R E P O R T

L A N D S C A P E D E S I G N S T A T E M E N T
and
L A N D S C A P E M A N A G E M E N T P L A N

Project

I l l a w a r r a R e g i o n a l B u s i n e s s P a r k
7 8 T o n g a r r a R o a d , A l b i o n P a r k .

Date
07 March 2007

Prepared by

J a m e s P f e i f f e r L a n d s c a p e A r c h i t e c t s
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1.0 INTRODUCTION

The following Landscape Design Statement and Landscape Management Plan has been prepared by James Pfeiffer Landscape Architects on behalf of Delmo Albion Park Pty Ltd for the proposed Illawarra Regional Business Park, to be located at 78 Tongarra Road, Albion Park

The site is approx 80 Ha in area, located immediately west of the Albion Park Airfield. At present the site is utilized as a grazing property; cleared of all trees except three mature native Fig trees (Ficus sp.) and a small Paperbark woodland (Melaleuca decora) an endangered, endemic, tree specie of the region, located in the south east corner of the site, beside Tongarra Road. Existing groundcover is predominantly pasture grass, with a significant weed content. Running through the site is an existing creek; centred within the site, and intercepting the course of the creek, is a SEPP 14 wetland; an additional wetland also exists on the northern boundary of the site, however this wetland has not been classified.

The proposed development can be divided into three major zones;

- Zone 1 is a Road Reserve, located south west corner of the site, a corridor of land set aside for the up-grade of the Pacific Highway.
- Zone 2 consists of the existing creek, SEPP 14 wetland, and low lying areas subject to flooding, which will be rehabilitated by extensive re-planting of endemic trees, shrubs, and groundcover plants to re-create a riparian plant community, similar to what may of occurred before settlement. For detail regarding rehabilitation refer to reports prepared by Gunninah Environmental Consultants
- Zone 3 is the Illawarra Regional Business Park, divided in two by the east/west runway of the Albion Park Airfield. For further detail regarding the proposed layout of the business park refer Concept Plan prepared by Julius Bokor Architect Pty Ltd.

James Pfeiffer Landscape Architects have prepared concept plans regarding the planting strategy for the Illawarra Regional Business Park, including street trees, planting to the entry off Tongarra Road, boundary screen planting and planting to individual allotments. The Landscape Concept Plan, Drawing No 06-050-01, 06-050-02, and 06-050-03, illustrates the proposed landscape strategy for this property.

2.0 AIMS

Proposed planting strategy has been formulated in order to fulfill the following aims:

1. BIRD STRIKE TO AIRCRAFT
   The proposed development is located beside an existing airport and the potential hazard of aircraft flying into birds and bats is a significant management issue for airports. Incidents of aircraft striking birds are a common occurrence. Aircraft flying into birds and bats can have catastrophic consequences; although birdstrikes do not always affect aircraft flight, aircraft are frequently damaged, some seriously, to the extent that emergency landings need to be initiated and engines or other major components replaced.

   Vegetation that provide potential feeding opportunity or safe resting places can be attractive to birds and bats. A decision has been made to select trees, shrubs and groundcover plants, for the Illawarra Regional Business Park, that minimize the production of flowers and fruit which can be utilized by birds and bats, and therefore minimize the bird and bat population within the environs of the airport; flight safety for aircraft, taking-off and landing, is increased by reducing the number of birds

2. HEIGHT OF TREES

Aircraft flight patterns dictate the height of structures and trees within the environs of an airport. For detail concerning the height of structures and trees, within the Illawarra Regional Business Park, associated with the airport refer Section AA, and Section BB, prepared by Julius Bokor Architects Pty Ltd. Generally street trees can be 15.0 metres tall except for the following zones

- End of runway; and
- That part of the street northern side of runway, where the street follows boundary line.

3. STREET TREES

Street trees are an important landscape component to any urban precinct. Street trees associated with the Illawarra Regional Business Park will reflect the fact that the proposed development is an industrial precinct. The reasons for planting trees, located in streets are;

- Climate modification:
  - Provision of shade and protection for pedestrians and vehicles against seasonal changes;
  - Reduction of air movement, and dust control;
  - Absorption of water; and
  - Reduction of air temperature
- Visual quality:
  - Definition of space;
  - Linking together of separate visual elements;
  - Highlight vehicular and pedestrian access points
  - Provision of vertical visual elements in the streetscape; and
  - Visual softening built forms.
- Aesthetics:
  - Provision of natural elements in a man made environment;
  - Provision of scale and identity
  - Highlights seasonal changes;
  - Casting of shadows which are a dynamic visual element in the landscape; and
  - Introduction of many and varied visual forms and colours
- Psychological aspects:
  - Offer sense of perspective, distance and speed; and
  - Enhance the human scale and human psychological comfort within an otherwise large and open physical environment.
- Economics:
  Successful street plantings increase the value of developments.

Choice of tree species for street planting is based on the following criteria;

- Physical characteristics;
  - Height – trees can be no higher that 15 metres because of height restrictions imposed by the Albion Park Airfield.
  - Spread – large trucks will require access to the streets and allotments of this development which means the trees need to have a tall umbrella form to allow the trucks safe passage
- Form
  The street tree must be visually transparent – ability to look through the tree so that the buildings and business signage can be seen from the street – business require visual access from the street in order to promote their trade or service – the trees must frame and filter views not block views
- Survival characteristics
  The proposed street tree will need to be hardy and well suited to the climate;
  - Soil – the street trees shall be planted in a continuous strip of site topsoil 3.0 metres wide and 1.0 metre deep;
  - Drainage – the planting strip will be effectively drained
  - Climate – moist temperate with an occasional minor frost mid winter
- Ornamental nature and colour;

The street tree must have a strong visual quality in terms of form and floral display so long as the flowers do not attract birds and bats

- Wildlife habitat:
  As mentioned above, because birdstrike to aircraft is a hazard, the street trees, for this development, must minimize the provision to attract birds and bats.
- Rate of growth and longevity;
  There is benefit if the street trees grows reasonably quickly as well as survives for an extended period of time.
- Root disturbance;
  Beside the zone where the trees will be planted shall be place, below ground, service conduits such as electricity, water, telephone, gas, etc. Therefore the tree root system should not be too aggressive – root system of Fig trees are far too aggressive.
- Maintenance;
  The street tree must be hardy, drought resistant, resistant to insect attack, and require relatively low levels of maintenance.

