

FERN CREEK RD RESIDENCES

FERN CREEK RD WARRIEWOOD NSW 2102

LANDSCAPE CONCEPT PLAN REPORT

DA SUBMISSION

15.01.2021

ISSUE A

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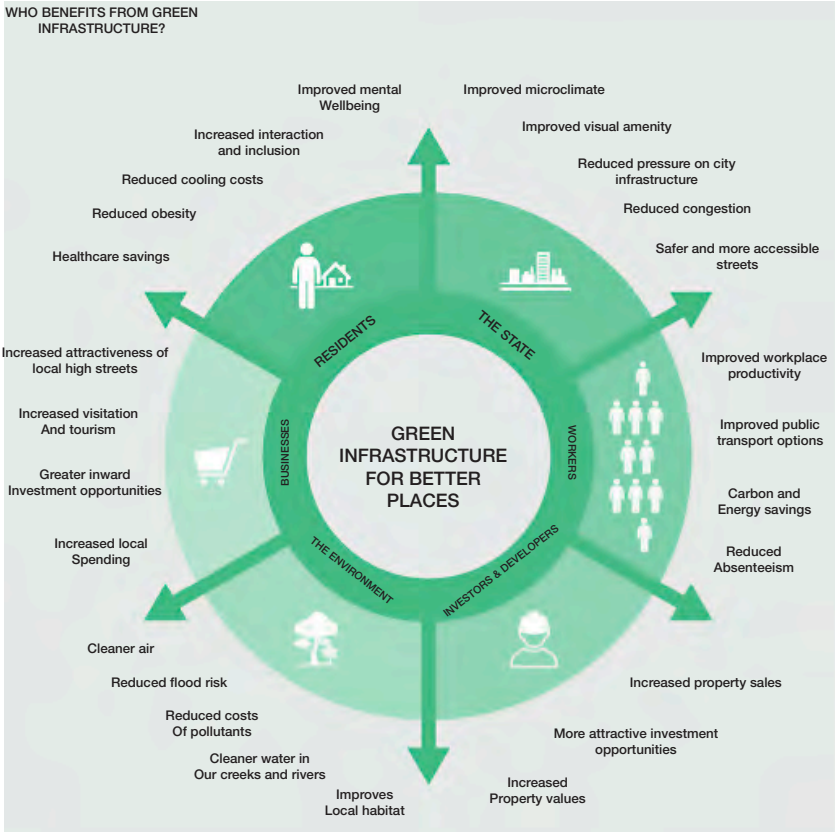
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LANDSCAPE DESIGN PHILOSOPHY

Green Infrastructure is the network of green spaces, natural systems and semi-natural systems including parks, rivers, bushland and private gardens that are strategically planned, designed and managed to support a good quality of life in an urban environment.

Green Infrastructure should be envisioned as a three-dimensional envelope that surrounds and connects buildings, streets and utilities. The concept of landscape as Green Infrastructure provides a framework for integrating the work of designers, planners, developers and policy makers, and leveraging this collaboration to achieve larger local or state goals.



NSW GAO - Greener Places Policy 2020

Green Infrastructure is as crucial to the city as transport, cultural and communications infrastructure. It delivers a range of benefits including:

- Healthy living
- Mitigating flooding
- Improving air and water quality
- Cooling the urban environment
- Encouraging walking and cycling
- Enhancing biodiversity and ecological resilience
- Absorbing and transforming waste.

The landscape design principles for the landscape masterplan (Issue K- 23.07.20) are consistent with the previous exhibited application. These four main principles associated with the draft NSW Greener Places Policy prepared by the Government Architect NSW (2017) are:

a) **Principle 1: Integration:** We propose a multi-purpose infrastructure strategy that mimics nature, provides critical ecosystem services and promotes healthy and active living. We propose to combine green space with urban development and WSD infrastructure.

b) **Principle 2: Connectivity:** We aim to create a network of high quality open streetscape and spaces that connect with each warehouse and office, public transport hubs, South creek corridor. The network includes physical and functional connections that benefit people, wildlife and the logistics nature of the estate.

c) **Principle 3: Multifunctionality:** Our proposed green space infrastructure is designed to be high quality and high performing, producing ecological, social, environmental and economic benefits. The multifunctionality of our design proposal allows the sites green infrastructure to deliver multiple ecosystem, environmental and other services simultaneously.

d) **Principle 4: Participation:** We have followed a planning process that has been open to all, transparent and incorporates the knowledge and needs of all interested and diverse parties. The process has involved stakeholders in development, Northern Beaches Council and the industrial open market through tenants and the companies they represent. The process has incorporated local and state Green Infrastructure policies and actions.

The following design features reflect the project outcomes:

PROJECT OUTCOMES:

1. **Conservation of the natural environment.**
 - This project will lead to the future protection and enhancement of the Fern Creek natural resources and local habitat by creating a green habitat corridor and protecting any endangered ecological communities
 - promotion of social, cultural, recreational, and educational opportunities within natural landscapes.
2. **Increased access to open space**
 - improved connections to local destinations such as the Fern Creek and Central Local Park
 - quantity, quality, distribution, and accessibility of green spaces enables the delivery of multifunctional spaces that promote healthy living environments
3. **Improved connectivity to promote active living**
 - improvements to the residential frontages that promote exercise and alternative modes of transport such as walking and cycling.
4. **Increase urban greening to ameliorate climate extremes**
 - design of green cover strategies including street trees, front setback canopy trees, cooler pavement materials and WSUD.
 - Provide benefits such as improved amenity, comfort, health, reduced stormwater run-off, improved air and water quality, and energy and resource efficiency

a) RE-VEGETATION STRATEGY

The strategy for re-vegetating the site focuses on canopy tree planting to reduce the “urban heat island effect”. We have proposed a mix of local endemic, native and exotic trees to strengthen the urban design principles and to comply with current sustainability guidelines. Street verges, buffer tree planting to boundaries and all road setbacks are densely planted with canopy trees ranging from 6m to 15m+ in height and canopy spread. Cycleways and path systems are also shaded by canopy tree planting. WSUD principles including soft engineering through bio-swales, detention basins and grey water re-use (co-ordinated with the civil engineer) shall help in maintaining and managing the re-vegetation areas.

