



CUMBERLAND
CITY COUNCIL

PART F3

INDUSTRIAL SITE SPECIFIC

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PART F3-1

PEMULWUY NORTHERN EMPLOYMENT LANDS

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1. Introduction

1.1 Land to which this Part applies

This Part relates only to the Pemulwuy North Employment Lands, the land shown in Figure 1. The entirety of the site is within Cumberland City. This DCP does not apply to the whole of the Greystanes Precinct that was defined in the *State Environmental Planning Policy No. 59 - Central Western Sydney Economic and Employment Area* (SEPP 59). Lands not included are: the residential land within Pemulwuy, parts of the Employment Lands in Blacktown LGA, and the 'Greystanes Southern Employment Lands' (as defined by the 20/07/2007 Part 3A Determination). Also, the southeast boundary of the former CSIRO lands has been redefined to reflect the landowners' intended uses for the lands here. Therefore, this Section of the DCP applies only to some of the employment component of the Greystanes Precinct that was defined in SEPP 59. It also includes the north-west corner industrial land (Lot 101 DP 851785I, Lot 9 DP 374325 and public road reserve) originally excluded from SEPP 59. It also includes the eastern half of Clunies Ross Street linking the two industrial lands, as this is part of the WSEA SEPP 2009 land.



Figure 1: Land application map - Pemulwuy Northern Industrial lands

1.2 Relationship to other Plans

State Environmental Planning Policy No. 59 - Central Western Sydney Economic and Employment Area (SEPP 59) was gazetted In February 1999, and applied to a number of

landholdings in Western Sydney including the Greystanes Estate. The SEPP rezoned the Greystanes Estate for urban development including employment generating and residential land uses and establishes the planning framework for the development of the land.

As a result of to the gazettal of the *State Environmental Planning Policy (Western Sydney Employment Area) 2009* (WSEA SEPP) on Friday 21 August, 2009, control of the Employment Lands of SEPP59 was transferred to the WSEA SEPP. Most of the land that is the subject of this section of the DCP is controlled by the WSEA SEPP.

As required now under clause Part 4 (Development control plans) of the WSEA SEPP, prior to the lodgement of a development application for the site, the owner or Council needs to prepare a Development Control Plan for the site pursuant to section 80 (11) of the *EP&A Act* and consistent with the issues of consideration in Schedule 4 of the WSEA SEPP (Requirements relating to preparation and content of development control plans), and then have it determined (approved) by the Director-General of the Department of Planning.

This Part of the *Cumberland DCP 2021* provides guidance on specific development matters pertinent to the land defined in Section 1.1 above, and is consistent with Schedule 4 of the WSEA SEPP. Infrastructure services are not addressed by this DCP, having been provided prior to the adoption of this control.

Where this Part does not provide guidance on specific development matters, reference shall be made to other Parts, such as Part A, Part C, Part D, Part G and Council Codes and Policies. The objectives and controls of these Parts will be considered in the determination of the Development Application. Where there is an inconsistency between this Part and Part A or D, this Part should take precedence.

Historically, this Part was amalgamated from relevant sections of two Precinct Plans:

- *Former CSIRO Site Pemulwuy Employment Lands; and*
- *Greystanes Estate SEPP 59 Residential Lands.*

These Precinct Plans continue to apply to the subject land of Pemulwuy, except where there is an inconsistency between this Development Control Plan and these Precinct Plans, in which case this DCP prevails to the extent of the inconsistency.

Note: Lot 63 DP 752051, on the western side of Clunies Ross Street, Pemulwuy, was formerly part of the SEPP 59 land, though it had not been included in the Greystanes Estate Precinct Plan.

2. Objectives and controls

2.1 General

Objectives

O1. Achieve the principles of ESD through:

- provision of a range of new employment opportunities;
- efficient re-use of degraded land;
- proximity of local employment to workforce and the consequent benefits to the community such as reduced travel time, promotion of healthy lifestyles, reduced expenditure for transport;
- energy efficient design of employment developments;
- provision of public transport networks;
- implementation of sustainable practices, where practicable e.g. water efficiency and conservation measures to reduce water consumption, maintenance or improvement

of water quality through a catchment management approach to the site and the control and minimisation of air pollutant emissions;

- efficient use of land to minimise urban growth and better utilise existing infrastructure;
- promoting the use of appropriate and renewable source materials;
- maintaining and enhancing the significant vegetation and habitat and protecting threatened ecological communities; and
- recognising and integrating significant cultural and archaeological features/aspects.