Spacing of street trees is also an important issue. As mentioned above business require visual access from the street in order to promote their trade or service. Furthermore access to each allotment by large trucks is an absolute requirement. Therefore in order to maintain clear sight lines to the buildings and signage and not to obstruct access of large trucks in is proposed to plant street trees at 30 metre centers.

4. AMENITY TREE AND SHRUB PLANTING TO SIDE AND REAR BOUNDARY LINES TO ALL ALLOTMENTS
   Amenity tree and shrub planting along side and rear boundary lines to each allotment is a very important landscape element, in regard to this development, for the following reasons:
   - The massed strata of foliage will visually screen and soften the built form, especially building mass and extensive truck & car parking areas. Screen planting is especially important along the southern boundary where the allotments share a common boundary with the existing heritage buildings
   - Enhance the human scale and human psychological comfort within an otherwise large and open physical environment;
   - Establish an aesthetically attractive landscape setting;
   - Ameliorate the physical environment, especially;
     - solar penetration to buildings and parking areas
     - wind

     in order to enhance and maximize human physical comfort.

   The amenity planting should have the following characteristics:
   - The plants should be evergreen to provide visual screening properties throughout the year;
   - The plants need to have a dense upright form in order to grow, without human intervention, in relatively narrow spaces;
   - In general the mature height of selected trees should be no higher than 8.0 to 10.0 metres so that they do not overshadow neighbouring properties and do not exceed height restrictions imposed by the Albion Park Airfield
   - Species need to be hardy and well suited to the site environment;
   - Minimize maintenance; and
   - As mentioned above, because birdstrike to aircraft is a potential hazard, the plants, for this development, must minimize the provision to attract birds and bats.

5. MASS PLANTED GARDEN BEDS ALONG INTERNAL STREET
   Establish mass planted garden beds using shrubs, groundcover plants and grasses in order to;

- Visually soften truck and car parking areas;
- Enhance visual presentation of the buildings by establishing mass planted strips of planting along the internal road system. The purpose of the 3.5 metre planting strip along internal roads is not to screen the buildings; visual access to the buildings from the street, and from the buildings to the street, must be maintained in order to provide customer recognition, promote positive security practices; the purpose of the mass planted strips is to frame views to the buildings and combine with the street trees to visually soften the built form;
- Highlight pedestrian and vehicular access points;
- Delineate landscape spaces and humanize the scale; and
- Stabilize embankments

Mass planting along the street frontage should have the following characteristics;

- Shrubs and groundcover must be evergreen to provide cover throughout the year;
- Shrub and ground cover plants should be massed together to form a planting structure, when mature, that is generally no higher than 1.0 metre; isolated shrubs could be higher, however, the aim is to ensure the planting strip does not screen the buildings and signage;
- Species need to be hardy and well suited to the site environment;
- Plants should be selected because they are known to require low levels of care; and
- As mentioned above, because birdstrike to aircraft is a potential hazard, the trees, for this development, must minimize the provision to attract birds and bats.

6. SHELLHARBOUR CITY COUNCIL LANDSCAPE GUIDELINES DCP
   The provisions of the Shellharbour City Council's Landscape Guidelines Development Control Plan, 12 February 1997, regarding landscape treatment within the boundary lines of each allotment have been taken into consideration in the preparation of the Landscape Management Plan for this site. However because of the site characteristics an alternative preferred schedule of plants has been prepared The recommended plant species for the Illawarra Regional Business Park, as listed below, have been selected based on the following criteria;
   - Decorative plants that harmonize with the rest of the region;
   - Selected plants must minimize bird habitat, especially food supply for birds because of planning controls associated with the Albion Park Airfield;
   - Hardy and well suited to horticulture;
   - Decorative;
   - Relatively low maintenance; and
   - Generally salt tolerant

4.0 LANDSCAPE MANAGEMENT PLAN

The landscape plan can be divided into the following zones;

ZONE A – STREET TREES

It is recommended that one street tree specie is selected in order to promote a sense of harmony throughout the entire development.

The preferred street tree specie is the Jacaranda (Jacaranda mimosifolia) The Jacaranda is considered the best match to the above mentioned constraints, the following factors being especially important;

- Height – mature height is at best 15.00 metres – within height restrictions;
- Form – up-right with an umbrella form to allow trucks safe passage beneath;
- Bird attractant – no fruit and the flowers are not an important food for birds or bats;
- Maintenance – Jacaranda trees are hardy, well suited to the climate and are require little maintenance;

- Root development – root system is not aggressive
- Aesthetics – the Jacaranda has a very attractive form and the seasonal floral display is spectacular

ZONE B – 3.0 m LANDSCAPE STRIP TO HERITAGE BUILDING

The purpose for the 3.0 metre wide landscape strip along the common boundary to the heritage building precinct is to provide a dense, evergreen, visual screen, in order to block visual access between neighbouring properties. The screen planting has no need to be more than 6.0 to 8.0 metres high because at this height an effective visual screen can be provided without shadowing the heritage precinct to the south. The following plants are suited to the requirements as above mentioned;

Botanical Name	Common Name	Mature Size
Evergreen Trees		
Backhousia citriodora	Lemon-scented Myrtle	6.00 x 4.00
Bachhousia myrtifolia	Iron Wood	6.00 x 4.00
Macadamia integrifolia	Macadamia	8.00 x 6.00
Small Evergreen Trees		
Hoheria populnea	Lacebark	8.00 x 4.00
Magnolia grandiflora Little Gem	Bull Bay	5.00 x 3.00
Michelia figo	Port wine Magnolia	4.00 x 4.00
Photinia serratifolia	Chinese Hawthorn	6.00 x 6.00
Xylosma serrulata	Xylosma	6.00 x 6.00
Palm Trees		
Howea forsteriana	Kentia Palm	10.00 x 4.00
Livistonia australis	Cabbage Palm	20.00 x 4.00
Shrubs		
Baeckea sp	Baeckea	3.00 x 2.00
Bursaria spinosa	Blackthorn	3.00 x 2.00
Crowea exalata	Small Crowea	1.00 x 1.00
Metrosideros Thomasii	N Z Christmas Tree	1.80 x 1.20
Murraya paniculata	Orange Jessmine	1.80 x 1.80
Photinea sp	Photinea	1.80 x 1.50
Pittosporum Green Pillar	Pittosporum	1.80 x 1.20
Prostanthera spp	Mint Bush	1.20 x 1.20
Viburnum odoratissimum	Sweet Viburnum	3.00 x 2.00
Groundcover		
Crinum pendunculatum	Swamp Lily	0.90 x 0.60
Liriope muscari Evergreen Giant	Lily Turf	0.60 x 0.60
Lomandra longifolia	Spiny-headed Mat Rush	0.90 x 0.90
Strelitzia reginae	Bird of Paradice	1.00 x 1.00
Trachelospermum asiaticum	Asiatic Jasmine	1.50 x 0.20
Trachelospermum jasminoides	Star Jasmine	1.50 x 0.60
Viola hederacea	Native Violet	0.10 x 0.30

