ANNEX G

Landscape Plan

Prepared by Verge Landscape Architects for Aspen Group Limited.

FERN BAY **LANDSCAPE MASTER PLAN**

May 2007

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INTRODUCTION

AIMS

The Landscape Master Plan aims to create a unique subdivision with the character of a seaside village while maintaining the site's natural qualities.

The subdivision's identity will be created by a combination of two main strategies. The Open Space Strategy will employ a variety of unique Art and Furniture elements throughout the public domain of the subdivision. Each element will be designed to build on the unique seaside character of the subdivision. The Vegetation Strategy aims to preserve as much as possible of the site's existing vegetation and topography - these are the two things that give the site it's existing unique and natural character. Where new planting is undertaken, it aims to incorporate the qualities of the existing vegetation communities. Predominantly local indigenous species will be used.

In addition to the above strategies to be utilised throughout the subdivision, there will also be area specific landscape treatments. These will include parks, water features, active recreation areas and a community nursery.

The principle aims of the Landscape Master Plan are:

- create a unique development with strong identity
- maintain sense of living in the bush
- where suitable preserve existing biodiversity
- create a sense of community ownership and participation in the natural qualities of the landscape.

STRUCTURE

This report has two main sections. The first explains the principles and strategies of the master plan, the second contains drawings of the master plan and selected elements.

Streetscape views within the subdivision will be framed and terminated by either existing forest to be retained or by planting that is designed to be in harmony with the existing vegetation.

Examples of control of views through the use of vegetation. From top to bottom: understorey with no screen planting creates views through framing tree trunks; screen planting blocks views; distant views terminated by vegetation.

OPEN SPACE

Apart from the roads and paths, open space within the development includes conservation reserves; parks and pocket parks; commercial areas; and several key focal areas.

The road network forms a key connecting element throughout the various character units within the development, and between the differently themed open space areas.

Other connecting elements include art and furniture, and a consistent palette of materials.

Open space performs a number of functions, including connection, movement, ecological, hydrological, archaeological protection, bushfire protection, passive and active recreation, children's play and commercial.

Open Space is described in terms of Public Art and Interpretation; Materials; and Typical Treatments of Roads and Paths. The Vegetation Strategy is described separately on page 4.

Views

Being entirely surrounded by forest and sand dunes the site does not afford external views, and likewise will not have any visual impact on other areas, except for the views from the two entry roads.

Being visually self-contained views along internal roads of the estate are terminated by the surrounding bushland. This bushland is managed for conservation purposes by the community and will therefore always serve the function of borrowed landscape for the development. This borrowed landscape will be supplemented by planting of indigenous plants within the controlled vegetation zones adjoining the road reserves and parks.

At the two entry roads, where the site is visible from outside, these areas will be carefully landscaped using native flora en masse to highlight and dress the entries while retaining the landscape character of the nearby bushland.

Within the subdivision, manipulation of internal views with screen planting will be one of the major devices used to create various spaces and experiences. Visual access will be maintained to key areas, such as parks and playgrounds, to allow passive surveillance for increased security.

A Visual Analysis Plan is shown on page L3.

Roads and Paths

Roads and paths within the development are organised according to a hierarchy ranging from the substantial, highly trafficked main road, down to laneways, cycleways paths and walking tracks through bush. Landscape treatment for each type of road and pedestrian trails reflects their level in the hierarchy, while also serving the overall design intent for the settlement. The roads and paths form a significant part of the overall Open Space network. The road hierarchy reflects character units and housing types.

Pedestrian trails through bushland areas will be sited to reduce environmental impacts such as edge effects and erosion.

Open Spaces - brief descriptions

The following are brief descriptions of the main open space areas. These areas are shown on the following plan (Landscape Master Plan on page L1) and sketch designs for selected areas are shown in the drawing in the second part of this report.

Main Road / Road 2

This road provides the only two entry / exit points to the subdivision, and is the spine along which all the other areas and precincts are organised. As the main thoroughfare this road will play a central role in creating for both visitors and residents the feel of the entire subdivision. In keeping with the aim to create a subdivision with a distinctive bushland character, this road seeks to accentuate the sense of arrival into the estate by having people pass along a tree-lined road using select native plants whilst retaining the existing bushland in close proximity to the road. The roads main thematic zones are described on pp. L6-L11. These thematic zones are:

- Approach
- Threshold
- Arrival.

Active Recreation Area

This is the only area of turf in the Public Domain. A generous open turf area is surrounded by woodland of native trees with picnic shelters and bbqs.

Parks

There will be three main parks located within the subdivision. Each will be conceptually based on the indigenous landscape on which it is located. Plant species and construction materials will reflect each park's specific location.

Cabbage Tree Park

Cabbage Tree Park will be located in a flat, low-lying area where most existing vegetation will be retained. This vegetation is dominated by the canopy of Cabbage Tree Palms and Broad-leaved Paperbarks. In the sheltered environment below this canopy a series of timber and concrete boardwalks and platforms will create an intricate "park" of walks and rest areas. Adults will have opportunities for quiet meditation, and children will find opportunities for adventure and play. Maintenance of sight lines by clearing mid-storey vegetation will ensure security.

Banksia Park

This park is located in a higher density area, close to the community facilities, and will therefore be heavily used. This will be reflected in the harder, urban materials of concrete and masonry that will be used to create a contemporary urban park. Planting will consist of species from the site's indigenous Apple Blackbutt Forest.

Corymbia Park

A playground of sand dunes constructed from "soft-fall" will recall the sand dunes underlying the site's heath vegetation. Multi-coloured steel poles will form forests, throwing walls and other play equipment. Shade trees will consist of the heath's emergent vegetation of Eucalyptus spp..

Public Domain Precedents

The below images provide examples of public domain treatments that reflect some of the qualities desired for the public domain at Fern Bay.

Clockwise from top left: Boardwalk in Dorrigo National Park; Edenbrooke, QLD, (two images) showing flush kerbs, retained trees a and blurred edge between urban and natural areas; Boardwalk and sitting platform on the Gold Coast, QLD.

topography

light

vegetation associations

VEGETATION

The site's existing vegetation is a floristically and aesthetically rich combination of three distinct ecological communities:

- Swamp Forest (consisting of 2 sub-communities)
- Apple Blackbutt Forest and
- Heath.

This richness has evolved from the site's unique combination of geology, hydrology and climate.

The Planting Strategy aims to maintain, where possible within both the public and private domain of the site, the same aesthetic and ecological values that occur in the existing vegetation communities. This involves maintaining the variety and feel of existing vegetation communities - texture, light, wind, sound, opening and enclosure and species associations. In general, there will be a clear delineation between "natural" and "contrived" planting, through the use of raised planters, monospecific stands, geometric layouts etc. Biodiversity will be preserved by primarily using only plant material sourced from the site. Where possible koala habitat trees will be used in public areas in accordance with Port Stephens Comprehensive Koala Plan of Management.

This strategy supports the aims of SEPP 71 and the Coastal Policy in terms of ESD and maintaining existing character by using indigenous flora.

The following pages describe the development and implementation of species palettes for public domain and streetscape areas. The palettes are derived from the Planting Themes described below.

Planting Themes

With the exception of street trees that respond to the specific requirements of Port Stephens Council, planting throughout the public domain will be based on palettes of species derived from the site's indigenous floristic communities. The location of different planting themes will be based on the existing distribution of plant communities. This will ensure a strong visual and species connection between planted areas and adjoining natural areas. The three main plant communities present are:

- Swamp Forest
- Apple Blackbutt Forest
- Wet Heath

While there is considerable overlap between communities in terms of species distribution, each community is easily distinguished by its unique physical characteristics and representative species. Apart from choosing species present in each community, planting will be structured in similar ways to the natural communities. Palettes based on the two forest communities will utilise canopy, mid- and understorey plants to create spaces and to control views. Similarly the palettes based on the heath community will include emergents, shrubs and groundcover plants. These communities are described further on page 6.

Species suitable for more urban areas may also include species from a presumed belt of littoral rainforest that existed previously on the site. Use of these species will increase the variety of tree form and habitat available for use in urban areas.

Community Participation

Specialist facilitators will be commissioned to promote community participation in the ongoing maintenance and restoration of the bushland surrounding and within the subdivision. The community nursery will serve as the focal point for community activities. Community engagement activities may include

- Tree planting days
- Regular bush regeneration activities
- Seed collection events and propagation of plants
- Guided walks in bushland areas (night and day)
- Education activities

Interpretation

Interpretive signage, to be installed throughout the subdivision will educate residents on the ecological importance of the site's natural and planted vegetation. This is also intended to encourage a sense of ownership and responsibility for the bushland.