O2. Continue existing employment;

O3. Offer new job opportunities in Western Sydney. The accessibility of the site to a regional road and public transport network will assist in attracting new employment generating industries.

O4. Provide within the public domain of the Pemulwuy north employment lands:

- riparian corridor;
- water bodies;
- paths and cycleways; and
- roads.

O5. Design these areas so as to create a unique setting and encourage development throughout the Estate.

Note: For a vision of Residential Pemulwuy, see Part F1 – Site Specific Controls.

2.2 Public domain and open space

2.2.1 Open space

Objectives

O6. Protect scenic values and ridge skyline.

O7. Create an integrated open space system that is safe, visually attractive, environmentally sustainable, manageable and flexible to cater for changing community needs.

O8. Retain significant vegetation bands and corridors including the dominant north-south wooded ridgeline.

O9. Rehabilitate existing quarry batters to provide a vegetated setting for employment lands.

O10. Create a major northern gateway to the employment lands of high quality landscape that reflects the character of the entire employment area.

Controls

C1. Provide open space generally in accordance with the development concept set out in Figure 2. The public domain should comprise: riparian corridor, water bodies, paths and cycleways, and roads. The treatment of these areas will be important in creating a unique setting and encouraging development throughout the Estate. These areas are to be reflected in subsequent development applications for the site, and maintained as such.

C2. Open space areas may be used for stormwater detention purposes.

- C3. Open space may include elements of the natural environment and provide for active and passive recreation.
- C4. Retain and reinforce existing vegetation patterns through the Open space landscaping within public domain areas.
- C5. On the north-south wooded ridgeline, replace the pine plantation with new locally indigenous planting to protect the skyline.
- C6. Provide a cross site link to allow for connection between Greystanes and Prospect Reservoir.
- C7. Provide pedestrian and cycle systems through the riparian corridor where possible, designed to minimise the impact on the ecology of the riparian corridor.
- C8. Design accessible open space corridors to ensure the safety of pedestrians and cyclists using the corridors as thoroughfares.
- C9. Maintain and vegetate the riparian corridor in accordance with the agreement with the relevant State authority and to the satisfaction of Cumberland City Council.
- C10. Create a major northern gateway to the employment lands of high quality landscape that reflects the character of the entire employment area, as shown in Figure 2.
- C11. Provide a linear open space area with water elements, landscaped areas and suitably designed signage, bridge, lighting and pavements to evoke the character and theme of a quality industrial park.
- C12. Along the eastern ridgeline, plant to reinforce the topographical bounds of the employment area.

