUSE 4.6 OF NORTH SYDNEY LEP IN RELATION TO – 5-7 Lower Wycombe Road Neutral Bay

August 2023 – Revised plans

Clause 4.3 of the *North Sydney Local Environmental Plan 2013* (**LEP**) and the relevant map indicates that the site is subject to an 8.5m height control. The proposal achieves a maximum height of RL23.8m at the lift overrun (a small area of 7sqm). This is a maximum of around 5.2m above the height control. However part of this non-compliance relates to the existing ground level (EGL) at this point being measured from existing basement level (see **Attachment A - Figure A**).

The lift overrun is the only part of the building that is higher than the maximum height of the existing building on the site which is the large skylight structure that has a height of RL23.01-23.02m. The main part of the building has the same height and at the eastern and western building facades, where the envelope is clear of the existing basement and the EGL closely follows the natural topography, the extent of the height breach is less, varying between 0.6 and 1.4m at the northern end of the building and 3.6-5m at the southern end where the land falls steeply away (see **Attachment A - Figures B and C**).

Whilst the existing building also breaches the height control to a comparable degree, a request to breach the height control must be submitted in accordance with Clause 4.6 of the LEP.

The relevant parts of Clause 4.6 of North Sydney LEP 2013 are:

(1) The objectives of this clause are as follows:

(a) to provide an appropriate degree of flexibility in applying certain development standards to particular development,

(b) to achieve better outcomes for and from development by allowing flexibility in particular circumstances.

(2) Development consent may, subject to this clause, be granted for development even though the development would contravene a development standard imposed by this or any other environmental planning instrument. However, this clause does not apply to a development standard that is expressly excluded from the operation of this clause.

(3) Development consent must not be granted for development that contravenes a development standard unless the consent authority has considered a written request from the applicant that seeks to justify the contravention of the development standard by demonstrating:

(a) that compliance with the development standard is unreasonable or unnecessary in the circumstances of the case, and

(b) that there are sufficient environmental planning grounds to justify contravening the development standard.

(4) Development consent must not be granted for development that contravenes a development standard unless:

(a) the consent authority is satisfied that:

(i) the applicant's written request has adequately addressed the matters required to be demonstrated by subclause (3), and

(ii) the proposed development will be in the public interest because it is consistent with the objectives of the particular standard and the objectives for development within the zone in which the development is proposed to be carried out, and

(b) the concurrence of the Secretary has been obtained.

(5) In deciding whether to grant concurrence, the Secretary must consider:

(a) whether contravention of the development standard raises any matter of significance for State or regional environmental planning, and

(b) the public benefit of maintaining the development standard, and

(c) any other matters required to be taken into consideration by the Secretary before granting concurrence.

The purpose of this written request is to satisfy (3)(a) and (b) above and to demonstrate that (4)(a)(ii) and 5(a) and (b) can be satisfied. In preparing this request, regard has been had to the document: "Varying development standards: A Guide (August 2011)" prepared by the NSW Department of Planning & Infrastructure, and to relevant Land Environment Court judgements including the recent judgements of *Al Maha Pty Ltd v Huajun Investments Pty Ltd* [2018] NSWCA 245, by Chief Judge Preston CJ in *Initial Action Pty Ltd v Woollahra Council [2018] NSWLEC 118 and Baron Corporation Pty Limited v Council of the City of Sydney* [2019] NSWLEC 61 and Rebel MH Neutral Bay Pty Ltd v North Sydney Council. And, most recently, the decision of Chief Justice Preston in *Woollahra Municipal Council v SJD DB2 Pty Limited* [2020] NSWLEC 115.

Clause (3)(a) - whether compliance with the development standard is unreasonable or unnecessary in the circumstances of the case

Whilst it was prepared in relation SEPP 1, the Land and Environment Court judgment *Wehbe v Pittwater Council [2007] NSWLEC 827 (21 December 2007)*, is referred to in the Four2Five judgment and remains relevant to the consideration of concept of compliance being unreasonable or unnecessary. The DP&I Guide referred to above outlines the following 5 part test used in *Wehbe:*

1. the objectives of the standard are achieved notwithstanding noncompliance with the standard;

2. the underlying objective or purpose of the standard is not relevant to the development and therefore compliance is unnecessary;

3. the underlying objective or purpose would be defeated or thwarted if compliance was required and therefore compliance is unreasonable;

4. the development standard has been virtually abandoned or destroyed by the council's own actions in granting consents departing from the standard and hence compliance with the standard is unnecessary and unreasonable;

5. the compliance with development standard is unreasonable or inappropriate due to existing use of land and current environmental character of the particular parcel of land. That is, the particular parcel

of land should not have been included in the zone.

It should be noted that the Courts have reiterated that it is only necessary to satisfy **one of** these 5 paths, although in some instances more than one may be relevant and achieved.

In regard to the issue here, it is considered that Tests 1 and 3 are applicable.

Test 1

Strict compliance with the development standard for building height in clause 4.3 of the LEP would be unreasonable and unnecessary because the proposal achieves each of the stated objectives of the height control, as noted and commented upon below:

(a) to promote development that conforms to and reflects natural landforms, by stepping development on sloping land to follow the natural gradient,

Comment – Whilst the site slopes steeply from the Lower Wycombe Road frontage down to the foreshore at Sydney Harbour that part of the site where the proposed building is to be located has a moderate fall of 4m over a distance of around 20m. To take advantage of this fall, that part of the LG level that is close to the street is partly underground and as such, as can be seen on the east and west elevations, this gives a stepped appearance to the building when viewed externally (see **Figures B and C**). It should also be noted that this lowest habitable level is also at the same level as the existing basement parking.

Give the confined nature of the 'buildable' area and form of existing building, it is not reasonable to provide a step in the top part of the building. Notwithstanding this, the top level is setback from the level below, providing a visual step that mitigates the building bulk of this level. It is noted that the steepest parts of the land are left development free, negating the need to step the building to a greater degree.

(b) to promote the retention and, if appropriate, sharing of existing views,

Comment – The proposal will not result in the loss of any views as there are only small areas of the building that are higher than the existing building. Also due to the large trees on the site, views from lower vantage points that could potentially affected by a small increase in height are obstructed by the existing significant vegetation in the street and on the site. The removal of 2 of these trees may in fact improve existing views. The impacts are confirmed in the submitted view impact diagrams.

(c) to maintain solar access to existing dwellings, public reserves and streets, and to promote solar access for future development,

Comment – the proposal results in negligible additional overshadowing of the adjoining sites to the east and west and to the public domain between 9am and 3pm at midwinter (refer to the shadow diagrams and the detailed analysis in the SEE). Where there is a minor increase, this is offset by some reductions in overshadowing and there will be little impact on amenity overall.

In light of the above, this objective of clause 4.3 of the LEP is achieved.

(d) to maintain privacy for residents of existing dwellings and to promote privacy for residents of new buildings,

Comment – the proposed building is designed to preserve privacy by having its main orientation

north/south, away from neighbouring properties. The windows that do face side boundaries are not primary window and as such privacy screens are provided without unreasonably compromising apartment amenity. Further, the proposal represent a significant improvement as the are more significant windows and balconies facing adjoining properties in the existing building as discussed in the SEE.

In light of the above, this objective is achieved.

(e) to ensure compatibility between development, particularly at zone boundaries,

Comment – the site is not at the zone boundaries and compatibility is achieved by maintaining a similar bulk and scale as the existing development on the site and also adjoining development which attains similar building heights – No 3 has a roof ridge of RL23.9m and No 9 has a parapet height of RL23.52m (both higher than the proposed parapet).

In light of the above, this objective is achieved.

(f) To encourage an appropriate scale and density of development that is in accordance with, and promotes the character of, an area.

Comment - The relevant DCP character statement is the Kurraba Point Conservation Area. The only guidance to height provided is in P6 of Clause 6.2.6 where it is noted that *'Multi-level residential flat buildings'* characteristic built elements. The proposal is consistent with this character. Further in Clause 6.2.5 it is noted that the Characteristic buildings in the area are: *"Federation and Edwardian detached dwelling houses. Inter war dwelling houses. Inter war residential flat buildings."* The existing building is not, therefore, a characteristic building. Replacing an uncharacteristic building, albeit with a more contemporary, more aesthetically pleasing building, is an appropriate outcome within a conservation area. This is discussed further in the submitted heritage report and further letter regarding the amended plans.

(g) to maintain a built form of mainly 1 or 2 storeys in Zone R2 Low Density Residential, Zone R3 Medium Density Residential and Zone E4 Environmental Living.

Comment – whilst the intent of this objective is understood, there are many areas within the R3 zone in North Sydney LGA, that contain residential flat buildings and other buildings that are 3 storeys or greater in height. The area in the vicinity of the site is one of those where 3 storey development is common including the building directly to the east, opposite the site in Lower Wycombe Road and development that increases in height down the slope to the foreshore. Whilst the proposal is 4 storeys, the lowest level is not visible from the street and is at a similar level to the existing basement parking area, which allows the overall height of the existing building and its 3 storey appearance from the street to be generally maintained (see **Figure D**).

From the foreshore, the basement of the existing building is visible due to the slope of the land and thus appears as 4 storeys. The proposal maintains a 4 storey appearance and is commensurate with the height of adjoining development. Further, unlike the existing building, the top level is setback (particularly from the side boundaries) and has a recessive appearance, ensuring that the proposal provides an improvement to the overall visual quality compared to the existing building.

Overall, the proposal is considered to be a high quality design that will be compatible with the

character of the area and make a positive contribution to improving the standard of built form on the site and locality generally. The objectives of the height control are achieved by the proposal.

Test 3

Requiring compliance with the control would thwart achieving the objective of the height control to: *(e) to ensure compatibility between development, particularly at zone boundaries*

In this regard if compliance was enforced, the building could only be single storey to the street and 2 storeys to the rear (see **Figure A**). This outcome would not be compatible with the height intended by the 8.5m control and not compatible with adjoining developments. In this case compatibility can only be achieved by permitting a breach of the 8.5m height control.

In view of the above, having regard to Tests 1 and 3 of *Wehbe* enforcing compliance in the circumstances is considered to be unreasonable and unnecessary. Flexibility should be applied, consistent with objective (a) of clause 4.6 of the LEP.

Clause (3)(b) – whether there are sufficient environmental planning grounds to justify contravening the development standard

In addition to the above the following comments are made.

Compliance would result in poorer planning outcomes

As noted above the proposal has been specifically designed to provide a superior planning outcome, consistent with the objective of Clause 4.6 to *"achieve better outcomes for and from development by allowing flexibility in particular circumstances".* As detailed above strict compliance with the controls would result in building which would be much lower than, and therefore incompatible with, both adjoining development and the built form character of the area generally.

Lack of impact

As detailed above, in the original SEE and additional information submitteed, the proposal has very minimal impact on surrounding properties and the level of impact arising from the non-compliance is negligible. This is because the proposal is designed to minimise impact by adopting a similar building envelope to the existing building and by having a top level that is setback from the level below.

Existing excavation

The maximum breach of the height control relates to the area where the existing basement is excavated below the natural ground levels on the site. As the existing topography of the site has previously been altered, this creates an 'artificial' existing ground level from where building height must be measured. If the ground levels around the basement are used as the basis for calculation (as was the case in the LEC judgment of *Bettar v City of Sydney Council)*, the non-compliance would be similar to that shown on the eastern and western elevations where the land is not excavated.

Further the ground levels around the perimeter of the building are partly maintained which

means that the northern part of the LG Level is below ground level and does not add to the visual bulk of the building. This includes the views from the street where the building will have a 3 storey appearance.

Improved amenity/visual quality

The existing building is an intrusive element in the Kurraba Point conservation area. It is an unattractive building that does not complement the character of the area. It also has low ceiling height providing a lower level of amenity than is currently acceptable.

The replacement with a new contemporary building of high quality design and to the current amenity standards with be a positive outcome. This amenity improvement is partly due to the increase in ceiling heights which contributes to the degree to which the proposal breaches the height standard compared to the existing building.

In view of the above it is considered that there are sufficient environmental planning grounds, specifically related to the subject site, that warrant contravention of the height standard.

As determined in *Randwick City Council v Micaul Holdings Pty Ltd*, and supported by Preston CJ in *Initial Action*, lack of impact alone is a sufficient ground for allowing a breach of a development standard pursuant to Clause 4.6.

Clause (4)(a)(ii) – whether the proposed development will be in the public interest because it is consistent with the objectives of the particular standard and the objectives for development within the zone in which the development is proposed to be carried out

As noted above the proposal will be consistent with the objectives of the height standard. In relation to the objectives of the subject R3 zoning the following comments are made:

- *To provide for the housing needs of the community within a medium residential environment.*

Comment – the proposal provides for larger residential dwellings, which are needed in this community where smaller apartments predominate, as discussed in the SEE and other submitted documentation. The proposal generally complies with the development controls that apply to the R3 zone (except height) and achieves a density that would be considered to be medium density.

- *To provide a variety of housing types within a medium density residential environment.*

Comment – the proposal provides for a mix of apartments sizes with the LG and L2 containing only 1 apartment and G and L1 having tow on each level. Importantly, this is a zone objective not an objective for the development and as noted in the preceding point, the proposal provides larger apartments to ensure more variety of housing in the R3 zone (particularly in this locality).

- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*

Comment - NA

- *To encourage the development of sites for medium density housing if such development does*

not compromise the amenity of the surrounding area or the natural or cultural heritage of the area.

Comment – as noted above and discussed in detail in the SEE and other submitted documentation, the amenity of the surrounding area will not be compromised. The proposal will result in new residential dwellings, improved visual quality, and an appropriate relationship with surrounding development, whilst not compromising the amenity of the surrounding area or the natural or cultural heritage of the area.

- *To provide for a suitable visual transition between high density residential areas and lower density residential areas.*

Whilst the proposal has the height of what is considered to be high density development in North Sydney's R4 High Density Zone (ie 4 storey development), it appears as 3 storeys in the streetscape, compatible with existing surrounding development and a scale which is a transition between lower and higher density areas.

- *To ensure that a high level of residential amenity is achieved and maintained.*

Comment – as noted elsewhere, the residential amenity of the proposed dwellings is high (and a significant improvement on the existing design) and the amenity of adjoining dwellings is maintained by the proposed development.

In view of the above it is considered that the proposal suitably achieves the objectives of the R3 zone.

Clauses 4.6(4)(b) and 4.6(5)

3.5 Clause 4.6(4)(b) – SECRETARY'S CONCURRENCE

In *Initial Action*, Preston CJ noted at [28-29] that:

> "*Under cl 64 of the Environmental Planning and Assessment Regulation 2000, the Secretary has given written notice dated 21 February 2018, attached to the Planning Circular PS 18-003 issued on 21 February 2018, to each consent authority, that it may assume the Secretary's concurrence for exceptions to development standards in respect of applications made under cl 4.6, subject to the conditions in the table in the notice.*"

It is therefore noted that concurrence is to be assumed, but the relevant matters for consideration are assessed below for completeness.

Clause 5(a) whether contravention of the development standard raises any matter of significance for State or regional environmental planning

No, the variation of the height standard is a minor matter and not uncommon. It does not raise any issues at a regional or state level.

Clause 5 (b) the public benefit of maintaining the development standard

For the reasons outlined about there is no public benefit in maintaining the standard. In fact, there will be public benefits in allowing a variation as a better planning outcome will be achieved.

Conclusion

Having regard to the above it is considered that this written request satisfies the requirements of Clause 4.6 and that the consent authority can be satisfied that the proposal also meets the other requirements of Clause 4.6. The proposed contravention of the standard will meet the objectives of Clause 4.6 as it achieves *"better outcomes for and from development by allowing flexibility in particular circumstances".*

It is considered that the proposal represents a high quality planning outcome for the site.