Reintroduction of Species

According to vegetation studies (Clements and Associates, 1992) species diversity on the site has declined over the last two decades due to human influences, especially increased bushfire frequency. This implies there is ecological merit in reintroducing species that would presumably have occurred naturally on the site in the recent past. Genera currently absent from the site that could be reintroduced include Xanthorrhoea, Petrophile, Grevillea and Telopea. Suitable species will be introduced as part of the vegetation strategy. Plant material will be sourced as locally as possible to ensure good genetic match to the area.

Planting Principles

The Planting Strategy is supported by the following main principles:

- Preservation of as much vegetation as feasibly possible insitu, including within public domain areas and on private property.
- Preservation of existing topography and groundwater flows where feasible.
- Establishing Planting Themes to reflect and highlight the existing plant communities excluding street trees (see Plant Themes on the following pages).
- Development of planting palettes that can support the design intent while recognising the physical changes that have occurred to topography, hydrology and solar access.
- Transplant and save as many advanced trees as possible.
- Establish an on-site nursery to propagate plants for use in landscape and revegetation areas.
- Relocate selected large felled timber as habitat in parks and reserves.
- Recycle site topsoil and organic material.
- Limited imported soil, minimal fertilizer use.
- Use only mulch created from site materials.
- Planting will reflect the requirements of the Bushfire Report.

VEGETATION ZONES

Plant Rescue Zone

Wherever possible substantial plants suitable for transplanting will be relocated on site. This has both ecological and aesthetic benefits. Using suitable equipment most species can be successfully transplanted.

Selection of individual trees for transplanting will depend on species, maturity, health, accessibility, SULE and availability of a suitable location for transplanting to.

High priority areas for plant rescue are shown on the Planting Strategy Plan. These areas have been identified based on the likelihood of finding significant numbers of transplantable trees that will be used in the early stages of the subdivision. Advanced trees for later stages will be propagated and grown on-site in the community nursery.

Vegetation Zones

Planting throughout the development is in four zones, with different principles guiding the selection, sourcing and maintenance of plant material in each zone. These zones are shown on the following plan.

Zone 1 - Parks, Reserves and Feature Planting

Such as roundabouts, Entry Water Feature and parks.

Where possible, remnant vegetation will be preserved, but where this is not possible planting themes will be established to suit the intended programme based on species native to the site.

Zone 2 - Streetscape and Bio-retention Swales

The road reserves are a significant proportion of the public domain, and the most prominent part of the subdivision. The medium to low planting within road reserves, in addition to meeting the general aims of the planting strategy, also serves a stormwater treatment purpose.

Planting of roads and swales varies to reflect the different character units of the subdivision.

Street trees within this zone will take into consideration the requirements of Port Stephens Council, however significant numbers of mature trees will be transplanted into this zone to ensure immediate visual and micro-climatic (esp. shade) amenity.

Zone 3 - Controlled Vegetation Zone

Continues the understorey planting theme of the adjacent road reserve in a 3m strip within private lots with the upper canopy species reverting to those setout in the endemic planting pallets on PP 6-7. By the widening the area of streetscape planting and the inclusion of endemic tree species, the bushland theme can be carried through the subdivision more strongly. The CVZ is maintained by the land holder with the assistance of the Developer / Community Association. In some areas the developer will undertake the initial planting and establishment or provide planting stock to the landowner for inclusion within this zone. Layout and design of this area is undertaken in consultation with the landowner in order to ensure solar access etc. to individual homes.

The Controlled Vegetation Zone will considerably strengthen the natural bushland qualities of the subdivision.

Zone 4 - Private Domain

The Private Domain is all private land including the Controlled Vegetation Zone. Residents may only landscape and plant within the Private Domain as approved by the Design Review Panel. These constraints are aimed at preserving the site's ecological values and bushland character.

Prior to sale, land in the private domain that has not already been cleared, is to be cleared of all extremely large trees and trees that are considered dangerous or with a SULE of <15 years. All other trees are to retained and removed only as part of the Design Review process on a lot-by-lot basis. This will retain extensive tree canopy on the site that will be protected by councils Tree Preservation Order.

Constraints on selection of species and materials in the Private Domain are aimed primarily at eliminating environmental weeds and preserving the site's bushland character. Constraints include limiting turf in rear yards and controlling the use of plant species that are known to be or may become environmental weeds. Education programmes will encourage residents to correctly manage pets to reduce impacts on native fauna.

PLANTING THEMES

Planting throughout the public domain with the exception of street trees, will be based on planting themes that reflect the natural plant community of particular locations. The following is a brief description of the three main existing plant communities and the corresponding complementary street trees.

Swamp Forest

In the Swamp Forest the almost straight vertical trunks of *Livistona* and *Melaleuca* provide contrasting black and white columns to support the forest's dense canopy, creating a landscape of strong contrasts. Light and dark are accentuated as sunlight penetrates gaps in the canopy. Beneath the canopy differing watertable levels have created a varied understorey of virtual monostands of ferns, reeds and sedges.

The dominant canopy species are *Casuarina glauca; Eucalyptus robusta; Livistona australis* and *Melaleuca quinquenervia*. The palms (*Livistona australis*) are the key representative species in terms of easy recognition and in terms of their aural and visual characteristics.

Omalanthus and juvenile *Casuarinas* contribute to the screening effect of the midstorey.

The understorey is dominated by *Gahnia clarkei* - a tall grass-like plant with bright green foliage. Papery stems and feathery inflorescences of *Phragmites* dominate in other areas. The fern *Blechnum indicum* dominates in smaller pockets. A variety of other species add interest to the forest floor, including *Allocasia macrorrhizos; Baumea articulata;* and *Crinum pedunculatum*.

The Swamp Forest has intermediate conservation significance, and is potential habitat for koalas and amphibians.

Complementary Street Trees

- *Livistona australis* (Cabbage Tree Palm)
- *Eucalyptus robusta* (Swamp Mahogany)
- *Waterhousia floribunda* (Weeping Lilly Pilly)
- *Tristaniopsis laurina* (Water Gum)
- *Glochidion ferdinandi* (Cheese Tree)
- *Elaeocarpus reticulatus* (Blueberry Ash)

Apple Blackbutt Forest

Contrasting trunks again contribute to the uniqueness of this forest community. Unlike the Swamp Forest however, the higher light levels in this forest have created a landscape of twisted and gnarled trunks, particularly in the reflective red trunks of *Angophora costata* and the black trunks of the Old Man Banksia (*Banksia serrata*).

Canopy species include *Angophora costata*, *Eucalyptus pilularis*, *Banksia serrata,* with occasional *Allocasuarina littoralis* and *Corymbia gummifera*.

Beneath the canopy an open shrub layer includes *Banksia serrata*, *Acacia ulicifolia* and *Dillwynia retorta*.

The understorey includes grasses, herbs and the dominant Bracken Fern (*Pteridium esculentum*).

This community does not have high conservation significance, but it may support threatened species including the orchids *Diuris arenaria* and *D. praecox*, and Black-eyed Susan (*Tetratheca juncea*).

Threatened fauna associated with this community include the Powerful Owl and Squirrel Glider.

Complementary Street Trees

- *Acmena smithii* (Lilly Pilly)
- *Cupaniopsis anacardiodes* (Tuckeroo)
- *Flindersia australis* (Crows Ash)
- *Syzygium australe* (Bush Cherry)
- *Waterhousia floribunda* (Weeping Lilly Pilly)
- *Tristaniopsis laurina* (Water Gum)
- *Glochidion ferdinandi* (Cheese Tree)

Heath

The site's heath communities are characterised by dense stands of shrubs up to 3m high with emergent trees protruding several metres higher. There are two types of heath on the site, each associated with sand transgressions of 2000 and 4000 years ago.

Emergent species include *Corymbia gummifera* and *Eucalyptus robusta. Angophora costata* and *Banksia serrata* also occur as an emergents.

The shrub layer is dominated by *Leptospermum laevigatum* and *Melaleuca nodosa.*

The understorey includes *Restio tetraphyllus* and *Lomandra longifolia*.

The conservation significance to the heath communities is likely to be high, as they are poorly represented in reserves in the region.

The dense foliage and floristic diversity of the heath provides important habitat for small birds, mammals and reptiles.

Complementary Street Trees

- *Harpullia pendula* (Tulipwood)
- *Cupaniopsis anacardiodes* (Tuckeroo)
- *Flindersia australis* (Crows Ash)
- *Xanthostemon chryanthus* (Golden Penda)
- *Flindersia brayleyana* (Queensland Maple)
- *Tristaniopsis laurina* (Water Gum)
- *Glochidion ferdinandi* (Cheese Tree)

STREETSCAPE PLANT PALETTES

The list below describes the species and the physical and spatial qualities of the proposed streetscape and public domain plant palettes including complementary street trees. Generally the bush palettes will use more species and an informal arrangement. The urban palettes will use a more restricted range of plants and will often be arranged in geometric patterns. The distribution of these palettes is shown on plan L5 Streetscape Planting Plan in the second part of this report.