Greener Places policy principles: Integration, Connectivity, Multifunctionality.

b) COMPLETE STREETS

All streets have been designed to be multifunctional and provide connectivity throughout

the residences for vehicles, pedestrians and cyclists. The streets form the main “green spines” throughout development and link the Central Local Park and Fern Creek with the built form. The street has been designed in accordance with Northern Beaches Council’s Public Domain policy (WVLMDG 2018). The main features of the public domain street design are to:

1. Provide tree canopy cover and reduce the “urban heat island effect”;
2. Provide safe and comfortable transit for pedestrians and cyclists;
3. Strengthen canopy connectivity through the residences;
4. Visually link the Central Local Park to the Residences and Fern Creek beyond;
5. Allow multi-functionality through the revisions of various transit lanes such as heavy vehicle, cars, pedestrian footpaths and cycleways;
6. Soften and screen the bulk of the architectural residences;
7. Help create a cooler microclimate around buildings and along pedestrian routes;
8. Integrate lighting for safety;
9. Incorporate WSUD principles into the streetscape.

Greener Places policy principles: Integration, Connectivity, Multifunctionality, Participation

PROJECT	DRAWING TITLE	PROJECT NO.	PURPOSE	SCALE	REVISION	DATE	DRAWN	CHECKED	PAGE	CLIENT
FERN CREEK RD RESIDENCES FERN CREEK RD WARRIEWOOD NSW 2102	LANDSCAPE DESIGN PHILOSOPHY	H8-21002	DA SUBMISSION	NTS	A	15.01.2021	KM	DV	L02	

LANDSCAPE PLANTING STRATEGY

KEY

Fern Creek Road Planting

Street Tree Planting

Courtyard Planting

Private Garden

Native Buffer Landscape Planting

NOTE:

REFER TO PLANTING LIST ON DWG L09 FOR DETAILED SCHEDULES



LANDSCAPE PLANTING STRATEGY: BUSHFIRE PRONE AREA

LAYOUT OF GARDEN IN ASSET PROTECTION ZONE

In creating and maintaining a garden that is part of an APZ, one should considered the following:

- Presence of a few planting in the APZ is acceptable only provided that they are well spread out and do not form a continuous path to the house. It should also not retain dead material or deposit quantities of ground fuel in a short or dangerous period. It must also be located far enough from the building so that plants will not ignite the building by direct flame contact or radiant heat emission.
- Plant or clear vegetation into clumps rather than in continuous rows. To prevent ground fire from spreading into trees, pruning of low branches two metres from ground is advised.
- Plant selection should preferably include local endemic species. Remove flammable species especially those with rough, flaky or stringy barks. Remove all noxious and environmental weeds as well.
- Ensure that shrubs and other plants do not directly abut the dwelling. Where this does occur, gardens should contain low-flammability plants and non flammable ground cover such as pebbles and crush tile
- Remove or locate away from the house woodpiles, wooden sheds, combustible material, storage areas, large quantities of garden mulch, stacked flammable building materials etc. These items should have no direct contact with bush fire hazard vegetation.
- Take advantage of existing or proposed protective features as part of the property’s APZ. These features are as follows: fire trails, gravel paths, rows of trees, dams, creeks, swimming pools, tenning courts, vegetable gardens.
- Rows of trees can serve as wind break that will trap embers and flying debris that could otherwise reach the house. These trees should be planted the same distance away from the house as their maximum height.

PLANTS FOR BUSH FIRE PRONE GARDENS

In designing the landscape garden, it is essential to consider the type of plant species and their flammability aside from their arrangement and placement in the garden. In general, all plants will eventually burn, however there are plants that are less flammable than others. Trees with loose, fibrous or stringy barks are flammable. These can easily ignite and encourage the ground fire to spread up to the crown of trees, thus should be avoided. When choosing less flammable plants, be sure not to introduce noxious or environmental weed species into the garden as it will cause greater long-term environmental damage

Features of a less flammable plant:

- high moisture content
- high levels of salt
- low volatile oil content of leaves
- smooth barks without “ribbons” hanging from branches or trunks; and
- dense crown and elevated branches.

Inner Protection Areas (IPAs)

The area closest to the building and acts as a defendable space is the IPA. Vegetation within this area should be kept to a minimum level and litter fuels should be discontinuous and kept below 1cm in height. The IPA consists of a mown lawn and well maintained gardens.

Tree requirements within IPA:

- Tree canopy cover should be less than 15% at maturity and should not touch or overhang the building.
- Should be pruned to a height of 2m above the ground
- Tree canopies should be 2m to 5m apart
- Smooth barked and evergreen trees are preferred.

Shrubs requirements within IPA:

- Should have large gaps in the vegetation to slow down the threat of fire towards the building.
- Should not be located under trees and not form more than 10% of ground cover
- Should be away from exposed windows and doors at least twice the maturity height of the vegetation.

Grass requirements within IPA:

- Should be kept mown and not be more than 100mm in height.
- Should be clean of leaves and vegetation debris

Outer Protection Areas (OPAs)

Located between the IPA and unmanaged vegetation is the OPA and only applicable in forest vegetation. Understorey are managed in this area, with some separation in the canopies. It aims to decrease the intensity of an approaching fire on the IPA.