Brett Brown, Ingham Planning Pty Ltd

Auguest 2023

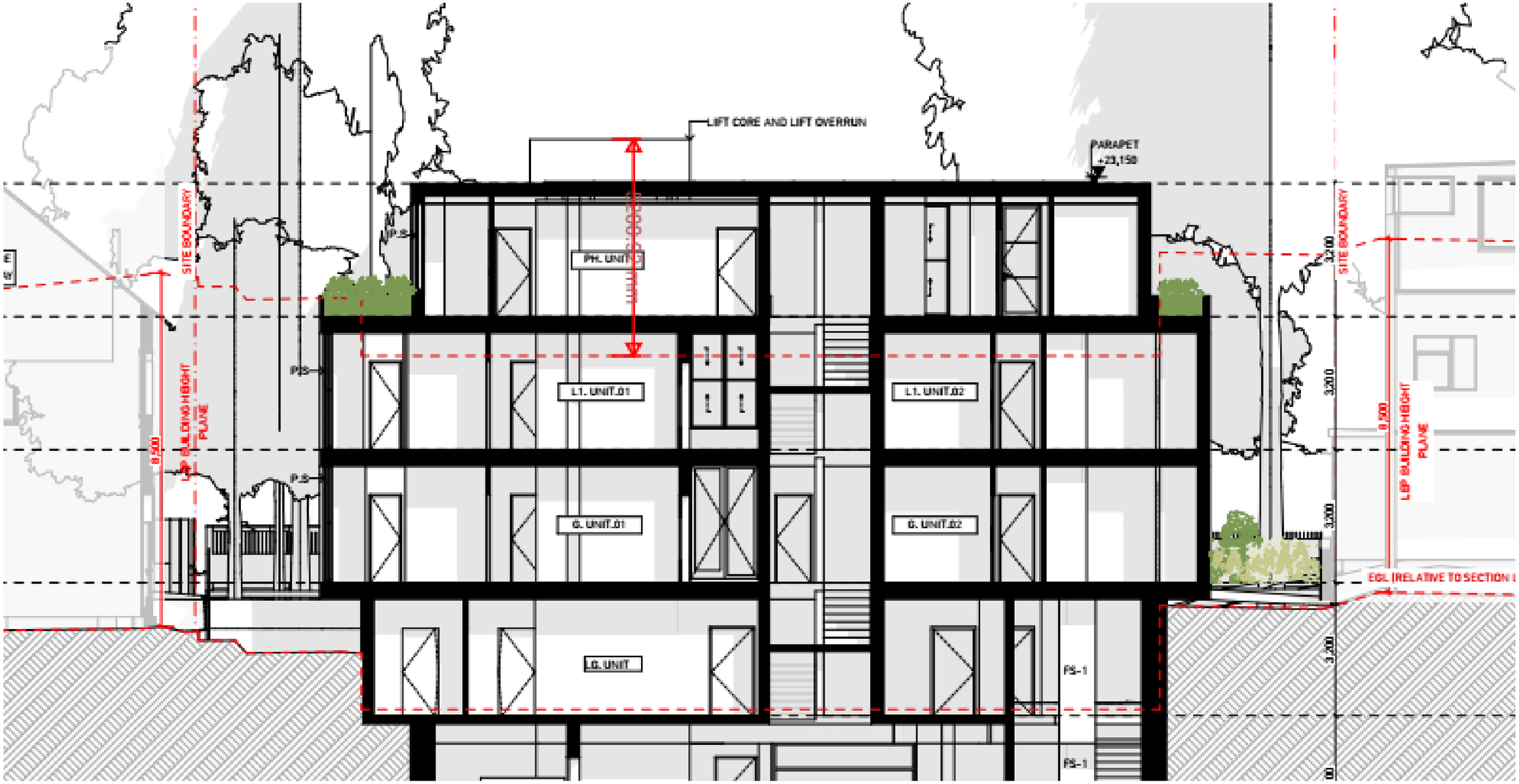

Figure A – Section A showing height maximum non-compliance

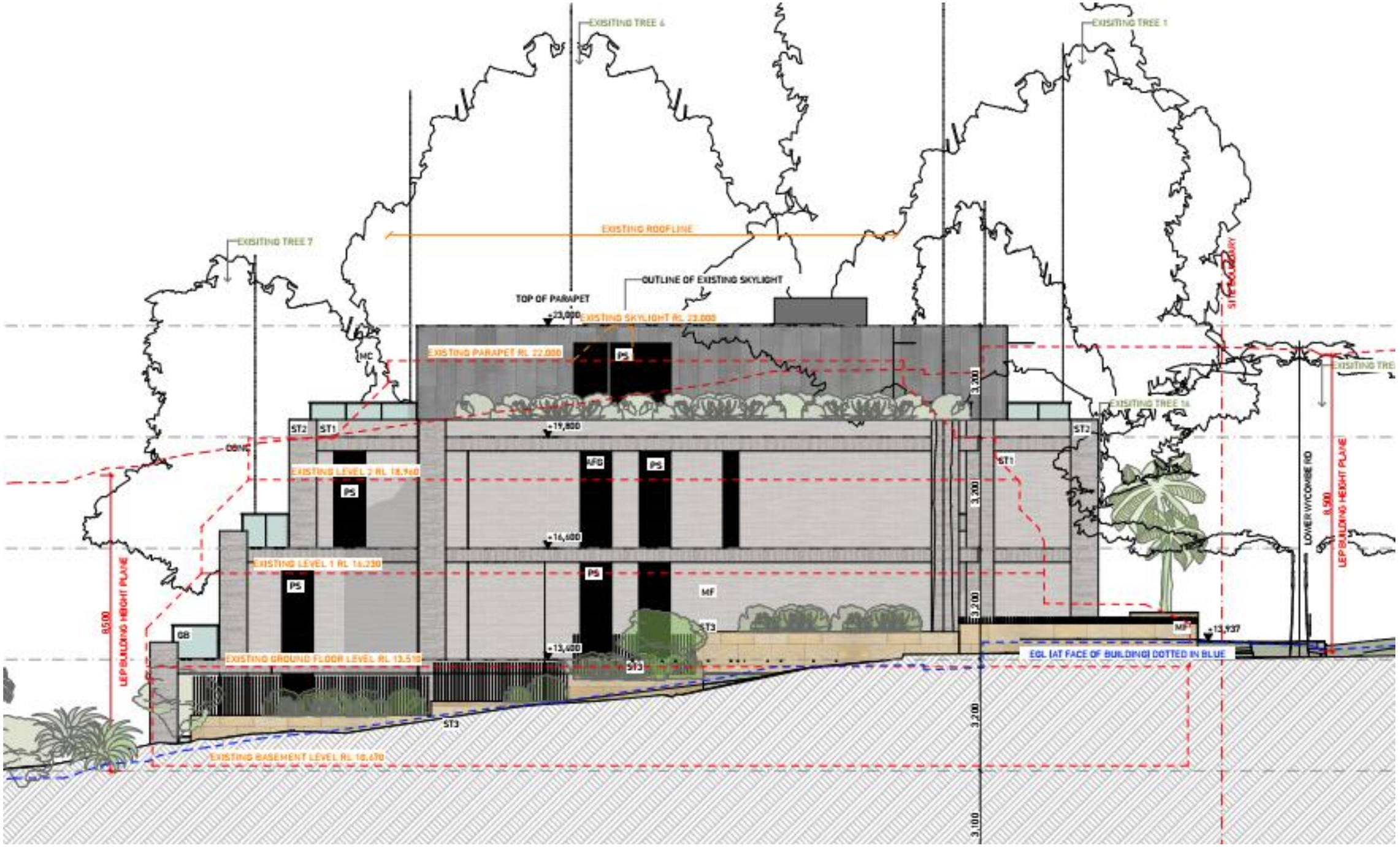

Figure B – Proposed East Elevation

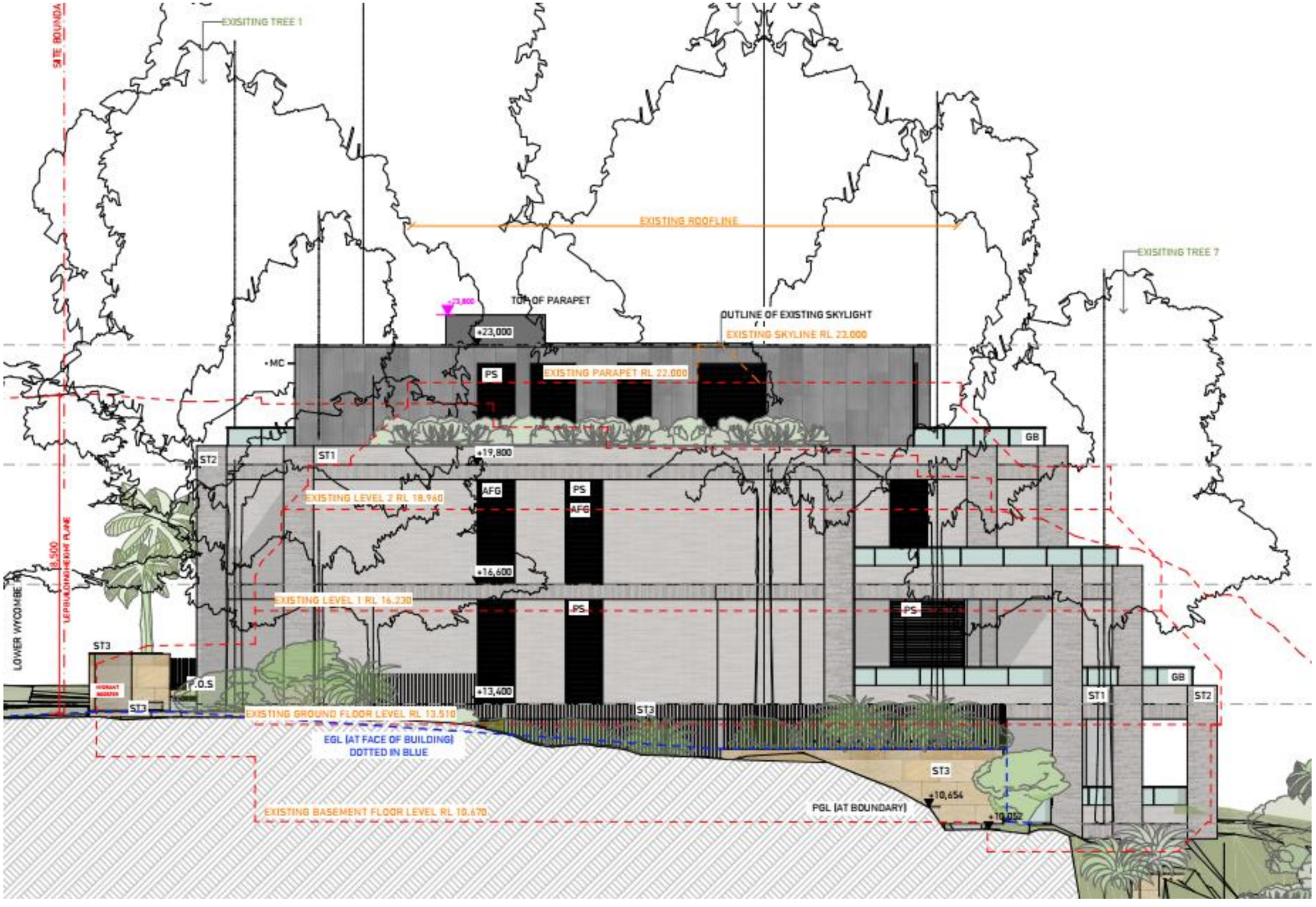

Figure C – Proposed West Elevation

Figure D – Proposed Street (North) Elevation

Figure E – Proposed Foreshore (South) Elevation

APPENDIX A

Response to matters raised by Design Excellence Panel

Summary of DEP Comment	Response
Principle 1: Context and neighbourhood character	
The removal of established vegetation and canopy trees	More significant vegetation is now retained including significant tree 14 in the eastern setback. The relocation of the vehicular access allows the basement setback to the eastern boundary to be increased from nil to 4-9.3m. Existing ground levels are retained where necessary to preserve existing trees.
The bulk and scale of the proposed development exceeds the existing building in terms of footprint and height	The existing building has 4 above ground levels and the proposal maintains this. The height must increase to ensure current ceiling height and construction standards are met, however apart from the lift overrun which is limited in area, the bulk of the building has the same height as the large skylight on the existing building. The footprint has been amended to more closely match the existing footprint. The plans show the outlines of the existing building and the originally submitted DA and it can be clearly seen that in the vast majority of cases, the proposed building has increased setbacks except in the NW corner where a reduced setback is offset with a greater setback of the NE corner of the building, providing a more articulated appearance in the streetscape.
The uppermost (top) level (Level 2) is prominent and highly assertive, and should be substantially reduced and articulated to be a more recessive and subservient element when viewed from the street/foreshore.	The overall bulk has been reduced through increased setbacks and greater articulation of the floorplate as noted above. The top level has also been reduced (by about 40sqm overall), generally from the more sensitive areas at the street and foreshore elevations. A change in design and materiality also makes this element more recessive and subservient in views of the site. This is best seen in the 3D images shown below.  Foreshore elevation (note-landscaping will further reduce visibility)

Summary of DEP Comment	Response
	 Street view
The existing and neighbouring buildings feature relatively articulated and stepped forms.	The proposal has been articulated to be more in keeping with the articulation and stepped form of the existing building whilst providing a more refined and contemporary appearance.
There is extensive glazing presenting to the foreshore and waterfront.	The glazing is a natural and appropriate response to the harbour views available to the south. However to reduce the impact of glazing, part of the balconies are now solid and this will assist in reducing impacts, particular from the beach below the site where views are angled up to the underside of these balconies (see image below). Also each balcony has a planter box that will further break up the building form in both the street and foreshore elevations.  Hayes St beach view (note-landscaping will further reduce visibility)
The contemporary colours, materiality and finishes of the proposed development appear are noted, and a sensitive	The external materiality has adopted a palette of face brick in 3 different tones on the facades to bring up a warm presentation to the streetscape. The brick colours are consisted of a range of pale warm grey, mid-grey to a pastel terracotta tone to the planter box walls along the balcony edges. The use of

Summary of DEP Comment	Response
contemporary intervention could be supported given the context. High quality materials such as stone and face brick should be use and it is suggested that less contrasting material specifications are used. The contrasting tones of the materials stark white and black colouration of the scheme is not considered to be in sympathy with neighbouring buildings. The proposed development should feature warmer tones that are non-assertive.	sandstone to the base planter walls is also incorporated to tie in with the surrounding context, softening the exterior appearance amongst the existing and proposed trees.
Principle 2: Built form and scale	
Street setback: A review of adjacent buildings at No. 3 and No. 9 Lower Wycombe Road indicated that there is no prevailing street setback; however, these buildings (as well as the existing building) have articulated and stepped forms. It is noted that the new building is forward of the building line of the eastern neighbour and slightly behind the building line of the western neighbour. The street setback may be considered acceptable; however, the proposed building should also comprise of additional articulation and modulation to reduce bulk and scale. The current setback of top floor (Level 2) should be increased to minimise its presentation	The proposed street setbacks have been further amended to reinforce the variations in setbacks of the neighbours and to allow for greater articulation of the northern façade. The setback of the top level has been increased.
Side setback: As mentioned, the proposed development should be reduced in density and be set within the current building footprint. It is further noted that the proposed building fails to achieve the minimum separation distances under the Apartment Design Guide (ADG) (12m between habitable rooms and 9m between non-habitable/ habitable rooms). Concern is raised with regard to the windows along the east/west elevations.	Building separation requirements are discussed in Part 2F of the ADG. Part 2 provides guidance for Council's in preparing planning controls for apartment development and are not required to be considered in relation to a DA (only the Design Principles and Parts 3 and 4 of the ADG are relevant as per the requirements of Cl 29 of the EP&A Regs and p9 of the ADG). In this regard, Council has its own setback controls that determine appropriate built form for apartments in North Sydney LGA. In relation to side boundaries these are a combination of a minimum setback of 3m and a 3.5m building height plane. Apart from very minor encroachment by architectural elements, the building is setback 3m or greater from side boundaries. The top level is setback further meaning that there is a high degree of compliance with the building height plane and where there is non-compliance, it is generally consistent with the existing development on site.

Summary of DEP Comment	Response
There is no information on the neighbouring windows and respective spaces. The side windows should be offset from any neighbouring windows, feature privacy treatments or could be deleted to address any overlooking impacts.	Further, it is very much the character of this area to have minimal side setbacks and so if anything, the proposed built form provides a superior built form outcome than many existing developments, including the building on the subject site. In relation to visual privacy, Part 3F of the ADG applies. In this case a 6m setback is required to habitable rooms which have direct views to neighbouring habitable rooms. In this case, the proposal has been designed to be orientated primarily to the harbour views to the south and to a lesser degree to the north toward the street. Openings to side boundaries have been minimised and are much reduced compared to the existing building which has windows and balconies directly facing neighbours. The majority of side facing windows are to non-habitable areas (bathrooms or wardrobes) and the neighbours also have limited openings facing the site (as now shown on the plans). As suggested, all windows are provided with privacy screens. These are in the form of horizontal louvres that allow solar penetration but limit direct viewing. They protect the neighbour's privacy without unduly affecting the apartment amenity as they have other more significant light sources. The proposed balconies generally extend south of the adjoining properties and are orientated south to minimise potential for overlooking. The above is consistent with the design guidance in Part 3F which states: *New development should be located and oriented to maximise visual privacy between buildings on site and for neighbouring buildings. Design solutions include:* *• site layout and building orientation to minimise privacy impacts (see also section 3B Orientation)* *• on sloping sites, apartments on different levels have appropriate visual separation distances*
Rear setback: The architectural plans indicate that the proposed building has a rearward projection that is beyond the existing building footprint and encroaches the foreshore building line. Any elements encroaching the foreshore building line should be deleted as these are prohibited (refer to Figure 1 below). Any elements beyond the existing building footprint should be deleted (refer to Figure 1 below). The top floor (Level 2) should feature an even greater rear setback compared to lower levels to provide a more appropriate and recessive presentation when viewed from the waterfront	Encroachments into the foreshore area are not prohibited by the LEP provisions. Notwithstanding, the rear setbacks have been generally increased as shown on the revised plans and are now mostly greater than the existing building. In the few cases where they are not, this is to provide balcony space to ensure appropriate apartment amenity. In the overall scheme of things such non-compliances will be imperceptible in views of the site.
Public domain interface: Concerns are raised with regard to the foreshore interface and presentation of the building.	The changes described above and additional planting will ensure that the building has a high quality appearance in the public domain.
Excavation and existing ground levels: It is noted that the extent of excavation is limited to the car lift,	As noted above the relocation of the car lift has allowed a more efficient basement and for a significant setback to be provided to the eastern boundary. Importantly this allows retention of significant Tree 14.

Summary of DEP Comment	Response
basement levels and new pool. The basement levels are partially within the footprint of the existing building but is notably at very close proximity to the eastern boundary (refer to Figure 2).	
Principle 3: Density	
Amenity: A discussion with regard to amenity is provided below under Principle 6. In general, a modified version of the proposed development would be able to achieve suitable amenity for future occupants. Considering the site context, orientation and neighbouring properties, the unit design features dual aspects that take advantage of prominent water views to the south and incorporate habitable spaces to the north.	The revised version of the proposal achieves suitable amenity for future occupants as discussed.
Housing diversity and unit mix: The proposed development features four (4) x 3-bedroom and two (2) x 3-bedroom+ units (with rumpus rooms). Therefore, fails to comply with the required residential dwelling mix and housing diversity under the ADG and under Section 1.2.1 of the North Sydney Development Control Plan 2013 (NSDCP 2013). Whilst it is noted that proposed development only involves six (6) units, further justification and information should be provided for the lack of unit mix and housing choice within the scheme. The provision of a 2-bedroom unit with improved amenity and no subterranean habitable rooms on the lower ground floor should be considered as this will resolve the unit mix issue.	Further information on this issue has been provided to Council. It demonstrates that there is a lack of supply of larger apartments in this area and that the demand for apartments is also focused on larger dwellings. The proposal seeks to resolve this supply/demand problem. The amenity issues have been resolved and there is no environmental benefit to be gained by reducing bedroom numbers.
Principle 4: Sustainability The overall design generally appears reasonable in relation to environmental performance. The plans indicate an area for solar panels but the details of these panels are not provided.	The proposal increases the amount of planting.

Summary of DEP Comment	Response
The provision of green roofs and planting on structure is a welcome design feature that assists in softening the built form.	
Principle 5: Landscape	
Communal open space: The amount of communal open space is acceptable; however, additional bench seating and facilities (such as a BBQ area, kitchenette, etc.), connection to water and power and weather protection should be incorporated into the accessible communal open space. These components should be contained within the building footprint (such as the plant rooms in Basement 1).	The accessible communal space has been relocated to a less sloping area between retaining walls and is only around 0.5m above the downslope ground levels. It has been made larger and accommodates some seating areas. A highly active area such as would result from cooking facilities is not appropriate to this location given the proximity to the main outlook of the apartments.
Deep soil zone: The proposed development achieves compliance with the deep soil zone requirements under the ADG but fails to achieve the minimum requirement (40%) under the NSDCP 2013.	The proposed landscaped area (deep soil) easily meets the 40% DCP requirement. Other changes to the design have significantly increased tree retention and additional planting is also proposed.
Structural (sea) wall: Council is to investigate and further assess these elements to confirm acceptance of any changes to the reclaimed foreshore area.	A response regarding the sea wall is provided in the main part of this letter.
Principle 6: Amenity Building separation: As mentioned above, the minimum separation distances for buildings (up to 4-storeys) is 6-12m. The proposal fails to comply with the minimum building separation. The Applicant failed to provide any assessment and justification for the 3m setbacks and the lack of building separation.	Refer to the comments above.
Amenity: The proposed development achieves cross ventilation to all six (6) residential units and only one (1) unit will receive two (2) hours of direct solar access to the living room (via a skylight). The above equates to 100% of the units achieving the ADG cross ventilation requirement and 16.7% of the units achieving the ADG solar access requirement.	The skylight has been relocated to provide a better outcome and a west facing window included at Levels 1 and 2 to improve solar access. Overall, despite the non-compliance with the ADG solar access requirements, the apartments will have a very high level of amenity.

Summary of DEP Comment	Response
Notably, none of the primary balconies (off living areas) in any units will receive direct solar access. The skylight in the Level 2 unit is insufficient and additional solar access should be provided to this unit. The provision of secondary living rooms to the northern elevation should also be considered to improve solar access performance. Living spaces that connect from north to south should be proposed. The Applicant noted their preference was not to include living spaces on the north that could be converted to bedrooms and the Panel agrees with this.	
Concerns are raised with regard to the unit in lower ground floor, which features subterranean habitable rooms and areas with restricted amenity (refer to Figure 3). The subterranean areas must be deleted or converted into non-habitable rooms (refer to Figure 3). The re-design must not facilitate nor suggest future conversion into habitable spaces (as defined by the DCP). The western bedroom will have limited amenity. As mentioned, the provision of a 2-bedroom unit with no subterranean habitable rooms at this level should be considered as this will resolve both amenity and unit mix matters.	The Lower Ground unit has been redesigned so that only one bathroom window has a single orientation to the side elevation where existing ground levels need to be generally maintained to protect existing trees. Other rooms have dual aspects or in the case of the living areas, are open plan with a large glazed area facing the harbour views. The overall amenity of this apartment will be high. With this outcome, here is no environmental benefit from reducing bedrooms.
Private open space: The balustrade design should be revisited for the rear-facing balconies to facilitate shared privacy. The close proximity of the spa on the lower ground floor to the eastern boundary is a concern and will have potential amenity impacts. This spa should be deleted.	Partly solid balustrades, planting and screening to side elevations will ensure that the privacy between balconies is satisfactory. The spa has been deleted.
Main pedestrian entrance: The centralised entrance is recessed. Consideration should be given to ensure that the pedestrian entrance is more prominent when	An awning canopy design has been incorporated in the proposal to provide shade over the mailboxes as well as giving a visual cue to lead pedestrians to the building entrance, when viewing from the street.

Summary of DEP Comment	Response
viewed from Lower Wycombe Road.	
Vehicular access and parking: As mentioned, the extent of excavation and the footprint of basement are considered excessive and contributes to substantial tree loss.	As noted the amount of excavation has been significantly reduced and basement setbacks to the eastern boundary increased.
Waste management: An operational waste management plan was included in the application. The Architect stated that the waste bins are to be taken up via the car lift and situated within the bin holding space (on the western side of the front setback) prior to collection. Following collection, the bins are to be re-located to the basement. This arrangement is suitable as it avoids interaction with common lobby and lift areas used by residents	Noted. The revised plans maintain a similar arrangement.
Shadow impacts: The proposed development should be modified and set within the existing building footprint to ensure no additional overshadowing impacts are generated. Any additional height must not result in additional overshadowing, particularly on Hayes Street Beach. The proposal may impact the amount of solar access received by adjoining dwellings due to the lack of setbacks from the side boundaries and the front and rear setback of Level 2. Elevational solar access diagrams (hourly during mid-winter and both equinoxes) of the neighbouring properties at No.'s 3 and 9 Lower Wycombe Road may assist in demonstrating reasonableness in terms of overshadowing impacts.	The proposed envelope has been reduced to provide negligible additional impact on adjoining properties and trafficable public space from the proposal and this is balanced with some reductions in overshadowing compared to the existing development.
View impacts: It is noted that a view loss analysis was not provided to Council.	A view impact analysis is provided and demonstrates that there will be no unreasonable impacts in this regard.

Summary of DEP Comment	Response
Principle 7: Safety The proposed development is generally acceptable with regard to safety and security.	Noted. The revised scheme also provides a satisfactory outcome in this regard.
Principle 8: Housing diversity and social interaction A discussion on housing diversity and unit mix is provided under Principle 3 above. The common circulation and spaces appear acceptable.	Noted. Apartment mix is discussed above.
Principle 9: Aesthetics Refer to the discussion pertaining to Principle 1. In general, the architectural expression, presentation and aesthetics of the proposed development are not consistent with nor characteristic of the streetscape, immediate locality and conservation area. Further, the proposed removal of established trees in-combination with the bulk, scale and less articulated built form will result in an undesirable planning and design outcome for the site.	The proposal has a significantly reduced footprint, particularly at basement level allowing more significant trees to be retained. The eastern floorplate has generally moved south and the western floorplate north, to provide articulation which is more consistent with the character of the area. The top level has been reduced in size and other changes including materiality contribute to making the proposal more compatible with this conservation area.

ARBORLOGIX

5-7 LOWER WYCOMBE ROAD, NEUTRAL BAY

23 AUGUST 2023

CLIENT: VERGOME PTY LTD

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1. Contents

2. Report summary

*** This report is an amended report from one provided by Arborlogix Pty Ltd on 12/4/23 (Ref 1700 v2.1). This report has been updated to cover the following design changes and additional information required by North Sydney Council.*

- *Retention of additional trees onsite to include Trees 2, 3, 4, 6 and 14 at request of council to maintain as many trees onsite as possible. Trees 1, 7, 16 and 19 will also be retained as they were in original plans. This change in design has meant that now a central driveway will be required so this now means Tree 17 has been included to the list of those that will need to be removed onsite. The updating of designs to ensure the additional trees can be retained and protected throughout the development has been fairly complex but is generally based on ensuring no root pruning is required, no existing SRZ/TPZ areas are lost, no grade changes greater than 100mm are required and any excavations within the TPZ/SRZs of trees to be retained will need to be supervised by the project arborist to ensure no roots are damaged. In order to prevent conflicts with any tree roots onsite the proposed building will generally follow the footprint of the existing building, existing retaining walls will be left where possible or replaced in exactly the same location as existing retaining walls (excavations and construction to be supervised by project arborist) and any minor extensions outside of the existing building footprint will be done using suspended slab construction to prevent the need for excavations or root pruning.*
- *Additional information regarding canopy pruning required for building clearances, piling works, scaffolding and crane access - provided in section 8.3.*
- *Additional information regarding over-excavation and workings around root zones - this is provided in table 2 section 8.2 on a case by case basis for each tree.*
- *Council enquired about a Howea Forsteriana (Kentia Palm) on the foreshore they wanted transplanted. This palm is only 2m tall and not covered by the local TPO so out of scope for this report but this palm will be transplanted further up the site and is marked on the landscape plans.*

This report has been updated and all plans updated to reflect all the above changes and additional information required by all other areas of the report that are still relevant have remained unchanged.