Swamp Mahogany Paperbark Forest - bush palette

The dominant canopy species will be the Broadleaf Paperbark and the Cabbage Tree Palm, with the Swamp Mahogany used to as an accent tree. Casuarinas will be used to provide visual screening where required. Understorey planting will include Swamp Lilies, *Gahnia* spp., and water ferns (*Blechnum spp*.).

Street Trees

Livistona australis, Tristaniopsis laurina, Eucalyptus robusta and *Elaeocarpus reticulatus*.

Swamp Mahogany Paperbark Forest - urban palette

Similar species to the above, with the addition of rainforest tree species that exist as small remnants on the site. Understorey species will also include *Dianella* spp..

Street Trees
Livistona australis, Waterhousia floribunda, Eucalyptus robusta and *Glochidion ferdinandi.*

Apple Blackbutt Forest - bush palette

The dominant canopy species will be the Smooth Bark Apple (*Angophora costata*) and the Old Man Banksia. Blackbutts will be used as feature trees where required. Understorey species will include Acacias, Bracken Fern and numerous species that will be reintroduced to the site following advice from the likes of Greening Australia and members of the consulting team.

Street Trees
Acmena smithii, Tristaniopsis laurina, Cupaniopsis anacardiodes, Flindersia australis and *Waterhousia floribunda.*

Apple Blackbutt Forest - urban palette

Where space permits, the *Angophora costata* and Blackbutts will be used as street trees. Where space is limited *Banksia serrata*, *Eucalyptus haemastoma* and *Corymbia gummifera* will be used. Understorey and screening species will be similar to those included above.

Street Trees
Syzygium australe, *Glochidion ferdinandi, Waterhousia floribunda, Tristaniopsis laurina* and *Cupaniopsis anacardiodes.*

Heath - bush palette

Leptospermum spp. will dominate where space permits and where screening is appropriate. Public domain trees will include *Corymbia gummifera* and *Eucalyptus robusta*. Understorey species will include *Restio*, *Lomandra longifolia*.

Street Trees
Flindersia brayleyana Xanthostemon chrysanthus and *Glochidion ferdinandi.*

Heath - urban palette

Similar species to the above, planted in more regular arrangements. May also include the addition of rainforest tree species that exist as small remnants on the site.

Street Trees
Harpullia pendula, Flindersia australis, Tristaniopsis laurina, Cupaniopsis anacardiodes, and *Xanthostemon chrysanthus.*

PUBLIC ART AND INTERPRETATION

In combination with the Planting Strategy, the use of art, signage and furniture will determine the overall feel and identity of the subdivision.

The Art and Interpretation Strategies are closely linked, and will perform a major role in achieving design outcomes in terms of amenity, bushland and coastal identity and environmental education.

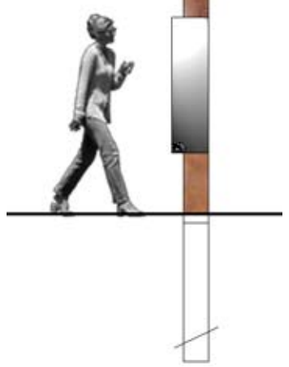
Art Strategy

Public Art will make a major contribution to the feel of the site and will also serve an environmental education role. Some artworks will also be play elements.

The Art Strategy encompasses both individual sculptural and installation pieces, and also furniture elements that are used throughout the site.

Major art elements will include:

- installation of palms at Nelson Bay Rd roundabout
- sculptural installation on the main road based on the site's physical qualities
- solar powered light poles incorporating Fern Bay logo
- opportunities for community art in the three main parks
- incorporation of Fern Bay logo / motif into other custom furniture, such as bollards, seats, interpretive and wayfinding signage etc.



Interpretation Strategy

Interpretation of the site's natural and archaeological qualities will contribute to residents' sense of ownership of the estate, and will also increase the sense of being close to the bush and to a sensitive natural environment.

Interpretation will consist of signage and artwork, tion including wildlife, flora, water sensitive urban design, geology and hydrology, asset protection zone and aboriginal archaeologically.

Interpretative signage will be designed and incorporated into the public art strategy for the site, looking at new and ingenious ways to address and impart information within the sites natural environment.

The opportunity exists for art works to incorporate signage to further develop a unique character for the subdivision.

Art Precedents

Clockwise from top left: Sea Shell Carving, a series of marine carvings within parkland areas carved into local rock; Four images of sculptural elements made from stainless steel and perspex - materials that could be used to represent the visual and tactile qualities of the site; Use of vertical elements to convey meaning - Flood Sculpture at Maitland Visitors Centre; Dead tree reused insitu as sculpture.

Road signage will reinforce the site's natural values.

In the Shadows - installation using resin poles to reveal ecological processes

MATERIALS

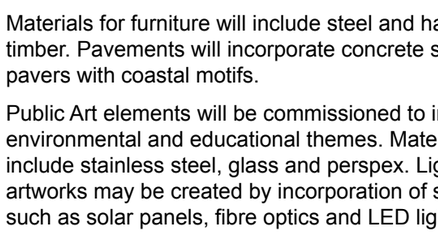
The existing landscape of Fern Bay is characterised by the variety and diversity of textures, colours and sounds.

Materials to be used in artworks and furniture will be chosen from a palette designed to highlight and complement the site's natural physical qualities.

Materials for furniture will include steel and hardwood plantation timber. Pavements will incorporate concrete stencilling and unit pavers with coastal motifs.

Public Art elements will be commissioned to incorporate environmental and educational themes. Materials for artworks will include stainless steel, glass and perspex. Lighting effects in artworks may be created by incorporation of sustainable technology such as solar panels, fibre optics and LED lighting.

The materials palette has been chosen to compeliment and highlight the sensory qualities of the site's existing vegetation and geology.



Use of timber will maintain the coastal connection.

Batters and feature paving will incorporate motifs that reflect the textural qualities of the site. The examples below show (l to r) concrete stencilling at Edenbrooke, Qld; Urbanstone 'Shifting Sands' pavers.

ROADS

Roads will form the first, and for many, the main impression of Fern Bay, therefore it is important that they reflect the design aims of the subdivision. The landscape treatment of the roads, bio-retention swales and verges aims to retain as far as possible the physical and sensory qualities of the site's existing vegetation. Planting will mimic the structure of existing plant communities with mid- and understorey species. Planting will be as dense as possible with regard to bushfire, vehicle safety and resident amenity.

The impact of streetscape planting has been increased by extending the planting into private lots in the Controlled Vegetation Zone (Refer L14). This zone is explained further in the Vegetation Strategy.

CARINDALE

Causeway swale crossovers.

EDENBROOKE

Varied road alignment creates interest.

EDENBROOKE

Stormwater in open swales.

VICTORIA PARK

Decorative kerb treatment and timber walk over central swale.

EDENBROOKE

Decorative planting in median.

PATHS AND TRAILS

Paths and Pedestrian trails will be of three main types:

- Concrete footpaths
- Pedestrian trails and
- Boardwalks

Shared pedestrian / vehicle access, footpaths, and pedestrian trails will be sited to minimise environmental disturbance and to maximise pedestrian amenity.

Design of pedestrian trails will reflect DEC construction techniques, but will be to a higher standard of both construction and materials. This will add to the perception of the site's environmental sensitivity and natural values.

Concrete Footpaths

Concrete footpaths 1.2 - 1.5m wide will be provided adjacent to roads. Concrete may be coloured or sandblasted to suit overall design intent. Where footpaths cross drainage swales fully accessible steel and timber bridges will be installed.