Tree requirements within IPA:

- Tree canopy cover should be less than 30% at maturity and should not touch or overhang the building.
- Tree canopies should be 2m to 5m apart

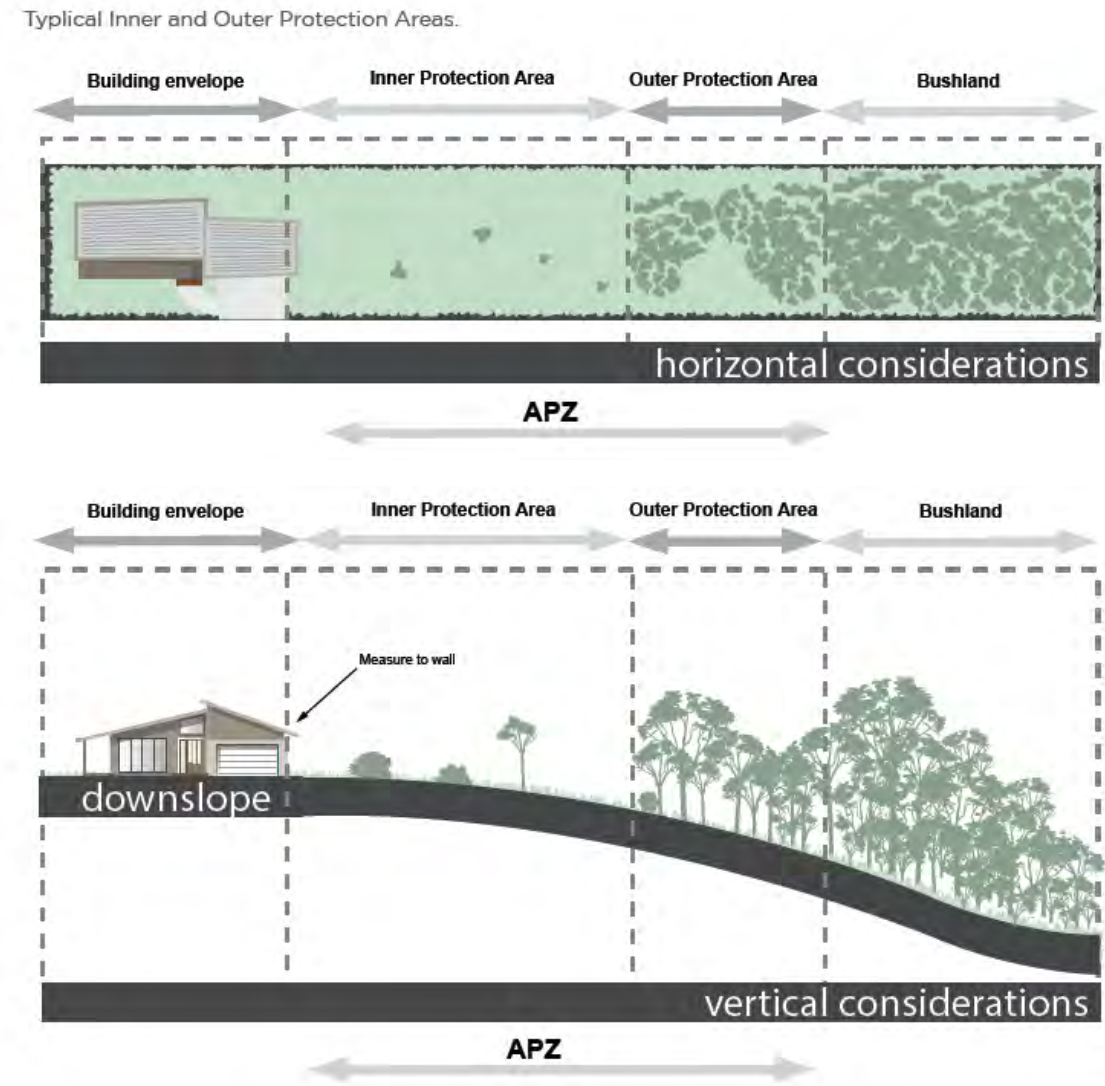
Shrubs requirements within IPA:

- Should have large gaps in the vegetation to slow down the threat of fire towards the building.
- Should not form more than 20% of ground cover

Grass requirements within IPA:

- Should be kept mown and not be more than 100mm in height.
- Should be clean of leaves and vegetation debris

An APZ should be maintained in at all times to ensure ongoing protection from the impact of bush fires. Maintenance of the IPA and OPA as described above should be undertaken regularly, particularly in advance of the bush fire season



NOTE:

Reference from:

- NSW Rural Fire Service (RFS). Planning for Bush Fire Protection: A Guide for Councils, Planners, Fire Authorities, and Developers 2019
- NSW Rural Fire Service (RFS). Standards for Asset Protection Zone

PROJECT	DRAWING TITLE	PROJECT NO.	PURPOSE	SCALE	REVISION	DATE	DRAWN	CHECKED	PAGE	CLIENT
FERN CREEK RD RESIDENCES	LANDSCAPE PLANTING STRATEGY:	H8-21002	DA	NTS	A	15.01.2021	KM	DV	L04	
FERN CREEK RD WARRIEWOOD NSW 2102	BUSHFIRE PRONE AREA		SUBMISSION							

LANDSCAPE MASTERPLAN

KEY

 SITE BOUNDARY

 PROPOSED TREE PLANTING

 EXISTING TREES TO BE RETAINED OUTSIDE BOUNDARY

 PROPOSED STREET TREES


 EXISTING TREES TO BE REMOVED REFER TO ARBORIST REPORT

 MASS PLANTING BEDS

 TURF

 PAVED / TILED SURFACE

 COMPACTED DECOMPOSED GRANITE SURFACE

 GRAVEL SURFACE

 CONCRETE STEPPING STONES

 STONE CLAD RETAINING WALL



CONTEXT PLAN



DESIGN NOTES

1. 1.5m PATHWAY
2. 2.1m SHARED PATH ALONG FERN CREEK RD
3. BATTER LANDSCAPE
4. CENTRAL LOCAL PARK TO COUNCIL'S SPECIFICATION
5. EXISTING TREES ON ADJOINING PROPERTY
6. SCREEN PLANTING
7. PRIVATE LANDSCAPED COURTYARD
8. BALCONY PLANTING
9. PRIVATE GARDEN LANDSCAPE AREA WITH COMPACTED DECOMPOSED GRANITE
10. PROPOSED SWIMMING POOL

