# B DESIGN GUIDELINES AND CONTROLS

# 3 INTRODUCTION

## 3.1 Aims and Objectives

The aims and objectives of the Guidelines and Controls are as follows:

The aim is to provide a high quality business precinct and employment area which supports economic and planning objectives and provides a high quality environment for workers, visitors and neighbours.

The objectives for the Business Park development are as follows:

- To provide for the development of a Business Park of architectural quality which will make a positive contribution to its urban context
- To respect and respond to view corridors through the site
- To respect the heritage significance of the site and its neighbours
- To protect the ecological significance of the site and its environs
- To encourage the development of innovative buildings responding to ecologically sustainable development principles
- To control the building bulk and form to ensure that it complements the surrounding environment
- To ensure that there is a design relationship between buildings on the site through the adoption of guidelines relating to built form, materials and colours
- To provide a coordinated signage policy for the site to ensure that signage is controlled and that the site presents a positive and attractive image
- To allow for the softening of the development by the provision of a high standard of landscaping on the overall site
- To ensure that each development can satisfactorily function within its site in relation to car parking, loading and unloading, manoeuvring areas and waste management
- To screen storage areas
- To ensure that the design, placement and height of buildings takes into account site constraints, in particular heritage constraints and those presented by the operation of the adjacent airport
- To ensure the design of development provides for a safe and pleasant environment for workers and visitors
- To ensure there are no adverse impacts on the operation of the nearby Illawarra Regional Airport from the development within the Business Park

# 3 INTRODUCTION

## 3.2 Application

These Guidelines and Controls have been prepared to establish a development and design framework for the Illawarra Regional Business Park. The guidelines and development controls indicate the planning outcomes expected by all new development. Developers of all sites within the Business Park will be required to adhere to the Guidelines and Controls in a manner which is satisfactory to the consent authority. The Guidelines and Controls form an integral part of the Concept Plan for the site and provide the desired future direction for development within the Business Park. As such they are to be addressed in any application for development in the Business Park. Any inconsistencies with the Guidelines and Controls will need to be addressed in relation to the provisions in the Concept Plan and it will need to be demonstrated that the proposed development is generally consistent with the Concept Plan.

These Guidelines and Controls apply to the land as shown on the site map in Figure 3.1.

## 3.3 ESD Principles Adopted

All development within the Business Park is to, where possible, adopt the following principles of sustainable development:

- Water Sensitive Urban Design
- Shading through the use of trees
- Landscaping and planting
- Water conservation
- Avoid upward lighting
- Provision of a pedestrian micro-climate
- Addressing the impact of heavy vehicle issues
- Materials selection
- Passive design opportunities
- Building services design

## 3.4 The Riparian Buffer

The objective of the Riparian Buffer is to protect the wetland areas adjacent to the site.

### Controls

- There are to be no buildings in the buffer area.
- Any works in the area are to be for flood mitigation or vegetation rehabilitation purposes only.
- The provisions of the Vegetation Management Plan, dated November 2007 and prepared by Whelans Insites, where relevant, are to be implemented by development within the Business Park.

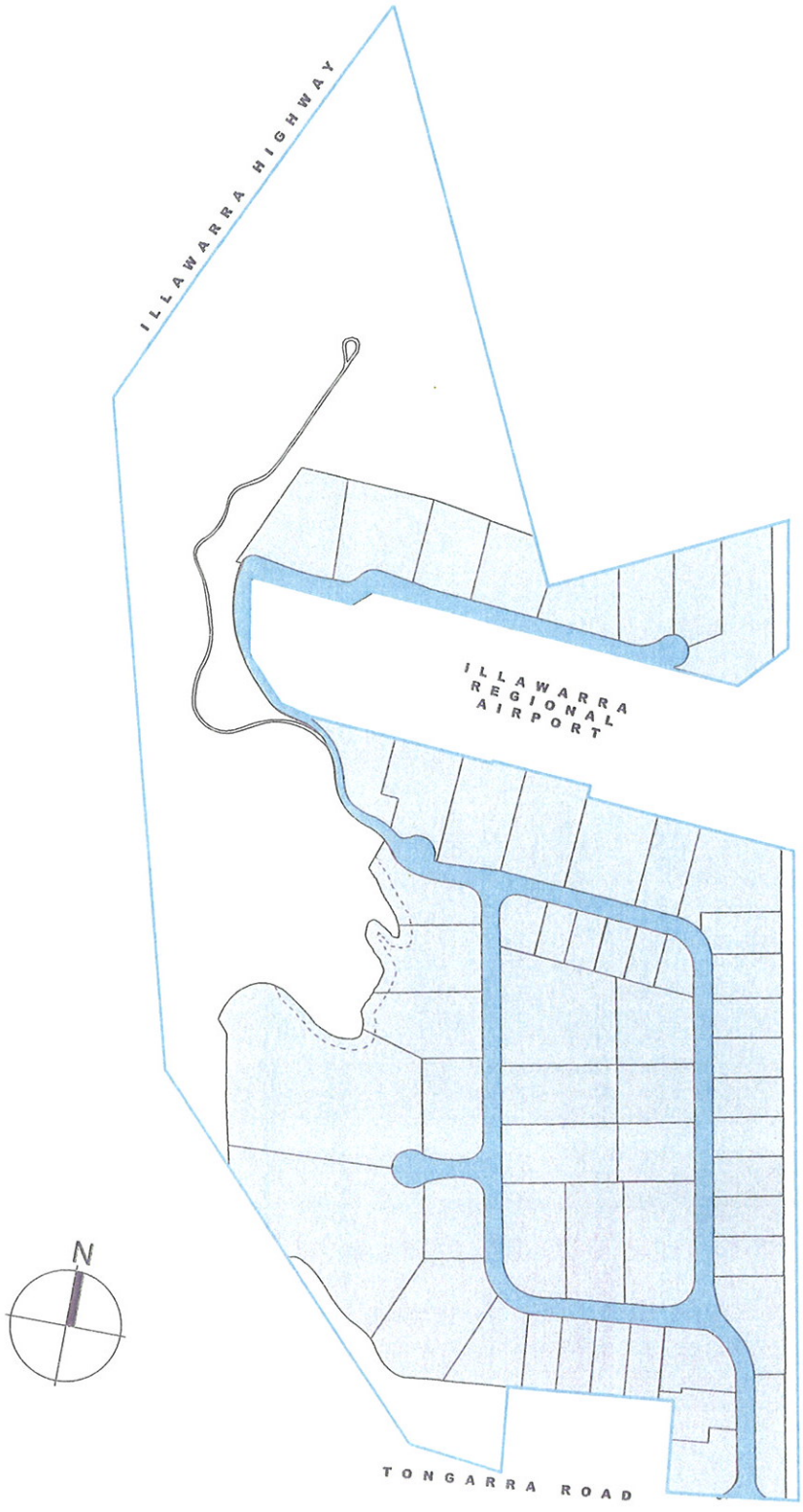
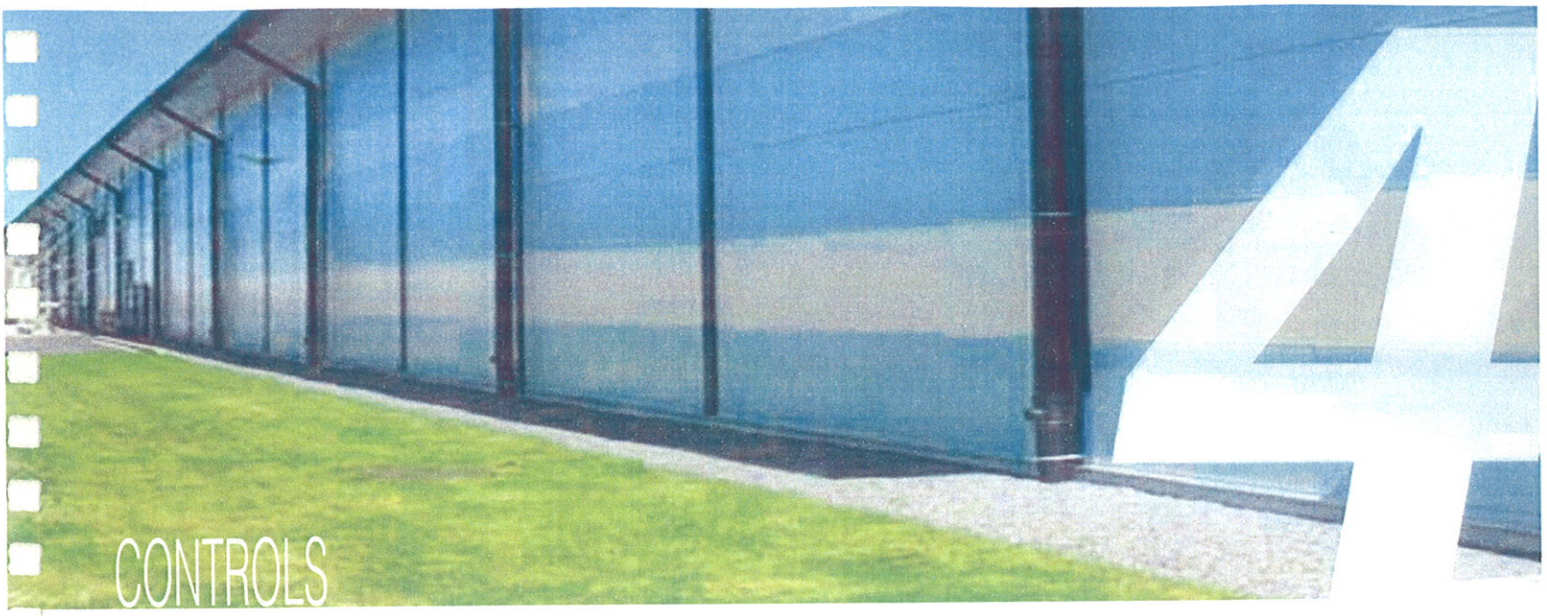