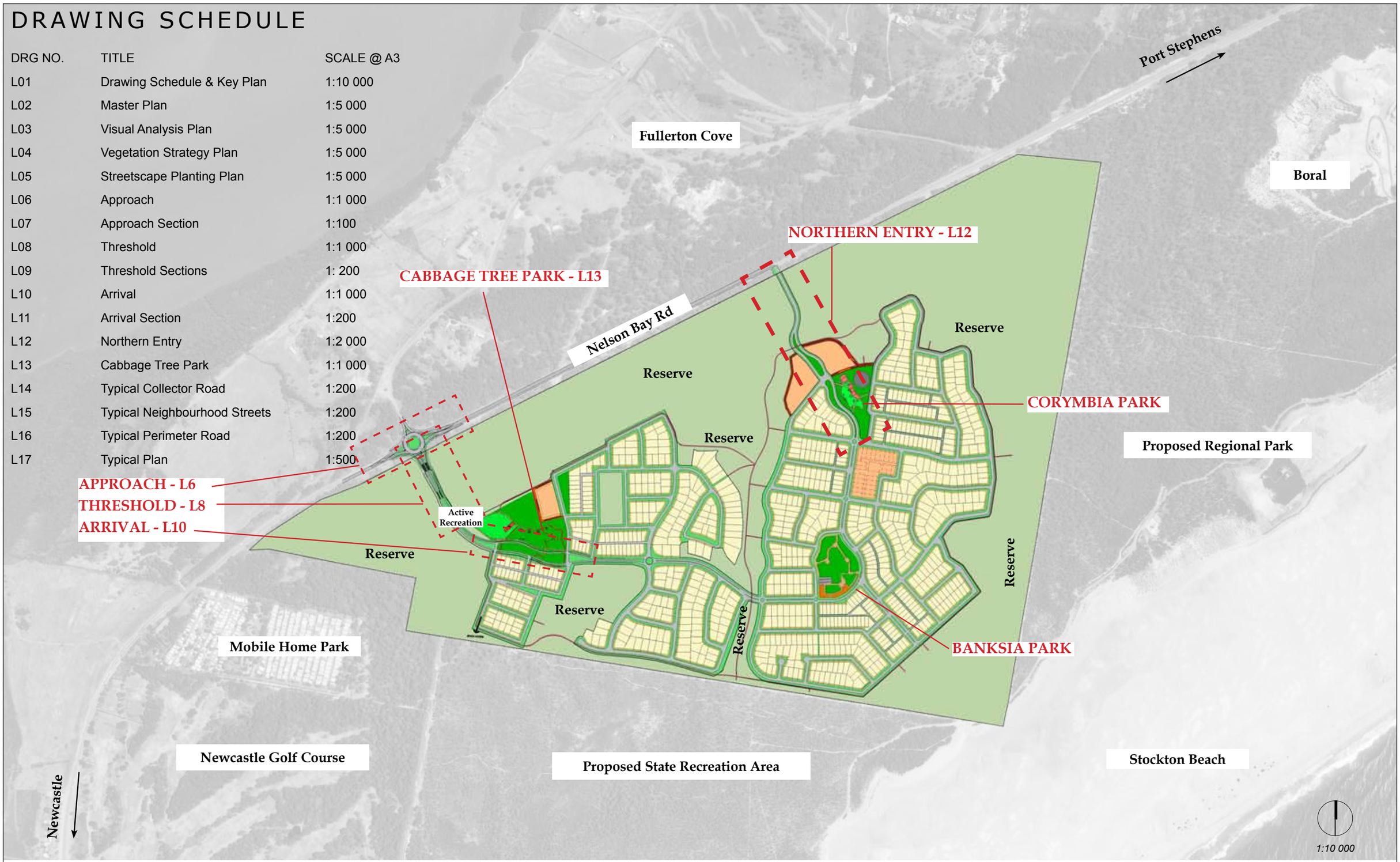
Pedestrian Trails

Pedestrian trails will generally be 2m wide and consist of natural surfaces. Trails will be constructed for pedestrian access through less sensitive areas.

Boardwalks will be installed along sections of the pedestrian trails to provide and to control pedestrian access to environmentally sensitive areas. Boardwalks will be of two types: rigid and flexible. Flexible boardwalks will be used over sand dunes, while the rigid boardwalks will be used in wetlands and to provide elevation over sand dunes. Rigid boardwalks will wherever possible provide full disabled access.

DRAWING SCHEDULE

DRG NO.	TITLE	SCALE @ A3
L01	Drawing Schedule & Key Plan	1:10 000
L02	Master Plan	1:5 000
L03	Visual Analysis Plan	1:5 000
L04	Vegetation Strategy Plan	1:5 000
L05	Streetscape Planting Plan	1:5 000
L06	Approach	1:1 000
L07	Approach Section	1:100
L08	Threshold	1:1 000
L09	Threshold Sections	1: 200
L10	Arrival	1:1 000
L11	Arrival Section	1:200
L12	Northern Entry	1:2 000
L13	Cabbage Tree Park	1:1 000
L14	Typical Collector Road	1:200
L15	Typical Neighbourhood Streets	1:200
L16	Typical Perimeter Road	1:200
L17	Typical Plan	1:500



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FERN BAY - LANDSCAPE MASTER PLAN
18 May 07

DRAWING SCHEDULE AND KEY PLAN
L 1

LEGEND

- Reserves
- Parks
- Streetscapes
- Controlled Vegetation Zone
- Residential Lots
- Integrated Housing
- Community Facilities
- Fire Trail
- Pedestrian Trail

Cabbage Tree Park
- Combined passive and active recreation opportunities
- Boardwalks
- Adventure play
- Quiet relaxation.

Corymbia Park
- conserved existing heath
- sand dune theme
- soft fall
- steel play equipment

Reserve
no public access

Road 2
- thematic forest journey
- dense planting of native vegetation carries the bush through the subdivision

Reserve

Entry Roundabout
- Radial grid of *Livistona australis* with low groundcover planting.

Reserve

Reserve

BEACH ACCESS

1:5 000

Arrival Entry Road
- retain existing vegetation
- strong pedestrian connection with Cabbage Tree Park

Banksia Park
- banksia theme
- urban park
- concrete pavement and furniture
- recreation area

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MASTER PLAN
L2

LEGEND

- Visual Boundary
- Internal Screen
- Open View

Visual access from entry road.

Visual access from entry road.

Internal view of parks and community facilities for passive surveillance and community awareness.

Filtered views of park from entry road

Internal view of parks and community facilities for passive surveillance and community awareness.

Internal view of parks and community facilities for passive surveillance and community awareness.

1:5 000

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VISUAL ANALYSIS PLAN
L3

LEGEND

Existing Vegetation
- to be retained and managed according to ecological principles and bushfire requirements

- Swamp Mahogany Paperbark Forest
- Apple Blackbutt Forest
- Wet Heath
- Swamp Sclerophyll Forest
- Bush Regeneration Areas
- Aboriginal Heritage Reserve
- Plant Rescue - priority area

Streetscape Planting
- refer to Streetscape Planting Themes Plan.

Parks and Reserves

- ZONE 1 - Parks
- ZONE 2 - Streetscape
- ZONE 3 - Controlled Vegetation Zone
- ZONE 4 - Private Domain

Ecological Corridor

Corymbia Park

Reserve

Ecological Corridor

Cabbage Tree Park

Reserve

Banksia Park

Reserve

Reserve

BEACH ACCESS

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VEGETATION STRATEGY PLAN

L4

LEGEND

Proposed Streetscape Planting

- refer to p. 7 for description of planting palettes.

- Swamp Mahogany Paperbark Forest - bush palette with complementary street trees.
- Swamp Mahogany Paperbark Forest - urban palette with complementary street trees.
- Apple Blackbutt Forest - bush palette with complementary street trees.
- Apple Blackbutt Forest - urban palette with complementary street trees.
- Heath - bush palette with complementary street trees.
- Heath - urban palette with complementary street trees.

Note: Streetscape planting will also apply to the Controlled Vegetation Zones (CVZ) within individual lots

Existing Vegetation

- to be retained and managed according to ecological principles and bushfire requirements

- Swamp Mahogany Paperbark Forest
- Apple Blackbutt Forest
- Wet Heath
- Swamp Sclerophyll Forest
- Bush Regeneration Areas