2.1. Scope of works

2.1.1. Arborlogix Pty Ltd has been contracted by the client to undertake an arboricultural impact assessment report and provide a tree protection plan for a proposed new development at 5-7 Lower Wycombe Road, Neutral Bay. The site is located on a sloping block with Lower Wycombe Road on the northern upper side, neighbouring properties on either side and Sydney Harbour waterfront on the southern side. The site is currently occupied by a multi storey concrete block of residential apartments with underground parking and a small off street parking area at the front (each with their respective driveway crossovers), small terraced garden areas along either side of the building and sloping garden areas at the rear that lead down to the level section on the edge of the waterfront.

2.1.2. The proposed development is for demolition of the current residence and the construction of a new multi storey residence (4 levels above ground and 2 basement levels). The proposed development will have underground parking in the basement levels that will utilise a car lift and a new central driveway

crossover; new landscaped terraced gardens across the front, along the sides and down the rear section of the property that will include planting of advanced specimens and a new swimming pool in the communal area at the bottom southern side of the site adjacent to the waterfront.

2.1.3. Arborlogix Pty Ltd has been asked to assess the trees within this site, and on any neighbouring properties or council land, that have their TPZs (Tree Protection Zones) within 5m of the proposed development footprint or in areas that could be used as access points to the site for construction vehicles and materials. This arboricultural impact assessment report is only concerned with trees that are large enough to be covered by the local DCP (Development Control Plan) and Tree Management Policy for North Sydney Council which includes any trees over 5m in height. Therefore this report includes 21 trees, 18 of these are within the site and 3 are out front on the council nature strip.

2.1.4. This report will assess these 21 trees for health, vitality, structural defects, form, pests and diseases, life expectancy, significance and retention value. An assessment will also be made of the likely impacts the proposed development will have on these trees. This will be used to aid with determining whether any of these trees would need to be removed for safety reasons or to accommodate the new development, or whether they should be retained and protected.

2.1.5. If the trees are to be retained this report will provide recommendations to any design modifications, construction techniques and the necessary protection measures that will need to be implemented prior, during and post development to ensure the health, vigour and longevity of these trees. Details of these protection measures will be based on local government regulations and protection measures outlined in AS-4970-2009 (Protection of Trees on Development Sites). Any pruning works that may be required to accommodate this development or improve the health and stability of these trees will also be outlined and detailed as part of the recommendations of this report.

3. SUMMARY OF RECOMMENDATIONS

This arboricultural impact assessment of the proposed development site made the following recommendations.

3.1. Retention and Protection of Trees 1, 2, 3, 4, 6, 7, 14, 16 and 19 according to AS-4970-2009 (Protection Trees on Development Sites). No roots are to be pruned greater than 40mm diameter within any TPZ and no roots at all within any SRZ without the authorisation of the project arborist. Details of any TPZ encroachment and tree protection required are found in sections 8.1, 8.2, 8.3 and 8.5 (Tree Protection Plan).

3.2. Removal and replacement of Trees 5, 8-13, 15, 17, 18, 20 and 21 due to their low retention values and/or conflicts with the proposed development and landscaping design. More details can be found in section 8.1 and 8.4.

3.3. Generally all activities involving soil level changes, excavation, storage, cleaning and refueling are prohibited (a full list is found in section 4.2 AS-4970) within the TPZ. Installation of any underground services including stormwater infrastructure will need to be done in accordance with the conditions listed in 10.4.2. Some activities may be authorized if required but only by the project arborist. Any additional mulching or irrigation required should be done at the discretion of the project arborist.

3.4. All other tree protection measures required during construction and detailed in section 8.5 (Tree Protection Plan) of this report are to be complied with.

3.5. Any tree removal works and tree protection measures should be carried out by an arborist with a minimum qualification of AQF level 3 and certified by the project arborist. The project arborist should have a minimum qualification of AQF level 5 or equivalent.

3.6. All works on-site should be carried out according to Workcover Authority NSW 2007, *Code of Practice Amenity Tree Industry,* NSW.

3.7. All works should be carried out according to AS-4373-2007 (Pruning of Amenity Trees) and AS-4970-2009 (Protection trees on development sites).

4. Disclaimer and limitations of report

4.1. This document is only valid in its entirety and is for the exclusive use of the client and Arborlogix Pty Ltd only. Arborlogix Pty Ltd will not be held liable for any use or interpretations from any other person or third party. This report remains the intellectual property of Arborlogix Pty Ltd and any individual or company must have written consent prior to its use for any other purpose. Alterations of this report invalidate the entire report

4.2. All inspections and assessments were carried out using Visual Tree Assessment methods (VTA)[1] from ground level only and do not include the use of diagnostic devices. Although great care is taken to accurately diagnose the condition of the tree, using accepted industry practices; the arborist is limited in determining the exact structural integrity of the tree by interpreting mainly exterior features. There are multiple factors both physical and environmental such as extreme climatic events and conditions that could lead to possible structural failures in trees which would not have been possible to predict or identify from VTA methods and assessments.

4.3. Any protection or preservation methods recommended are not a guarantee of tree survival or safety but have been recommended to improve vigour and reduce risk only. Therefore Arborlogix Pty Ltd does not accept any liability for any future tree failure, illness, damage or injury caused by any undetected or unpredicted faults or failures in any tree or part thereof referred to in this document. Arborlogix Pty Ltd also accepts no responsibility for any failure, loss or decline, damage or injury caused by any tree covered in this document due to any meteorological or other unforeseen event.

4.4. It is the client's responsibility to maintain ongoing inspections and assessments of trees covered in this document and obtain the services of a suitably qualified arborist to carry out the work where necessary. All work should be carried out according to AS-4373-2007 Pruning of amenity trees[2] and AS-4970-2009 Protection of trees on development sites[3].

4.5. Tree identification is based on visual characteristics at the time of inspection using the authors knowledge and supporting reference materials. The accuracy of the identification is not guaranteed since key identifying features are not always available.

4.6. All plans and photographs used in this report are for visual aids only and may not be to scale. Arborlogix Pty Ltd also does not guarantee the accuracy of plans and documents provided by others in this report.

Michael Todd - Director

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Graduate Cert. Arboriculture – AQF Level 8
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[1] Mattheck, K and Breloer, H (2007). *The Body Language of Trees* – A handbook for failure

[2] Standards Australia (2007). AS4373:*Pruning of Amenity Trees*

[3] Standards Australia (2009). AS4970: *Protection of Trees on Development Sites*.

5. Methodology

Tree Assessments were all carried out using the following information and according to the following methods:

5.1. Tree assessments

- Visual Tree Assessment (VTA) method (Mattheck 2007)) (Appendix 1) was used from ground level to determine tree health, structural integrity and presence of any pests or diseases.
- Sustainable Retention Index Value (SRIV) Version 4 © (IACA 2010) (Appendix 3) is used to provide an index value corresponding to age, vigour and condition.
- The meanings and terminology used to describe and assess each tree are taken from the IACA Dictionary for Managing Trees in Urban Environments (2009). An extract is included as a glossary of terms in Appendix 6 of this report.
- No aerial (climbing) inspections, soil sampling or root excavations were conducted as part of these assessments.
- No additional specialised diagnostics equipment was used to quantitatively determine extent of any decay (i.e. resistographs or non-intrusive tomographic methods such as PICUS)
- All trees were identified using prior knowledge of the species and visual inspection of the subject trees at the time of inspection.
- Trees of the same species, size and age that form a stand or hedge may be grouped together and shown as one tree on plans for simplicity. If this is the case it is always noted in the tree schedule.
- A Lufkin 10m diameter tape was used to obtain the Diameter at Breast Height (DBH) as recommended at 1.4m unless otherwise stated due to variations in tree form (AS-4970-2009). Diameter at Root Crown (DRC) was also measured to enable calculation of Structural Root Zones. If access into a neighbouring property was not possible then measurements were taken from over the fence using a tape measure or estimated.
- Canopy spread was estimated or paced out and the longest span was recorded as the spread.
- Height of each tree was estimated and then cross referenced with photographs.
- Any photographs were taken with an iphone xS (12MP).
- All map data was gathered using www.nearmaps.com.au
- All design work used in this report was completed using Adobe Illustrator and ArborCAD.

5.2. Tree protection zones

This report adopts Australian Standard AS4970-2009 *Protection of trees on development sites* as a point of reference and guide for the recommended minimum setbacks (Appendix 4) from the centre of a tree's trunk to development works. The distances may be increased or decreased by the author in accordance with AS4970 – Section 3.3.4 as a result of other factors providing mitigating circumstances or constraints as indicated by but not restricted to the following:

- Condition of individual trees,
- Tolerance of individual species to disturbance,
- Geology e.g. physical barriers in soil, rock floaters, bedrock to surface
- Topography e.g. slope, drainage,
- Soil e.g. depth, drainage, fertility, structure,
- Microclimate e.g. due to landform, exposure to dominant wind,
- Engineering e.g. techniques to ameliorate impact on trees such as structural soil, gap graded fill, lateral boring,

- Construction e.g. techniques to ameliorate impact on trees such as pier and beam, bridge footings, suspended slabs,
- Root mapping,
- Physical limitations - existing modifications to the environment and any impact to tree/s by development e.g. property boundaries, built structures, houses, swimming pools, road reserves, utility services easements, previous impact by excavation, or construction in other directions, soil
- level changes by cutting or filling, existing landscaping works within close proximity, modified
- drainage patterns,
- Extraneous factors e.g. potential future impacts from development on adjoining land when the tree is located on or near to a property boundary

5.3. Tree significance, sustainability and retention values

Tree landscape significance rating was calculated using IACA Significance of a Tree, Assessment Rating System (STARS) © (IACA 2010) which is shown in Appendix 2. Landscape significance not only takes into account the physical form of the tree but it also assesses other factors such as Heritage, Cultural and Environmental values. These Landscape significance ratings were then combined with the Estimated Life Expectancy values of each specimen to categorise each tree under the Priority Matrix of Retention Values.

This is used in combination with the value obtained from the Sustainable Retention Index Value (SRIV) Version 4 © (IACA 2010) (Appendix 3) to determine whether the tree should be removed for safety and sustainability reasons or whether it should be retained and what remedial works may be required. Tree Sustainability is an important factor since it takes into account not only the life expectancy but also the effect of other economical, social and environmental factors that need to be addressed as part of a tree management plan.

5.4. Local government documentation reviewed for assessment.

In order to ensure all legal requirements are met when determining which trees can be retained or removed on this development site a number of Local Government Area (LGA) Policies and documents were reviewed:

- Significant Tree Register and/or – Heritage Tree Register -– No listings for this site were found.
- Threatened/Endangered species or communities onsite – No listings for this site were found.
- Local Government Area (LGA) Tree Preservation Order – North Sydney Council

5.5. Documentation provided for this report

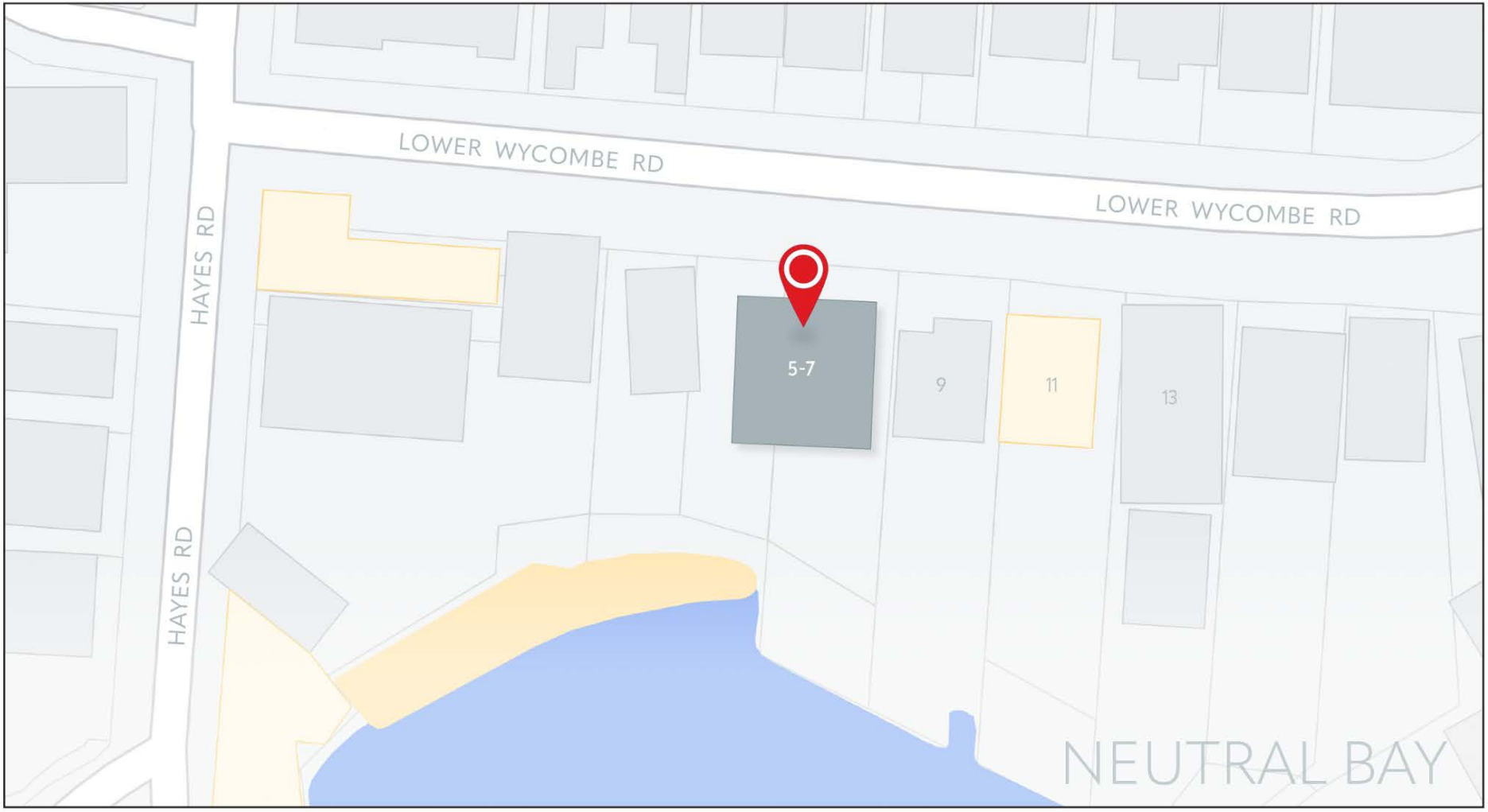
The following documentation was provided to assist in preparing this report:

- Site Survey - Beveridge Williams - 20.2.2023 - Project no. 2201591
- DA Drawings - PBD Architects - 18.08.2023

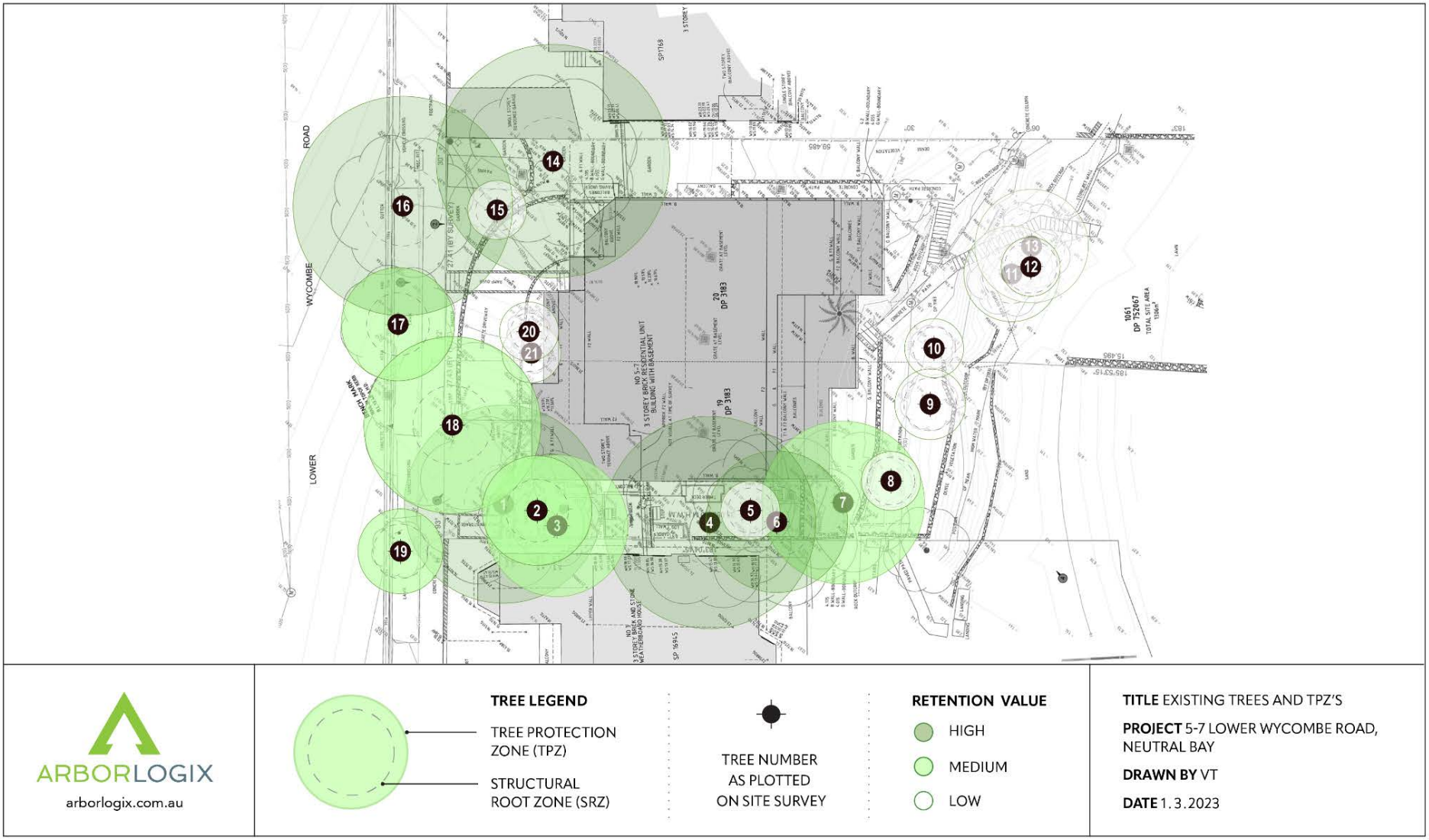
  Proposed Site Plan- Drawing no.DA 002 Basement plan - Drawing no.DA-102
  Lower Ground Plan- Drawing no.DA 104 Ground floor plan - Drawing no.DA-105
  North Elevation- Drawing no.DA 202 West Elevation - Drawing no.DA-201
  Section B - Drawing no.DA 302