DETAILED LANDSCAPE CONCEPT PLAN 01



KEYPLAN

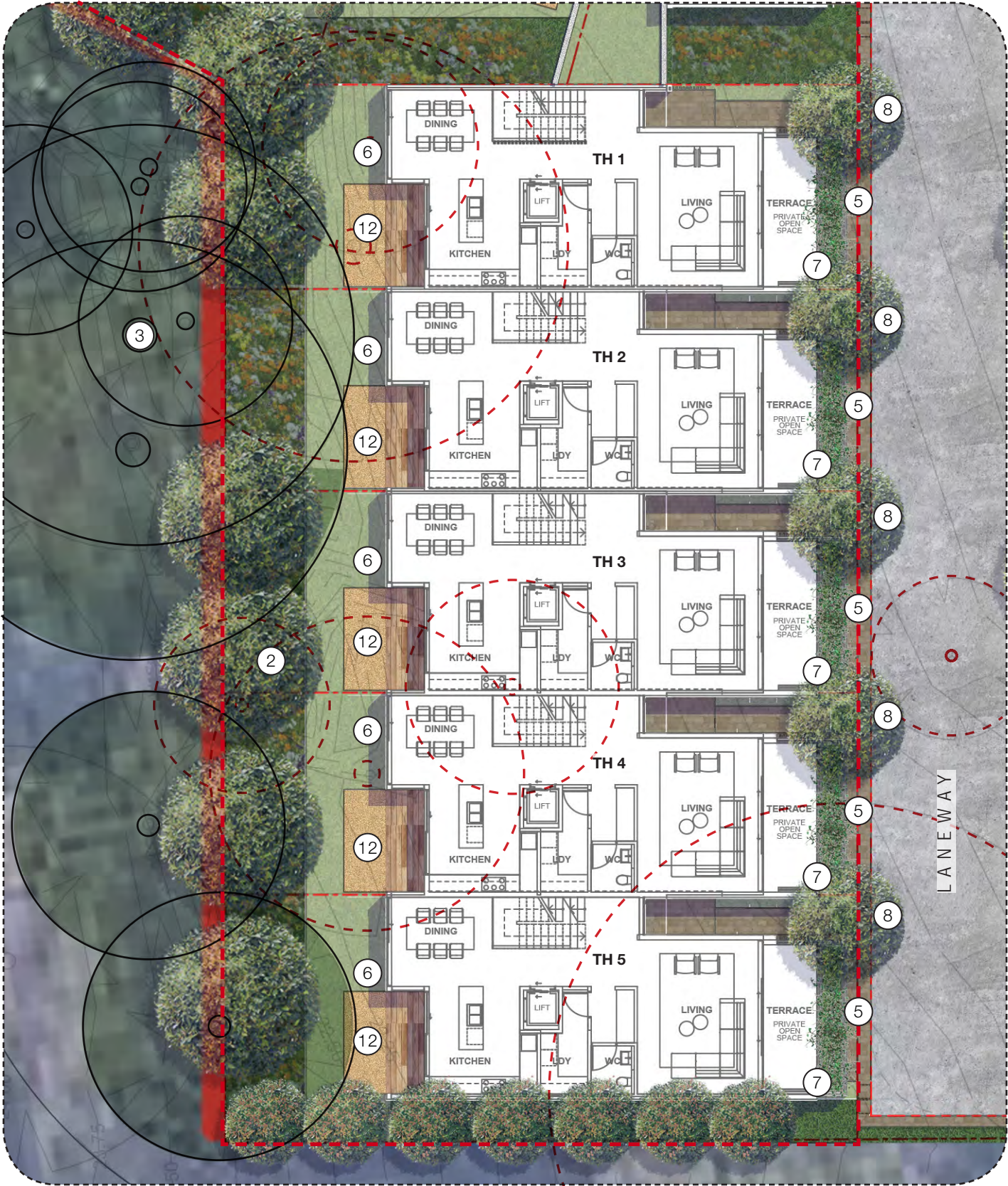
KEY

- SITE BOUNDARY
- EXISTING TREES TO BE RETAINED
- EXISTING TREES TO BE REMOVED
- REFER TO ARBORIST REPORT
- PROPOSED STREET TREES
- PROPOSED TREE PLANTING
- MASS PLANTING BEDS
- TURF
- PAVED / TILED SURFACE
- COMPACTED DECOMPOSED GRANITE SURFACE
- GRAVEL SURFACE
- CONCRETE STEPPING STONES
- STONE CLAD RETAINING WALL

DESIGN NOTES

- 1.5m PATHWAY
- BATTER LANDSCAPE
- EXISTING TREES ON ADJOINING PROPERTY
- SCREEN PLANTING
- DRIVEWAY
- PRIVATE GARDEN LANDSCAPE AREA
- BALCONY PLANTING
- STREET TREE PLANTING
- 2.1m SHARED PATH ALONG FERN CREEK RD
- PRIVATE LANDSCAPED COURTYARD
- ENTRY PATH & STAIRS
- COMPACTED DECOMPOSED GRANITE
- CONCRETE STEPPING STONES