ZONE C – 3.5 m LANDSCAPE STRIP ALONG INTERNAL ROADS

The purpose for the 3.5 metre wide landscape strip along the street boundary to each individual lot is to provide visual and environmental amenity to the common streetscape. The landscape strip, combined with the proposed street trees, will visually soften the built form and ameliorate the climatic conditions with in the development, providing the users with a visually attractive and

environmentally comfortable environment. Visual access between private and public domain should be maintained in order to enhance security and visual access to individual businesses. The following plants are suited to the requirements as above mentioned;

Botanical Name	Common Name	Mature Size
Palm Trees		
Howea forsteriana	Kentia Palm	10.00 x 4.00
Livistonia australis	Cabbage Palm	20.00 x 4.00
Hedging		
Buxus microphylla Japonica	Japanese Box	0.60 x 0.60
Buxus sempervirens	English Box	0.60 x 0.60
Camellia sp	Camellia	1.20 x 1.20
Metrosideros Thomasii	N Z Christmas Tree	1.40 x 1.20
Murraya paniculata	Murraya	1.40 x 1.20
Pittosporum tobira	Pittosp[orum	1.40 x 1.20
Photinea sp	Photinea	1.40 x 1.20
Xylosma serrulata	Xylosma	1.40 x 1.20
Shrubs		
Astartea spp.	Astartea	1.00 x 1.00
Baeckea virgata Miniature	Dwarf Baeckea	1.50 x 2.00
Buxus microphylla Japonica	Japanese Box	1.20 x 1.20
Buxus sempervirens	English Box	1.20 x 1.20
Camellia japonica	Camellia	2.00 x 1.50
Chrysanthemum frutescens	Marguerite Daisy	1.00 x 1.00
Coleonema pulchellum	Diosma	1.00 x 1.50
Convolvulus cneorum	Silver Bush	0.60 x 0.60
Crowea exalata	Small Crowea	1.00 x 1.00
Dampiera spp	Dampiera	0.75 x 1.00
Escallonia macranthus Rosea	Escallonia	1.80 x 1.40
Euonymus alatus ‘Compactus’	Looking Glass Plant	1.20 x 1.20
Euryops pectinatus	Golden Daisy	1.00 x 1.00
Hebe sp	Veronica	1.00 x 1.00
Murraya paniculata	Orange Jessmine	1.80 x 1.80
Murraya paniculata Dwarf	Orange Jessmine	1.00 x 1.00
Photinea sp	Photinea	1.80 x 1.50
Pieris floribunda	Pieris	1.50 x 1.50
Viburnum odoratissimum	Sweet Viburnum	2.00 x 2.00
Viburnum tinus	Laurestinus	1.20 x 1.20
Groundcover		
Brachycome multifida	Native Daisy	0.40 x 0.50
Carpobrotus glaucescens	Pig Face	0.30 x 0.90
Crinum pendunculatum	Swamp Lily	0.90 x 0.60
Hemerocallis hybrida	Day Lily	0.60 x 0.50
Juniperus sp	Dwarf Juniper	0.60 x 1.50
Liriope muscari	Lily Turf	0.40 x 0.40
Liriope muscari Evergreen Giant	Lily Turf	0.60 x 0.60
Lomandra longifolia	Spiny-headed Mat Rush	0.90 x 0.90
Lomandra longifolia Tanika	Dwarf Mat Rush	0.50x 0.50
Lomandra dwarf Joey Grass	Dwarf Rush	0.15 x 0.15
Ophiopogon japonicus	Mondo Grass	0.30 x 0.30
Ophiopogon japonicus (dwarf)	Dwarf Mondo Grass	0.10 x 0.10
Scaevola aemula	Fairy Fan Flower	0.50 x 0.75

Strelitzia reginae	Bird of Paradice	1.00 x 1.00
Trachelospermum asiaticum	Asiatic Jasmine	1.50 x 0.20
Trachelospermum jasminoides	Star Jasmine	1.50 x 0.60
Viola hederacea	Native Violet	0.10 x 0.30

Climber

Bougainvillea sp	Bougainvillea
Trachelospermum jasminoides	Star Jasmine
Wisteria sp	Wisteria

ZONE D - LANDSCAPE STRIP TO ALBION PARK AIRFIELD

The purpose for the landscape strip along the boundary line shared with the Albion Park Airfield is to provide a low, dense, evergreen, visual screen, in order to help visual screen the development from the airfield. The screen planting can be no more than 3.5 metres high because of regulatory requirements imposed as a result of proximity to an airfield. The following plants are suited to the requirements as above mentioned;

Botanical Name	Common Name	Mature Size
Shrubs		
Abelia grandiflora	Abelia	1.80 x 1.80
Baeckea virgata	Tall Baeckea	3.00 x 2.00
Escallonia macranthus Rosea	Escallonia	1.80 x 1.40
Euonymus fortunei	Looking Glass Plant	3.00 x 1.20
Hebe sp	Veronica	1.00 x 1.00
Jasminium mesnyi	Yellow Jasmine	1.80 x 1.80
Metrosideros Thomasii	N Z Christmas Tree	1.80 x 1.20
Murraya paniculata	Orange Jessmine	1.80 x 1.80
Photinea sp	Photinea	1.80 x 1.50
Pittosporum Green Pillar	Pittosporum	1.80 x 1.20
Viburnum odoratissimum	Sweet Viburnum	3.00 x 2.00
Viburnum tinus	Laurestinus	1.80 x 1.80
Groundcover		
Brachycome multifida	Native Daisy	0.40 x 0.50
Carpobrotus glaucescens	Pig Face	0.30 x 0.90
Liriope muscari Evergreen Giant	Lily Turf	0.60 x 0.60
Lomandra longifolia	Spiny-headed Mat Rush	0.90 x 0.90
Strelitzia reginae	Bird of Paradice	1.00 x 1.00

ZONE E – LANDSCAPE STRIP TO BETWEEN LOTS

The purpose for the landscape strip between lots is to provide a dense, evergreen, visual screen, in order to block visual access between neighbouring properties. The screen planting has no need to be more than 10.0 metres high because at this height an effective visual screen can be provided without planting plants that will too large in relatively small and confined spaces. The following plants are suited to the requirements as above mentioned;