6. Site details

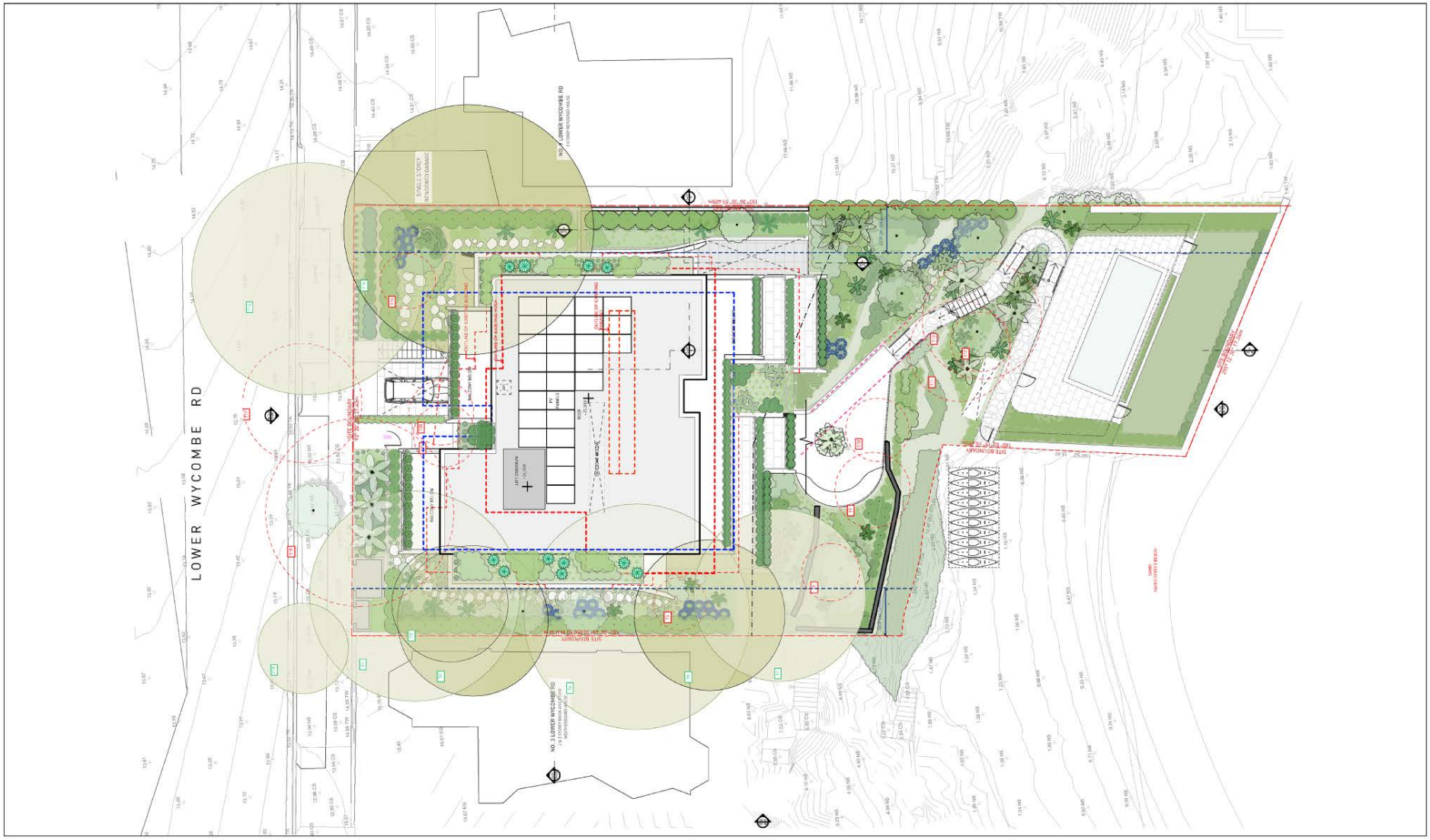
6.1. Map of site



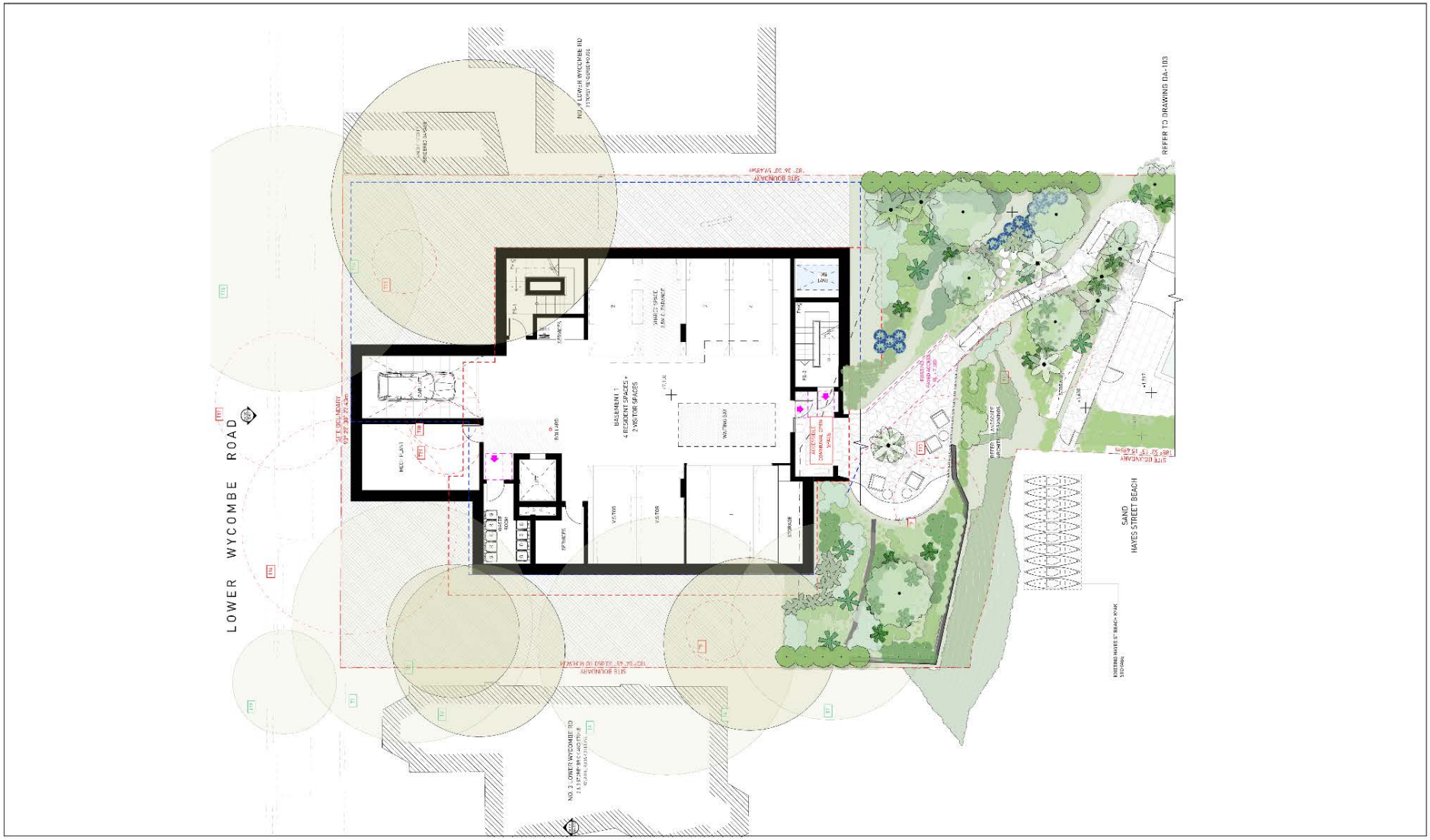
6.2. Plan of site showing existing site and location of trees surveyed in report with TPZs and retention values



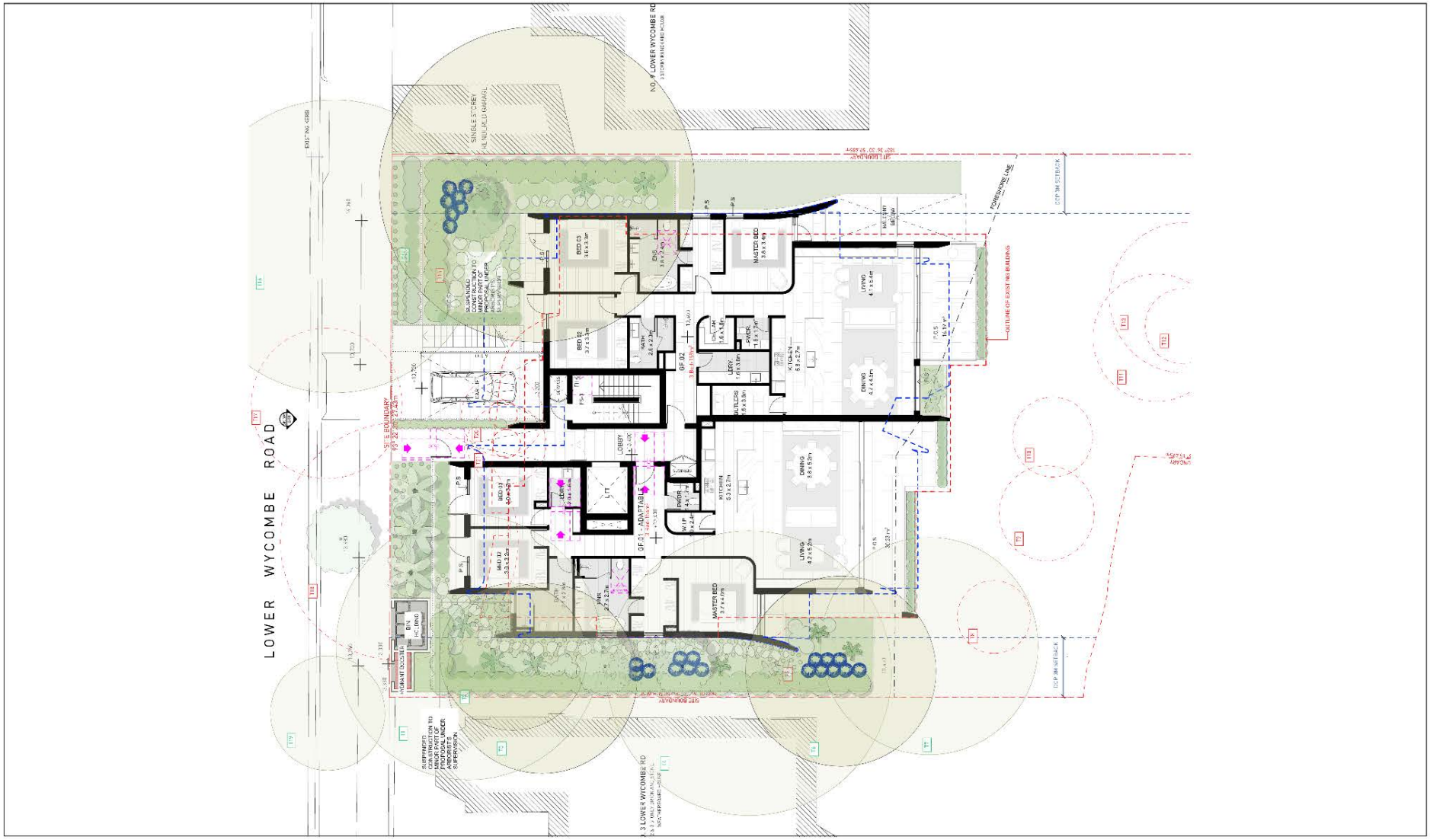
6.3. Plan of site showing proposed development - site plan



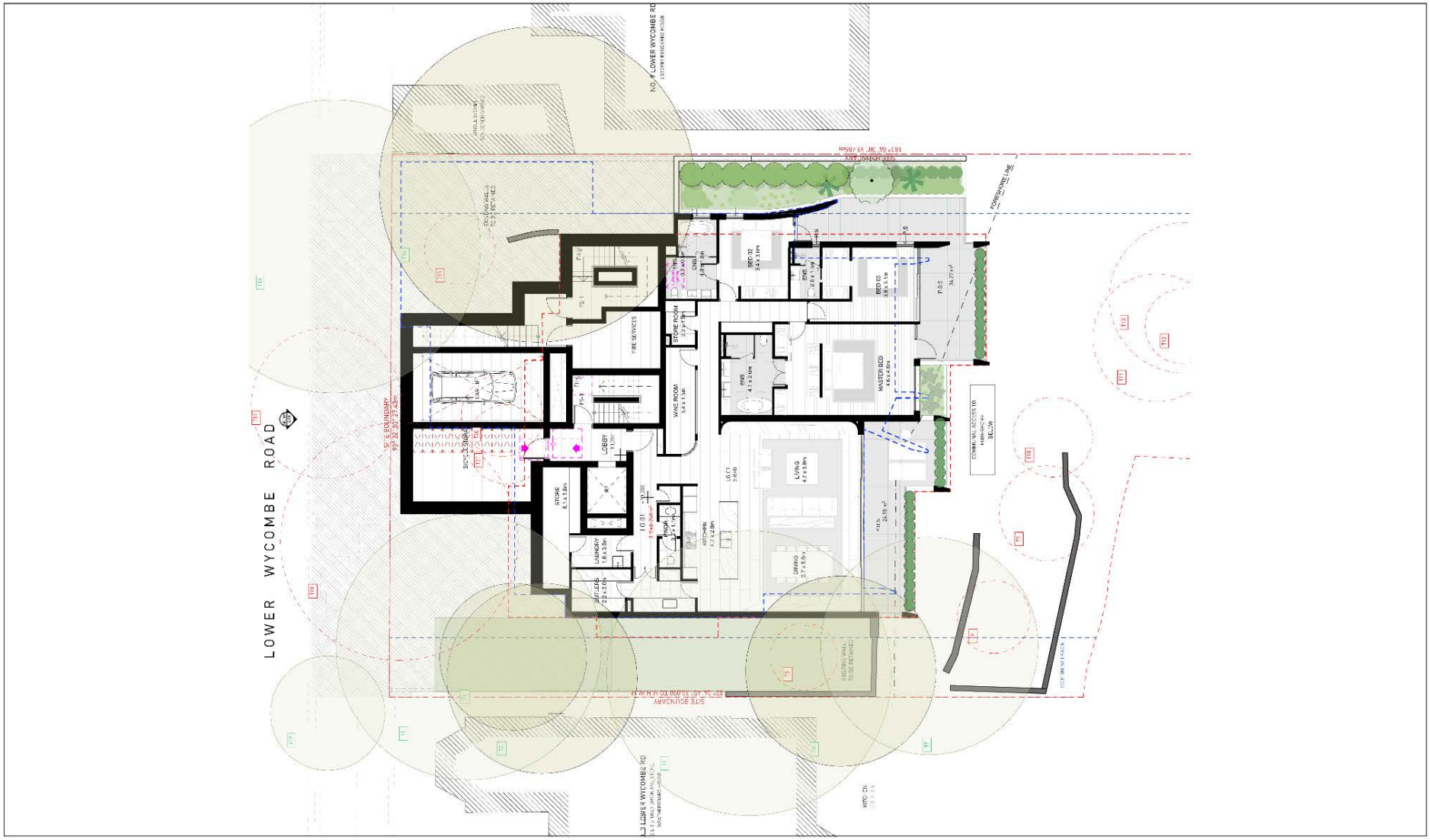
6.4. Plan of site showing proposed development - basement plan



6.5. Plan of site showing proposed development - lower ground floor



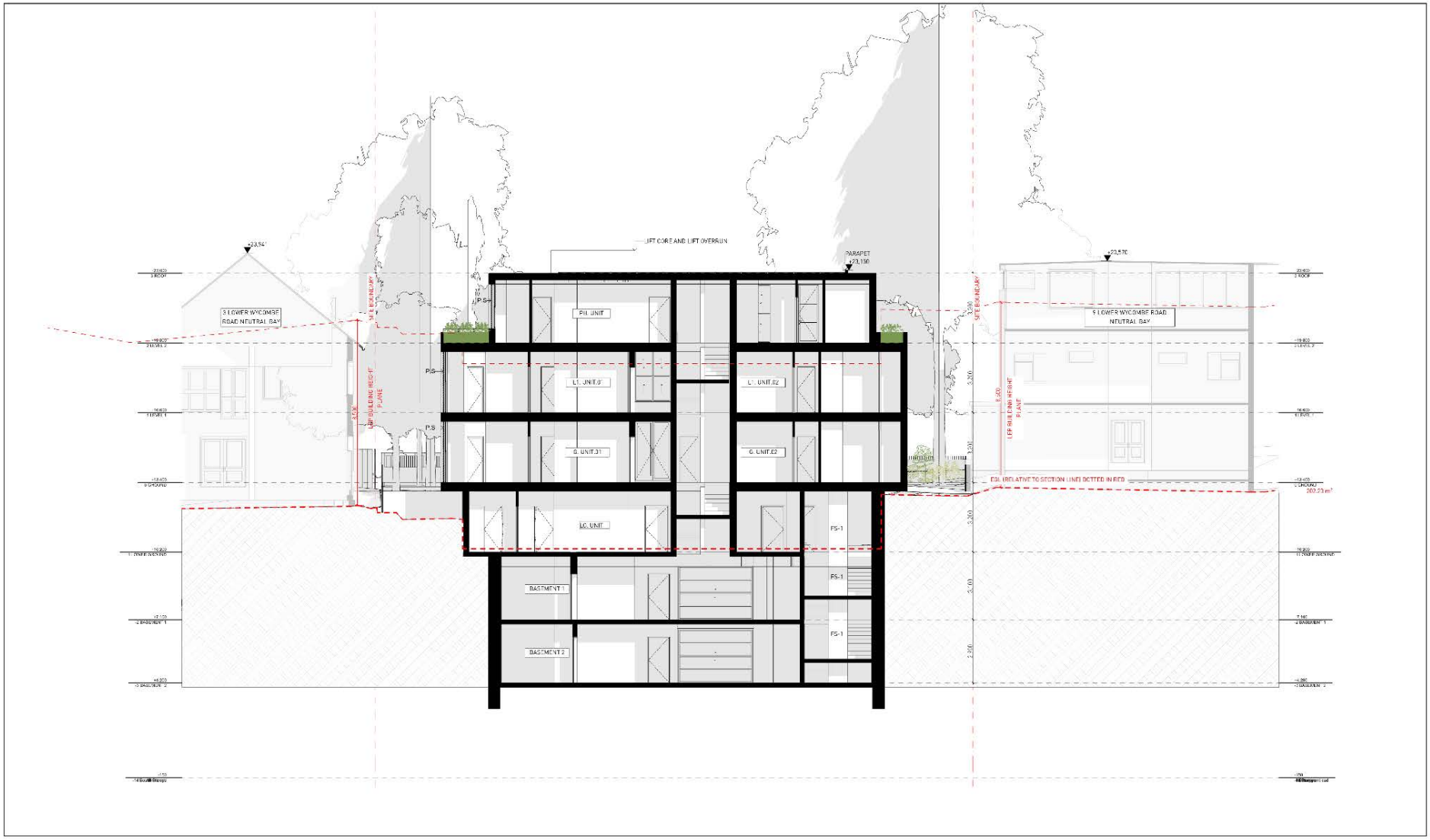
6.6. Plan of site showing proposed development - ground floor



6.7. Plan of site showing proposed development - north elevation

6.8. Plan of site showing proposed development - west elevation

6.9. Plan of site showing proposed development - section B



7. Tree Assessment

7.1. Tree schedule

KEY FOR TABLE:

AGE - Y = Young, M = Mature, OM = Over Mature D = Dead
DBH – Diameter Breast Height (mm)
SRZ – Structural Root Zone
Risk Rating – LOW, MEDIUM, HIGH, EXTREME (Colour Coded)

HT – Estimated Height (m)
DRC – Diameter above Root Crown (mm)
Health/ Condition – G = Good, F = Fair, P = Poor, D = Dead
SRIV – Sustainable Retention Index Value (Appendix 3)

CS – Estimated Crown Spread (m)
TPZ – Tree Protection Zone

Defects/Comments – NIL = Deadwood <20mm Diameter, Minor D = Minor Deadwood 20-70mm Diameter, Major D = Major Deadwood 70+mm Diameter
Significance/Retention – LOW, MEDIUM, HIGH (Colour Coded according to Retention Value)
SULE – H = High (40+ Yrs), M = Medium (15-40 Yrs), S = Short (5-15 Yrs), R = Remove, S/Y = Small or Young

No.	***Botanical Name*** **(Common Name)**	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
1	Corymbia citriodora (Lemon scented Gum)	20	16	560	600	6.7	2.7	M	G/G	MGVG	Good specimen	LOW	L	HIGH / HIGH	Retain and Protect (AS-4970-2009)
2	Corymbia citriodora (Lemon scented Gum)	15	7	310	350	3.7	2.1	M	G/F	MGVF	Suppressed form	LOW	L	MED / MED	Retain and Protect (AS-4970-2009)
3	Melaleuca quinquenervia (Broad-leaved Paperbark)	10	7	400	480	4.8	2.4	M	G/F	MGVF		LOW	L	MED / MED	Retain and Protect (AS-4970-2009)

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
4	Corymbia citriodora (Lemon scented Gum)	20	16	600	680	7.2	2.8	M	G/G	MGVG	Good specimen	LOW	L	HIGH / HIGH	Retain and Protect (AS-4970-2009)
5	Corymbia citriodora (Lemon scented Gum)	9	2	140	160	1.7	1.5	Y	G/G	YGVF	Small canopy specimen, suppressed, no space future growth	LOW	L	LOW / LOW	Remove & Replace
6	Corymbia citriodora (Lemon scented Gum)	18	12	400	450	4.8	2.4	M	G/G	MGVG		LOW	L	HIGH / HIGH	Retain and Protect (AS-4970-2009)
7	Casuarina cunninghamiana (River She Oak)	15	7	460	500	5.5	2.5	M	G/F	MGVF		LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
8	Casuarina cunninghamiana (River She Oak)	5	4	150	180	1.8	1.6	M	F/P	MGVP	Poor form from lopping	LOW	M	LOW / LOW	Remove & Replace
9	Acacia implexa (Hickory Wattle)	5	3	200	230	2.4	1.8	M	F/P	MGVP	Small specimen, poor condition	LOW	M	LOW / LOW	Remove & Replace

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
10	Casuarina cunninghamiana (River She Oak)	5	3	120	140	1.4	1.4	Y	P/P	YGVP	Poor form, poor condition, small specimen	LOW	S	LOW / LOW	Remove & Replace
11	Casuarina cunninghamiana (River She Oak)	7	7	270	300	3.2	2.0	M	F/P	MGVF	Poor form from lopping	LOW	S	LOW / LOW	Remove & Replace
12	Casuarina cunninghamiana (River She Oak)	5	6	160	230	1.9	1.8	Y	P/F	YGVP	Severe lean, poor form	LOW	S	LOW / LOW	Remove & Replace
13	Casuarina cunninghamiana (River She Oak)	7	8	320	400	3.8	2.3	M	P/F	MGVP	Poor form from lopping	LOW	S	LOW / LOW	Remove & Replace
14	Corymbia citriodora (Lemon scented Gum)	18	18	660	760	7.9	2.9	M	G/F	MGVF	Sparse form from likely previous storm damage	LOW	L	HIGH / HIGH	Retain and Protect (AS-4970-2009)
15	Tristaniopsis laurina (Water Gum)	6	5	130	140	1.6	1.4	Y	G/G	YGVG	Edge of retaining wall, limited space future growth	LOW	S	LOW / LOW	Remove & Replace

No.	*Botanical Name* (Common Name)	HT	CS	DBH (mm)	DRC (mm)	TPZ (m)	SRZ (m)	Age	Health / Cond.	SRIV	Defects / Comments	Risk Rating	SULE	Significance / Retention Value)	Recommendations
16	Tristaniopsis laurina (Water Gum)	8	12	620	620	7.4	2.7	M	G/G	MGVG	Council Street tree	LOW	L	HIGH / HIGH	Retain and Protect (AS-4970-2009)
17	Sapium sebifera (Chinese Tallowood)	8	9	320	350	3.8	2.1	M	G/G	MGVG	Council street tree	LOW	M	MED / MED	Remove & Replace
18	Melaleuca quinquenervia (Broad-leaved Paperbark)	10	9	500	600	6.0	2.7	M	G/F	MGVF	Limited space future growth, wedged between footpath and driveway	LOW	M	MED / MED	Remove & Replace
19	Sapium sebifera (Chinese Tallowood)	5	5	240	250	2.9	1.8	M	G/F	MGVF	Council street tree	LOW	M	MED / MED	Retain and Protect (AS-4970-2009)
20	Melaleuca quinquenervia (Broad-leaved Paperbark)	9	2	90	100	1.1	1.3	Y	G/F	YGVF	Small canopy specimen, planted as screening hedge	LOW	M	LOW / LOW	Remove & Replace
21	Melaleuca quinquenervia (Broad-leaved Paperbark)	9	2	80	100	1.0	1.3	Y	G/F	YGVF	Small canopy specimen, planted as screening hedge	LOW	M	LOW / LOW	Remove & Replace

TABLE 1 – TREE SCHEDULE

7.2. Site observations and photos

Tree assessments were carried out on the 10th January 2023. Photographs are shown below.