Figure 3.1 Site to which the Plan applies




## 4.1 Floor Space Ratio

### Objectives

The objectives of the control is to:

- Ensure that the scale and bulk of buildings on the site is consistent and does not overwhelm the environment of the site
- Ensure that the infrastructure on and around the site is adequate for the development on the site

### Controls

The ratio of the gross floor area of any building erected, or proposed to be erected, on a site to the site area shall not exceed 1:1 as provided for in Map 6 Schedule 3 to State Environmental Planning Policy – Major Projects.

## 4.2 Height of Buildings

### Objectives

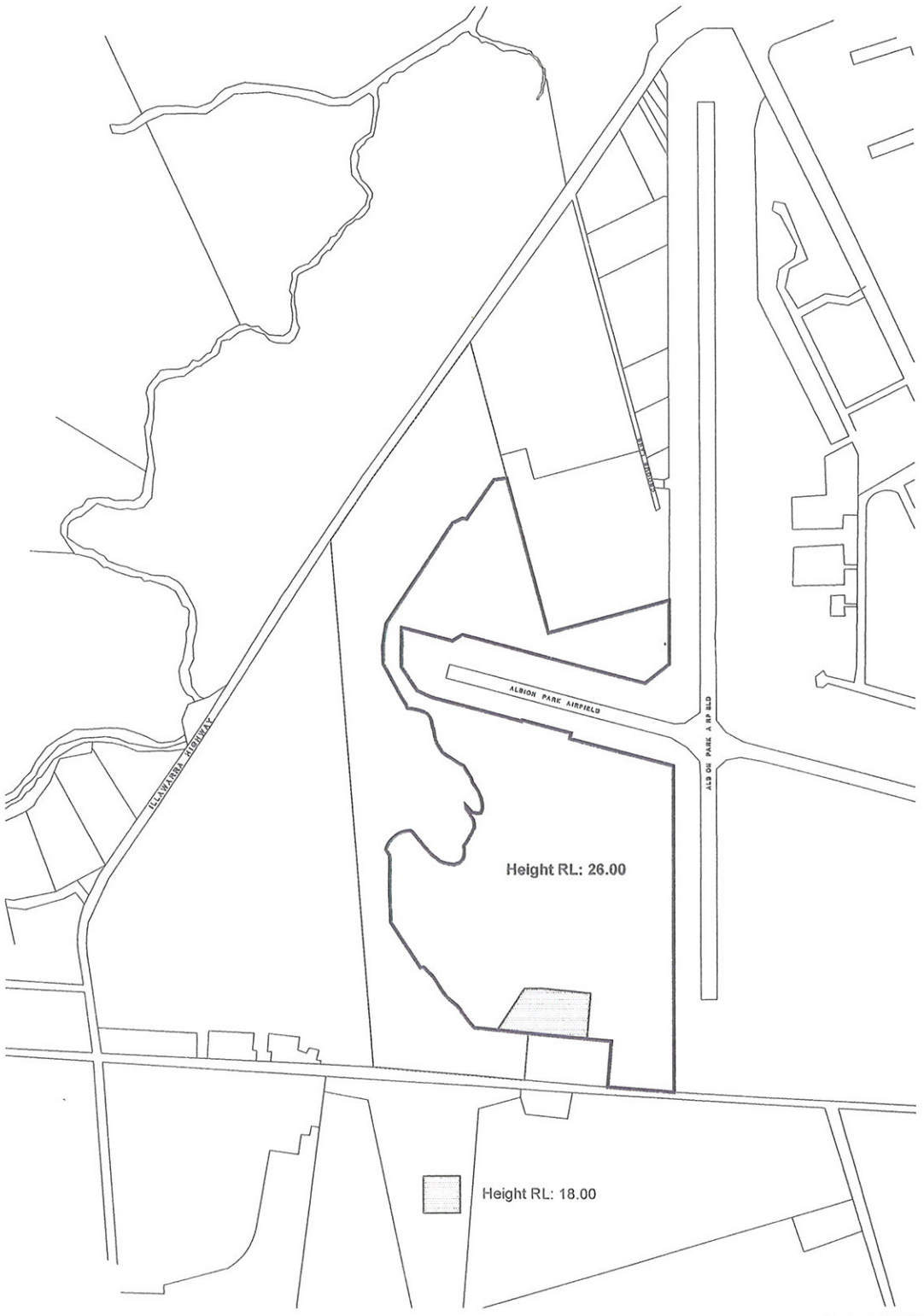
The objectives of the controls are to:

- Ensure consistency in the height of the buildings
- Protect significant view corridors
- Protect operation of Illawarra Regional Airport
- Respect the heritage significance of Ravensthorpe