Botanical Name	Common Name	Mature Size
Evergreen Trees		
Backhousia citriodora	Lemon-scented Myrtle	6.00 x 4.00
Bachhousia myrtifolia	Iron Wood	6.00 x 4.00
Michelia doltsopa	Michelia	8.00 x 4.00

Small Evergreen Trees

Hoheria sexstylosa	Ribbonwood	8.00 x 4.00
Magnolia grandiflora Little Gem	Bull Bay	5.00 x 3.00
Michelia figo	Port wine Magnolia	4.00 x 4.00
Photinia serratifolia	Chinese Hawthorn	6.00 x 6.00
Prunus lusitanica	Portugal Laurel	6.00 x 6.00
Xylosma serrulata	Xylosma	6.00 x 6.00

Palm Trees

Howea forsteriana	Kentia Palm	10.00 x 4.00
Livistonia australis	Cabbage Palm	20.00 x 4.00

Hedging

Buxus microphylla Japonica	Japanese Box	0.60 x 0.60
Buxus sempervirens	English Box	0.60 x 0.60
Camellia sp	Camellia	1.20 x 1.20
Cupressocyparis leylandii 'Leighton Green'	Cypress	2.40 x 1.40
Murraya paniculata	Murraya	1.80 x 1.20
Pittosporum tobira	Pittosp[orum	1.4 x 1.20
Photinea sp	Photinea	1.80 x 1.20
Xylosma serrulata	Xylosma	1.80 x 1.80

Shrubs

Abelia grandiflora	Abelia	1.80 x 1.80
Baeckea sp	Baeckea	1.50 x 2.00
Bursaria spinosa	Blackthorn	
Camellia japonica	Camellia	
Escallonia macranthus Rosea	Escallonia	1.80 x 1.40
Euonymus fortunei	Looking Glass Plant	1.20 x 1.20
Hebe sp	Veronica	1.00 x 1.00
Jasminium mesnyi	Yellow Jasmine	1.80 x 1.80
Metrosideros Thomasii	N Z Christmas Tree	1.80 x 1.20
Murraya paniculata	Orange Jessmine	1.80 x 1.80
Photinea sp	Photinea	1.80 x 1.50
Pittosporum Green Pillar	Pittosporum	1.80 x 1.20
Viburnum odoratissimum	Sweet Viburnum	3.00 x 2.00
Viburnum tinus	Laurestinus	1.80 x 1.80

Groundcover

Crinum pendunculatum	Swamp Lily	0.90 x 0.60
Hemerocallis hybrida	Day Lily	0.60 x 0.50
Juniperus conferta	Dwarf Juniper	0.60 x 1.50
Juniperus horizontalis	Dwarf Juniper	0.60 x 1.50
Juniperus sabina	Dwarf Juniper	0.60 x 1.50
Liriope muscari	Lily Turf	0.40 x 0.40
Liriope muscari Evergreen Giant	Lily Turf	0.60 x 0.60
Lomandra longifolia	Spiny-headed Mat Rush	0.90 x 0.90
Lomandra longifolia Tanika	Dwarf Mat Rush	0.50x 0.50
Ophiopogon japonicus	Mondo Grass	0.30 x 0.30
Ophiopogon japonicus (dwarf)	Dwarf Mondo Grass	0.10 x 0.10
Philodendron 'Xanadu'	Dwarf Philodendron	0.75 x 0.75
Scaevola aemula	Fairy Fan Flower	0.50 x 0.75
Strelitzia reginae	Bird of Paradice	1.00 x 1.00
Trachelospermum asiaticum	Asiatic Jasmine	1.50 x 0.20
Trachelospermum jasminoides	Star Jasmine	1.50 x 0.60
Viola hederacea	Native Violet	0.10 x 0.30

Climber

Bougainvillea sp	Bougainvillea
Trachelospermum jasminoides	Star Jasmine
Wisteria sp	Wisteria

ZONE F – EXISTING MELALEUCA WOODLAND

The existing Melaleuca woodland, located south east corner of the site, adjacent to the proposed vehicular entry to the estate, is composed of a monoculture of Melaleuca decora. The Melaleuca woodland has been classified as an endangered community, which means its conservation is an important ecological requirement. At present the woodland is degraded since grazing stock have been allowed access to this zone for in excess of 100 years, which has removed the endemic groundcover plants, compacted the soil, and inhibited regeneration of the woodland community.

It is proposed to retain as much of the existing woodland as possible and implement management strategies to promote the conservation of this endangered plant community. Priority shall be given to establishing endemic grasses beneath the woodland canopy and promoting regeneration of the existing trees. The following groundcover plants are suited to the requirements as above mentioned;

Botanical Name	Common Name	Mature Size
Groundcover		
Lomandra longifolia	Dwarf Mat Rush	0.90x 0.90
Poa labillardii	Tussock Grass	0.60 x 0.60

ZONE G – PLANTING TO CAFÉ CAR PARK

Amenity planting to car park must provide a multi-strata of small trees, shrubs and ground cover plants in order to visually soften the built environment, without creating a visual screen, and ameliorate the climatic conditions. Selected plants for this zone should share the following characteristics:

- Trees can be either deciduous and evergreen;
- Shrubs and groundcover plants shall be evergreen;
- Shrubs to have a dense upright form ;
- Birdstrike to aircraft is a potential hazard, plant specie for this development, being located beside Albion Park Airfield, must minimize the production of flowers and fruit which will attract birds and bats;
- Drought tolerant; and
- Hardy, well suited to the site, and relatively low maintenance

The following plants are suited to the requirements as above mentioned;

Botanical Name	Common Name	Mature Size
Evergreen Trees		
Backhousia citriodora	Lemon-scented Myrtle	6.00 x 4.00
Bachhousia myrtifolia	Iron Wood	6.00 x 4.00
Michelia doltsopa	Michelia	8.00 x 4.00
Small Evergreen Trees		
Hoheria sexstylosa	Ribbonwood	8.00 x 4.00
Magnolia grandiflora Little Gem	Bull Bay	5.00 x 3.00
Michelia figo	Port wine Magnolia	4.00 x 4.00
Photinia serratifolia	Chinese Hawthorn	6.00 x 6.00
Prunus lusitanica	Portugal Laurel	6.00 x 6.00
Xylosma serrulata	Xylosma	6.00 x 6.00
Palm Trees		
Howea forsteriana	Kentia Palm	10.00 x 4.00
Livistonia australis	Cabbage Palm	20.00 x 4.00