DETAILED LANDSCAPE CONCEPT PLAN 02



KEYPLAN

KEY

- SITE BOUNDARY
- EXISTING TREES TO BE RETAINED OUTSIDE BOUNDARY
- EXISTING TREES TO BE REMOVED REFER TO ARBORIST REPORT
- PROPOSED STREET TREES
- PROPOSED TREE PLANTING
- MASS PLANTING BEDS
- TURF
- PAVED / TILED SURFACE
- COMPACTED DECOMPOSED GRANITE SURFACE
- GRAVEL SURFACE
- CONCRETE STEPPING STONES
- STONE CLAD RETAINING WALL

DESIGN NOTES

- 1. 1.5m PATHWAY
- 2. BATTER LANDSCAPE
- 3. EXISTING TREES ON ADJOINING PROPERTY
- 4. SCREEN PLANTING
- 5. DRIVEWAY
- 6. PRIVATE GARDEN LANDSCAPE AREA
- 7. BALCONY PLANTING
- 8. STREET TREE PLANTING
- 9. 2.1m SHARED PATH ALONG FERN CREEK RD
- 10. PRIVATE LANDSCAPED COURTYARD
- 11. ENTRY PATH & STAIRS
- 12. COMPACTED DECOMPOSED GRANITE
- 13. CONCRETE STEPPING STONES

DETAILED LANDSCAPE CONCEPT PLAN 03



KEY

- SITE BOUNDARY
- EXISTING TREES TO BE RETAINED OUTSIDE BOUNDARY
- EXISTING TREES TO BE REMOVED REFER TO ARBORIST REPORT
- PROPOSED STREET TREES
- PROPOSED TREE PLANTING
- MASS PLANTING BEDS
- TURF
- PAVED / TILED SURFACE
- COMPACTED DECOMPOSED GRANITE SURFACE
- GRAVEL SURFACE
- CONCRETE STEPPING STONES
- STONE CLAD RETAINING WALL

DESIGN NOTES

- 1. 1.5m PATHWAY
- 2. BATTER LANDSCAPE
- 3. EXISTING TREES ON ADJOINING PROPERTY
- 4. SCREEN PLANTING
- 5. DRIVEWAY
- 6. PRIVATE GARDEN LANDSCAPE AREA
- 7. BALCONY PLANTING
- 8. STREET TREE PLANTING
- 9. 2.1m SHARED PATH ALONG FERN CREEK RD
- 10. PRIVATE LANDSCAPED COURTYARD
- 11. ENTRY PATH & STAIRS
- 12. COMPACTED DECOMPOSED GRANITE
- 13. CONCRETE STEPPING STONES

DETAILED LANDSCAPE CONCEPT PLAN 04

KEY

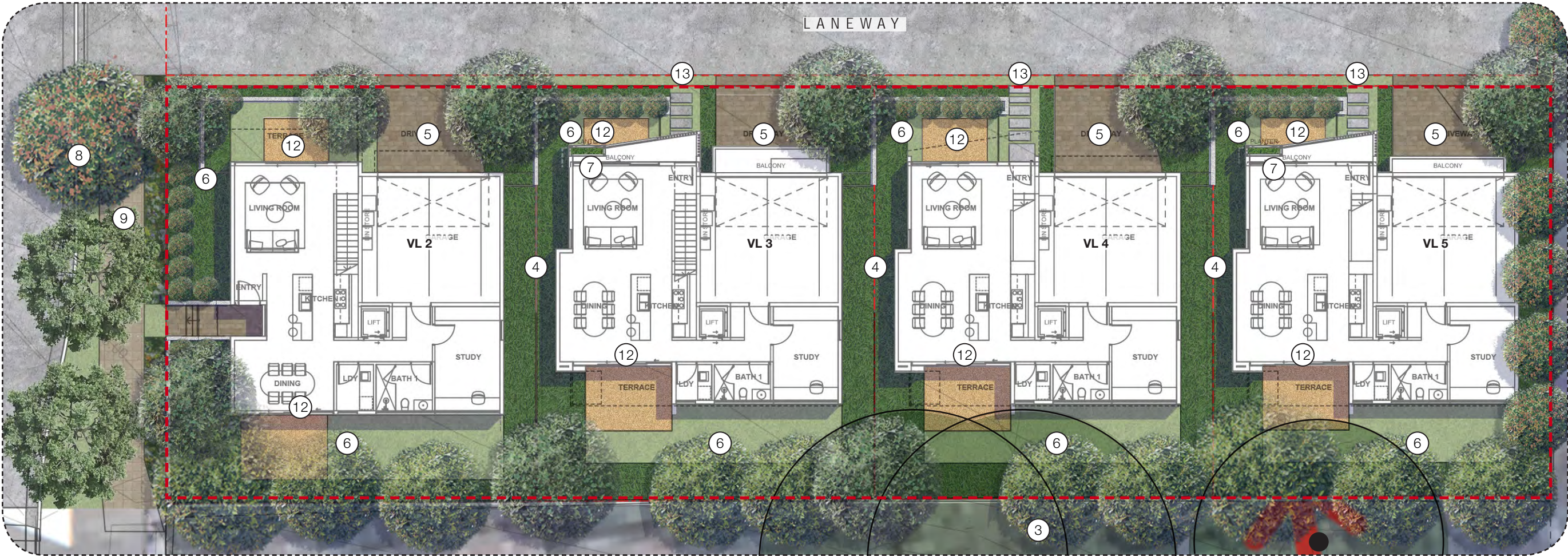
- SITE BOUNDARY
- EXISTING TREES TO BE RETAINED OUTSIDE BOUNDARY
- PROPOSED STREET TREES
- PROPOSED TREE PLANTING
- EXISTING TREES TO BE REMOVED REFER TO ARBORIST REPORT
- MASS PLANTING BEDS
- TURF
- PAVED / TILED SURFACE
- COMPACTED DECOMPOSED GRANITE SURFACE
- GRAVEL SURFACE
- CONCRETE STEPPING STONES
- STONE CLAD RETAINING WALL