### Controls

- The height of any building erected or proposed to be erected on a site shall not exceed RL 26
- The height of any building within 100m of part of the northern boundary of Ravensthorpe shall not exceed RL 18 as provided for in Map 5 Schedule 3 to State Environmental Planning Policy - Major Projects
- To protect the operation of Illawarra Regional Airport, building heights are not to exceed the heights indicated on the plan regarding Airport height limitations certified by the Director General of Planning, unless, after consultation with the Civil Aviation Authority, the consent authority, consider the proposal to be satisfactory
- Heights in the area between the boundary of Ravensthorpe and the road are not to exceed those shown on the view corridor plan, Figure 4.3

# 4 CONTROLS




**Ilawarra Regional Business Park Height of Buildings Map**

Scale 1:10 000

Figure 4.1 Map 5 SEPP - Height of Buildings

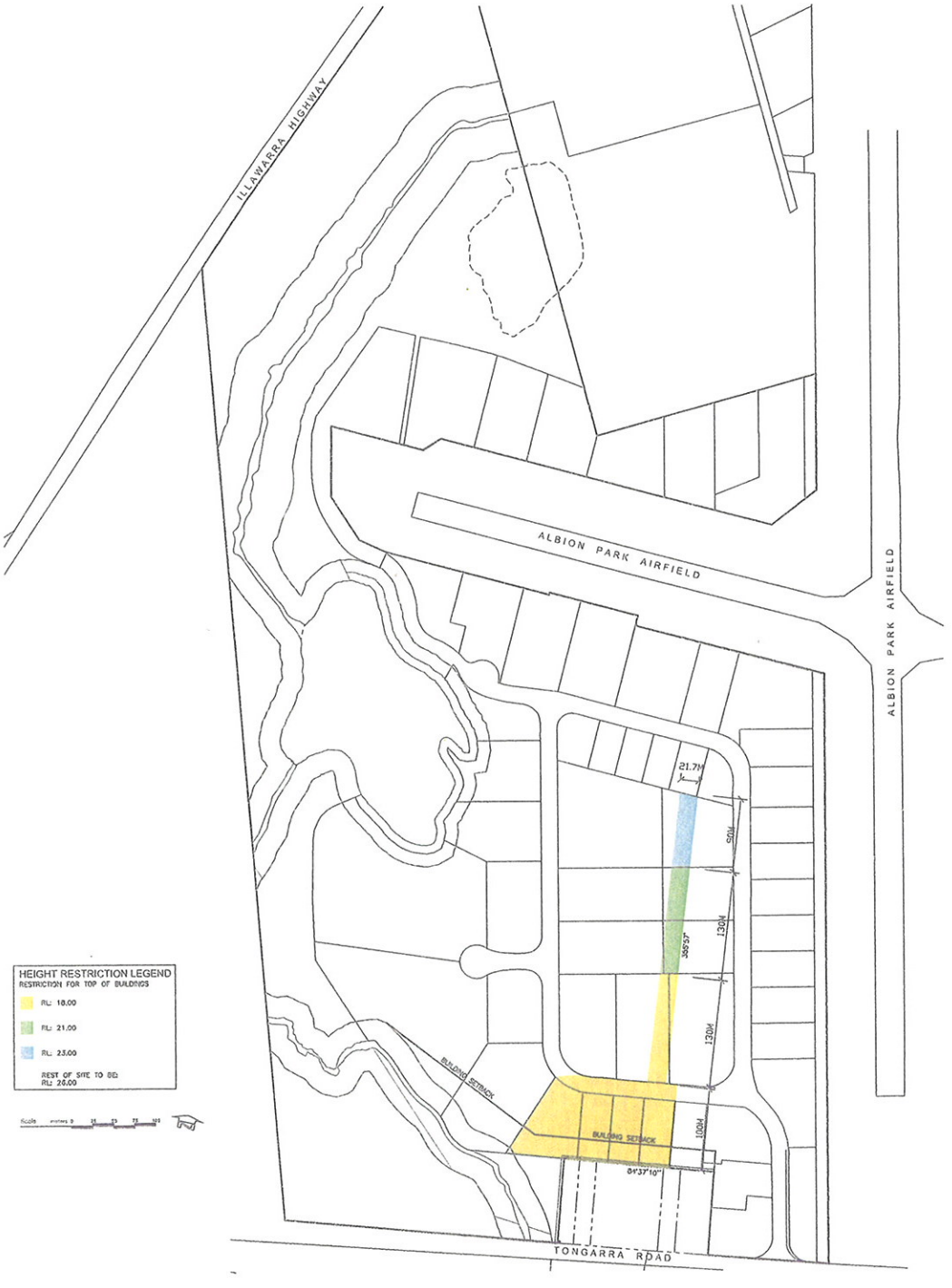



Figure 4.2 Height Restrictions Plan

# 4 CONTROLS

## 4.3 Site Coverage

### Objectives

- Ensure that there are sufficient landscaped areas on each site
- Ensure that open areas are provided to reduce the impact of the built form within the Illawarra Regional Business Park
- Provide areas for parking and other outdoor uses on each site

### Controls

- Total buildings on a lot are not to occupy more than 70% of the lot's site area

## 4.4 Setbacks

### Objectives

- Create an attractive streetscape within the Business Park
- Ensure buildings address the street and establish a legible street pattern
- Provide setbacks which establish and maintain the visual continuity of the street
- Provide for the interface between buildings, surrounding land uses and the public domain

### Controls

#### Front Boundary

- All setbacks from the front boundary of the site are to be a minimum of 5m. Of the 5m, 3.5m is to be landscaped and no development is permitted within this landscaped area.
- Where the site area exceeds 3,500m$^2$ then a setback from the front boundary of 8m is required. Of the 8m, 3.5m is to be landscaped area and no development is permitted within this landscaped area.

#### Side and Rear Boundaries

- All other buildings are to be set back from the side boundaries to comply with the Building Code of Australia.
- All rear boundaries of sites to have 2m landscaping strip along boundary.

#### Airport Boundary

- Where a site adjoins land zoned airport, all buildings and structures are to be set back a minimum of 2m from the boundary. This 2m strip is to be landscaped area and no development is permitted within this landscaped area.