Hedging

Buxus microphylla Japonica	Japanese Box	0.60 x 0.60
Buxus sempervirens	English Box	0.60 x 0.60
Camellia sp	Camellia	1.20 x 1.20
Cupressocyparis leylandii 'Leighton Green'	Cypress	2.40 x 1.40
Murraya paniculata	Murraya	1.80 x 1.20
Pittosporum tobira	Pittosp[orum	1.4 x 1.20
Photinea sp	Photinea	1.80 x 1.20
Xylosma serrulata	Xylosma	1.80 x 1.80

Shrubs

Abelia grandiflora	Abelia	1.80 x 1.80
Baeckea sp	Baeckea	1.50 x 2.00
Bursaria spinosa	Blackthorn	
Camellia japonica	Camellia	
Escallonia macranthus Rosea	Escallonia	1.80 x 1.40
Euonymus fortunei	Looking Glass Plant	1.20 x 1.20
Hebe sp	Veronica	1.00 x 1.00
Jasminium mesnyi	Yellow Jasmine	1.80 x 1.80
Metrosideros Thomasii	N Z Christmas Tree	1.80 x 1.20
Murraya paniculata	Orange Jessmine	1.80 x 1.80
Photinea sp	Photinea	1.80 x 1.50
Pittosporum Green Pillar	Pittosporum	1.80 x 1.20
Viburnum odoratissimum	Sweet Viburnum	3.00 x 2.00
Viburnum tinus	Laurestinus	1.80 x 1.80

Groundcover

Crinum pendunculatum	Swamp Lily	0.90 x 0.60
Hemerocallis hybrida	Day Lily	0.60 x 0.50
Juniperus conferta	Dwarf Juniper	0.60 x 1.50
Juniperus horizontalis	Dwarf Juniper	0.60 x 1.50
Juniperus sabina	Dwarf Juniper	0.60 x 1.50
Liriope muscari	Lily Turf	0.40 x 0.40
Liriope muscari Evergreen Giant	Lily Turf	0.60 x 0.60
Lomandra longifolia	Spiny-headed Mat Rush	0.90 x 0.90
Lomandra longifolia Tanika	Dwarf Mat Rush	0.50x 0.50
Ophiopogon japonicus	Mondo Grass	0.30 x 0.30
Ophiopogon japonicus (dwarf)	Dwarf Mondo Grass	0.10 x 0.10
Philodendron 'Xanadu'	Dwarf Philodendron	0.75 x 0.75
Scaevola aemula	Fairy Fan Flower	0.50 x 0.75
Strelitzia reginae	Bird of Paradice	1.00 x 1.00
Trachelospermum asiaticum	Asiatic Jasmine	1.50 x 0.20
Trachelospermum jasminoides	Star Jasmine	1.50 x 0.60
Viola hederacea	Native Violet	0.10 x 0.30

Climber

Bougainvillea sp	Bougainvillea
Trachelospermum jasminoides	Star Jasmine
Wisteria sp	Wisteria

ZONE H – LANDSCAPE STRIP VIEW SIDE OF CAFE

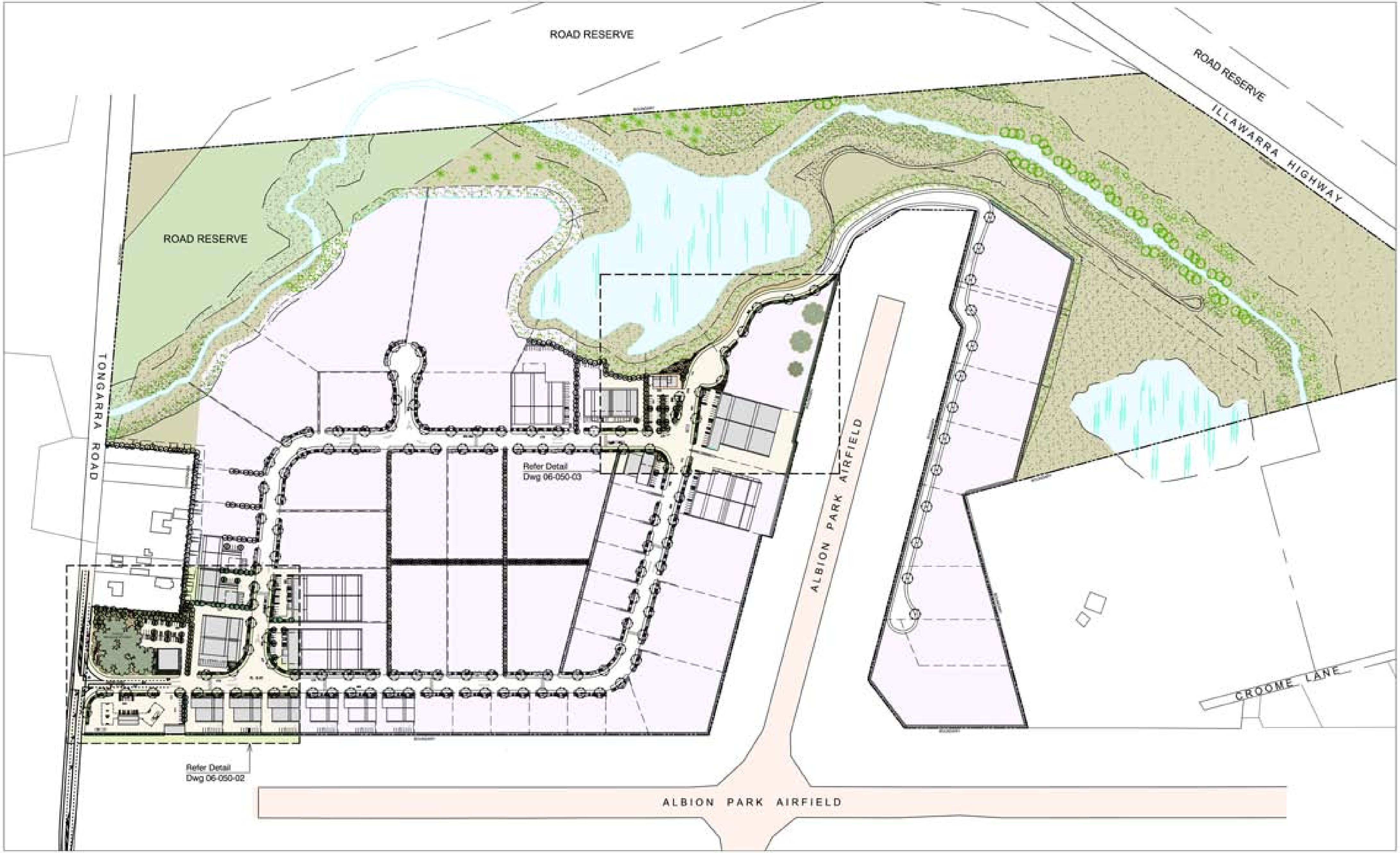
Match planting detail for Riparian Zone - refer Flora & Fauna Report prepared by Gunninah Environmental Consultants.