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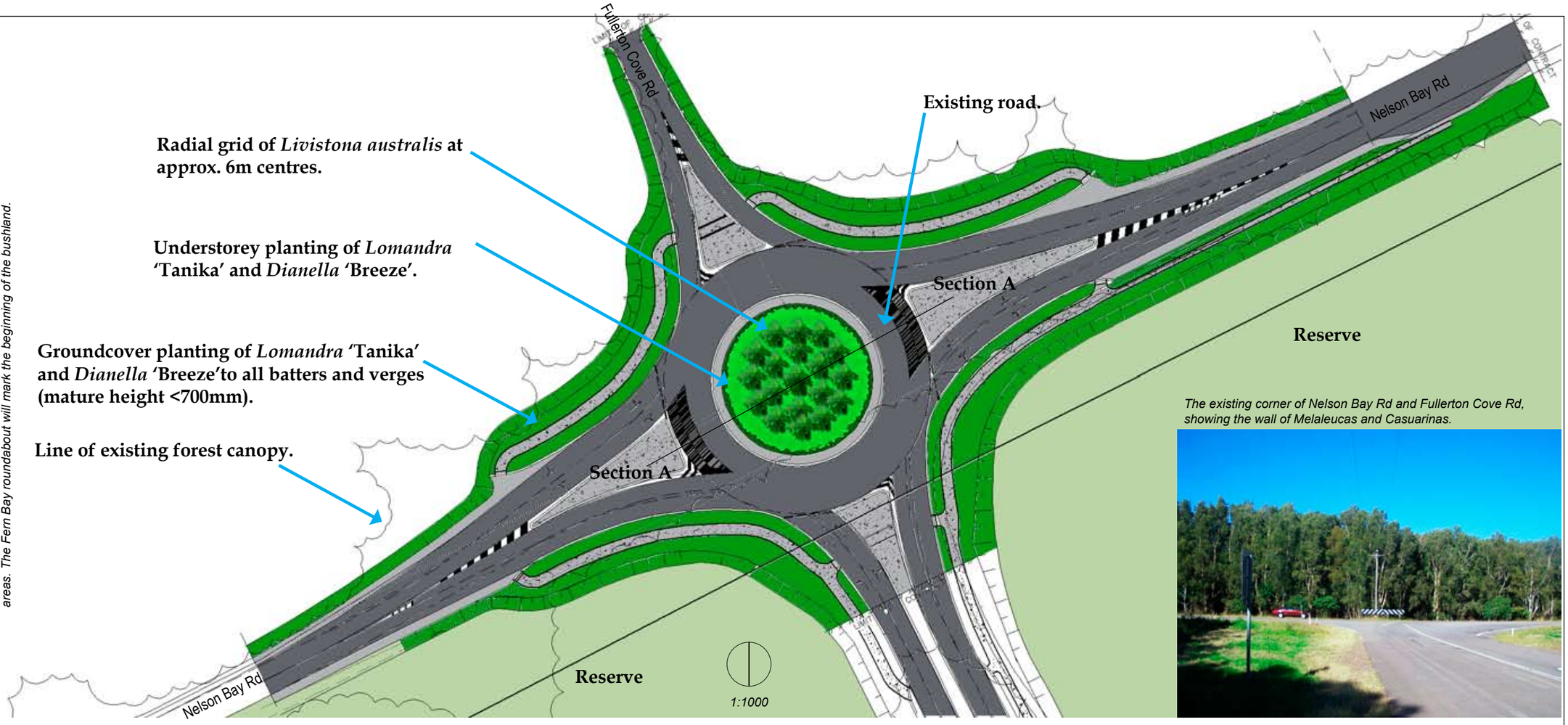
STREETSCAPE PLANTING PLAN
L5

The approach to the site from Newcastle passes urban, industrial, rural and suburban areas. The Fern Bay roundabout will mark the beginning of the bushland.



The existing corner of Nelson Bay Rd and Fullerton Cove Rd, showing the wall of Melaleucas and Casuarinas.

LANDSCAPE CONCEPT

The concept design for the Nelson Bay Rd roundabout aims to create an understated announcement of the entry to Fern Bay in keeping with the quiet, bushland character of the subdivision.

The design of the main internal road of the subdivision has been designed as a forest journey marked by different precincts and experiences. The roundabout landscape thus introduces the major theme of the landscape within the subdivision - the exclusive use of indigenous flora.

Travelling to Fern Bay from Newcastle will take commuters through a variety of distinct landscape types - urban, industrial, rural and suburban. Just as the internal main road of the subdivision will provide an experiential journey, the roundabout landscape will mark another stage on the external journey from Newcastle, giving both a sense of arrival and marking the escape from the developed areas to the bush as one leaves Nelson Bay Rd and turns into the subdivision's ecological corridor.

Design Principles

The following principles inform the concept design for the roundabout:

- maintain sense of penetration through existing wall of forest along Nelson Bay Rd frontage
- use light / dark transitions to accentuate arrival as one leaves Nelson Bay Rd
- indigenous planting - *Livistona australis* (transplanted from on-site) underplanted with *Lomandra* and *Dianella* cvs.
- up-lighting on selected trees
- complement entry statements.

Planting

The trees in the roundabout will be *Livistona australis*, transplanted as mature specimens from the Fern Bay subdivision. Selected trees for planting in the outside ring of palms will have a minimum clear-stem-height of 4m and minimum canopy clearance of 3m. Mature *Livistona australis* can reach 24m with a diameter-at-breast-height of 500mm.

Understorey and groundcover planting will consist of the following *Lomandra* and *Dianella* cultivars:

Lomandra longifolia 'Tanika'	Height 700mm
Dianella 'Breeze'	Height 600mm

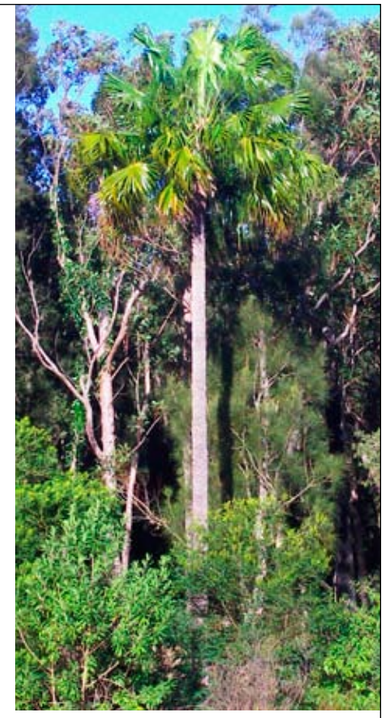
These species have been selected for areas adjacent to roads where visibility may be an issue.

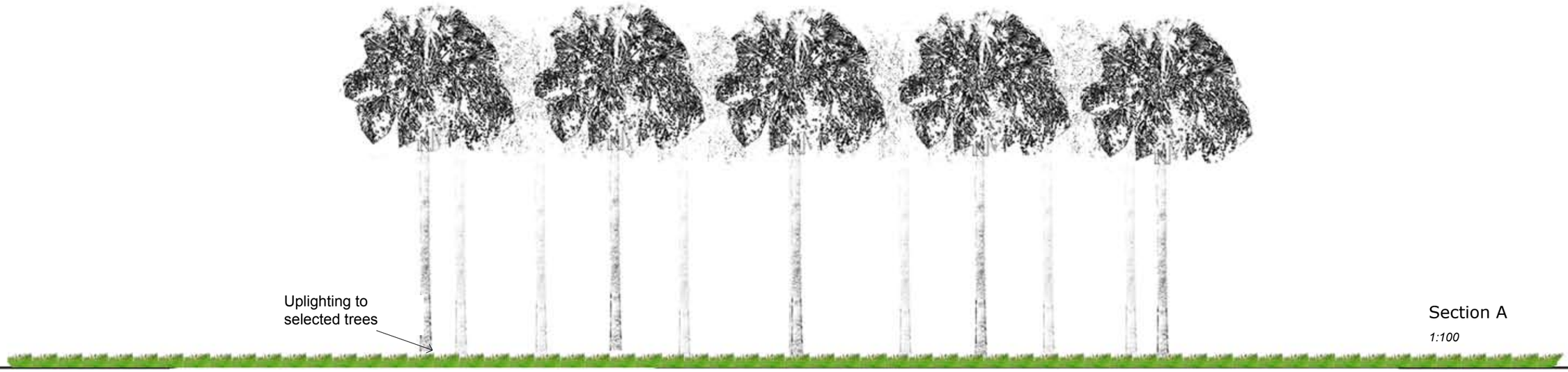
Existing trees will be retained where possible, except within required vision triangles.

Lomandra longifolia

Pteridium esculentum

Livistona australis





Section A

1:100

FERN BAY - LANDSCAPE MASTER PLAN

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APPROACH SECTION

L7

THRESHOLD CONCEPT

The concept design for the Threshold aims to accentuate awareness of both the transition from the everyday world of Nelson Bay Rd to the serene natural world of Fern Bay, and to mark the passage through the ecological corridor as being a different and special place. The existing forest will be maintained or re-established as close as possible to the road using endemic species. In addition to benefits for fauna, the close canopy will emphasize the passage through the forest as a sensory experience.

The batters that are required for road construction will be planted predominantely with *Livistona australis* (Cabbage Tree Palm), with *Eucalyptus robusta* (Swamp Mahogany) or *Tristaniopsis laurina* (Water Gum) used in low lying causeway areas, with the understorey dominated by banding of selective native groundcover species en masse. This will establish an instant mat of varying coloured foliage, that will stregthen over time and transform into a dramatic entry statement dominated by Cabbage Tree Palms.