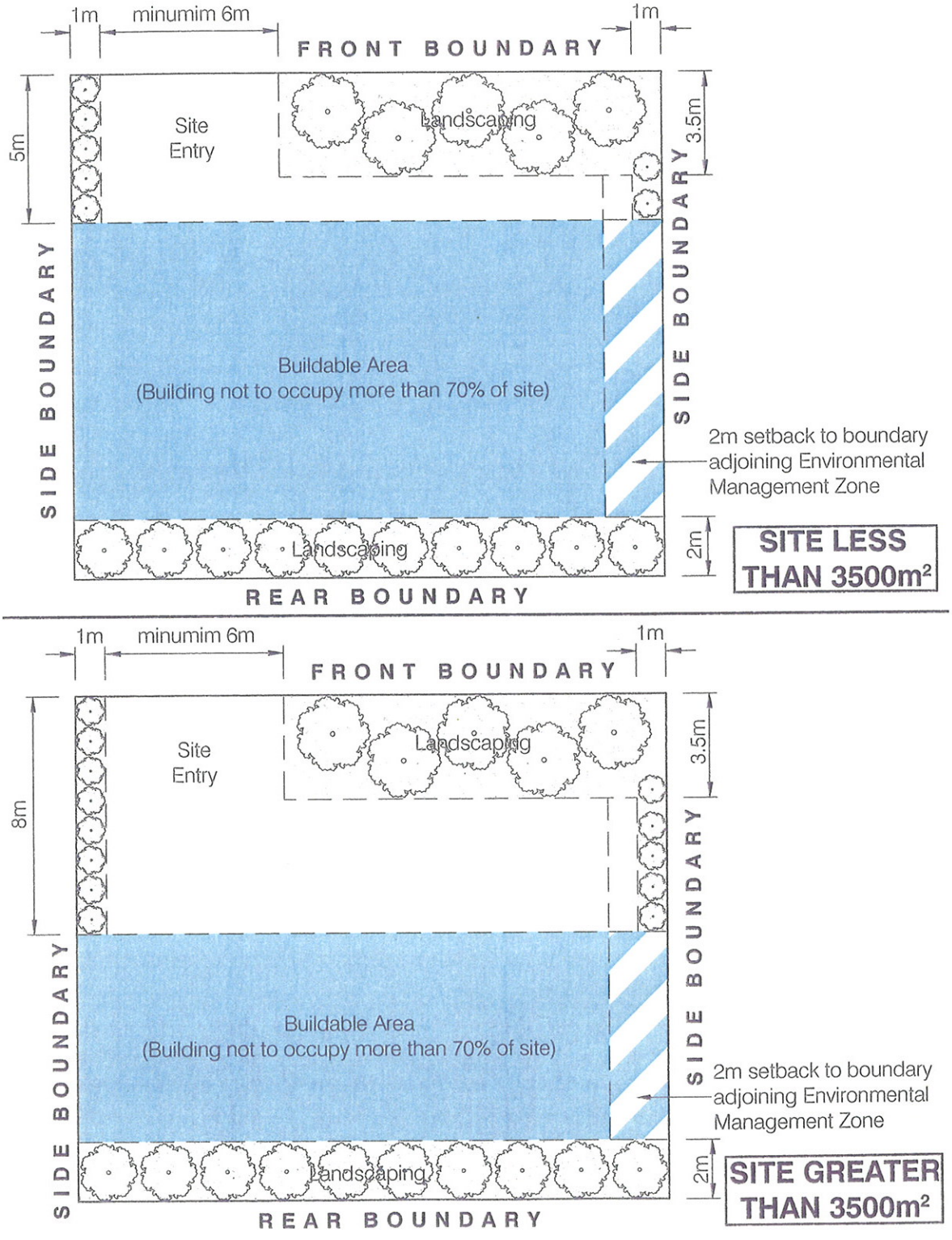



Figure 4.3 Setbacks

# 4 CONTROLS

### Ravensthorpe Boundary

- There are to be no buildings within 25m of the northern boundary of Ravensthorpe
- All development is to be set back 12m from the northern boundary of Ravensthorpe as shown in Figure 4.4


Figure 4.4 Setbacks from Ravensthorpe

### Environmental Conservation Zone Boundary

- Where a site adjoins land zoned Environmental Conservation, but is not in the 15m setback area, there is to be a setback for all buildings and structures of 2m from the zone boundary

## 4.5 Parking and Access

### Objectives

- To ensure that adequate on site parking is provided which is easily accessible and adequately identified
- To provide for access to the parking areas and adequate manoeuvring areas within the parking areas
- To ensure that parking areas are of suitable dimensions, landscaped and well laid out and marked
- To provide off street parking facilities that do not detract from the overall visual amenity and character of developments when viewed from the street
- To provide safe parking for bicycles

## Controls

### Location and Design of Parking Spaces

- Car park design is to meet the minimum requirements prescribed by AS 2890 Off Street Parking Code
- Parking areas should be easily accessible and adequately identified
- The design of car parking areas are to comply with Shellharbour Car Parking Policy Development & Control Plan
- An appropriate level of visual screening is to be provided to reduce the visual impact of loading and car parking areas to the street. For sites with less than 20 car spaces screen planting to the perimeter of the car park is sufficient. For sites with more than 20 car spaces tree bays must be incorporated at one bay for every 10 spaces except where bays abut rear or side walls
- Vehicular access should be designed to avoid conflict with pedestrians
- Pedestrian access and circulation is to meet the minimum requirements prescribed by AS 1428

## Parking Spaces

Minimum parking requirements are as follows:

- Industrial stand alone buildings: 1 space per 2 employees or 1 space per 70m$^2$ of gross floor area
- Commercial office: 1 space per 35m$^2$ of gross floor area
- Industrial units: 3 spaces per unit
- Warehouse/bulk stores: 3 spaces per 1,000m$^2$ of site area
- Shops/food outlets: 1 space per 20m$^2$ of gross leasable floor area and 1 space per 2 employees
- Restaurant: 1 space per 4m$^2$ of customer area and 1 space per 2 employees
- Disabled parking for users and visitors is to be provided in accordance with the BCA

Where development is proposed which is not identified above the applicant should consult the Shellharbour Council Car Parking Policy Development Control Plan. A Traffic Study may be required to justify parking provisions where they do not comply with the above requirements.

### Access

- Access ways are to comply with Australian Design Standards AS 2890.1 and .2
- Driveways should be designed to enable vehicles to enter and leave the site in a forward direction
- A maximum of two vehicle crossovers are permitted on lots with road frontages of 50m or less and a maximum of three on lots with a road frontage greater than 50m
- Access driveways are to have a minimum width of 6m across the full width of the footpath crossing, and have a perpendicular alignment to the street
- Access driveways are to be located so as to provide maximum sight distances

### Gates

- All driveway gates are to be of the sliding type

### Bicycle Parking

- Bicycle racks should be provided for development which exceeds 4,000m$^2$
- Bicycle parking should be provided at the rate of 2 bicycle parking spaces plus 5% of the total number of car parking spaces

- Bicycle racks should be located in a visible, well lit and secure area

## 4.6 Manoeuvring Areas

### Objective

The objective is to provide for the free flow of traffic within the Business Park site and on individual sites within the Park.

### Guidelines

- Access aisles adjacent to car parking areas are to be a minimum of 6.2m in width and generally to Australian Standards AS 2890
- Garbage trucks, delivery vehicles and large single unit trucks are to be able to manoeuvre on site so as to enter and exit the site in a forward direction
- All sites in excess of 2,000m² are to provide parking on site for one truck 8.8m long
- All car parking and manoeuvring areas are to be paved, drained and line marked
- The forward entry/exit of trucks is to be achieved for sites of 3,000m² and above

## 4.7 Operation of Illawarra Regional Airport

### Objective

- To ensure the development of the Business Park does not conflict with the operation of the Illawarra Regional Airport

### Guidelines

- All development proposals are to comply with the requirements of the Illawarra Regional Airport Guidelines dated 17 April 1998
- Applications for development within the Business Park are to demonstrate the compliance of the development with the Guidelines

## 4.8 Site Safety

### Objective

- To implement the principles of safe design in development proposals for the Business Park

### Guidelines

- Development is to implement the Safer by Design Principles of surveillance, access control, territorial reinforcement and space management
- A Safer by Design Evaluation which details implementation of the above principles is to accompany each application for the construction of new buildings within the Business Park

## 4.9 Heritage

### Objectives

- To respect the areas of heritage significance on and adjacent to the site
- To protect significant views to and from Ravensthorpe
- To ensure that there is adequate separation between the new buildings on the site and Ravensthorpe

### Guidelines

- Development is to comply with the height and setback controls established in S 4.2 and S 4.3.
- Any development on the Wanalama Archaeological site (Figure 4.5) is to identify and respect the archaeological significance of the site.