5.0 CONCLUSION

The planting strategy, for the Illawarra Regional Business Park, as illustrated by LANDSCAPE SITE PLAN, Dwg. No. 06-050-01, LANDSCAPE DETAIL PLAN, Dwg. No. 06-050-02, LANDSCAPE DETAIL PLAN, Dwg. No. 06-050-03, and the LANDSCAPE DESIGN STATEMENT, has been designed to comply with the constraints discussed by this report;

- Selected plants do not, in general, produce a food source, in terms of flowers or fruit, which can be utilized by birds and bats – this constraint is imposed because of the Illawarra Regional Business Park is located beside the Albion Park Airfield and the need to promote strategies to reduce bird and bat populations in and around airports. As a consequence the majority of selected plants are exotic species; plant species which have evolved in regions away from Australia and whose interrelationship with endemic bird and bat species is tenuous.
- Management control strategies for the Albion Park Airfield have imposed height restriction in regard to structures and plants. Height restrictions are determined as a function of distance from the runway, refer sections AA and BB prepared by Julius Bokor Architects. As a consequence;
  - proposed plants along common boundary between Illawarra Regional Business Park and the Albion Park Airfield shall be no higher than 3.5 metres;
  - plants located at the end of the runway shall be restricted to shrubs and groundcover plants
  - street trees will not be planted at or adjacent to the end of the runway
  - street trees where they can be planted will have a mature height of 15 metres or less
- Landscape planning conditions, regarding individual allotments, as specified by Landscape Guidelines Development Control Plan, 12 February 1997, prepared by Shellharbour City Council, are relevant to this project.
- Dense, multi-structured, screen planting along the common boundary between Illawarra Regional Business Park and the Heritage Building, shall be established
- Existing Melaleuca woodland, located at the entrance to the development, shall be re-habilitated.
- A 3.5 metre wide planting strip, located along the street frontage to all allotments, shall be established. The street trees combined with the planting strip shall provide an effective visual and environmental buffer dividing the public domain from the private domain. It should be emphasized that the purpose of the landscape strip is not to screen the buildings from the street; on the contrary, the planting should frame the buildings and allow visual access to the buildings and signage in order to promote the individual businesses located within the development.
- Selected plants are well suited to the environment, hardy, and require low levels of maintenance
- The selected street tree (Jacaranda) fulfills the requirements as listed above as well as;
  - being visually highly attractive in terms of its umbrella form, and its spectacular floral display in November each year;
  - leaves are very small and do not impose an undue maintenance problem; and
  - root structure does not impose an undue maintenance problem.

The planting strategy, for the Illawarra Regional Business Park, not only fulfills the practical constraints imposed by the site, the business function of the development, and the local DCP, it will also will provide a strong aesthetic and positive value to the region and strong conservation values combined with the restoration of the existing wetland and riparian zone.



Landscape Site Plan SCALE 1:2000

DA SUBMISSION

Amendments

Issue	Description	By	Date
A	Road alignment amended	DS	08.03.07
B	For DA Submission	DS	20.04.07

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James Pfeiffer Landscape Architects Pty Ltd ABN 63 098 336 580

PROJECT TITLE: Illawarra Regional Business Park

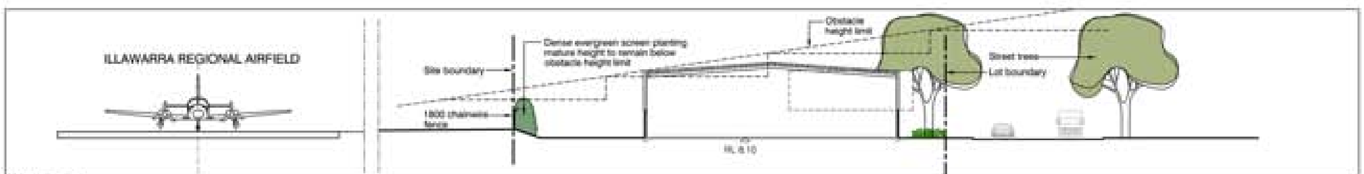
CLIENT: Delmo Albion Park Pty Ltd

ADDRESS: 78 Tongarra Road, Albion Park

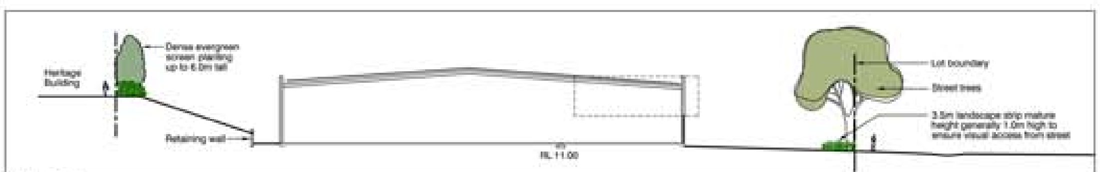
DRAWING TITLE: Landscape Site Plan

SCALE: 1:2000
DATE: 19.02.07
DRAWN: D.S.
CHECKED: J.P.
DRAWING NO: 06-050-01
ISSUE: B

Landscape Detail Plan SCALE 1:500



Section 1 SCALE 1:500



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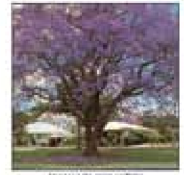
LEGEND

- Proposed Street Trees
- Illawarra Regional Business Park
- Boundary line



Jacaranda mimosifolia (Jackaranda)

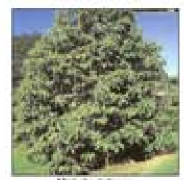
Backhousia citriodora (Lemon-scented Myrtle)

Calodendrum capense (Cape Chestnut)

Flindersia australis (Australia Teak)

Livistonia australis (Cabbage Palm)

Magnolia grandiflora (Bull Bay Magnolia)



Michelia doltsopa (Michelia)

ZONE A - STREET TREES

Street trees are a major visual and environmental element to any development. The purpose of street trees is to:

- Visually soften the built form, especially building mass and extensive truck & car parking areas - the canopy must be sufficiently light and airy to allow visual contact between private and public spaces;
- Enhance the human scale and human psychological comfort within an otherwise large and open physical environment;
- Establish an aesthetically attractive landscape setting;
- Ameliorate the physical environment, especially solar penetration to buildings and parking area, and wind; and
- Highlight vehicular and pedestrian access points.