Design Principles

The following principles form the concept design for the roundabout:

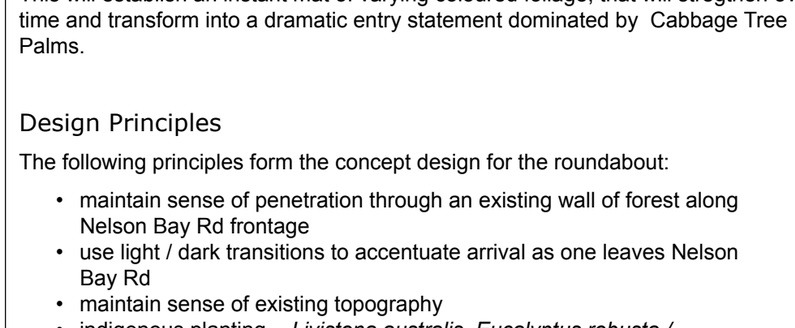
- maintain sense of penetration through an existing wall of forest along Nelson Bay Rd frontage
- use light / dark transitions to accentuate arrival as one leaves Nelson Bay Rd
- maintain sense of existing topography
- indigenous planting - *Livistona australis, Eucalyptus robusta / Tristaniopsis laurina* underplanted with selective native species
- infill of existing vegetation to stregthen backing screen of *Melaleuca quinquenervia* and *Casuarina glauca*
- up-lighting on selected trees.

Planting

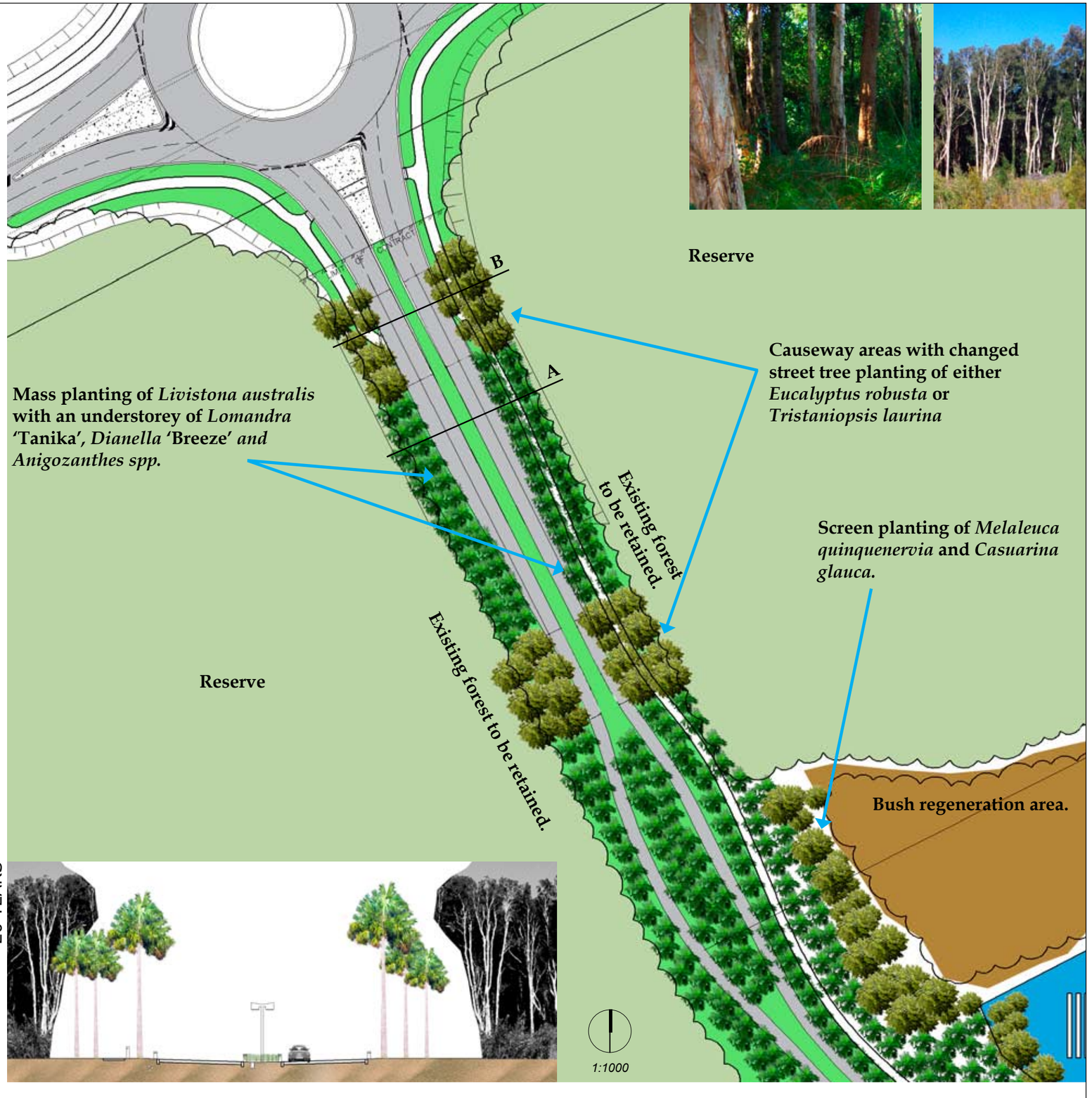
The majority of the Threshold will be planted with Cabbage Tree Palms (*Livistona australis*). The palms will be planted initially as a combination of singal row of semi-mature plantings to each verge with additional groundcover plantings behind, which as they mature, will become screening shrubs and finally a canopy species. Other tree planting will include *Eucalyptus robusta* (Swamp Mahogany) or *Tristaniopsis laurina* (Water Gum) within causeway areas,

Understorey and groundcover planting will be primarily *Lomandra* 'Tanika', *Dianella* 'Breeze' and *Anigozanthes* spp. planted en masse in large alternating bands .

Existing trees will be retained where possible and replenished with infill plantings of endemic species including Paperbarks (*Melaleuca quinquenervia*) and She-oak (*Casuarina glauca*) as required.



2 YEARS



20 YEARS

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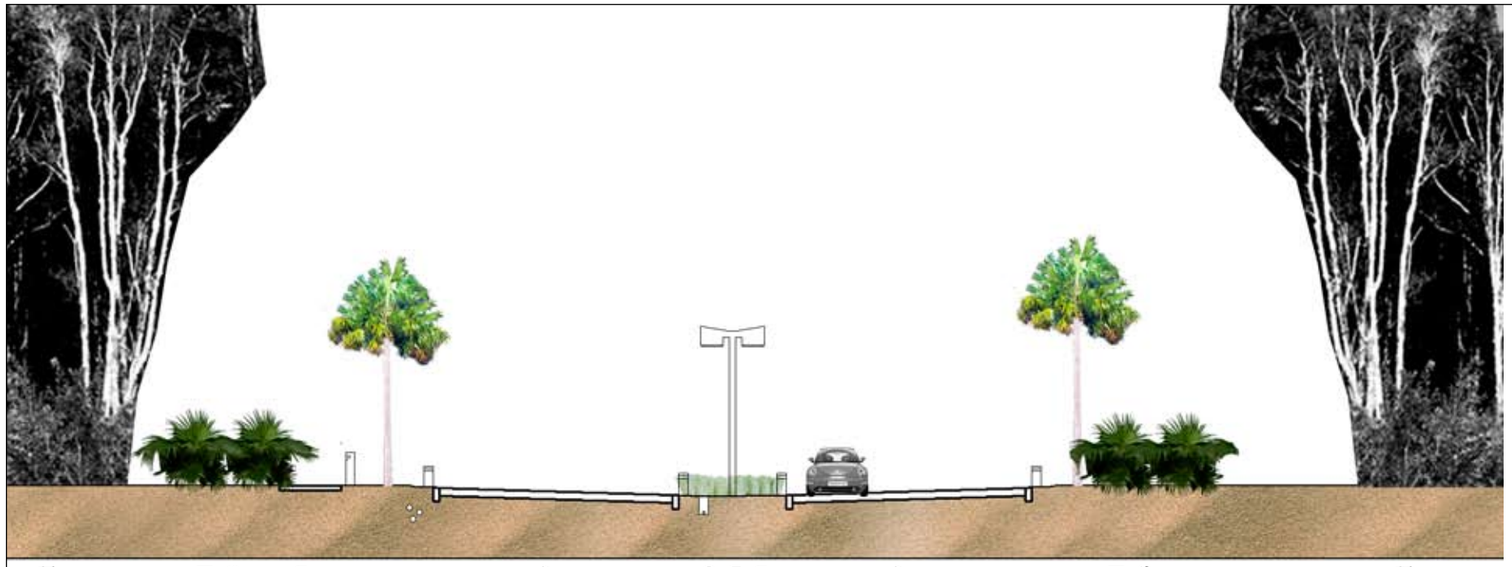
THRESHOLD
L8



Section A

1:200

Section B

1:200

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THRESHOLD SECTIONS

L9

1:1000

Landscape Plan

LANDSCAPE CONCEPT

The concept design for the Arrival aims to create a sense of arrival in the subdivision after the transition through the Threshold. The wide median of the main road is used as a park and public art installation. The existing forest is maintained, using retaining walls where necessary to support road construction. Into this forest a simple boardwalk will be placed that winds around and between existing trees. v

Design Principles

The following principles inform the concept design for the roundabout:

- incorporate public art into existing forest
- reinforce existing natural vegetation
- up-lighting on selected trees and artworks.