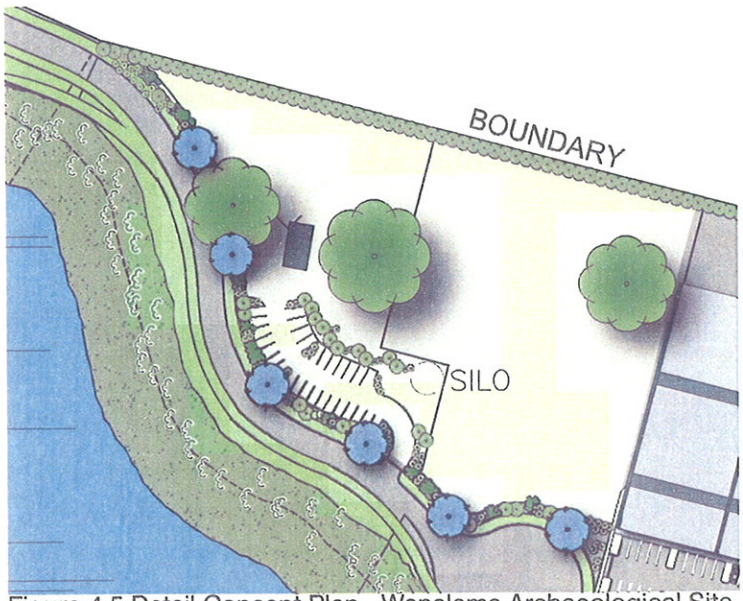



Figure 4.5 Detail Concept Plan - Wanalama Archaeological Site

# 5 DESIGN GUIDELINES

## 5.1 Building Design

### Objectives

The objectives for the design of buildings on the site are as follows:

- Ensure that buildings address the street and establish a legible street pattern
- Create an image for the Business Park which is of a high design standard and creates a visually pleasant environment
- Ensure that buildings are related to each other in terms of siting, appearance and built form
- Where possible the design of individual buildings is to relate to the development on adjacent sites in terms of colours and materials used and building design

# 5 DESIGN GUIDELINES

Figure 5.1 Examples of Good Design

## Guidelines

- Applications for new buildings must be prepared by a registered architect and be accompanied by a statement in relation to compliance with these guidelines
- Buildings are to be functional in design to reflect the nature of the Business Park
- Buildings addressing the street frontage are to be generally aligned parallel with that boundary
- The scale of buildings is to address the street and reinforce the streetscape by defining corners and edges
- Roof forms are to be generally flat although angles may be permitted at the front of the building where office uses are included in the development
- Roof plant rooms, lift over runs, air conditioning services and other equipment must be effectively screened from view using roof structures and architectural elements designed as an integral part of the building
- Building facades to road frontages should be articulated where the frontage is longer than 25m by:
  * Varying the facade alignment and height
  * Varying the materials and colours
  * The use of sun shading devices
  * Cantilevered or overhanging elements
  * Breaking up the facade with windows or the use of structural features
- Open space areas are to be provided for employees and visitors within or adjacent to the landscaped areas
- Design should encourage pedestrian permeability through the Business Park
- Awnings should be integrated into the design of the building
- Any minor buildings on sites, covered storage areas or shade areas, are to be designed to complement and coordinate with the main building on the site

# 5 DESIGN GUIDELINES

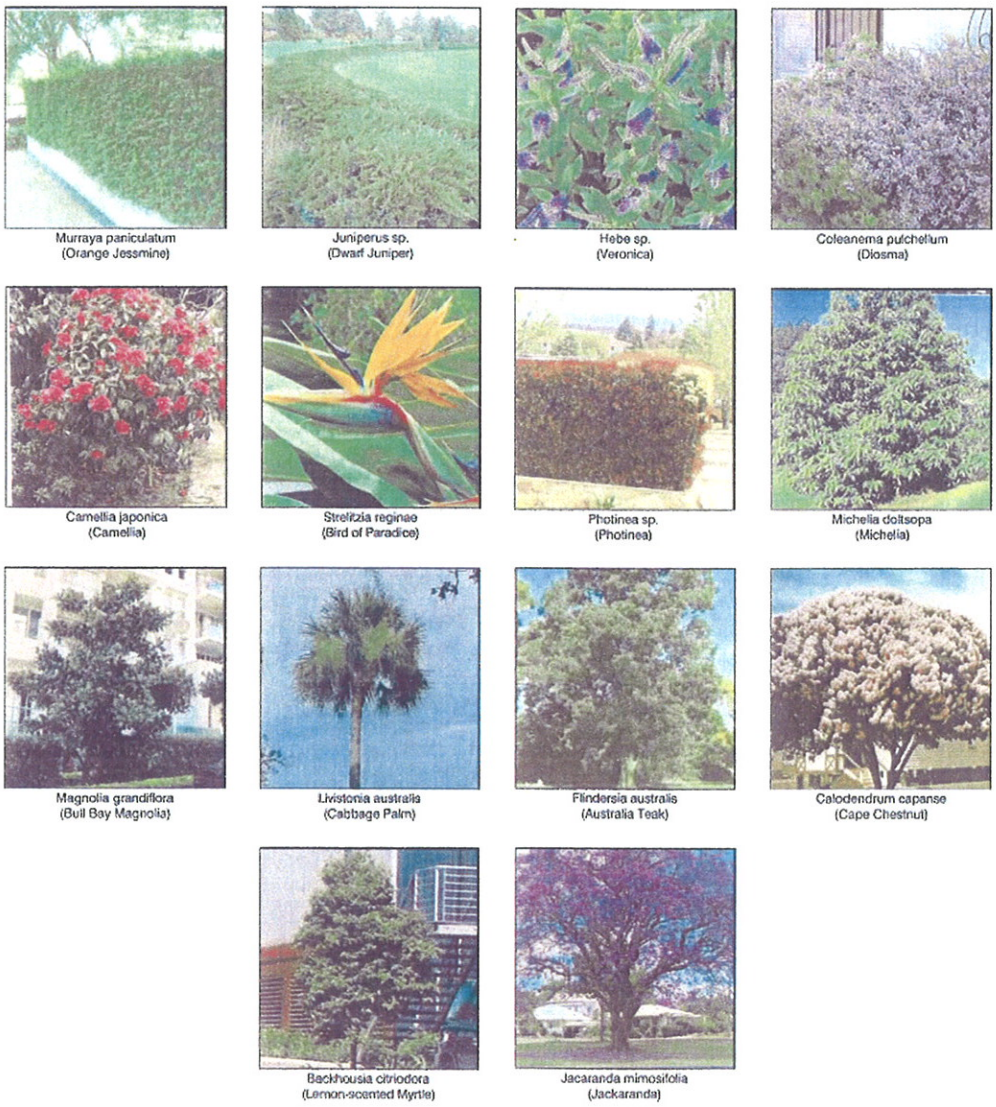



Figure 5.2 Indicative Species to be used in Development

## 5.2 Landscaping

### Objectives

The objectives for the landscaping of the site are as follows:

- Landscaping is to reflect the nature of the area and the context of the Business Park
- Site landscaping is to soften the impact of the built form and to provide shading and variation in the appearance of the area
- Landscaping is to be used to provide an edge to the Business Park
- Species used are to comply with the requirements for the safe operation of the airport
- Landscaping should, where possible, be low maintenance and drought resistant.
- The landscaping should provide for an attractive streetscape within the Business Park
- Landscaping is to be used to provide shading in car parking areas
- Landscaping is to protect and screen the heritage items adjacent to the site

### Guidelines

- All landscaping is to comply with the provisions in the Illawarra Regional Business Park Landscape Management Plan (IRBPLMP), dated November 2007 and prepared by James Pfieffer, Landscape Architect. (Appendix 1)
- Species are to be selected from the list in the IRBPLMP
- A detailed landscape proposal for each site is to be submitted with each major development application
- Shading of car parking areas should reach at least 50% cover upon maturity of the planting
- The condition of the landscaping of the Business Park is to be monitored every two years and steps taken to rectify any problems with the landscaped areas or their maintenance
- Outside the 15m setback area, a landscaped strip is to be provided along the edge of the Environmental Management Zone of at least 2m

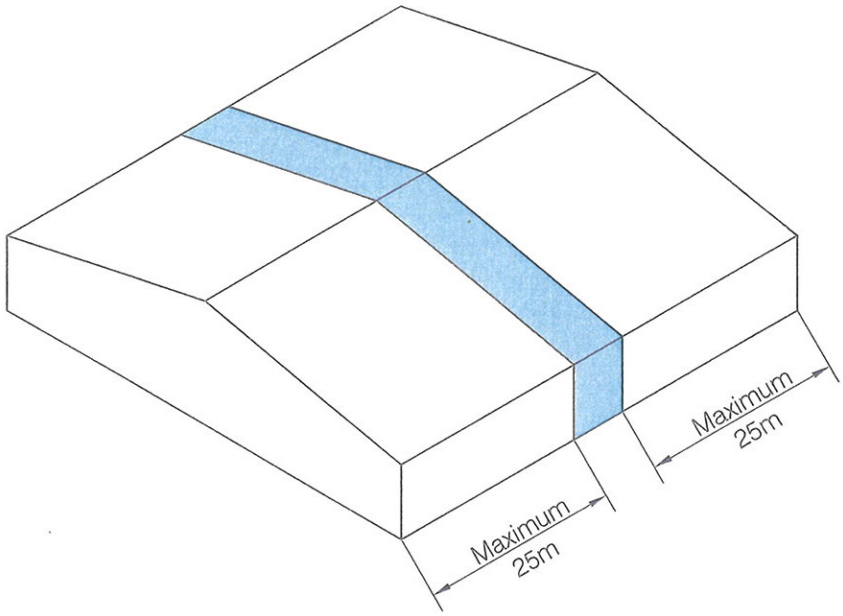
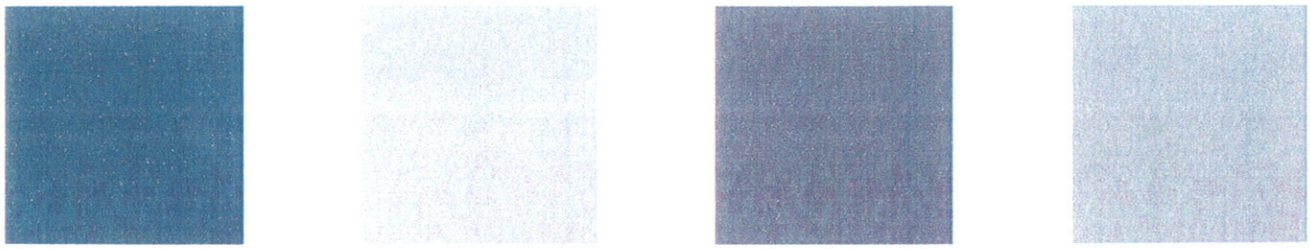



Figure 5.3 Material and Colour Variations to facades



Colorbond "Deep Ocean"

Colorbond "Shale Grey"

Colorbond "Ironstone"

Colorbond "Windspray"

Figure 5.4 Primary Colours to be used

## 5.3 Materials and Colours

### Objectives

- To encourage a high standard of appearance and enhance the general streetscape, character and amenity of the Business Park
- To ensure that the elements of the built form within the Business Park are related to each other through the use of a common colour palette and the use of standard materials
- To encourage the use of materials and colours to break up the bulk and scale of commercial and industrial buildings
- To ensure that all built form elements on a site are related to the main building on the site
- To ensure compatibility with the adjacent airport

### Guidelines

- The range of external materials on any individual building should be limited and compatible
- External materials should include one predominant external material, however accent colours are acceptable
- Changes in material and colours should be varied to break up long expanses of facade
- Low maintenance and robust materials should be used
- Materials to be used are as follows:

    - Metal
    - Colorbond
    - Glass

- Materials must be low reflective. All metal surfaces are to be Colorbond or similar and all glass surfaces must have a low level of reflectivity
- The use of zincalume will not be permitted
- Developments which propose the use of materials and colours different from the above will be considered on merit having regard to the external appearance of the material and colours and their relationship to the overall appearance and architectural quality of the Business Park

## 5.4 Lighting

### Objectives

- To provide a site lighting system across the Business Park that will provide a safe and attractive environment
- To ensure that there are no adverse impacts on the operation of the Airport from the lighting installed and used in the Business Park
- To ensure lighting does not cause distraction to vehicle drivers on internal or external roads or to the occupants of adjoining properties

### Guidelines

- All lighting is to comply with the operational requirements of the Illawarra Regional Airport Guidelines
- External lighting is to be integrated into the building form and designed to accentuate architectural form and features
- The use of flood lighting will not be permitted
- Lighting plans for sites are to be submitted with development applications

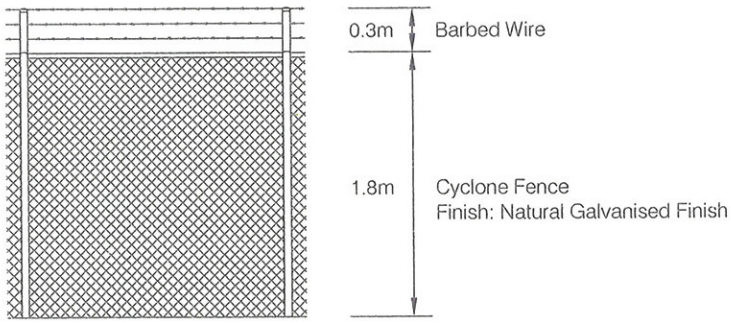
## 5.5 Fencing

### Objectives

- To ensure that fences are sympathetic to the design of the buildings and do not dominate the streetscape
- To provide security for the individual sites
- To provide security for the airport
- To ensure that fencing does not interrupt pedestrian permeability through the site

### Guidelines

- There is to be no fencing along the front boundaries of properties except in areas where there is no building fronting the front boundary
- Fencing is to be provided along the boundary of all sites adjacent with the airport zone to match the existing fencing around the airport
- All fences other than those along the airport zone are to be galvanised steel or aluminium tube construction. Refer to Figure 5.5 for dimensions and styles.
- Where possible landscaping should be used to soften the visual impact of boundary fences
- Open activities within sites are to be screened and fenced