Two major constraints regarding the selection of street trees for this development include:

- Selected tree must minimize bird habitat, especially food supply for birds because of planning controls associated wit the Albion Park Airfield; and
- The mature height of the tree must remain lower than 10 metres, to comply with aircraft safety associated with the Albion Park Airfield.

Preferred street tree specie is the Jacaranda (Jacaranda mimosifolia)

ZONE B - 3.0 LANDSCAPE STRIP TO HERITAGE BUILDING

The 3.0 metre wide landscape strip along the common boundary to the heritage building is to provide a dense, evergreen, visual screen, in order to block visual access between neighbouring properties. The screen planting has no need to be more than 6.0 to 8.0 metres high because at this height an effective visual screen can be provided without shadowing the property to the south. Selected plants for this zone should share the following characteristics:

- Evergreen;
- Dense up-right form apart from the palm trees;
- Birdstrike to aircraft is a potential hazard, plant specie for this development, being located beside Albion Park Airfield, must minimize the production of flowers and fruit which will attract birds and bats;
- Drought tolerant; and
- Hardy, well suited to the site, and relatively low maintenance.

ZONE C - 3.5 metre LANDSCAPE STRIP ALONG INTERNAL ROADS

The 3.5 metre wide landscape strip along the street boundary to each individual lot is to provide visual and environmental amenity to the common streetscape. The landscape strip, combined with the proposed street trees, will visually soften the built form and ameliorate the climatic conditions within the development, providing the users with a visually attractive and environmentally comfortable environment. Visual access between private and public domain should be maintained in order to enhance security and provide visual access to businesses. Selected plants for this zone should share the following characteristics:

- Evergreen;
- Shrub and groundcover strata should generally be no taller than 1.0 m because visual access between public and private domain must not be obscured in order to assist business recognition and security;
- Birdstrike to aircraft is a potential hazard, plant specie for this development, being located beside Albion Park Airfield, must minimize the production of flowers and fruit which will attract birds and bats;
- Drought tolerant; and
- Hardy, well suited to the site, and relatively low maintenance.

ZONE D - LANDSCAPE STRIP TO ALBION PARK AIRFIELD

The landscape strip along the boundary line shared with the Albion Park Airfield is to provide a low, dense, evergreen, visual screen, in order to help visual screen the development from the airfield. The screen planting can be no more than 3.5 metres high because of regulatory requirements imposed as a result of proximity to an airfield. Selected plants for this zone should share the following characteristics:

- Evergreen;
- Dense up-right form to a mature height no greater than 3.5 metres;
- Birdstrike to aircraft is a potential hazard, plant specie for this development, being located beside AlbionPark Airfield, must minimize the production of flowers and fruit which will attract birds and bats;
- Drought tolerant; and
- Hardy, well suited to the site, and relatively low maintenance.

ZONE E - LANDSCAPE STRIP BETWEEN LOTS

The landscape strip between lots is to provide a dense, evergreen, visual screen, in order to block visual access between neighbouring properties. The screen planting has no need to be more than 6.0 to 8.0 metres high; at this height an effective visual screen can be provided without establishing plants that will grow too large in relatively small and confined spaces. Selected plants for this zone should share the following characteristics:

- Evergreen;
- Dense up-right form apart from the palm trees;
- Birdstrike to aircraft is a potential hazard, plant specie for this development, being located beside Albion Park Airfield, must minimize the production of flowers and fruit which will attract birds and bats;
- Drought tolerant; and
- Hardy, well suited to the site, and relatively low maintenance.

ZONE F - EXISTING MELALEUCA WOODLAND

The existing Melaleuca woodland, located south east corner of the site, adjacent to the proposed vehicular entry to the estate, is composed of a monoculture of Melaleuca decora. The Melaleuca woodland has been classified as an endangered community, which means its conservation is an important ecological requirement. At present the woodland is degraded since grazing stock have been allowed access to this zone for in excess of 100 years, which has removed the endemic groundcover plants, compacted the soil, and inhibited regeneration of the woodland community.

It is proposed to retain as much of the existing woodland as possible and implement management strategies to promote the conservation of this endangered plant community. Priority shall be given to establishing endemic grasses beneath the woodland canopy and promoting regeneration of the existing trees.

INDICATIVE SHEDULE OF PLANTS

The following plants minimise the production of flowers and fruit, and therefore, minimize available food for birds; birds and bats are a potential hazard to the safe management of Albion Park Airfield.

Deciduous Trees		
Jacaranda mimosifolia	Jacaranda	12.00 x 10.00
Evergreen Trees		
Calodendrum capense	Cape Chestnut	15.00 x 5.00
Flindersia australis	Australia Teak	12.00 x 8.00
Magnolia grandiflora	Bull Bay Magnolia	12.00 x 8.00
Michelia doltsopa	Michelia	12.00 x 8.00
Small Evergreen Trees		
Backhousia citriodora	Lemon-scented Myrtle	8.00 x 4.00
Macadamia integrifolia	Macadamia	8.00 x 4.00
Magnolia grandiflora Little Gem	Bull Bay	5.00 x 3.00
Michelia figo	Port wine Magnolia	4.00 x 4.00
Photinia serratifolia	Chinese Hawthorn	8.00 x 6.00
Xylosma senticosa	Xylosma	6.00 x 6.00
Palm Trees		
Howea forsteriana	Kentia Palm	10.00 x 4.00
Livistonia australis	Cabbage Palm	20.00 x 4.00
Hedging		
Murraya paniculata	Murraya	1.80 x 1.20
Photinias sp	Photinias	1.80 x 1.20
Xylosma senticosa	Xylosma	1.80 x 1.80
Shrubs		
Abelia grandiflora	Abelia	1.80 x 1.80
Baeckea sp	Baeckea	3.00 x 2.00
Camellia japonica	Camellia	
Coleonema pulchellum	Diosma	1.00 x 1.50
Escallonia macranthus Rosea	Escallonia	1.80 x 1.40
Euonymus fortunei	Looking Glass Plant	1.20 x 1.20
Euryops pectinatus	Golden Daisy	1.00 x 1.00
Hebe sp	Veronica	1.00 x 1.00
Metrosideros Thomasii	N.Z Christmas Tree	1.80 x 1.20
Murraya paniculata	Orange Jessmine	1.80 x 1.80
Photinias sp	Photinias	1.80 x 1.50
Viburnum odoratissimum	Sweet Viburnum	3.00 x 2.00
Groundcover		
Crinum pedunculatum	Swamp Lily	0.90 x 0.80
Hemerocallis hybrida	Day Lily	0.60 x 0.50
Juniperus sp	Dwarf Juniper	0.60 x 1.50
Liriope muscari	Lily Turf	0.40 x 0.40
Lomandra longifolia	Spiny-headed Mat Rush	0.90 x 0.90
Ophiopogon japonicus	Mondo Grass	0.30 x 0.30
Strelitzia reginae	Bird of Paradise	1.00 x 1.00
Trachelospermum sp	Jasmine	1.50 x 0.20