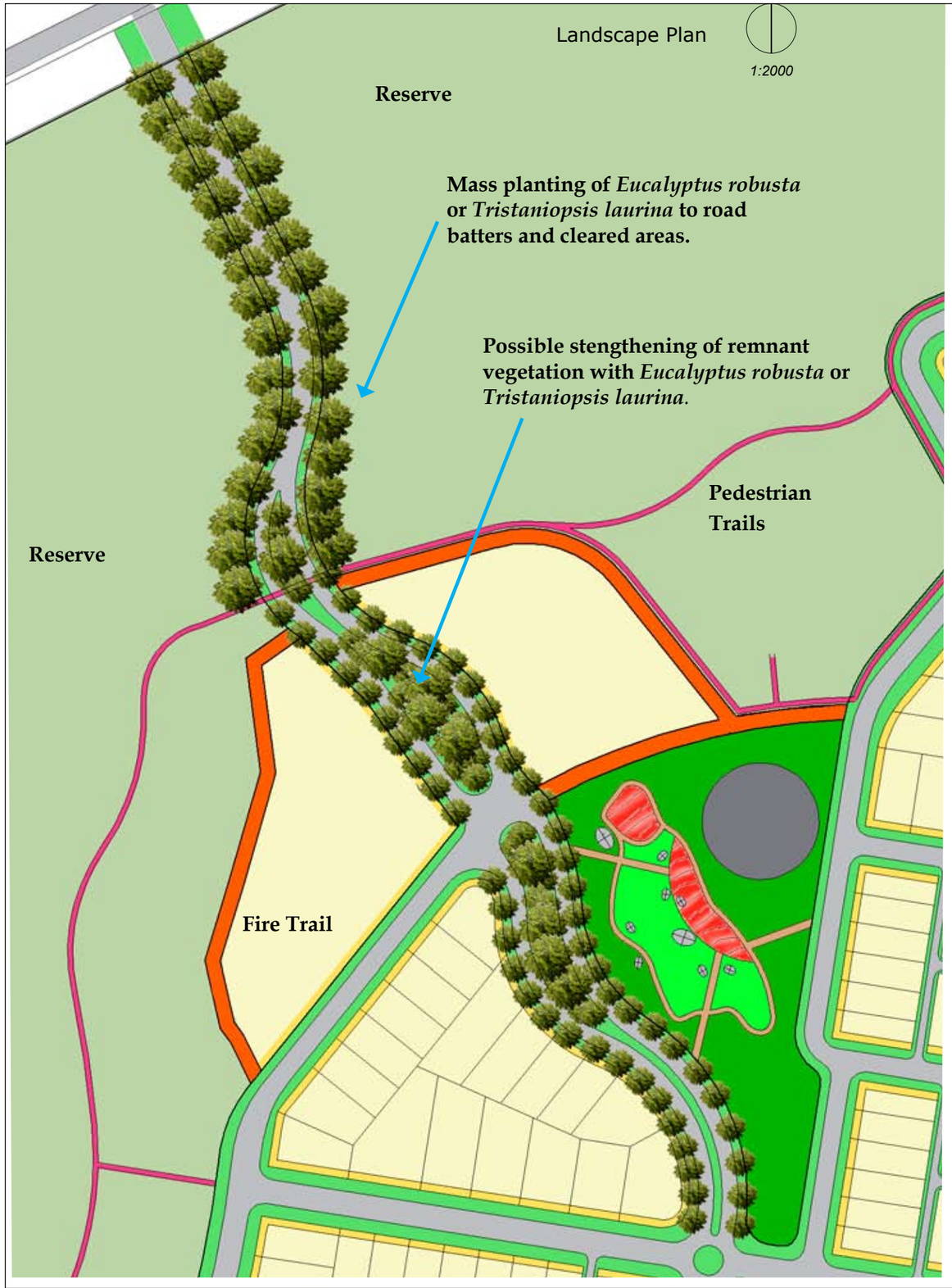
Planting

The trees to be planted in the Arrival will be exclusively the existing species - predominantly canopy species from the Swamp Forest and Apple Blackbutt Forest communities. Tree planting will be minimal however, as substantial amounts of existing vegetation will be retained.

Understorey and groundcover planting will include *Blechnum indicum*, *Gahnia clarkei* and *Phragmites* spp..

Public Art

A public artwork will be commissioned to occupy the Entry that will be inspired by the natural qualities of the site. Materials may include glass, perspex, stainless steel.



LANDSCAPE CONCEPT

The concept design for the Northern Entry involves the mass-planting of two native species taking into account the street tree requirements of Port Stephens Council:

- *Eucalyptus robusta*, and
- *Tristaniopsis laurina.*

These two species are individually distinctive, and their presence adds to the unique character of this entry. By planting en masse the contrasts between the dark, rough trunks of the *Eucalyptus robusta* and the smooth, pale sheeny trunks of the *Tristaniopsis laurina* will be accentuated, while the similar variable habits of the two species will complement each other.

These two species will also complement the existing vegetation to be retained, in close proximity to the road dominated by *Angophora costata* and *Banksia serrata* which have a similar relationship to the trees selected for the entry drive (see images below).

Angophora costata

Banksia serrata

The Apple Blackbutt Forest that exists at the site of the Northern Entry is marked by the contrasting light and dark trunks and variable form of the existing trees.

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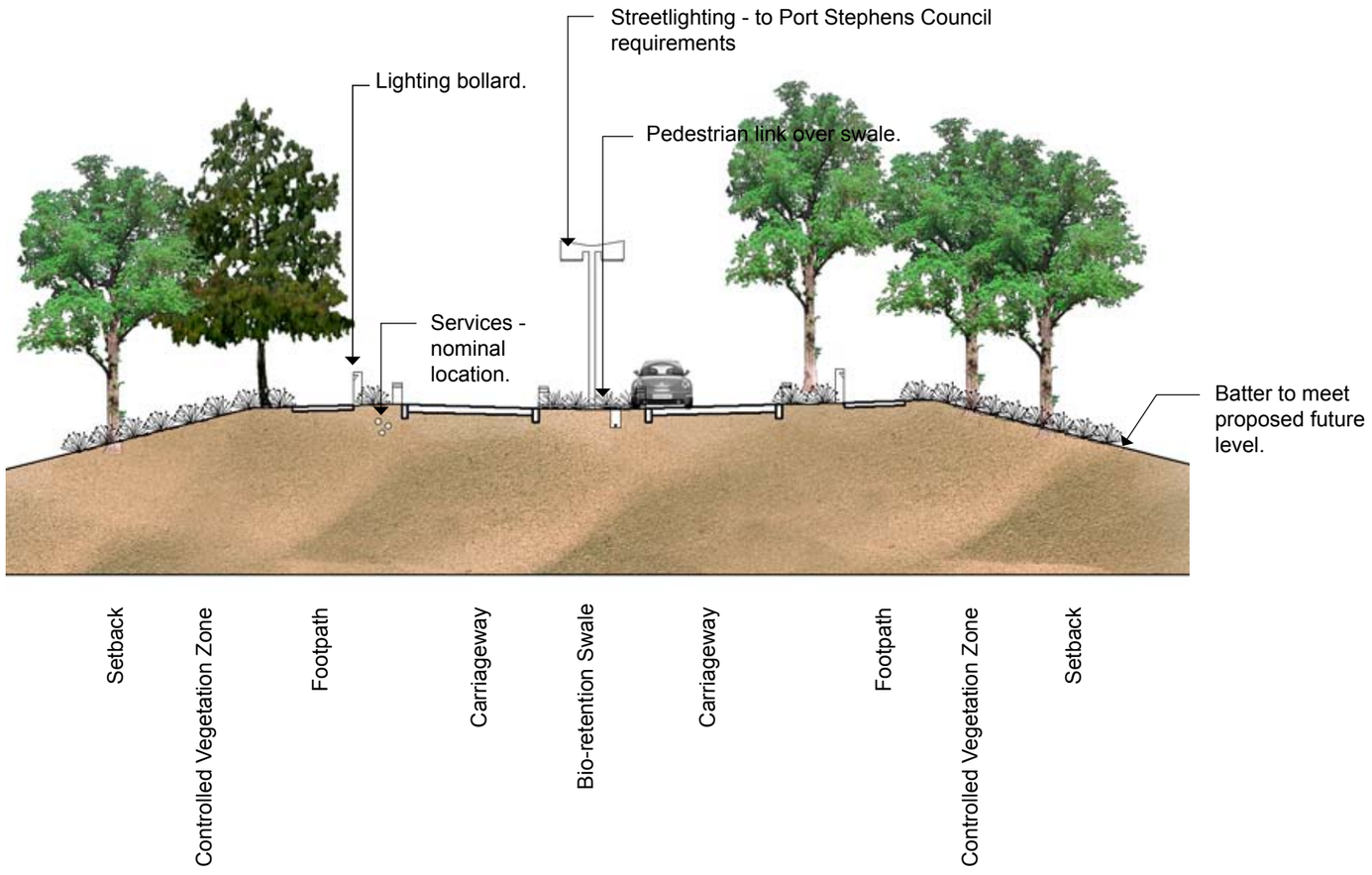
NORTHERN ENTRY
L11