Photo 1: Trees 1-6 along the western boundary of the site.

Photo 2: Tree 7 in foreground on left, with Trees 6 and 5 behind.
All along western side of the site.

Photo 3: Trees 11, 12 and 13 at rear of site.

Photo 4: From left to right - Trees 14, 15 and 16 - Front eastern side of site.

Photo 5: From left to right - Trees 17, 18 and 19 - along the front of site.

Photo 6: Trees 20 and 21 on edge of driveway at front of site.

8. Impact of proposed development

8.1. Summary of construction impacts on trees surveyed onsite.

8.1.1. All trees that scored HIGH as priority for retention are good specimens and design efforts should be made for their protection throughout the development to ensure there are no detrimental effects to the health of the trees. Trees that have scored MEDIUM for retention should also be protected where possible without impacting the development. If it is not possible to construct the new development without seriously impacting the tree then those trees with MEDIUM retention value should be considered for removal. Trees with LOW retention value should be removed if required to accommodate the new development.

8.1.2. In some cases trees will need to be removed for the development to proceed regardless of their retention value since they are directly within the building footprint and alternative designs are not feasible. Table 2 below summarizes the trees that can be retained and protected and those that will require removal either due to conflicts with the proposed development or due to their condition, form or species type. The table also lists their retention values and the reasons they need to be removed or the TPZ encroachment that will be required if they are retained and protected.

Tree Impact Type	Reason/Details	High Retention	Medium Retention	Low Retention
Recommended for Removal	Impacts from demolition and construction works, new surfaces, grade changes; or trees in poor condition, poor health, poor form, undesirable species, safety concerns.		17, 18	5, 8-13, 15, 20, 21
Recommended for retention requiring major TPZ (>10%) encroachments and Tree sensitive construction and design.	Removal of existing structures, surfaces and/or construction of new structures, surfaces, grades, landscaping.	1, 4, 6, 14, 16		
Recommended for retention requiring only minor (<10%) or no TPZ encroachments.	Removal of existing structures, surfaces and/or construction of new structures, surfaces, grades, landscaping. Or no TPZ encroachment required.		2, 3, 7, 19	

Table 2 – Summary of construction impacts on trees surveyed onsite

8.2. Detailed impact appraisal for trees to be retained onsite

8.2.1. Tree sensitive construction techniques can generally be categorised into 2 types:

1. **Tree sensitive building footings** - to minimise the impact to root systems that require major TPZ encroachment it will be necessary to construct these footings using pier and beam / suspended slab style foundations that can be constructed above the root zone still allowing water infiltration and gaseous exchange for the root systems below. Designs for these construction works will need to be pre approved and done in consultation with the project arborist. Implementation of this form of construction will also need to be done according to the following conditions:
    a. Excavations for footings will need to be done manually or using non-destructive techniques (i.e Air Spade or Hydrovac) to ensure no roots are damaged. These excavations may also need to be supervised at the discretion of the project arborist.
    b. The exact location of piers will need to be flexible to ensure they can be moved if there is a conflict with a significant root (greater 50mm diameter).
    c. Piers will need to be located at least 150mm from any significant roots (greater 50mm diameter)
    d. Pruning of roots greater than 30mm diameter should only be done in consultation with the project arborist.
    e. There should be no grade changes without consultation with the project arborist.
    f. The suspended slab will need to be slightly above the ground level to ensure water infiltration and gaseous exchange for the root system.

2. **Tree sensitive surface installations** - driveways, footpaths, landscaping - new surfaces will need to be constructed above the existing grades in the TPZ, involve no excavations within the TPZ or any root pruning and still allow gaseous exchange for the root systems and water infiltration. Designs for these construction works will need to be pre approved and done in consultation with the project arborist. In general these tree sensitive surface installations above the existing grade levels involve a synthetic load spreading material and a large aggregate subbase above a geotech fabric or similar. The upper pavement level can then either be a large aggregate material, permeable pavers or permeable concrete depending on the load spreading material underneath. Many of the popular products on the market now use a plastic cellular product that can be filled with aggregate, spreading the load but preventing any compaction of the layers. Further examples of some of these techniques can be found in Appendix 5.

8.2.2. Table 3 below lists the actual TPZ and SRZ radius and details of any TPZ encroachments, tree sensitive construction and tree sensitive demolition techniques that will be required for each tree. The tree protection plan shown in section 8.4 below also shows details of any encroachment and the location of the TPZs for each tree. In all cases, no roots greater than 40mm diameter in the TPZs of any trees are to be pruned, and no roots at all within the SRZs for any tree, without consultation with the project arborist. TPZ fencing should be set-up as shown in section 8.4 and as directed by the project arborist.

TREES RECOMMENDED FOR RETENTION AND PROTECTION			
No	**Species**	**TPZ / SRZ radius (m)**	**TPZ Encroachment required (<10%=Minor, >10%=Major) Details of any tree sensitive construction techniques and/or demolition required to ensure tree protection according to AS-4970-2009.**
1	Corymbia citriodora (Lemon scented Gum)	6.7 / 2.7	TPZ overlays show major TPZ encroachment required but in reality the proposed new development occupies almost exactly the same footprint as the existing building which due to the existing slab, boundary walls and basement levels below would have prevented lateral root growth in this direction. Therefore the actual TPZ encroachment will be less than 10% and there will be no new SRZ encroachment so this will be acceptable according to AS-4970-2009 provided there are no grade changes greater than 100mm for the landscaping works and no new retaining walls etc that would require any excavations or root pruning in the SRZ/TPZ area surrounding this tree. The minor extension shown on the floor plan outside the existing building footprint will be done using a suspended slab to prevent conflict with roots, as annotated on the plans. The Booster and Bin storage area will also need to be constructed above any roots that may be present. All excavations for demolition and construction works will need to be done using non-destructive techniques (i.e Hydrovac) and under the supervision of the project arborist. No root pruning will be possible within the SRZ and in many cases existing walls within the SRZ will need to remain or be replaced in exactly the same location since the root system will be using these walls for structural support. TPZ fencing and trunk/limb protection required for this tree.
2	Corymbia citriodora (Lemon scented Gum)	3.7 / 2.1	TPZ overlays show major TPZ encroachment required but in reality the proposed new development occupies almost exactly the same footprint as the existing building which due to the existing slab, boundary walls and basement levels below would have prevented lateral root growth in this direction. Therefore the actual TPZ encroachment will be less than 10% and there will be no new SRZ encroachment so this will be acceptable according to AS-4970-2009 provided there are no grade changes greater than 100mm for the landscaping works and no new retaining walls etc that would require any excavations or root pruning in the SRZ/TPZ area surrounding this tree. The minor extension shown on the floor plan outside the existing building footprint will be done using a suspended slab to prevent conflict with roots, as annotated on the plans. All excavations for demolition and construction works will need to be done using non-destructive techniques (i.e Hydrovac) and under the supervision of the project arborist. No root pruning will be possible within the SRZ and in many cases existing walls within the SRZ will need to remain or be replaced in exactly the same location since the root system will be using these walls for structural support. TPZ fencing and trunk/limb protection required for this tree.

TREES RECOMMENDED FOR RETENTION AND PROTECTION			
No	**Species**	**TPZ / SRZ radius (m)**	**TPZ Encroachment required (<10%=Minor, >10%=Major) Details of any tree sensitive construction techniques and/or demolition required to ensure tree protection according to AS-4970-2009.**
3	Melaleuca quinquenervia (Broad-leaved Paperbark)	4.8 / 2.4	TPZ overlays show major TPZ encroachment required but in reality the proposed new development occupies almost exactly the same footprint as the existing building which due to the existing slab, boundary walls and basement levels below would have prevented lateral root growth in this direction. Therefore the actual TPZ encroachment will be less than 10% and there will be no new SRZ encroachment so this will be acceptable according to AS-4970-2009 provided there are no grade changes greater than 100mm for the landscaping works and no new retaining walls etc that would require any excavations or root pruning in the SRZ/TPZ area surrounding this tree. The minor extension shown on the floor plan outside the existing building footprint will be done using a suspended slab to prevent conflict with roots, as annotated on the plans. All excavations for demolition and construction works will need to be done using non-destructive techniques (i.e Hydrovac) and under the supervision of the project arborist. No root pruning will be possible within the SRZ and in many cases existing walls within the SRZ will need to remain or be replaced in exactly the same location since the root system will be using these walls for structural support. TPZ fencing, TPZ mulching and trunk/limb protection required for this tree..
4	Corymbia citriodora (Lemon scented Gum)	7.2 / 2.8	TPZ overlays show major TPZ encroachment required but in reality the proposed new development occupies almost exactly the same footprint as the existing building which due to the existing slab, boundary walls and basement levels below would have prevented lateral root growth in this direction. Therefore the actual TPZ encroachment will be less than 10% and there will be no new SRZ encroachment so this will be acceptable according to AS-4970-2009 provided there are no grade changes greater than 100mm for the landscaping works and no new retaining walls etc that would require any excavations or root pruning in the SRZ/TPZ area surrounding this tree. The minor extension shown on the floor plan outside the existing building footprint will be done using a suspended slab to prevent conflict with roots, as annotated on the plans. All excavations for demolition and construction works will need to be done using non-destructive techniques (i.e Hydrovac) and under the supervision of the project arborist. No root pruning will be possible within the SRZ and in many cases existing walls within the SRZ will need to remain or be replaced in exactly the same location since the root system will be using these walls for structural support. TPZ fencing, TPZ mulching and trunk/limb protection required for this tree..

TREES RECOMMENDED FOR RETENTION AND PROTECTION			
No	**Species**	**TPZ / SRZ radius (m)**	**TPZ Encroachment required (<10%=Minor, >10%=Major) Details of any tree sensitive construction techniques and/or demolition required to ensure tree protection according to AS-4970-2009.**
6	Corymbia citriodora (Lemon scented Gum)	4.8 / 2.4	TPZ overlays show major TPZ encroachment required but in reality the proposed new development occupies almost exactly the same footprint as the existing building which due to the existing slab, boundary walls and basement levels below would have prevented lateral root growth in this direction. Therefore the actual TPZ encroachment will be less than 10% and there will be no new SRZ encroachment so this will be acceptable according to AS-4970-2009 provided there are no grade changes greater than 100mm for the landscaping works and no new retaining walls etc that would require any excavations or root pruning in the SRZ/TPZ area surrounding this tree. The minor extension shown on the floor plan outside the existing building footprint will be done using a suspended slab to prevent conflict with roots, as annotated on the plans. All excavations for demolition and construction works will need to be done using non-destructive techniques (i.e Hydrovac) and under the supervision of the project arborist. No root pruning will be possible within the SRZ and in many cases existing walls within the SRZ will need to remain or be replaced in exactly the same location since the root system will be using these walls for structural support. TPZ fencing, TPZ mulching and trunk/limb protection required for this tree.
7	Casuarina cunninghamiana (River She Oak)	5.5 / 2.5	TPZ overlays show major TPZ encroachment required but in reality the proposed new development occupies almost exactly the same footprint as the existing building which due to the existing slab, boundary walls and basement levels below would have prevented lateral root growth in this direction. Therefore the actual TPZ encroachment will be less than 10% and there will be no new SRZ encroachment so this will be acceptable according to AS-4970-2009 provided there are no grade changes greater than 100mm for the landscaping works and no new retaining walls etc that would require any excavations or root pruning in the SRZ/TPZ area surrounding this tree. The minor extension shown on the floor plan outside the existing building footprint will be done using a suspended slab to prevent conflict with roots, as annotated on the plans. All excavations for demolition and construction works will need to be done using non-destructive techniques (i.e Hydrovac) and under the supervision of the project arborist. No root pruning will be possible within the SRZ and in many cases existing walls within the SRZ will need to remain or be replaced in exactly the same location since the root system will be using these walls for structural support. TPZ fencing and trunk/limb protection required for this tree.

TREES RECOMMENDED FOR RETENTION AND PROTECTION			
No	**Species**	**TPZ / SRZ radius (m)**	**TPZ Encroachment required (<10%=Minor, >10%=Major) Details of any tree sensitive construction techniques and/or demolition required to ensure tree protection according to AS-4970-2009.**
14	Corymbia citriodora (Lemon scented Gum)	7.9 / 2.9	TPZ overlays show major TPZ encroachment required but in reality the proposed new development occupies almost exactly the same footprint as the existing building which due to the existing slab, boundary walls and basement levels below would have prevented lateral root growth in this direction. Therefore the actual TPZ encroachment will be less than 10% and there will be no new SRZ encroachment so this will be acceptable according to AS-4970-2009 provided there are no grade changes greater than 100mm for the landscaping works and no new retaining walls etc that would require any excavations or root pruning in the SRZ/TPZ area surrounding this tree. The minor extension shown on the floor plan outside the existing building footprint will be done using a suspended slab to prevent conflict with roots, as annotated on the plans. All excavations for demolition and construction works will need to be done using non-destructive techniques (i.e Hydrovac) and under the supervision of the project arborist. No root pruning will be possible within the SRZ and in many cases existing walls within the SRZ will need to remain or be replaced in exactly the same location since the root system will be using these walls for structural support. TPZ fencing, TPZ mulching and trunk/limb protection required for this tree.
16	Tristaniopsis laurina (Water Gum)	7.4 / 2.7	New TPZ encroachment of approximately 10% required for landscaping works at front of site and outside of SRZ so acceptable according to AS-4970-2009. DEmolition of existing driveway crossover and any construction works in this area will need to be supervised by the project arborist. TPZ fencing and trunk/limb protection required for this tree.
19	Sapium sebifera (Chinese Tallowood)	2.9 / 1.8	No TPZ encroachment required. TPZ fencing and trunk/limb protection required for this tree.

TABLE 3 – TPZ FOR RETAINED TREES AND ASSOCIATED ENCROACHMENTS

8.3. Pruning works required for trees to be retained onsite

The proposed new building itself does not require much canopy pruning for building clearances of the trees to be retained since it is a very similar height and size to the existing building and the branches are currently clear of the existing building. There will need to be some canopy pruning to enable piling works and crane access for construction works onsite. Branch pruning will not be required for scaffolding clearances but the trunks of existing trees are likely to conflict with some of the scaffolding works so they will need to be constructed around each of the trees and all trees will require branch and trunk protection as per AS-4970-2009. Table 4 below gives a summary of the pruning works required on each tree being retained onsite. All pruning works are to be done under coordination of the project arborist.

PRUNING WORKS REQUIRED ON ALL TREES RECOMMENDED FOR RETENTION		
No	**Species**	**Pruning Specifications required for building clearances, piling machinery clearances and crane access.**
1	Corymbia citriodora (Lemon scented Gum)	Pruning of approximately 15% of canopy required for clearances needed for crane access with construction on site. Branches to be pruned include: x 1 large 1st order low limb of approx 200mm diameter extending across the existing building in a north-easterly direction (prune back to trunk). x 1 2nd order branch of approx 160mm diameter from limb extending across the roofline in easterly direction (attached halfway along the limb). x 1 2nd order branch of approx 120mm diameter extending across the roofline in easterly direction from the same limb. x 2 2nd order branches of approx 80mm diameter extending across the roofline in easterly direction from the same limb.
2	Corymbia citriodora (Lemon scented Gum)	Pruning of approximately 10% of canopy required for clearances needed for crane access with construction on site. Branches to be pruned include: x 1 3rd order low branch of approx 120mm diameter extending across the existing building in an easterly direction.
3	Melaleuca quinquenervia (Broad-leaved Paperbark)	Minor pruning of less than 5% and maximum branch diameters of 50mm required for building clearances.
4	Corymbia citriodora (Lemon scented Gum)	Pruning of approximately 15% of canopy required for clearances needed for crane access with construction on site. Branches to be pruned include: x 1 large 1st order low limb of approx 180mm diameter extending across the existing building in an easterly direction (prune back to trunk). x 1 2nd order branch of approx 100mm diameter extending across the roofline in easterly direction.

PRUNING WORKS REQUIRED ON ALL TREES RECOMMENDED FOR RETENTION		
No	**Species**	**Pruning Specifications required for building clearances, piling machinery clearances and crane access.**
6	Corymbia citriodora (Lemon scented Gum)	Minor pruning of up to 10% with maximum branch diameters of 100mm required for building clearances and crane access.
7	Casuarina cunninghamiana (River She Oak)	Minor pruning of up to 10% with maximum branch diameters of 100mm required for building clearances and crane access.
14	Corymbia citriodora (Lemon scented Gum)	Minor pruning of up to 10% required for clearances needed for crane access with construction on site. Branches to be pruned include: x 1 large 1st order branch of approx 180mm diameter on the westerly side of the canopy. It may be possible to only reduce the tip of this limb (x 2 50mm diameter branches) instead and work around this limb with the crane but this can be assessed when onsite by the project arborist. This would be preferable to aid with balancing the canopy better.
16	Tristaniopsis laurina (Water Gum)	No pruning works required.
19	Sapium sebifera (Chinese Tallowood)	No pruning works required.

Table 4 – Pruning specifications for trees being retained onsite.

8.4. Trees recommended for removal

Table 3 below lists the trees onsite that have been recommended for removal together with reasons and any additional details.

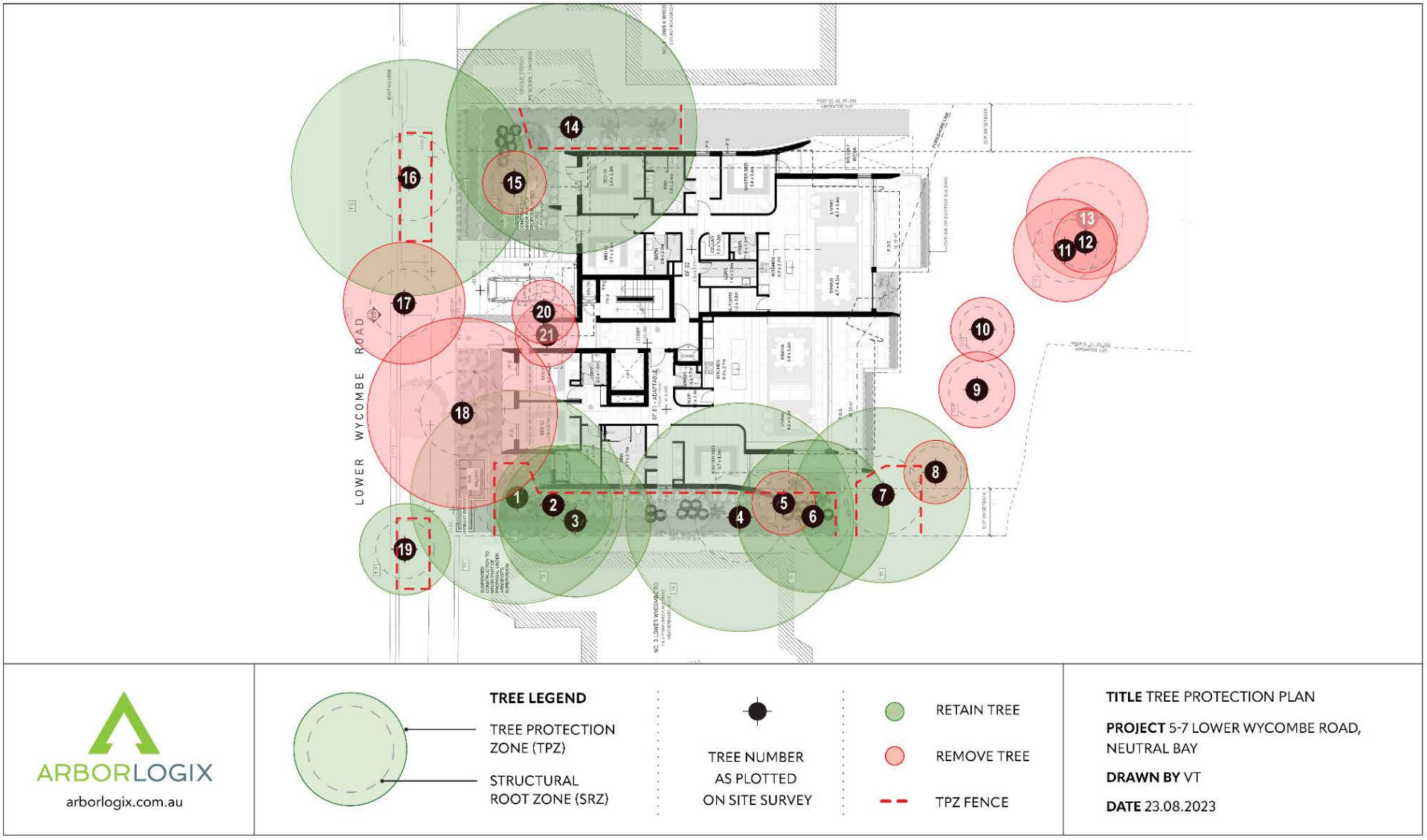
TREES RECOMMENDED FOR REMOVAL			
No.	**Species**	**Significance / Retention Value**	**Details / Specifications**
5	Corymbia citriodora (Lemon scented Gum)	LOW	Low retention value due to small size, suppressed form and no space to grow on the existing site underneath canopies of adjacent trees. Conflict with proposed development - construction of curved blade very close to the trunk of tree, no space for growth or space required for construction works and scaffolding. Remove and replace with a more suitable under canopy specimen that won't conflict with adjacent large canopy species.
8	Casuarina cunninghamiana (River She Oak)	LOW	Low retention value. Poor form and condition. Remove and replace new plantings as per landscape plan.
9	Acacia implexa (Hickory Wattle)	LOW	Low retention value. Poor form and condition. Remove and replace new plantings as per landscape plan.
10	Casuarina cunninghamiana (River She Oak)	LOW	Low retention value. Poor form and condition. Remove and replace new plantings as per landscape plan.
11	Casuarina cunninghamiana (River She Oak)	LOW	Low retention value. Poor form and condition. Remove and replace new plantings as per landscape plan.