DESIGN NOTES

1. 1.5m PATHWAY
2. BATTER LANDSCAPE
3. EXISTING TREES ON ADJOINING PROPERTY
4. SCREEN PLANTING
5. DRIVEWAY
6. PRIVATE GARDEN LANDSCAPE AREA
7. BALCONY PLANTING
8. STREET TREE PLANTING
9. 2.1m SHARED PATH ALONG FERN CREEK RD
10. PRIVATE LANDSCAPED COURTYARD
11. ENTRY PATH & STAIRS
12. COMPACTED DECOMPOSED GRANITE
13. CONCRETE STEPPING STONES



KEYPLAN



INDICATIVE PLANT SCHEDULE

PRIVATE GARDENS AND COURTYARDS		PRIVATE GARDENS AND COURTYARDS		NATIVE BUFFER CORRIDOR (FERN CREEK)		STREET TREE PLANTING	
BOTANICAL NAME	COMMON NAME	BOTANICAL NAME	COMMON NAME	BOTANICAL NAME	COMMON NAME	BOTANICAL NAME	COMMON NAME
LARGE CANOPY TREES		SHRUBS		CANOPY TREES		LARGE CANOPY TREES	
Angophora costata	Smooth barked apple	Callistemon 'small cultivars' to 1m	Callistemon	Ficus rubiginosa	Port jackson fig	Angophora costata	Smooth barked apple
Angophora floribunda	Rough barked apple	Correa alba	White correa	Ficus coronata	Sanderpaper fig	Angophora floribunda	Rough barked apple
Eucalyptus punctata	Grey gum	Westringia 'small cultivars' to 1m	Coast rosemary	Tristaniopsis laurina	Water gum	Eucalyptus punctata	Grey gum
Lophostemon confertus	Brush box	Acmena smithii 'cultivars'	Lilly pilly	Angophora costata	Smooth barked apple	Lophostemon confertus	Brush box
Syncarpia glomulifera	Turpentine	Metrosideros excelsa	New zealand christmas tree	Angophora floribunda	Rough barked apple	Syncarpia glomulifera	Turpentine
MEDIUM CANOPY TREES		Syzygium paniculatum 'small cultivars'	Magenta lilli pilli	Livistonia australis	Cabbage tree palm	Syzygium paniculatum	Magenta lilly pilli
Banksia integrifolia	Coast banksia	* Murraya paniculata (not hedged)	Orange jasmine	Eucalyptus botryoides	Bangalay	Waterhousia floribunda	Weeping lilly pilli
Syzygium paniculatum	Magenta lilly pilli	* Photinia 'cultivars'	Photinia	Acmena smithii	Lilly pilli	MEDIUM CANOPY TREES	
Waterhousia floribunda	Weeping lilly pilli	* Viburnum tinus (not hedged)	Laurustinus	Glochidion ferdinandi	Cheese tree	Banksia integrifolia	Coast banksia
Callistemon 'Hannah Ray'	Hannah ray	Grevillea	Spider flower	Ceratopetalum apetalum	Coachwood	Callistemon 'hannah ray'	Hannah ray
Corymbia ficifolia	Red flowering gum	Doryanthes excelsa	Gyrmea lily	PALMS & FERNS		Corymbia ficifolia	Red flowering gum
Eucalyptus haemastoma	Scribbly gum	Xanthorrhoea sp	Grass tree	UNDERSTORY / SHRUBS		Eucalyptus haemastoma	Scribbly gum
Syzygium luehmannii	Riberry lilly pilli	GROUNDCOVERS		Cyathea australis	Rough tree fern	Syzygium luehmannii	Riberry lilly pilli
Melaleuca styphelioides	Prickly paperback	Dianella sp.	Flax lilly	Acacia suaveolens	Sweet wattle	Melaleuca styphelioides	Prickly paperback
Tristaniopsis laurina	Water gum	Lomandra 'small cultivars'.	Mat-rush	Ceratopetalum gummiferum	Nsw christmas bush	Tristaniopsis laurina	Water gum
SMALL CANOPY TREES		Carpobrotus glaucescens	Pigface	Callicoma serratifolia	Black wattle	SMALL CANOPY TREES	
Backhousia myrtifolia	Grey myrtle	Hardenbergia violacea	Coral pea	Hibbertia scandens	Golden guinea flower	Backhousia myrtifolia	Grey myrtle
Buckinghamia celsissima	Ivory curl	Viola hederacea	Australian violet	NATIVE GRASS & AQUATICS		Buckinghamia celsissima	Ivory curl
Callistemon 'endeavour'	Endeavour			Bauera rubiodes	Dog rose	Callistemon 'endeavour'	Endeavour
Ceratopetalum gummiferum	Nsw christmas bush			Themeda australis	Kangaroo grass	Callitris rhomboidea	Port jackson pine
Elaeocarpus reticulatus	Blueberry ash			Cissus hypoglauca	Water vine	Ceratopetalum gummiferum	Nsw christmas bush
Hymenosporum flavum	Native frangipani			Juncus spp	Rush	Elaeocarpus reticulatus	Blueberry ash
Leptospermum petersonii	Lemon-scented teatree			Lomandra longifolia	Mat rush	Hymenosporum flavum	Native frangipani
Melaleuca linariifolia	Snow in summer			Microlaena stipoides	Weeping grass	Leptospermum petersonii	Lemon-scented teatree
Tristaniopsis laurina	Water gum					Melaleuca linariifolia	Snow in summer
* Acer palmatum	Japanese maple					Syzygium paniculatum 'small cultivars'	Magenta lilli pilli
* Lagerstroemia 'cultivars'	Crape-myrtle					Tristaniopsis laurina	Water gum
PALM & FERNS						PALM	
Livistona australis	Cabbage tree palm					Livistona australis	Cabbage tree palm
Cyathea australis	Tree fern						

NOTE:
Plant list sourced from Warriewood Valley Masterplan & Design Guidelines 2018
* Selected exotic small trees and shrubs to be used for small lots less than 6m wide and front setbac of 3m only.