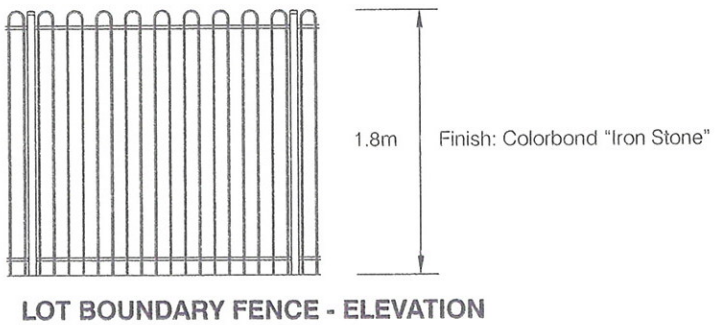
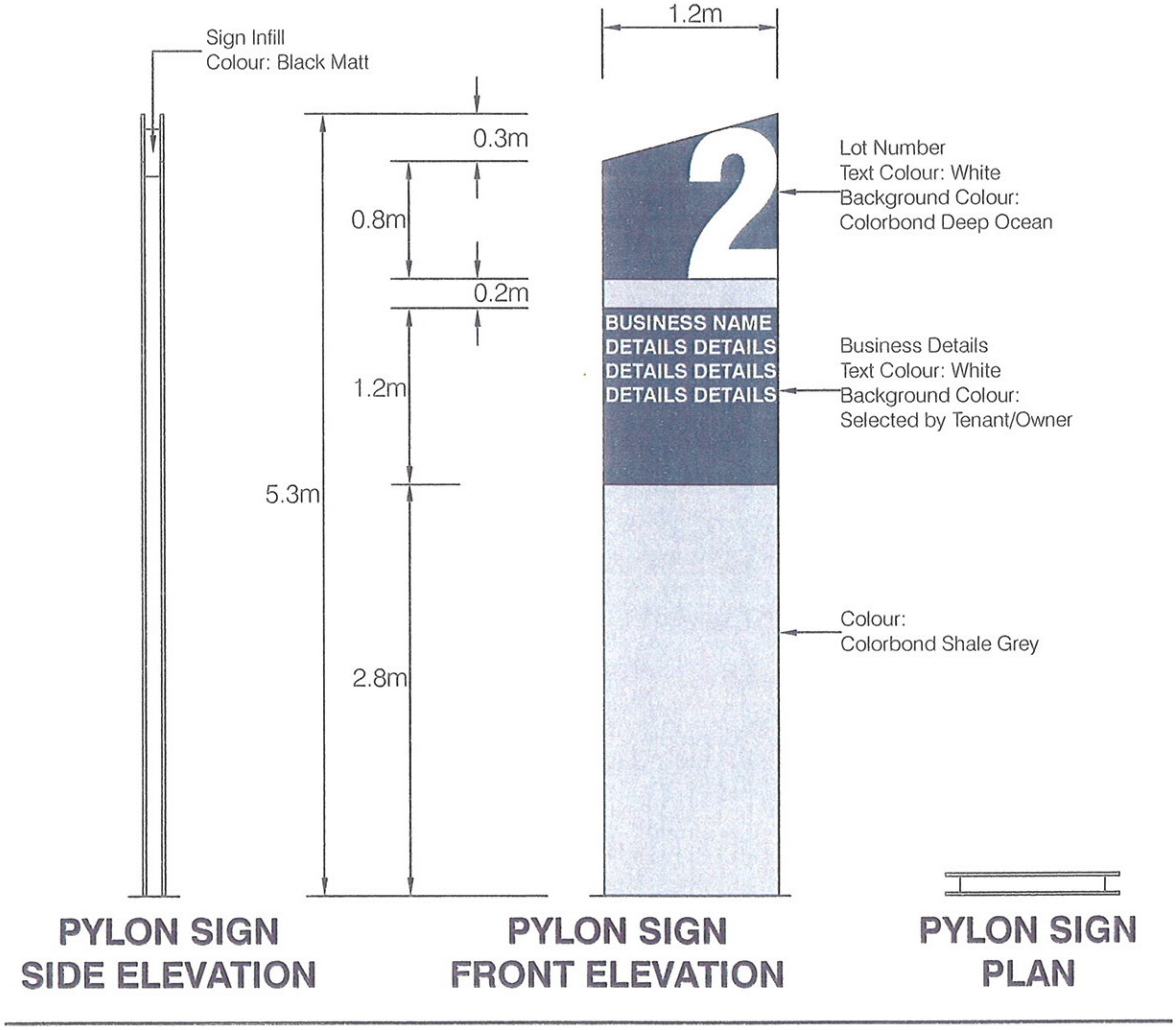




Figure 5.5 Fencing Diagram



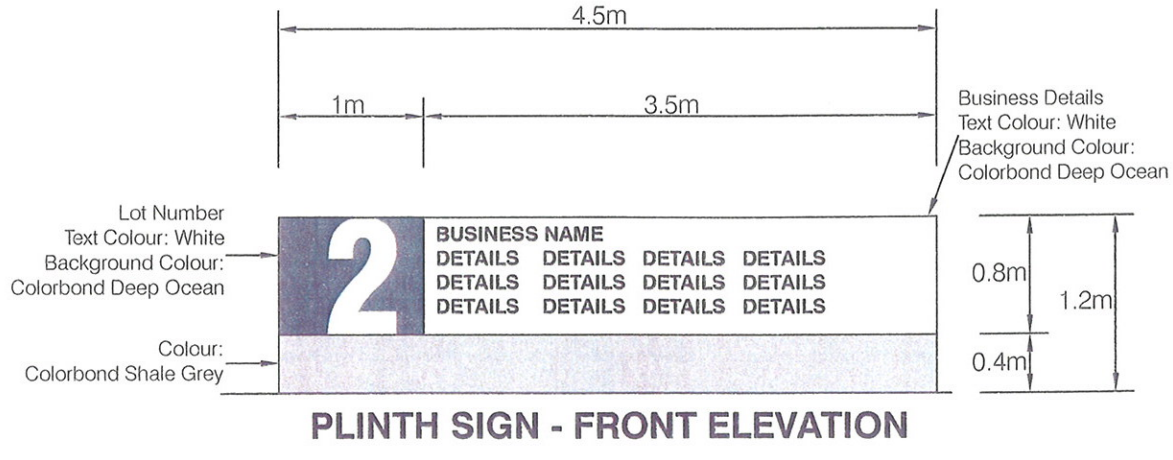




Figure 5.6 Signage Diagram

## 5.6 Signage

### Objectives

The objectives for the provision of signs in the Business Park are to:

- Provide businesses with the opportunity to identify their location and activity
- Ensure that signage is integrated into the design of buildings and does not detract from the visual appearance of the buildings
- Ensure that signs do not proliferate in the Business Park and impact on the overall appearance of the area
- Ensure that signage does not adversely impact on the surrounding land uses by controlling the location and size of signage within the Business Park
- Ensure that all signage is of a high design standard and is integrated into the built form of the Business Park

### Controls

- Applications for building signage are to be submitted as part of the application for the building to ensure that their design is integrated into the design of the building
- No sign is to exceed 18m² in area
- Signs are not to project above parapet lines or roof eave lines
- Flashing and neon signs will not be permitted
- Roof or sky signs will not be permitted
- Freestanding signs will not be permitted on individual sites other than a standard pylon sign as illustrated. All other signs are to be attached to the building facade
- The visual appearance of signs from the Illawarra Highway, the Airport, the Princes Highway and Tongarra Road is to be assessed in any application for signage
- The visual appearance of signs from the Environmental Management Zone is to be considered in any signage application
- All signs are to be related to uses in the Business Park, or products produced in the Business Park
- For buildings with more than one tenancy signage for each tenancy must be of a uniform size and shape and integrated into the design of the building
- Directional and tenancy signage must be located in a convenient point close to the development's main entry

Figure 5.6 shows examples of sign types and designs for the Business Park.