TREES RECOMMENDED FOR REMOVAL			
No.	**Species**	**Significance / Retention Value**	**Details / Specifications**
12	Casuarina cunninghamiana (River She Oak)	LOW	Low retention value. Poor form and condition. Remove and replace new plantings as per landscape plan.
13	Casuarina cunninghamiana (River She Oak)	LOW	Low retention value. Poor form and condition. Remove and replace new plantings as per landscape plan.
15	Tristaniopsis laurina (Water Gum)	LOW	Low retention value due to small size and no space future growth adjacent to retaining wall. Remove and replace with new plantings as per landscape plan.
17	Sapium sebifera (Chinese Tallowood)	MED	Medium retention value but conflict with proposed development design - located within the footprint of proposed new central driveway. The driveway was moved to this new location to ensure the retention of Tree 14 as requested by council.
18	Melaleuca quinquenervia (Broad-leaved Paperbark)	MED	Medium retention value tree but not possible to retain and carry out a development on this site since it would inhibit use of any site cranes and piling equipment and it would require major TPZ and SRZ encroachment for new building and proposed grade changes for landscaping works. Tree is currently causing several issues with damage to adjacent public footpaths and the driveway, and has very limited space for any future growth. Remove and replace new plantings as per landscape plan.
20	Melaleuca quinquenervia (Broad-leaved Paperbark)	LOW	Conflict with proposed development. Within the proposed building footprint. Remove and replace with new plantings as per landscape plan.

TREES RECOMMENDED FOR REMOVAL			
No.	**Species**	**Significance / Retention Value**	**Details / Specifications**
21	Melaleuca quinquenervia (Broad-leaved Paperbark)	LOW	Conflict with proposed development. Within the proposed building footprint. Remove and replace with new plantings as per landscape plan.

Table 5 – Details of trees recommended for removal

8.5. Tree protection and removals plan



9. RECOMMENDATIONS

This arboricultural impact report recognizes that as a consequence of development in some cases certain trees may need to be removed to accommodate new constructions despite some of the specimen trees being of good health. This report has based its recommendations on ensuring that all trees that can be retained and integrated into this future development will be protected throughout all stages of development.

The recommendations of this report include:

9.1. Retention and Protection of Trees 1, 2, 3, 4, 6, 7, 14, 16 and 19 according to AS-4970-2009 (Protection Trees on Development Sites). No roots are to be pruned greater than 40mm diameter within any TPZ and no roots at all within any SRZ without the authorisation of the project arborist. Details of any TPZ encroachment and tree protection required are found in sections 8.1, 8.2, 8.3 and 8.5 (Tree Protection Plan).

9.2. Removal and replacement of Trees 5, 8-13, 15, 17, 18, 20 and 21 due to their low retention values and/or conflicts with the proposed development and landscaping design. More details can be found in section 8.1 and 8.4.

9.3. Generally all activities involving soil level changes, excavation, storage, cleaning and refueling are prohibited (a full list is found in section 4.2 AS-4970) within the TPZ. Installation of any underground services including stormwater infrastructure will need to be done in accordance with the conditions listed in 10.4.2. Some activities may be authorized if required but only by the project arborist. Any additional mulching or irrigation required should be done at the discretion of the project arborist.

9.4. Branch and Truck protection, if required (only if access into TPZ needed), should be installed as detailed in section 10.3.2 of this report.

9.5. All other tree protection measures required during construction and detailed in section 8.5 (Tree Protection Plan) of this report are to be complied with.

9.6. Any tree removal works and tree protection measures should be carried out by an arborist with a minimum qualification of AQF level 3 and certified by the project arborist. The project arborist should have a minimum qualification of AQF level 5 or equivalent.

9.7. All works on-site should be carried out according to Workcover Authority NSW 2007, *Code of Practice Amenity Tree Industry,* NSW.

9.8. All works should be carried out according to AS-4373-2007 (Pruning of Amenity Trees) and AS-4970-2009 (Protection trees on development sites).

10. Tree protection requirements - method statement

10.1. Project arborist

10.1.1. A project arborist with a minimum of 5 years experience within the arboriculture industry, demonstrated management of trees on construction sites and a minimum certification of AQF-Level 5 (Diploma Level) should be appointed to oversee all areas of the project regarding any activities that may occur close to or within any TPZs of tree that are to be retained. They should be involved in all stages of early planning to prevent any damage to the trees to be retained and any unnecessary hold ups for the development if certain conditions and requirements have not been addressed.

10.1.2. The project arborist should complete regular inspections and monitoring of the site to ensure all tree protection measures are being adhered to, any additional protection measures are implemented if tree health appears to be in decline and all monitoring is documented for compliance certification. It is very important that communications channels between planners, architects, builders and the project arborist are kept open to ensure that the trees are protected throughout every stage of the development. Remediation measures are far less likely to be successful than careful planning with regards to tree protection. All site personnel must be properly briefed before any work starts.

10.2. Construction hold points and responsibilities

10.2.1. In order to ensure that all the required tree protection works are complied with and carried out in the correct sequence it is important that all site personnel understand the details of the arboricultural method statement and the site specific conditions that apply. This is done through clear communication channels between the developer, the project arborist and the site demolition and construction personnel. In order to ensure this is done correctly a series of construction hold points need to be met at each stage of the development and continuation to the next hold point cannot happen until the prior one has been inspected and signed off by the project arborist.

10.2.2. It is the site developers responsibility that all personnel are aware of these construction hold points and communication with the project arborist is maintained throughout the development process. It is too late to contact the project arborist at the end of the construction phase and ask them to certify that tree protection measures were in place at the beginning of the project 6 months earlier. Table 4 below details each of the construction hold points and the persons responsible for implementation and certification.

Hold Point	Details	Project Stage	Responsibility	Inspection & Certification
1	Pre construction meeting between project arborist and principal contractor to discuss tree protection requirements, methods and any issues relating to practicality and feasibility of tree protection requirements.	Prior to demolition and development work commencing.	Principal contractor	Project arborist
2	Marking of all trees that are proposed for removal onsite.	Prior to demolition and development work commencing.	Principal contractor	Project arborist
3	Installation of all tree protection requirements (TPZ fencing, ground protection, trunk protection, irrigation) in accordance with AS-4970-2009 and the arboricultural impact assessment report for the site.	Prior to demolition and development work commencing.	Principal contractor	Project arborist
4	Supervision of all demolition, excavations, underground service installations and construction works that will involve a major TPZ encroachment (greater 10% TPZ) of any trees to be retained and protected onsite. No roots greater 40mm diameter pruned without consultation project arborist.	Throughout the development, prior to works occuring within the TPZ.	Principal contractor and construction personnel.	Project arborist
5	Site inspections to ensure AS-4970-2009 compliance during construction, monitor health of trees and determine any measures required to mitigate detrimental impacts on protected trees. Advice on any modifications to tree protection in later stages of development to allow landscaping and approved low impact construction within tree TPZs.	Every 1-2 months as determined by the project arborist in Hold Point 1.	Principal contractor	Project arborist
6	Removal of tree protection measures and inspection of protected trees to ensure health and condition the same as pre construction. Advice on any mitigation works required to improve tree health and new tree planting management.	Construction completion.	Principal contractor	Project arborist

Table 4 – Details of trees recommended for removal

10.3. Tree protection works – prior to demolition

All TPZs (Tree Protection Zones) will need to be constructed as shown in a Tree Protection Plan produced by the project arborist prior to any demolition. Any encroachments or setbacks required to accommodate the new development need to be done in consultation with the project arborist.

10.3.1. General TPZ – no access authorised

The Protective fencing, signage and area within the TPZ should be constructed according to AS-4970-2009.

- Protective Fencing – The fencing delineates the boundary of the TPZ and should be positioned in accordance with Site Plan – Tree Protection zones and in consultation with the project arborist. Section 4, 4.3 of AS-4970 states " Fencing should be erected before any machinery or materials are brought onto the site and before the commencement of works including demolition. Once erected, protective fencing must not be removed or altered without approval by the project arborist. The TPZ should be secured to restrict access. AS-4687 specifies applicable fencing requirements. Shade cloth or similar should be attached to reduce the transport of dust, other particulate matter and liquids into the protected area. Fence posts and supports should have a diameter greater than 20mm and be located clear of roots.

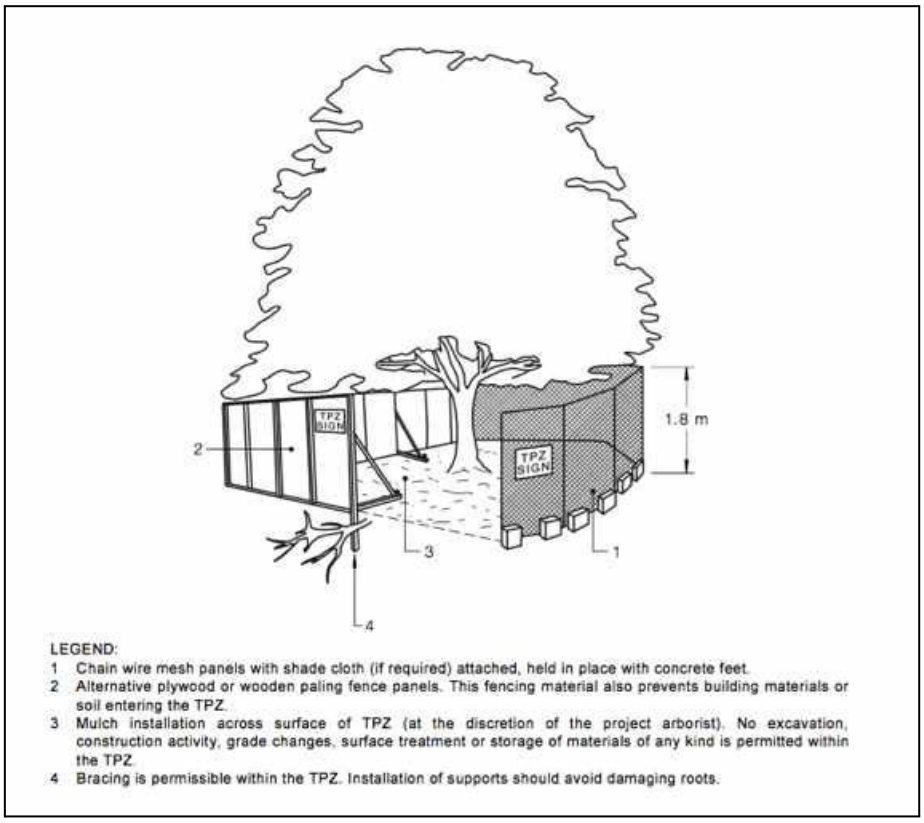


Figure 1 – TPZ fencing example from AS-4970-2009.

- TPZ encroachment – If encroachment is required to accommodate the building footprint then consideration should be given to the fact that the TPZ does actually extend outside of the fenced area and the rules regarding activities prohibited in the TPZ should apply to the distances presented in table 3 section 8.2 above and not just inside the fenced TPZ area.

- Signage – Signs identifying the TPZ should be placed around the edge of the TPZ and be visible from the development site.
- Mulching – Mulch installation across the surface of the TPZ should be carried out at the discretion of the project arborist. If required it should be applied to a depth of 100mm, consisting of approximately 75% leaf litter and 25% wood, and preferably from the same genus and species of tree to which they are protecting.
- Irrigation – At the discretion of the project arborist a timed drip irrigation system can be installed prior to any demolition works if it is deemed necessary.

10.3.2. Access to TPZ – temporary or permanent

The client has not detailed the exact location of logistical vehicular traffic and/or pedestrian traffic required during the construction phase. In general no access or any works are authorized inside a TPZ although pedestrian and vehicular access should still be allowed on roads and pavements already in place. If it is determined that entry into or through any of the TPZs are required then additional protection measures will be required. These are outlined in AS-4970-2009 in section 4.5 and listed below:

- Trunk and Branch Protection
  If access into the TPZ area is required for any scaffolding, or machinery, within 2m of the trees, then trunk and branch protection will need to be installed on limbs up to those above the height of tallest vehicle/scaffold. This should be installed by wrapping 2 layers of hessian (or similar material) around the branches and then securing hardwood battens (75x50x2000mm) at 100mm centers as shown in figure 2 below.

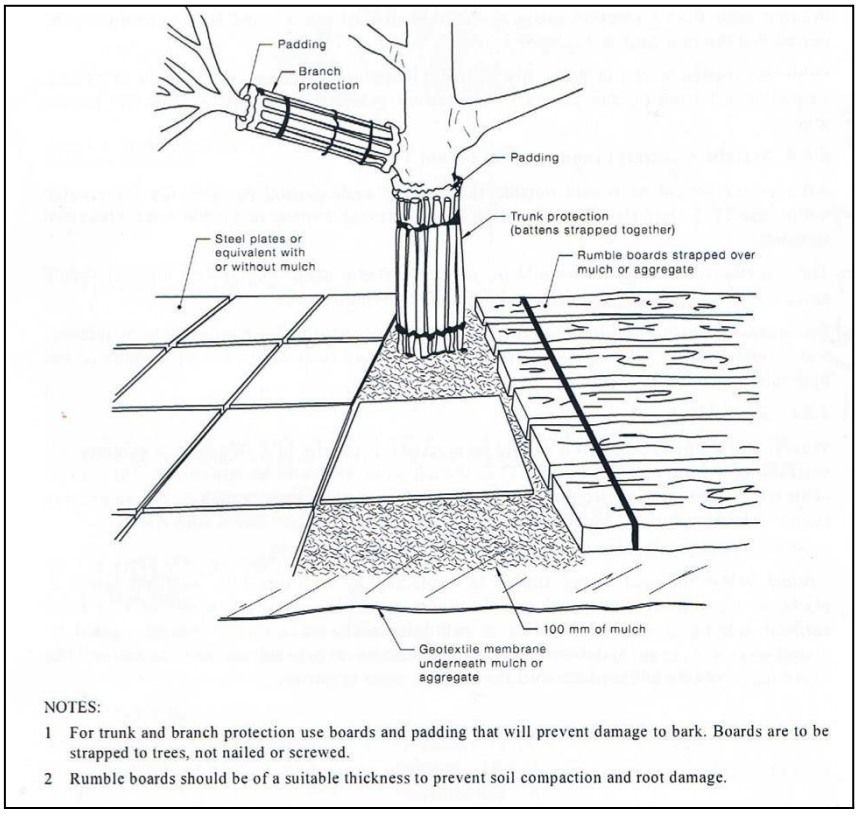


Figure 2 – TPZ TEmporary access – protection measures

- Ground Protection.
  If machinery or pedestrian access is required within the TPZ then ground protection measures will be required to prevent any compaction or root damage. These measures require a permeable membrane such as geotextile fabric beneath a 100mm layer of mulch with rumble boards or steel plates laid above as shown in figure 2 above.

10.4. Tree protection measures – during construction

Some activities may be authorized by the project arborist but generally all activities involving soil level changes, excavation, storage, excavation, cleaning and refueling are prohibited (a full list is found in section 4.2 AS-4970). There are some additional guidelines that do allow certain activities within the TPZ during construction but all of these need to be supervised and determined by the project arborist.

10.4.1. Excavation and fill in TPZ

Guidelines for excavation within the TPZ:

- All works must be carried out under the supervision of the project arborist.
- Root mapping for any encroachment greater than 10% of the TPZ will need to be carried out by the project arborist to determine the extent of root growth within the area designated for development. All root mapping will need to be done with non destructive techniques such as an air spade, water laser, manual digging (taking care not to damage roots or bark) or ground penetrating radar. The root mapping exercise should determine the extent of woody structural roots greater than 50mm diameter within the proposed development footprint and determine the amount of root pruning that would be possible. When the project arborist identifies roots to be pruned (>50mm) they should be cut with sharp tools such as pruners or chainsaws and back to undamaged wood. No 'pruning' is to be done by machinery.
- Root protection during works – Some approved works such as regrading, installation of piers or landscaping may have potential to damage roots. Where roots are exposed within the TPZ, temporary root protection should be installed to prevent them drying out. This may include jute matting or hessian sheeting as multiple layers. This should be pegged in place and kept moist during the period that the root zone is exposed.

Guidelines for adding fill within the TPZ:

- Any material used as fill should be approved by the project arborist and consist of a coarse, gap-graded material to provide aeration and infiltration to the root zone. Clays and any sort of fines should not be used since this will seriously impact the future health of the tree.
- No grade changes greater than 250mm should be done without approval of the project arborist and any compaction should be done with a non-vibrating roller.

10.4.2. Demolition and installation of structures in TPZ

- All demolition and installation of structures within the TPZ will need to be done under the instruction of the project arborist.
- Great care should be taken to ensure no roots are damaged as structures or surfaces are removed since roots are often very close to the surface. No heavy machinery is allowed within any TPZs and any removal of structures and surfaces should be done using appropriate hand and power tools to ensure roots are not damaged underneath the surface being removed.
- Installation of new surfaces should be semi permeable to allow water and gaseous exchange to the root zone underneath. There are several specialised surface materials and technologies that can allow for this whilst ensuring adequate loading is still possible without any additional compaction. The project arborist will need to determine which of these will be suitable for the application.
- Installation of building structures within the TPZ may require piled supports that are located between the larger structural roots and enable the structure to be suspended. This is an engineering solution that

will require the collaboration of the project arborist and the architect to develop the correct designs. above the root zone and therefore limit the detrimental effects of the encroachment into this area.

- Installing underground services – If services must be routed through a TPZ they should be installed by directional drilling (at least 600mm deep) or in manually excavated trenches using non-destructive techniques such as hydrovacs or airspades (supervised by project arborist) and the services can then be laid underneath or between the root system.
- Scaffolding – When it is essential to erect scaffolding within a TPZ it should be designed to minimize any branch removal. Branches should be tied back, or when unavoidable, pruned as required according to AS-4373. These works may require authority from LGA. Ground protection as detailed in section 10.3.2 above may also be required.

10.4.3. Soft landscaping in TPZ

Guidelines for Soft Landscaping within the TPZ:

- Soft landscaping involves the addition of soil, trees and plants, lawns and mulch. These all have the potential to be extremely damaging to trees if not done according to directions of the project arborist.
- No significant excavations, turfing, plantings, grade changes, soil addition or removal, addition of fertilisers or mulching should be done without consultation with project arborist
- Areas too close to tree trunks should not be have grade changes or be excessively mulched

10.4.4. Monitoring during construction

All the TPZs for the retained trees are to be monitored and maintained throughout the construction phase of development. Areas that may require maintenance include:

- Mulching – mulch (if required) must be maintained to a depth of 50-100mm. Where the existing landscape within the TPZ is to remain unaltered, mulch may not be required.
- Irrigation – Soil moisture levels may need to be monitored by the project arborist. Temporary irrigation or watering may be required within the TPZ upon discretion of project arborist.

The project arborist should monitor at regular intervals all construction works and excavations on site that are within the proximity of any TPZ to ensure that protection measures are being adhered to and no works are likely to affect the health of the protected trees.

10.5. Post construction

At completion of all construction works the project arborist should assess the tree conditions and provide certification for tree protection with a condition that outstanding works or landscaping must not injure the trees. After this all tree protection measures should be removed from the site.