INDICATIVE PLANT SCHEDULE

FERN CREEK ROAD PLANTING

BOTANICAL NAME	COMMON NAME
LARGE CANOPY TREES	
Angophora costata	Smooth barked apple
Angophora floribunda	Rough barked apple
Eucalyptus punctata	Grey gum
Lophostemon confertus	Brush box
Syncarpia glomulifera	Turpentine
MEDIUM CANOPY TREES	
Banksia integrifolia	Coast banksia
Syzygium paniculatum	Magenta lilly pilli
Waterhousia floribunda	Weeping lilly pilli
Callistemon 'hannah ray'	Hannah ray
Corymbia ficifolia	Red flowering gum
Eucalyptus haemastoma	Scribbly gum
Syzygium luehmannii	Riberry lilly pilli
Melaleuca styphelioides	Prickly paperback
Tristanopsis laurina	Water gum
SMALL CANOPY TREES	
Backhousia myrtifolia	Grey myrtle
Buckinghamia celsissima	Ivory curl
Ceratopetalum gummiferum	Nsw christmas bush
Elaeocarpus reticulatus	Blueberry ash
Hymenosporum flavum	Native frangipani
Leptospermum petersonii	Lemon-scented teatree
Melaleuca linariifolia	Snow in summer
Tristanopsis laurina	Water gum
PALM	
Livistona australis	Cabbage tree palm

NOTE:
Plant list sourced from Warriewood Valley Masterplan & Design Guidelines 2018
* Selected exotic small trees to be used for small lots less than 6m wide and front setback of 3m only.



TYPICAL SPECIFICATION + MAINTENANCE NOTES

SERVICES

Before landscape work is commenced the Landscape Contractor is to establish the position of all service lines and ensure tree planting is carried out at least 3 metres away from these services. Service lids, vents and hydrants shall be left exposed and not covered by any landscape finishes (turfing, paving, garden beds etc.) Finish adjoining surfaces flush with pit lids.

PLANTING MIXTURE - (300mm DEPTH)
Imported Garden Mix.
Type: Premium
Available: Australian Native Landscapes (ANL)

TURF SOIL MIX (150mm DEPTH)
Type: Turf underlay
Available: Australian Native Landscapes (ANL)

MULCH
APPLICATION: Place mulch to the required depth, (refer to drawings) clear of plant stems, and rake to an even surface finishing 25mm below adjoining levels. Ensure mulch is watered in and tamped down during installation.
MULCH TYPE: (75mm DEPTH)
Type 1 (Base of Trees):
Pine bark: From mature trees, graded in size from 15mm to 30mm, free from wood slivers. Dark brown in colour and texture.
Type 2:
Batters and Edges Re-vegetation Mulch

COMPOST
Shall be “GO Compost” as available from Soilco or approved equal.

PLANT MATERIAL
All plants supplied are to conform with those species listed in the Plant Schedule on the drawings. Generally plants shall be vigorous, well established, hardened off, of good form consistent with species or variety, not soft or forced, free from disease or insect pests with large healthy root systems and no evidence of having been restricted or damaged. Trees shall have a leading shoot. Immediately reject dried out, damaged or unhealthy plant material before planting. All stock is to be container grown for a minimum of six (6) months prior to delivery to site.

FERTILISER
MASS PLANTING AREAS: Fertiliser shall be ‘Nutricote’ or approved equivalent in granule form intended for slow release of plant nutrients over a period of approximately nine months. Thoroughly mix fertiliser with planting mixture at the recommended rate, prior to installing plants.
TURF: Shall be Shirleys No. 17 or approved equal thoroughly mixed into the topsoil prior to placing turf.
TREES IN GRASS AND SUPER ADVANCED TREES: Pellets shall be in the form intended to uniformly release plant food elements for a period of approximately nine months equal to Shirleys Kokei pellets, analysis 6.3:1.8:2.9. Kokei pellets shall be placed at the time of planting to the base of the plant, 50mm minimum from the root ball at a rate of two pellets per 300mm of top growth to a maximum of 8 pellets per tree.

STAKING AND TYING
Stakes shall be straight hardwood, free from knots and twists, pointed at one end and sized according to size of plants to be staked.
a. 100-greater than 200litre 3x(1800x50x50mm)
Ties shall be 50mm wide hessian webbing or approved equivalent nailed or stapled to stake. Drive stakes a minimum one third of their length, avoiding damage to the root system, on the windward side of the plant.

TURF
Obtain turf from a specialist grower of cultivated turf. turf shall be of even thickness, free from weeds and other foreign matter; lay in stretcher pattern with joints staggered and close butted, perpendicular to gradient of FSL. Water immediately after laying.
TURF TYPE: Couch (Confirm with council prior to construction)

LANDSCAPE MAINTENANCE PROGRAM

Maintenance shall mean the care and maintenance of the landscape works by accepted horticultural practice as rectifying any defects that become apparent in the landscape works under normal use. This shall include, but shall not be limited to, watering, mowing, fertilising, re-seeding, returfing, weeding, pest and disease control, staking and tying, replanting, cultivation, pruning, aerating, renovating, top dressing, maintaining the site in a neat and tidy condition as follows:-

GENERAL

The landscape contractor shall maintain the landscape works for the term of the maintenance (or Plant establishment) period to the satisfaction of the council. The landscape contractor shall attend to the site on a weekly basis. Landlord to maintain all landscape areas in perpetuity (life of the development).