TYPICAL COLLECTOR ROAD and
TYPICAL NEIGHBOURHOOD STREET WITH CENTRAL SWALE
1:200

ROAD CONCEPT

Roads throughout the estate are one of the most significant parts of the public domain, and will form a major part of the overall aesthetic feel of the subdivision. The roads are therefore significant in achieving the design aims for the estate's landscape, of maintaining the look and feel of the existing bushland character. Typical roads have been designed to maximise planting space, so that as far as is possible the existing forest canopy (or a near equivalent) is maintained through the public areas of the subdivision. The planting concept for the roads is explained on pp. 4-7 and L5.

Roads will have five main elements. Starting from the lowest point, they are:

- Bio-retention swale
- carriageway
- footpath / verge
- Controlled Vegetation Zone
- building setback.

Controlled Vegetation Zones (CVZs), where they occur are 3m wide landscaped strips comprised primarily of indigenous plants occurring inside the front boundaries of building lots. The aim of the CVZs is to augment and strngthen the desired landscape character created by landscaping within the road reserve. CVZs located along major roads may be planted by the developer whereas other CVZs will be monitored by the design review panel and planted out by the individual property owners using plants from the approved plant schedule.

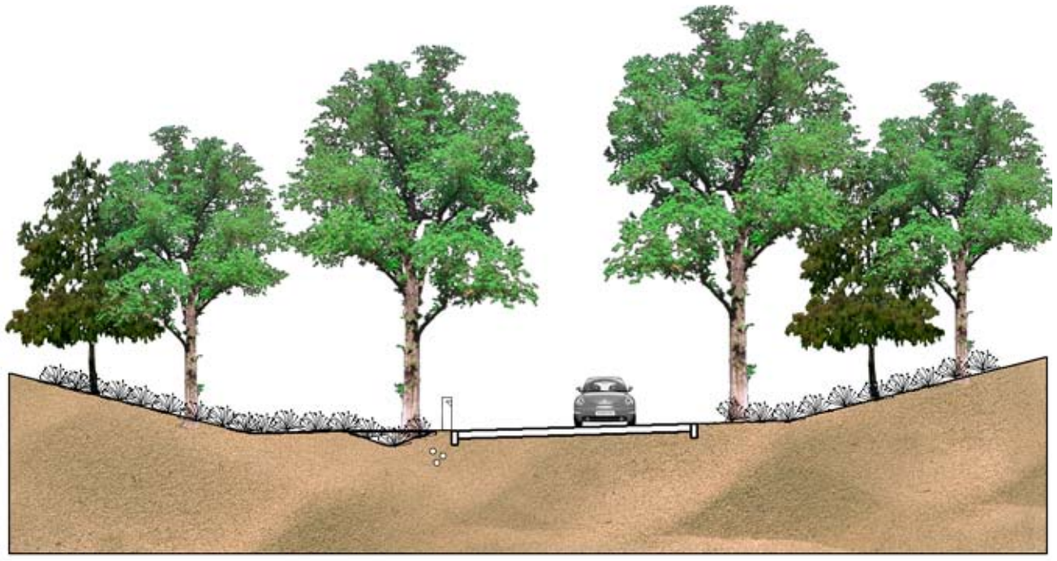
Swales on single carriageway roads will be located between the footpath and carriageway.

Additional elements will include pedestrian and vehicular bridges over swales, street lighting, signage and bollards. Where roads are located in cuttings, batters will be treated with pavers that incorporate a coastal motif.

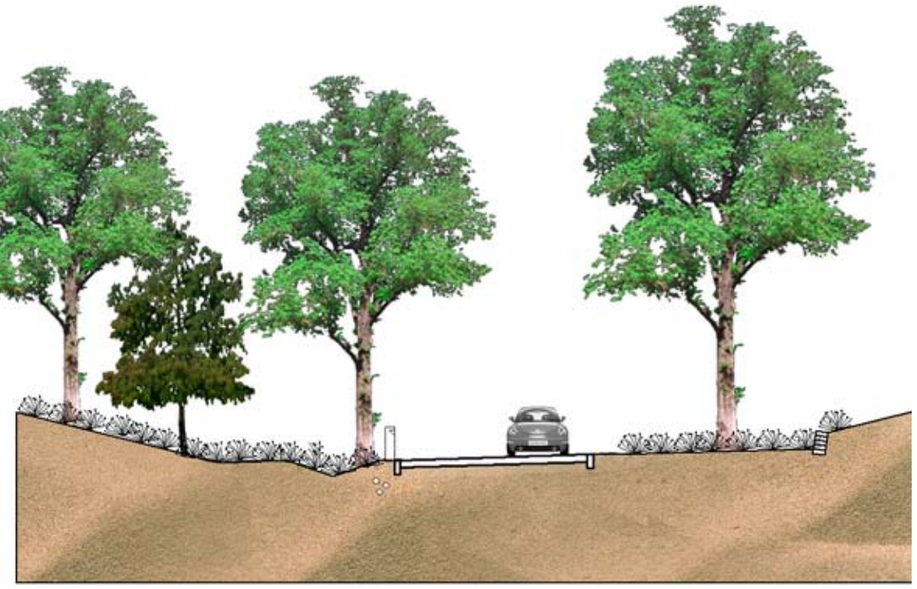
The main types of road and there typical sections are:

- Collector Road (L14)
- Neighbourhood Street with central swale (L14)
- Neighbourhood Street - 17.5m (L15)
- Neighbourhood Street - 15m (L15)
- Perimeter Road (L16).

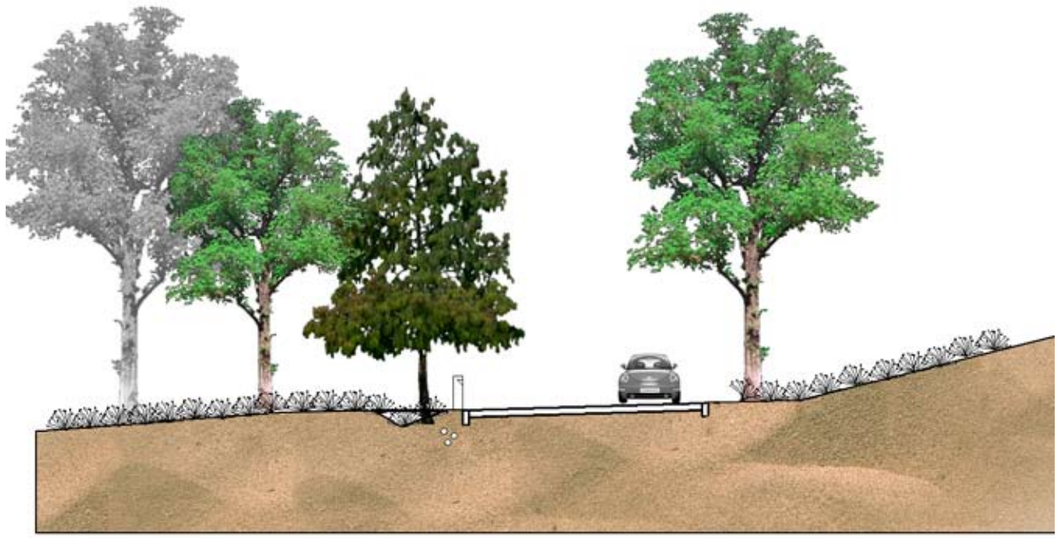
Where roads are located in cuttings, batters will be treated with pavers that incorporate a coastal motif.



TYPICAL SECTION - 17.5m ROAD



TYPICAL SECTION - 15m ROAD



TYPICAL PERIMETER ROAD SECTION

1:200

Landscape Plan 1:500

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TYPICAL PLAN
L15