Following the final inspection and completion of remedial works the project arborist should certify the completed works have been carried out in compliance with the approved plans and specifications according to AS-4970-2009. Monitoring documentation and any deviations should also be provided

11. QUALIFICATIONS

- **Master Science Degree (MSc Hons)** – Information Technology (Sheffield Hallam University, UK)
- **Graduate Diploma (Arboriculture) – AQF Level 8** - (University of Melbourne) – 1st Class Hons
- **Bachelor Science Degree (BSc Hons)** - Environmental Science (Leeds University, UK)
- **Diploma Horticulture (Arboriculture)** – **AQF Level 5** - (Kurri Kurri TAFE) – Distinction
- **Certified Tree Risk Assessor** –QTRA Certified and ISA TRAQ Certified Risk Assessor
- **Arboriculture AQF Level 3** – Horticulture (Arboriculture) (Ryde TAFE)
- Member Arboriculture Australia – 12 Years
- 20 years arboriculture industry experience - Tree contractor and consulting arborist

12. References

1. Barrell, Jeremy (2009). *SULE: Its use and status into the new Millennium*. Barrell Tree Consultancy. http://www.barrelltreecare.co.uk/pdfs/BT08-Sydney.pdf
2. Matheny, N.P & Clark, J.R (1994). A photographic Guide to the Evaluation of Hazard Trees in Urban Areas. International Society Arboriculture (ISA)
3. Mattheck, K and Breloer, H (2007). *The Body Language of Trees* – A handbook for failure analysis.
4. Standards Australia (2009). AS-4970: *Protection of Trees on Development Sites*
5. Standards Australia (1996). AS-4373 – *Pruning of Amenity Trees*.
6. Draper, D.B & Richards, P.A (2009). *Dictionary for Managing Trees in Urban Environments*. CSIRO Publishing.
7. Urban Forest Technical Manual. Newcastle council. 2012.
8. Tree Retention Values Table. A.Morton from: Couston, Mark and Howden, Melanie (2001). Footprint Green Pty Ltd, Sydney Australia.
9. North Sydney Council DCP and Tree Management Policy
10. IACA Significance of a Tree, Assessment Rating System (STARS) © (IACA 2010) http://www.iaca.org.au/home/index.php/publications
11. Sustainable Retention Index Value (SRIV) Version 4 © (IACA 2010) http://www.iaca.org.au/home/index.php/publications
12. Manual for managing trees on development sites v3.0. Barrell Tree Consultancy 2020.
13. Terram Geocell Ground Reinforcement - Tree Root Protection. Terram Geocell 2019. https://terram.com/app/uploads/2020/07/TERRAM_Ground_Reinforcement_Solutions.pdf

13. Appendices

13.1. Appendix 1 – Visual Tree Assessment (VTA) Method

THE PRINCIPLES OF RECOGNIZING PREDICTABLE TREE FAILURES

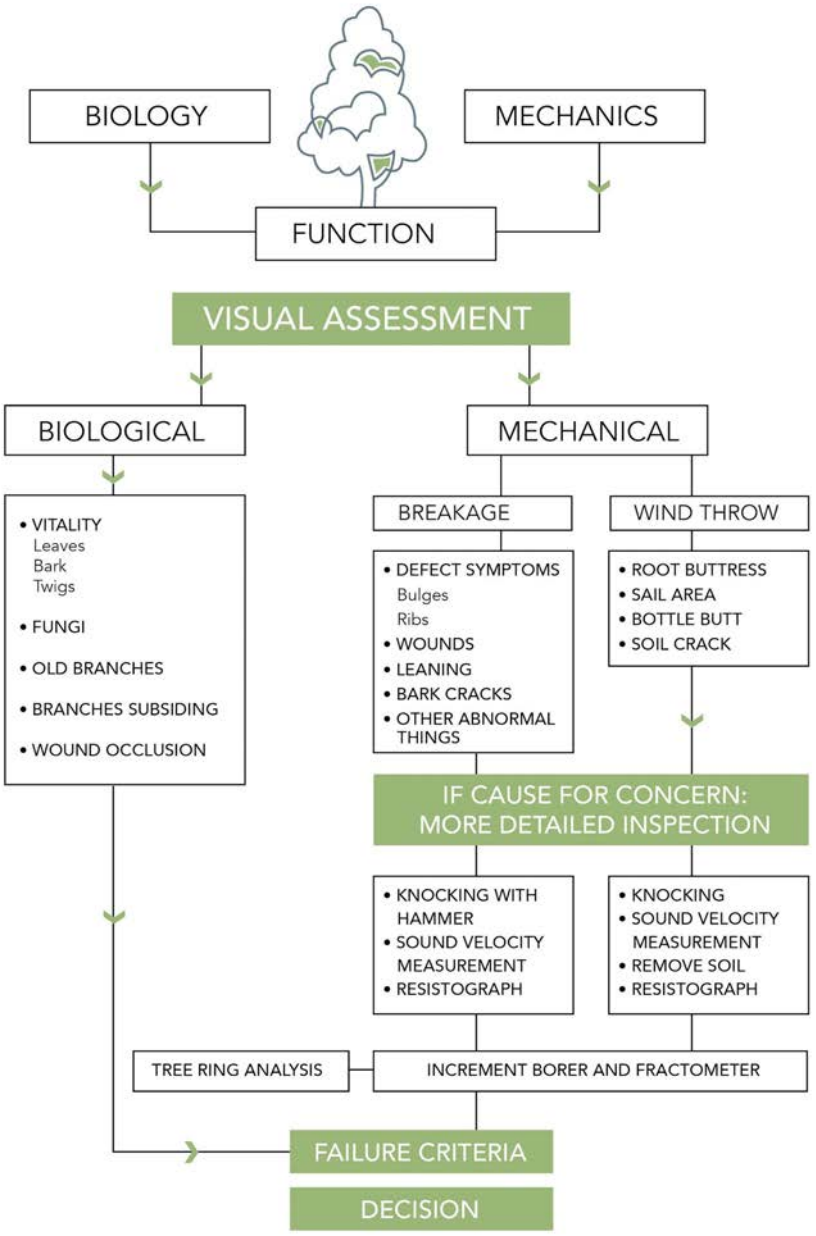


Figure 3 - Schematic Representation of the procedure for evaluating a tree with the VTA system

Source: Mattheck and Breloer "The body Language of Trees" 2007 p.196

13.2. Appendix 2 – (IACA 2010)© IACA Significance of a Tree, Assessment Rating System (STARS)

Institute of Australian Consulting Arboriculturists, Australia, **www.iaca.org.au**. In the development of this document IACA acknowledges the contribution and original concept of the Footprint Green Tree Significance & Retention Value Matrix, developed by Footprint Green Pty Ltd in June 2001.

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

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

Tree Significance - Assessment Criteria

1. High Significance in landscape

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

2. Medium Significance in landscape

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

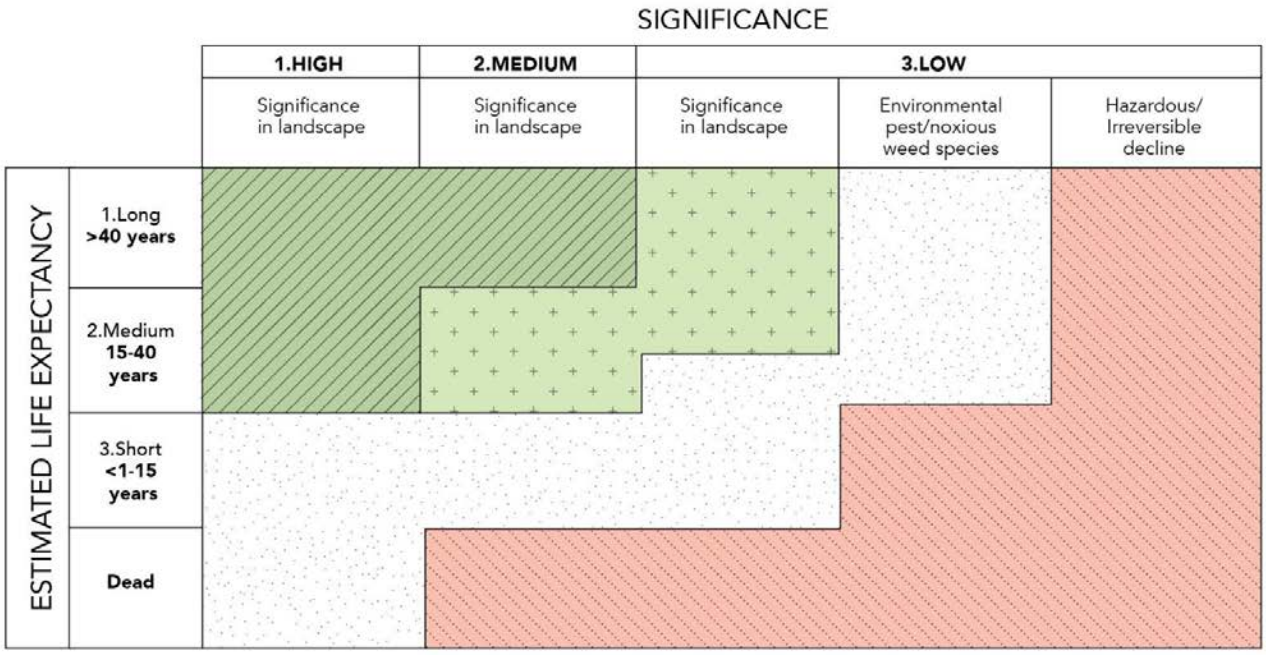
3. Low Significance in landscape

- The tree is in fair-poor condition and good or low vigour;- The tree has form atypical of the species;- The tree is not visible or is partly visible from surrounding properties as obstructed by other vegetation or buildings,- The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area,- The tree is a young specimen which may or may not have reached dimension to be protected by local Tree Preservation orders or similar protection mechanisms and can easily be replaced with a suitable specimen,- The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ - tree is inappropriate to the site conditions,- The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms,- The tree has a wound or defect that has potential to become structurally unsound.Environmental Pest / Noxious Weed Species- The tree is an Environmental Pest Species due to its invasiveness or poisonous/ allergenic properties,- The tree is a declared noxious weed by legislation.Hazardous/Irreversible Decline- The tree is structurally unsound and/or unstable and is considered potentially dangerous, - The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.

The tree is to have a minimum of three (3) criteria in a category to be classified in that group.
Note: The assessment criteria are for individual trees only, however, can be applied to a monocultural stand in its entirety.

Table 1.0 below shows how to use the significance ratings to provide a value for the Tree Retention Value – Priority Matrix.

Table 1.0 Tree retention Value- Priority matrix



LEGEND FOR MATRIX ASSESSMENT

	Priority for retention (HIGH) –These trees are considered important for retention and should be retained and protected. Design modification or relocation of building/s should be considered to accomodate the setbacks as prescribed by the Australian Standard AS4970 *Protection of Trees on Development Sites*. Tree sensitive construction measures must be implemented eg. pier and beam etc if works are to proceed within the Tree Protection Zone
	Consider for retention (MEDIUM) – These trees may be retained and protected. These are considered less critical; however their retention should remain priority with removal considered only if adversely affecting the proposed building/works and all other alternatives have been conisdered and exhausted
	Consider for removal (LOW) – These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention
	Priority for removal (LOW) – These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development

REFERENCES:

IACA, Institute of Australian Consulting Arborists

Australia ICOMOS Inc.1999, The Burra Charter – *The Australian ICOMOS Charter for Places of Cultural Significance*, International Council of Monuments and Sites., www.icomos.org/australia

Draper BD and Richards PA 2009, *Dictionary for Managing Trees in Urban Environments*, IACA, Institute of Australian Consulting Arborists, CSIRO Publishing, Collingwood Victoria, Australia

Footprint Green Pty Ltd, 2001, *Footprint Green Tree Significance & Retention Value Matrix, Avalon* NSW Australia www.footprintgreen.com.au

13.3. Appendix 3 - IACA, 2010, Sustainable Retention Index Value (SRIV)©

The matrix is to be used with the value classes defined in the Glossary for Age / Vigour / Condition.An index value is given to each category where ten (10) is the highest value.

Age Class	Vigour Class and Condition Class					
	Good Vigour & Good Condition (GVG)	**Good Vigour & Fair Condition (GVF)**	**Good Vigour & Poor Condition (GVP)**	**Low Vigour & Good Condition (LVG)**	**Low Vigour & Fair Condition (LVF)**	**Low Vigour & Poor Condition (LVP)**
	Able to be retained if sufficient space available above and below ground for future growth. No remedial work or improvement to growing environment required. May be subject to high vigour. Retention potential - Medium - Long Term.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work may be required or improvement to growing environment may assist. Retention potential - Medium Term. Potential for longer with remediation or favourable environmental conditions.	Able to be retained if sufficient space available above and below ground for future growth. Remedial work unlikely to assist condition, improvement to growing environment may assist. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Retained if sufficient space available above and below ground for future growth. No remedial work required, but improvement to growing environment may assist vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	May be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing environment may assist condition and vigour. Retention potential - Short Term. Potential for longer with remediation or favourable environmental conditions.	Unlikely to be able to be retained if sufficient space available above and below ground for future growth. Remedial work or improvement to growing env. unlikely to assist condition or vigour. Retention potential - Likely to be removed immediately or retained for Short Term. Potential for longer with remediation or favourable environmental conditions.
(Y) Young	**YGVG - 9Index Value 9** Retention potential - Long Term. Likely to provide minimal contribution to local amenity if height Retain, move or replace.	**YGVF - 8 Index Value 8** Retention potential - Short - Medium Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Medium-high potential for future growth and adaptability. Retain, move or replace.	**YGVP - 5Index Value 5** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Low-medium potential for future growth and adaptability. Retain, move or replace.	**YLVG - 4Index Value 4** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height Medium potential for future growth and adaptability. Retain, move or replace	**YLVF - 3Index Value 3** Retention potential - Short Term. Potential for longer with improved growing conditions. Likely to provide minimal contribution to local amenity if height <5m. Low-medium potential for future growth and adaptability. Retain, move or replace.	**YLVP - 1Index Value 1** Retention potential - Likely to be removed immediately or retained for Short Term. Likely to provide minimal contribution to local amenity if height
(M) Mature	**MGVG - 10Index Value 10** Retention potential -Medium - Long Term.	**MGVF - 9Index Value 9** Retention potential - Medium Term. Potential for longer with improved growing conditions.	**MGVP - 6Index Value 6** Retention potential - Short Term. Potential for longer with improved growing conditions.	**MLVG - 5Index Value 5** Retention potential - Short Term. Potential for longer with improved growing conditions.	**MLVF - 4Index Value 4** Retention potential - Short Term. Potential for longer with improved growing conditions.	**MLVP - 2Index Value 2** Retention potential - Likely to be removed immediately or retained for Short Term.

(O) Over-mature	**OGVG - 6Index Value 6** Retention potential - Medium - Long Term.	**OGVF - 5Index Value 5** Retention potential - Medium Term.	**OGVP - 4Index Value 4** Retention potential - Short Term.	**OLVG - 3Index Value 3** Retention potential - Short Term. Potential for longer with improved growing conditions.	**OLVF - 2Index Value 2** Retention potential - Short Term.	**OLVP - 0Index Value 0** Retention potential - Likely to be removed immediately or retained for Short Term.

13.4. Appendix 4 – Further Information on Tree Protection Zones from AS4970 2009 (Protection of trees on development sites)

Following extracts and definitions taken from AS-4970-2009:

Tree protection zone (TPZ)

"The tree protection zone (TPZ) is the principal means of protecting trees on development sites. The TPZ 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.

The TPZ incorporates the structural root zone (SRZ) (refer to Clause 3.3.5 in AS4970-2009)."

Determining the TPZ

The radius of the TPZ is calculated for each tree by multiplying its DBH x 12

Where TPZ = DBH x 12

DBH = trunk diameter measured at 1.4 m above ground (DBH = Diameter at Breast Height)

Radius is measured from the centre of the stem at ground level.

Note: Minimum TPZ size is 2.0m.

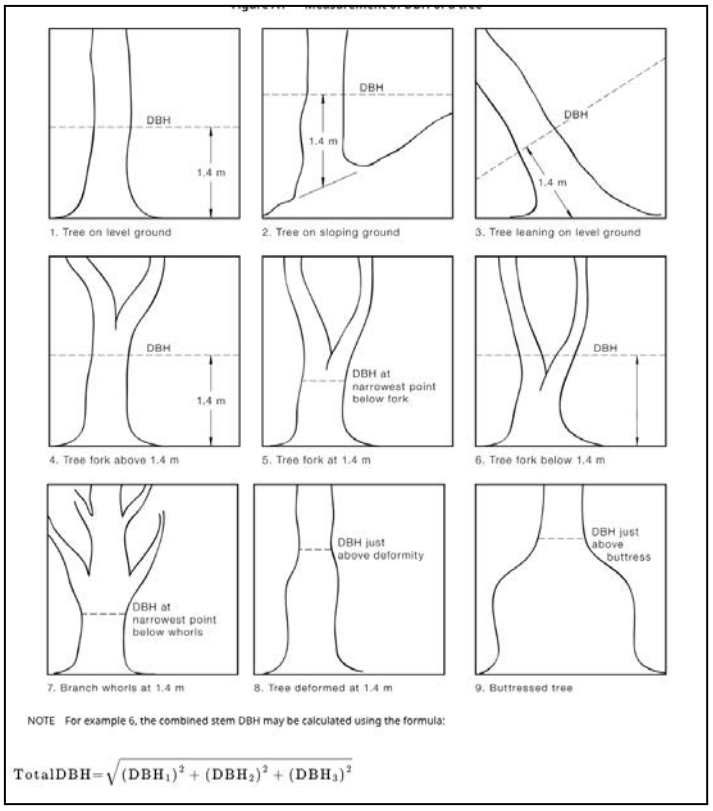


Figure 4 - Examples of DBH measurements on a variety of tree forms - from AS-4970-2009

Structural root zone (SRZ)

"The SRZ is the area required for street stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when a major encroachment into a TPZ is proposed. Root investigation may provide more information on the extent of these roots."

Determining the SRZ

SRZ radius = (DRC x 50) 0.42 x 0.64

Where

DRC = trunk diameter, in metres, measured above the root crown (DRC = Diameter Above Root Crown)

Note: The SRZ for trees with trunk diameters (DRC) less than 0.15 m will be 1.5 m.

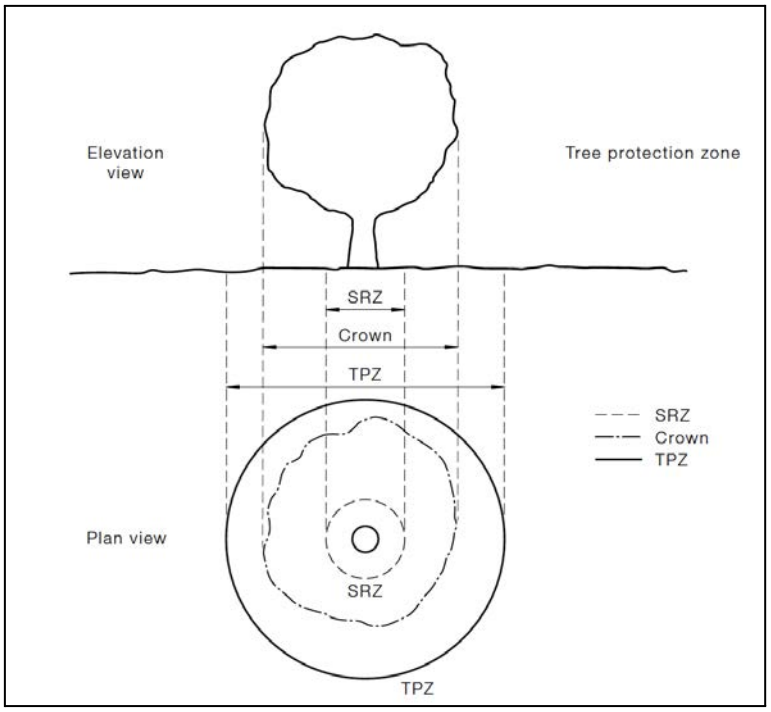


FIGURE 5 - TPZ AND SRZ EXAMPLES FROM AS-4970-2009

Variations to Tree Protection Zones (TPZs) - TPZ Encroachments

It is possible to encroach inside the TPZ radius for development works including root pruning, excavations, compacted fill and machine trenching provided certain conditions are met. There are 2 categories of TPZ encroachments:

1. **Minor TPZ Encroachment** - 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 elsewhere and continuous with the TPZ. Variations must be made by the project arborist considering the relevant factors listed in Clause 3.3.4 of AS-4970-2009. Figure 6 below shows some examples of minor TPZ encroachment.

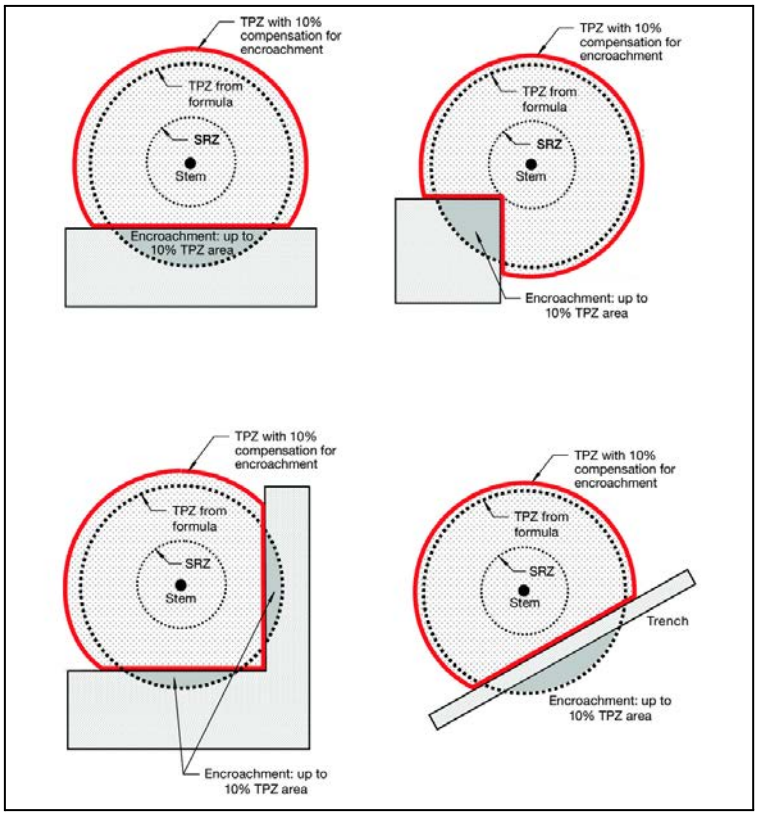


FIGURE 6 - EXAMPLES OF MINOR TPZ ENCROACHMENTS FROM AS-4970-2009

2. **Major TPZ Encroachment** - The proposed encroachment is greater than 10% of the TPZ or inside the SRZ. The project arborist must demonstrate that the tree would remain viable. The area lost to this encroachment should be compensated elsewhere and continuous with the TPZ. This may require root investigation by non-destructive techniques and consideration of relevant factors listed in Clause 3.3.4 of AS-4970-2009. A summary of these factors is listed in section 5.2 above.