WATERING
Grass, trees and garden areas shall be watered regularly so as to ensure continuous healthy growth.

RUBBISH REMOVAL
During the term of the maintenance period the landscape contractor shall remove rubbish that may occur and reoccur throughout the maintenance period. This work shall be carried out regularly so that at weekly intervals the area may be observed in a completely clean and tidy condition.

REPLACEMENTS
The landscape contractor shall replace all plants that are missing, unhealthy or dead at the Landscape Contractor’s cost. Replacements shall be of the same size, quality and species as the plant that has failed unless otherwise directed by the Landscape Architect. Replacements shall be made on a continuing basis after the plant has died or is seen to be missing.

STAKES AND TIES
The landscape contractor shall replace or adjust plant stakes, and tree guards as necessary or as directed by the Landscape Architect. Remove stakes and ties at the end of the maintenance period if so directed.

PRUNING
General: Prune to reflect the natural growth flowering and regrowth habit of the individual species. Shrubs: Prune after flowering - Spring and Summer and on a spot basis as required.
Hedge trimming: Schedule trimming at times which will maintain the character and design of hedges. Allow up to three times per season.
Tip pruning: To encourage development of new shoots during the active growing season. Do not remove buds before the flowering season in those plants that have terminal flowers.
Radical pruning: To maintain a hedge or formal shape or when a particular problem, growth habit, damage, or disease requires branch removal.
Trees: Prune to eliminate diseased or damaged growth, avoid inter-branch contact and thin out crowns in a natural manner, maintain sight lines to signs and lights, or maintain visibility for personal security. Tree branch removal to AS 4373. Give notice and engage a suitably qualified ‘arborist’.

MULCHED SURFACES
All mulched surfaces shall be maintained in a clean and tidy condition and be reinstated if necessary to ensure that a depth of 75mm is maintained. Ensure mulch is kept clear of plant stems at all times. Remove all mulching materials off lawn or paved areas and maintain a clean and tidy appearance when viewed on a weekly basis.

PEST AND DISEASE CONTROL
The landscape contractor shall spray against insect and fungus infestation with all spraying to be carried out in accordance with the manufacturer’s directions. Report all instances of pests and diseases (immediately that they are detected) to the Landscape Architect.

GRASS AND TURF AREAS
The landscape contractor shall maintain all grass and turf areas by watering, weeding, re-seeding, rolling, mowing, trimming or other operations as necessary. Seed and turf species shall be the same as the original specified mixture. Grass and turf areas shall be sprayed with approved selective herbicide against broad leafed weeds as required by the Landscape Architect and in accordance with the manufacturer’s directions. Grass and turf areas shall be fertilised once a year in autumn with “Dynamic Lifter” for lawns at a rate of 20kg per 100m2. Fertiliser shall be watered in immediately after application. Irregularities in the grass and turf shall be watered in immediately after application.
Grass and turf areas shall be kept mown to maintain a healthy and vigorous sward. Mowing height: 30-50mm.

WEED ERADICATION
Eradicate weeds by environmentally acceptable methods using a non-residual glyphosate herbicide (eg. ‘Round-up’) in any of its registered formulae, at the recommended maximum rate. Regularly remove by hand, weed growth that may occur or recur throughout grassed, planted and mulched areas. Remove weed growth from an area 750mm diameter around the base of trees in grassed areas. Continue eradication throughout the course of the works and during the maintenance period.

SOIL SUBSIDENCE
Any soil subsidence or erosion which may occur after the soil filling and preparation operations shall be made good by the landscape contractor at no cost to the client.

MAINTENANCE PERIOD: (26 Weeks) - Confirm with Project Manager

IRRIGATION PERFORMANCE SPECIFICATION NOTES

IRRIGATION OVERVIEW - Confirm with Project Manager at tender stage

EXTENT (Setback and Carpark Landscape Areas)
All mass planting landscape areas and trees are to have full coverage by a fully automatic irrigation system. The design, materials and installation are to be in accordance with Sydney Water Codes and all relevant Australian Standards.

1. An automatic irrigation system is to be installed to all turf and garden bed areas.
2. The irrigation system shall be designed and installed by a licensed contractor to relevant Australian standards and Sydney water guidelines.
3. The irrigation system shall be connected into the rainwater tank system and pump

DRIPLINE
Provide 13mm dripline to all garden bed areas with appropriate 13mm joiners. Dripline to be Toro drip or similar with 400mm centre drippers.
Install line at 500mm spacings with the first line to be 150mm in from edge. Install dripline after planting and prior to mulching to allow for an adequate mulch cover. Anchor at 1.5m maximum intervals with u-shaped stakes. Dripline pattern to suit planting.

CONTROL VALVES
24v solenoid actuated hydraulic valve with flow control. Control valves to be Toro ezflow series solenoids 25mm or approved equal. Provide a gate valve of the same size immediately upstream of each valve. House both valves in a high impact plastic valve box with a high impact plastic cover at finished ground level. Support the box with bricks on each side. Controller to be Toro greenkeeper or approved equal with a rain switch.
Install a master valve/pressure regulating valve equal to Toro p220 with exreg pressure regulation valve. Filter to be installed equal to Toro y filter 75mm screen filter.

CONTROL WIRES
Connect the control valves and soil moisture sensor to the controller with double insulated underground cables laid alongside piping where possible. Lay intertwined for their full length without joints except at the valves and branches off common wires. Provide waterproof connectors.

Provide a backflow prevention device to Sydney water standards AS 3500.

RELEVANT AUSTRALIAN STANDARDS

Soil: AS4419, AS3743, AS4454.
Mulch: AS4454.
Tree Stock: AS2303.
Pruning: AS4373.
Tree Protection: AS4970.
Contractors to comply with the above Australian Standards.