## 5.7 Water Cycle Management

### Objective

- To implement the principles of Water Saving Urban Design in the development at the Business Park

### Controls

- The provisions contained in the Water Cycle Management Plan dated November 2007 prepared by Costin Roe Engineers are to be implemented in all development within the Business Park (Appendix 2)
- All development applications are to be accompanied by a Stormwater Management Plan which demonstrates compliance with the above Management Plan
- All development applications are to be accompanied by information relating to the water saving and re-use measures to be adopted in compliance with the Management Plan

## 5.8 General

### Cut and Fill

- The minimum finished floor level for any development is to be a minimum of AHD 7.1

### Staff Amenities

- These are to be provided in accordance with the Building Code of Australia

### Accessibility

- All development is to comply with AS1428.1 and AS1428.2.

### Construction

- All applications are to be accompanied by a Construction Management Plan detailing hours of work, access and waste management and the amelioration of any impact on adjoining properties
- A Construction Waste Management Plan is to accompany all applications and is to include the following:
  - * measures to prevent discharged pollutants or contaminants during construction
  - * identification of locations for waste materials, building materials, rubble and other items
  - * measures to ensure construction workers are aware of the relevant issues on the site and in the adjacent areas

## Waste Management

- An Operational Waste Management Plan is to be submitted with all applications which details the following:
  - * the description, volume, mass and generation rate of all solid and liquid wastes likely to be generated during operations
  - * the opportunity for resource recovery from the waste streams
  - * the proposed location, size and design of on site (internal and external) sorting, transfer, processing, storage and transport facilities for resource recovery and waste disposal
  - * the domestic waste and recycling facilities including container capacities and storage locations suitable for the proposed development
  - * plans for the screening and signposting of waste storage areas including built walls, landscaping and the relation of this to the overall design of the development
  - * access for on site movement and collection of waste
  - * provision of any communal areas for waste disposal

## Hours of Operation

- All applications are to set out operating hours and assess any impacts these hours might have on adjoining developments

## Noise

- All buildings are to comply with AS 2021 regarding interior noise levels
- All major applications for development are to be accompanied by an assessment of noise impacts on properties adjoining the site

# APPENDIX 1

Illawarra Regional Business Park Landscape Management Plan

# REPORT

## LANDSCAPE DESIGN STATEMENT
and
## LANDSCAPE MANAGEMENT PLAN

Project

**Illawarra Regional Business Park**
**78 Tongarra Road, Albion Park.**

Date
21 November 2007

Prepared by

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Tele: 9566 4678, Fax: 9552 4400
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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. BOUNDARY PLANTING WITH RAVENSTHORPE
   Proposed landscape treatment to the common boundary line with Ravensthorpe has been formulated to accommodated views to and from this historic property, located next to the Illawarra Regional Business Park, along Tongarra Road

   Ravensthorpe is a culturally significant house and garden; existing views from and to Ravensthorpe from the north and west have been identified as being important to the historic setting of this property and therefore should be maintained. Views of particular importance include;
   - Western views from Ravensthorpe – the western view is important because it provides Ravensthorpe visual access to the escarpment, a view the house and garden has enjoyed from the time the property was first constructed – conversely the western view is also important because the house and garden can be seen by people from the west, especially traveling east along Tongarra Road.
   - Narrow framed northern view aligned with Raventhorpe's entry driveway – the driveway view north, to the escarpment, is important to the historic setting and sense of place and is considered sufficiently important to remain unobstructed.
   - General northern views from Ravensthorpe – the northern views to the escarpment, from Ravensthorpe, are considered important to the historic setting of the property, however, it is also considered important to preserve as much of the rural atmosphere as possible, surrounding Ravensthorpe. In order to enhance the rural setting, along the northern boundary to Ravensthorpe, apart from the narrow framed northern view mentioned above, it is recommended that some trees are planted within this zone.

5. 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.

6. 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 – LANDSCAPE BUFFER TO RAVENSTHORPE

In response to the above mentioned issues the following landscape treatment, undertaken within the Illawarra Regional Business Park precinct, is proposed;

- Establish a 12.0 metre wide landscape buffer zone along the entire length of Ravensthorpe's northern boundary, which will extend further west for approx 60.0 metres. The landscape treatment of this landscape buffer zone will include;
  - excavated embankment, adjacent to Ravensthorpe, falling away from the boundary to create level terraces on which buildings will be constructed below sight lines from Ravensthorpe; a strip of undisturbed ground will be preserved, running along the entire northern boundary to Ravensthorpe, in order to ensure the root zone of existing trees growing within the Ravensthorpe, are left undisturbed as a result of proposed excavation.
  - existing unobstructed views within the narrow framed view corridor, aligned with Raventhorpe's entrance driveway, refer Drawing No 06-050-04, will be preserved. Therefore no trees will be planted in this zone
  - outside the narrow framed view corridor trees the aim is to filter views through random groups of native trees – the trees and the location of the trees must have the following characteristics;
    - the trees must have a light branch and foliage texture to allow visual access through the canopy;
    - trees must be located individually or in small groups, spaced apart to allow visuall access between individuals or small groups; and
    - Height of trees must be small enough to ensure the Ravensthorpe garden is not adversely shaded.

    The best tree for this application is considered to be the naturally occurring Paperbark (Melaleuca decora). Mature height of this Paperbark, growing on the embankment, is expected to be approx. 8.0 metres. The existing, on site Paperbark trees, have a small, twisted, light textured form, allowing sight lines through the canopy. Therefore if this tree

is planted randomly in open groups they will provide a visual filter which will provide spatial delineation, yet can be seen through, will not adversely shade Ravensthorpe, using an endemic tree to the site.
- proposed groundcover treatment is mass planted native grasses and shrubs such as Lomandra sp. And Poa sp.

- Planting to narrow zone along Raventhorpe's western boundary shall be limited to native grasses and shrubs compatible with the strategy proposed by the Environmental Management Zone – refer Flora & Fauna Report. The strip along the western boundary is narrow and it is located beside to Frazer Creek riparian conservation zone, therefore, a practical response is to harmonize both treatments. Because existing view lines must be maintained no trees are proposed

The following plants are recommended as mentioned above;

| Botanical Name | Common Name | Mature Size |
|---|---|---|
| **Evergreen Trees** | | |
| Melaleuca decora | Paperbark | 8.00 x 4.00 |
| **Groundcover** | | |
| Lomandra longifolia | Mat Rush | 0.90 x 0.90 |
| Lomandra longifolia Tanika | Dwarf Mat Rush | 0.50 x 0.50 |
| Dianella caerulea | Flax | 0.60 x 0.50 |
| Poa sp | Tussock | 0.90 x 0.90 |

**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 | |