13.5. Appendix 5 - Installation of hard surfaces through Tree Protection Zones

Tree sensitive surface installations need to be installed above the current grade levels and involve no excavations or any root pruning. This is primarily done by using some form of load bearing material that can be installed above the current grade without needing to compact the soil surrounding the existing root system. The materials above will also need to be permeable to allow water infiltration and gaseous exchange for the root system. There are numerous construction and engineering techniques used to achieve this. One of the most popular involves a cellular system that can be filled with large aggregates and then some form of permeable pavement or permeable concrete above. The following figures show a few examples of these tree sensitive hard surface installations.

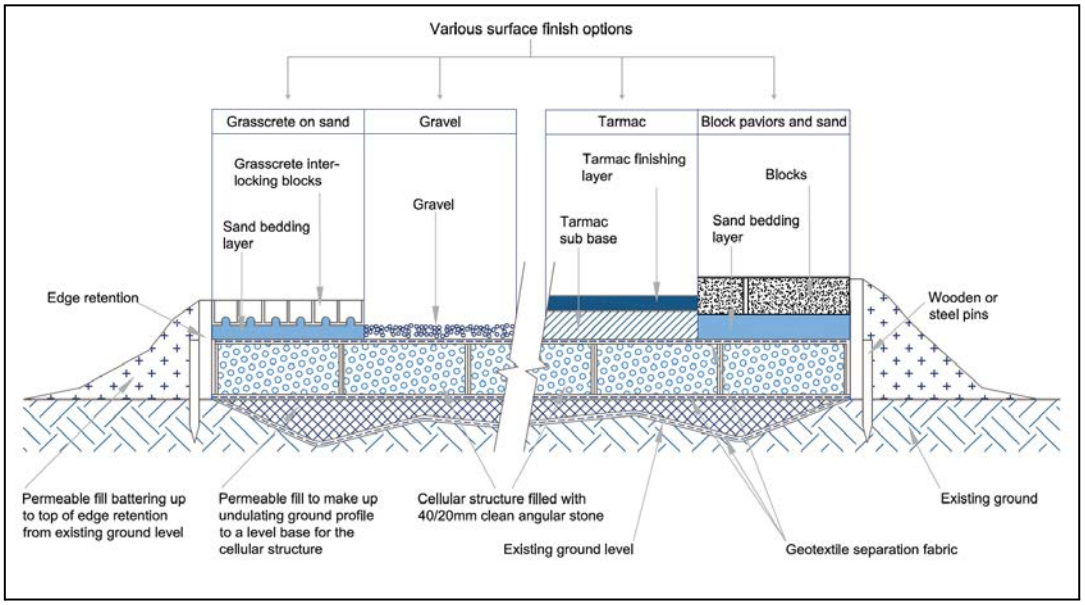


Figure 7 - No dig cellular confinement surfacing with examples of finishing options (Source: Barrel Tree Consultancy 2020)

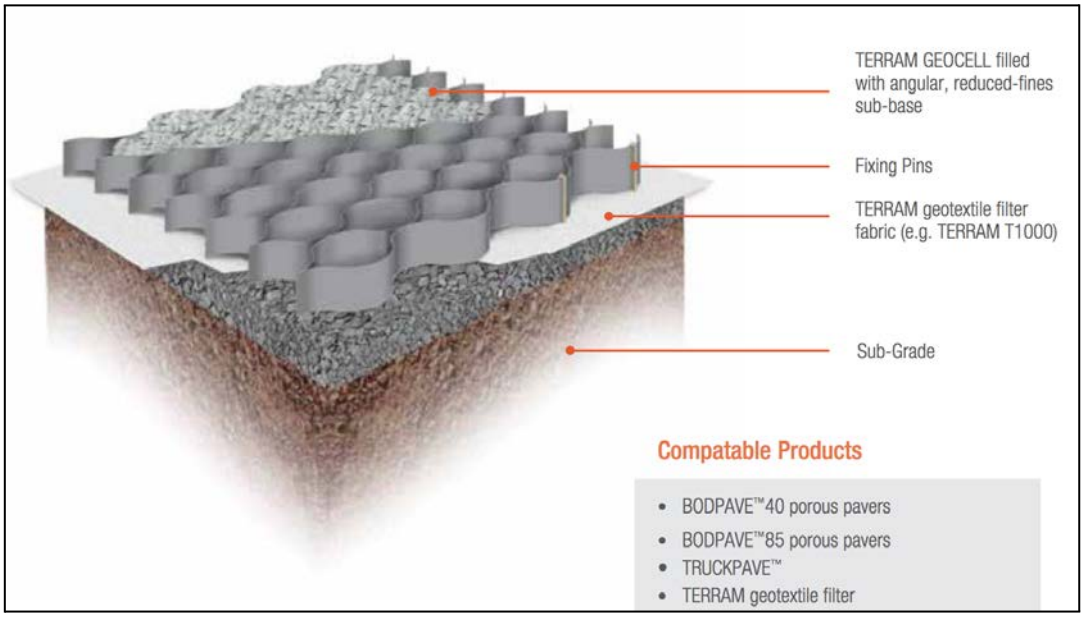


Figure 8 - Terram Geocells - Tree root protection (Source: Terram Geocell 2019)

13.6. Appendix 6 - Glossary

From Dictionary for Managing Trees in Urban Environments
Institute of Australian Consulting Arboriculturists (IACA) 2009.

Age of Trees

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, Mature and Over-mature (British Standards 1991, p. 13, Harris et al, 2004, p. 262).

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.

Condition of Trees

Condition 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 (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 normal vigour but in poor condition. Condition can be categorized as Good Condition, Fair Condition, Poor Condition and Dead.

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).

Removed No longer present, or tree not able to be located or having been cut down and retained on a site, or having been taken away from a site prior to site inspection.

Deadwood

Deadwood Dead branches within a tree's crown have been categorised into 3 categories for the purpose of this report:

Nil – There are no dead branches or they are less than 20mm in diameter so not significant.
Minor – Dead branches are 20-75mm in diameter.
Major – Dead branches are 75mm in diameter and above.

Deadwooding Removing of dead branches by pruning. Such pruning may assist in the prevention of the spread of decay from dieback or for reasons of safety near an identifiable target.

Dieback

Dieback The death of some areas of the crown. Symptoms are leaf drop, bare twigs, dead branches and tree death, respectively. This can be caused by root damage, root disease, bacterial or fungal canker, severe bark damage, intensive grazing by insects, abrupt changes in growth conditions, drought, water-logging or over-maturity. Dieback often implies reduced resistance, stress or decline which may be temporary. Dieback can be categorized as Low Volume Dieback, Medium Volume Dieback and High Volume Dieback.

Low Volume Dieback Where <10% of the crown cover has died. See also Dieback, High Volume Dieback and Medium Volume Dieback.

Medium Volume Dieback Where 10-50% of the crown cover has died.

High Volume Dieback Where >50% of the crown cover has died.

Form of Trees

Crown Form The shape of the crown of a tree as influenced by the availability or restriction of space and light, or other contributing factors within its growing environment. Crown Form may be determined for tree shape and habit generally as Dominant, Codominant, Intermediate, Emergent, Forest and Suppressed. The habit and shape of a crown may also be considered qualitatively and can be categorized as Good Form or Poor Form.

Good Form Tree of typical crown shape and habit with proportions representative of the taxa considering constraints such as origin e.g. indigenous or exotic, but does not appear to have been adversely influenced in its development by environmental factors in situ such as soil water availability, prevailing wind, or cultural practices such as lopping and competition for space and light.

Poor Form Tree of atypical crown shape and habit with proportions not representative of the species considering constraints and appears to have been adversely influenced in its development by environmental factors in situ such as soil water availability, prevailing wind, cultural practices such as lopping and competition for space and light; causing it to be misshapen or disfigured by disease or vandalism.

Crown Form Codominant Crowns of trees restricted for space and light on one or more sides and receiving light primarily from above e.g. constrained by another tree/s or a building.

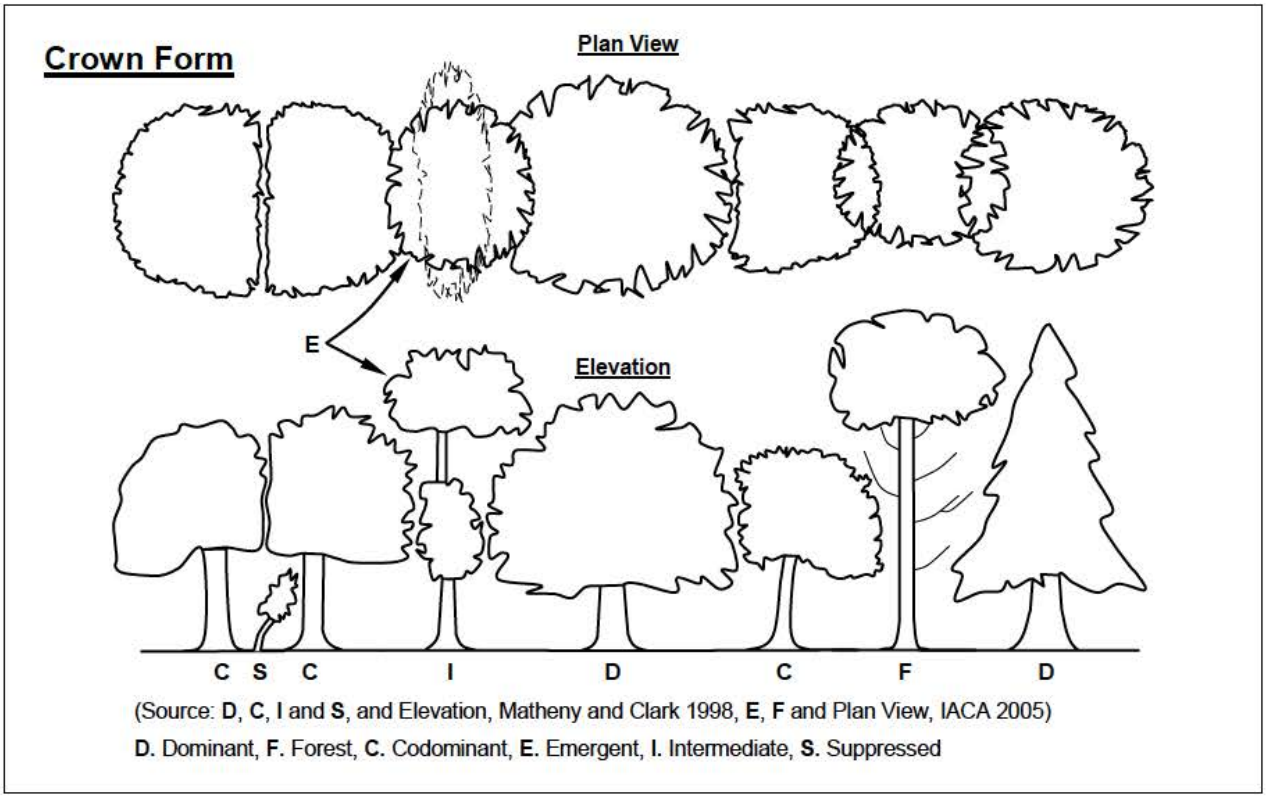
Crown Form Dominant Crowns of trees generally not restricted for space and light receiving light from above and all sides.

Crown Form Emergent Crowns of trees restricted for space on most sides receiving most light from above until the upper crown grows to protrude above the canopy in a stand or forest environment. Such trees may be crown form dominant or transitional from crown form intermediate to crown form forest asserting both apical dominance and axillary dominance once free of constraints for space and light.

Crown Form Forest Crowns of trees restricted for space and light except from above forming tall trees with narrow spreading crowns with foliage restricted generally to the top of the tree. The trunk is usually erect, straight and continuous, tapering gradually, crown often excurrent, with first order branches becoming structural, supporting the live crown concentrated towards the top of the tree, and below this point other first order branches arising radially with each inferior and usually temporary, divergent and ranging from horizontal to ascending, often with internodes exaggerated due to competition for space and light in the lower crown.

Crown Form Intermediate Crowns of trees restricted for space on most sides with light primarily from above and on some sides only.

Crown Form Suppressed Crowns of trees generally not restricted for space but restricted for light by being overtopped by other trees and occupying an
understorey position in the canopy and growing slowly.



Symmetry Balance within a crown, or root plate, above or below the axis of the trunk of branch and foliage, and root distribution respectively and can be
categorized as Asymmetrical and Symmetrical.

Asymmetrical Imbalance within a crown, where there is an uneven distribution of branches and the foliage crown or root plate around the vertical axis of the trunk. This may be due to Crown Form Codominant or Crown From Suppressed as a result of natural restrictions e.g. from buildings, or from competition for space and light with other trees, or from exposure to wind, or artificially caused by pruning for clearance of roads, buildings or power lines. An example of an expression of this may be, crown asymmetrical, bias to west.

Symmetrical Balance within a crown, where there is an even distribution of branches and the foliage crown around the vertical axis of the trunk. This usually applies to trees of Crown Form Dominant or Crown Form Forest. An example of an expression of this may be crown symmetrical.

Crown Spread Orientation Direction of the axis of crown spread which can be categorized as Orientation Radial and Orientation Non-radial.

Crown Spread Orientation Non-radial Where the crown extent is longer than it is wide, e.g. east/west or E/W. Further examples, north/south or N/S, and may be Crown Form Codominant, e.g. **A** or **B**, Crown Form Intermediate e.g. **A**, or Crown Form Suppressed e.g. **B**, and crown symmetry is symmetrical e.g. **A**, or asymmetrical e.g. **B**.

Crown Spread Orientation Radial Where the crown spread is generally an even distance in all directions from the trunk and often where a tree has Crown Form Dominant and is symmetrical.

Crown Projection (CP) Area within the dripline or beneath the lateral extent of the crown (Geiger 2004, p. 2). See also Crown spread and Dripline.

Dripline A line formed around the edge of a tree by the lateral extent of the crown. Such a line may be evident on the ground with some trees when exposed soil

is displaced by rain shed from the crown. See also Crown Projection.

Epicormic Shoots Juvenile shoots produced at branches or trunk from epicormic strands in some Eucalypts (Burrows 2002, pp. 111-131) or sprouts produced from dormant or latent buds concealed beneath the bark in some trees. Production can be triggered by fire, pruning, wounding, or root damage but may also be as a result of stress or decline. Epicormic shoots can be categorized as Low Volume Epicormic Shoots, Medium Volume Epicormic Shoots and High Volume Epicormic Shoots.

- **Low Volume Epicormic Shoots** Where <10% of the crown cover is comprised of live epicormic shoots.
- **Medium Volume Epicormic Shoots** Where 10-50% of the crown cover is comprised of live epicormic shoots.
- **High Volume Epicormic Shoots** Where >50% of the crown cover is comprised of live epicormic shoots.

Trunk A single stem extending from the root crown to support or elevate the crown, terminating where it divides into separate stems forming first order branches. A trunk may be evident at or near ground or be absent in acaulescent trees of deliquescent habit, or may be continuous in trees of excurrent habit. The trunk of any caulescent tree can be divided vertically into three (3) sections and can be categorized as Lower Trunk, Mid Trunk and Upper Trunk. For a leaning tree these may be divided evenly into sections of one third along the trunk.

- **Acaulescent** A trunkless tree or tree growth forming a very short trunk. See also Caulescent.

- **Caulescent** Tree grows to form a trunk. See also Acaulescent

Leaning Trees

Leaning A tree where the trunk grows or moves away from upright. A lean may occur anywhere along the trunk influenced by a number of contributing factors e.g. genetically predetermined characteristics, competition for space or light, prevailing winds, aspect, slope, or other factors. A leaning tree may maintain a static lean or display an increasingly progressive lean over time and may be hazardous and prone to failure and collapse. The degrees of leaning can be categorised as Slightly leaning, Moderately Leaning, Severely leaning and Critically leaning.

Slightly Leaning – A leaning tree where the trunk is growing at an angle within 0-15 degrees from upright.

Moderately leaning - A leaning tree where the trunk is growing at an angle within 15-30 degrees from upright.

Severely Leaning - A leaning tree where the trunk is growing at an angle within 30-45 degrees from upright.

Critically leaning - A leaning tree where the trunk is growing at an angle greater than 45 degrees from upright.

Progressively Leaning – A tree where the degree of leaning appears to increase over time

Static Leaning A leaning tree whose lean appears to have stabilized over time.

Roots

First Order Roots (FOR) Initial woody roots arising from the root crown at the base of the trunk, or as an adventitious root mass for structural support and stability. Woody roots may be buttressed and divided as a marked gradation, gradually tapering and continuous or tapering rapidly at a short distance from the root crown. Depending on soil type these roots may descend initially and not be evident at the root crown, or become buried by changes in soil levels. Trees may develop 4-11 (Perry 1982, pp. 197-221), or more first order roots which may radiate from the trunk with a relatively even distribution, or be prominent on a particular aspect, dependent upon physical characteristics e.g. leaning trunk, asymmetrical crown; and constraints within the growing environment from topography e.g. slope, soil depth, rocky outcrops, exposure to predominant wind, soil moisture, depth of water table etc.

Orders of Roots The marked divisions between woody roots, commencing at the initial division from the base of the trunk, at the root crown where successive branching is generally characterised by a gradual reduction in root diameters and each gradation from the trunk and can be categorized numerically, e.g. first order roots, second order roots, third order roots etc. Roots may not always be evident at the root crown and this may be dependent on species, age class and the growing environment. Palms at maturity may form an adventitious root mass.

Root Plate The entire root system of a tree generally occupying the top 300-600mm of soil including roots at or above ground and may extend laterally for distances exceeding twice the height of the tree (Perry 1982, pp. 197-221). Development and extent is dependent on water availability, soil type, soil depth and the physical characteristics of the surrounding landscape.

Root Crown Roots arising at the base of a trunk.

Zone of Rapid Taper The area in the root plate where the diameter of structural roots reduces substantially over a short distance from the trunk. Considered
to be the minimum radial distance to provide structural support and root plate stability. See also Structural Root Zone (SRZ).

Structural Roots Roots supporting the infrastructure of the root plate providing strength and stability to the tree. Such roots may taper rapidly at short distances from the root crown or become large and woody as with gymnosperms and dicotyledonous angiosperms and are usually 1st and 2nd order roots, or form an adventitious root mass in monocotyledonous angiosperms (palms). Such roots may be crossed and grafted and are usually contained with the area of crown projection or extend just beyond the dripline.

Significance

Significant Tree A tree considered important, weighty or more than ordinary. Example: due to prominence of location, or in situ, or contribution as a component of the overall landscape for amenity or aesthetic qualities, or curtilage to structures, or importance due to uniqueness of taxa for species, subspecies, variety, crown form, or as an historical or cultural planting, or for age, or substantial dimensions, or habit, or as remnant vegetation, or habitat potential, or a rare or threatened species, or uncommon in cultivation, or of aboriginal cultural importance, or is a commemorative planting.

Sustainable Retention Index Value (SRIV) - A visual tree assessment method to determine a qualitative and numerical rating for the viability of urban trees for development sites and management purposes, based on general tree and landscape assessment criteria using classes of age, condition and vigour. SRIV is for the professional manager of urban trees to consider the tree in situ with an assumed knowledge of the taxon and its growing environment. It is based on the physical attributes of the tree and its response to its environment considering its position in a matrix for age class, vigour class, condition class and its sustainable retention with regard to the safety of people or damage to property. This also factors the ability to retain the tree with remedial work or beneficial modifications to its growing environment or removal and replacement. SRIV is supplementary to the decision made by a tree management professional as to whether a tree is retained or removed (IACA - Institute of Australian Consulting Arboriculturists 2005).

Vigour

Vigour - 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 Normal Vigour, High Vigour, Low Vigour and Dormant Tree Vigour.

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. Normal vigour during dormancy is achieved when such growth is evident on a majority of branches throughout the crown.

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Project Advice Notice

Project:	5 – 7 Lower Wycombe Rd Neutral Bay	**Job No:** 23.07033		**Date:**	18 / 08 / 2023
Addressed to:	Mr Tom Virgonia				
RE:	Seawall				

Hi Tom

We attended site on 26 July 2023 to view the seawall fronting the property at 5-7 Lower Wycombe Rd Neutral bay the following comments.

- In our opinion the seawall is in sound condition, and with repairs to be specified by Land and Marine Engineering Consulting P/L it is structurally able to accommodate the modest height increase of 500mm to match adjacent seawall / property.
- The wall is approximately 1500mm high and is founded on solid rock
- The concrete matrix is eroded to the front face and requires re-surfacing using shotcrete or render.
- Several old cracks in the wall require repair.
- The central blockwork wall shall have concrete deadmen and stainless steel rods installed to tie the wall back to shore
- New drainage agg pipes and geofabric to be installed behind the wall
- New free draining fill to be installed
- New agg lines to be installed under any fill
- The 500mm new fill to the garden behind to be engineered free-draining fill
- The stormwater system will require upgrade with a new pit.

When you require us to assist with the final design above can you please instruct us by email.

We trust that this report has been of assistance.

Please do not hesitate to contact the undersigned if you have any queries or require further information.

Yours sincerely

Steve Fitzhenry BE(civil) MIEAust CPEng NER

1 PHOTOGRAPHS & COMMENTS