Amendments

Issue	Description	By	Date
A	For DA Submission	DS	20.04.07
B	Section 1 amended	DS	26.06.07

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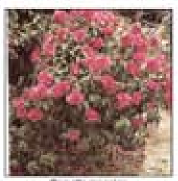
Email: jpla@hinet.net.au
James Pfeiffer Landscape Architects Pty Ltd ABN 60 086 380 580

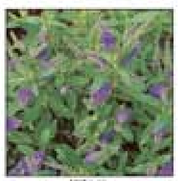
PROJECT TITLE:	Illawarra Regional Business Park
CLIENT:	Delmo Albion Park Pty Ltd
ADDRESS:	78 Tongarra Road Albion Park
DRAWING TITLE:	Landscape Detail Plan
SCALE:	1:500
DATE:	19.02.07
DRAWN:	D.S.
CHECKED:	J.P.
DRAWING NO:	06-050-02
ISSUE:	B

Landscape Detail Plan

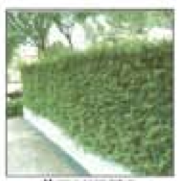
SCALE 1:500


Camellia japonica (Camellia)


Coleanema pulchellum (Diosma)

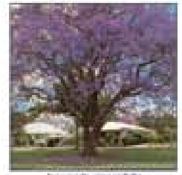

Hebe sp. (Veronica)


Juniperus sp. (Dwarf Juniper)


Murraya paniculatum (Orange Jessamine)


Photinea sp. (Photinea)


Strelitzia reginae (Bird of Paradise)


Jacaranda mimosifolia (Jackaranda)

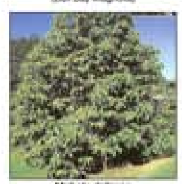

Backhousia citriodora (Lemon-scented Myrtle)


Calodendrum capense (Cape Chestnut)


Flindersia australis (Australia Teak)


Livistonia australis (Cabbage Palm)


Magnolia grandiflora (Bull Bay Magnolia)


Michelia doltsopa (Michelia)

ZONE A - STREET TREES

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- The mature height of the tree must remain lower than 15 metres, to comply with aircraft safety associated with the Albion Park Airfield.

Preferred street tree specie is the Jacaranda (Jacaranda mimosifolia).

ZONE C - 3.5 metre LANDSCAPE STRIP ALONG INTERNAL ROADS

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- Dense up-right form apart from the palm trees;
- Birdstrike to aircraft is a potential hazard, plant specie for this development, being located beside Albion Park Airfield, must minimize the production of flowers and fruit which will attract birds and bats;
- Drought tolerant; and
- Hardy, well suited to the site, and relatively low maintenance.

ZONE G - PLANTING TO CAFÉ CAR PARK

Amenity planting to car park must provide a multi-strata of small trees, shrubs and ground cover plants in order to visually soften the built environment, without creating a visual screen, and ameliorate the climatic conditions. Selected plants for this zone should share the following characteristics:

- Trees can be either deciduous and evergreen;
- Shrubs and groundcover plants shall be evergreen;
- Shrubs to have a dense upright form;
- Birdstrike to aircraft is a potential hazard, plant specie for this development, being located beside Albion Park Airfield, must minimize the production of flowers and fruit which will attract birds and bats;
- Drought tolerant; and
- Hardy, well suited to the site, and relatively low maintenance.

ZONE H - LANDSCAPE STRIP VIEW SIDE OF CAFE

Match planting detail for Riparian Zone

ZONE I - RIPARIAN ZONE

For detail refer Flora & Fauna Report

INDICATIVE SHEDULE OF PLANTS

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Magnolia grandiflora	Bull Bay Magnolia	12.00 x 8.00
Michelia doltsopa	Michelia	12.00 x 8.00
Small Evergreen Trees		
Backhousia citriodora	Lemon-scented Myrtle	6.00 x 4.00
Macadamia integrifolia	Macadamia	8.00 x 4.00
Magnolia grandiflora Little Gem	Bull Bay	5.00 x 3.00
Michelia figo	Port wine Magnolia	4.00 x 4.00
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Murraya paniculata	Murraya	1.80 x 1.20
Photinea sp	Photinea	1.80 x 1.20
Xylosma senticosa	Xylosma	1.80 x 1.80
Shrubs		
Abelia grandiflora	Abelia	1.80 x 1.80
Baeckea sp	Baeckea	3.00 x 2.00
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Photinea sp	Photinea	1.80 x 1.50
Viburnum odoratissimum	Sweet Viburnum	3.00 x 2.00
Groundcover		
Crinum pedunculatum	Swamp Lily	2.00 x 2.00
Hemerocallis hybrida	Day Lily	0.60 x 0.50
Juniperus sp	Dwarf Juniper	0.60 x 1.50
Liriope muscari	Lily Turf	0.40 x 0.40
Lomandra longifolia	Spiny-headed Mat Rush	0.90 x 0.90
Ophiopogon japonicus	Mondo Grass	0.30 x 0.30
Strelitzia reginae	Bird of Paradise	1.00 x 1.00
Trachelospermum sp	Jasmine	1.50 x 0.20

Amendments

Issue	Description	By	Date
A	For DA Submission	D.S.	20.06.07

N

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PROJECT TITLE: Illawarra Regional Business Park

CLIENT: Delmo Albion Park Pty Ltd

ADDRESS: 78 Tongarra Road Albion Park

DRAWING TITLE: Landscape Detail Plan

SCALE: 1:500
DATE: 19.02.07
DRAWN: D.S.
CHECKED: J.P.
DRAWING NO: 06-050-03
ISSUE: A