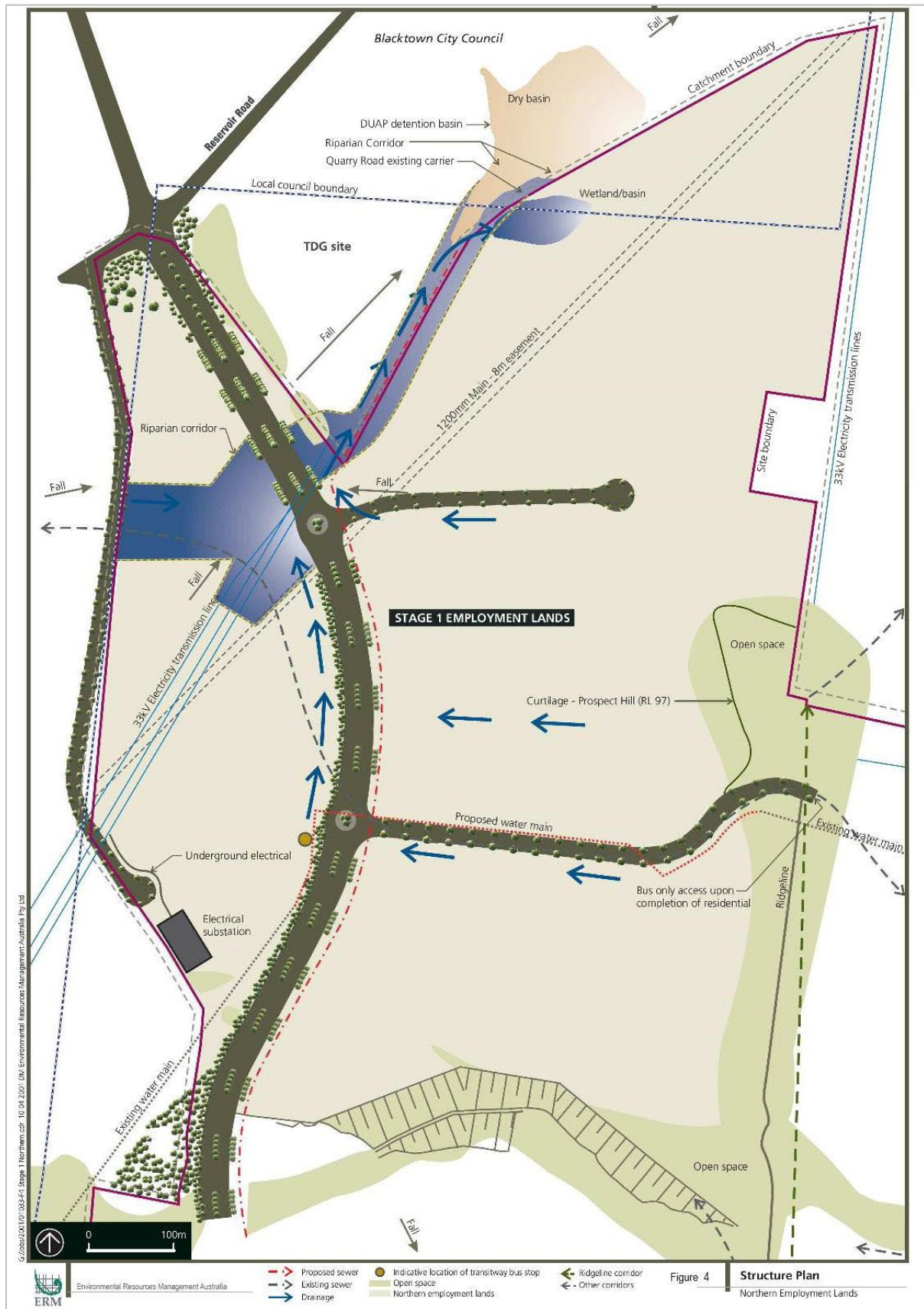


Figure 2: Open space concept plan

2.2.2 Pedestrian and cyclist facilities

Objectives

- O1. Provide a convenient access to the employment precinct.
- O2. Encourage walking and cycling by providing safe, convenient and legible routes to points of attraction within and beyond the suburb.
- O3. Provide open space permeability through development precincts.
- O4. Link the existing Greystanes community with new development precincts.
- O5. Utilise natural drainage systems and vegetation corridors as open space links.

Controls

- C1. Construct pedestrian footpaths generally as part of the normal street network, other than paths in open space corridors.
- C2. Ensure that development applications that relate to the cycle network and pedestrian link the site facilities to the off-site facilities. The cycle network is a combination of on street, dedicated street lanes, shared paths (parks and streets) and dedicated paths (parks) that link the main points of attraction, particularly the residential and employment areas and village centre with the open space network including the Prospect Canal linear park and Hyland Park.
- C3. Provide key pedestrian and cycle routes broadly along the alignment shown on Figure 3 below.
- C4. Align cycle/foot paths in open space approximately parallel with the park edge streets wherever possible to take advantage of the street lighting and allow for casual surveillance by residents and drivers.
- C5. Wherever possible and practical, design and construct footpaths or shared paths to be of appropriate width, longitudinal gradient, sight distance and kerb details to cater for the likely population and user types, including aged people, people with prams and wheelchairs, and people with disabilities. Provide a minimum width of 1200mm and maximum gradient where possible of 15%.
- C6. Consider incorporating drainage lines into the open space networks as pedestrian and cycle paths.
- C7. Pedestrian and cyclist access to the north east employment area will be via the main gate onto Clunies Ross Street.
- C8. Pedestrian access to private land should be designed as an integral part of the internal circulation network.

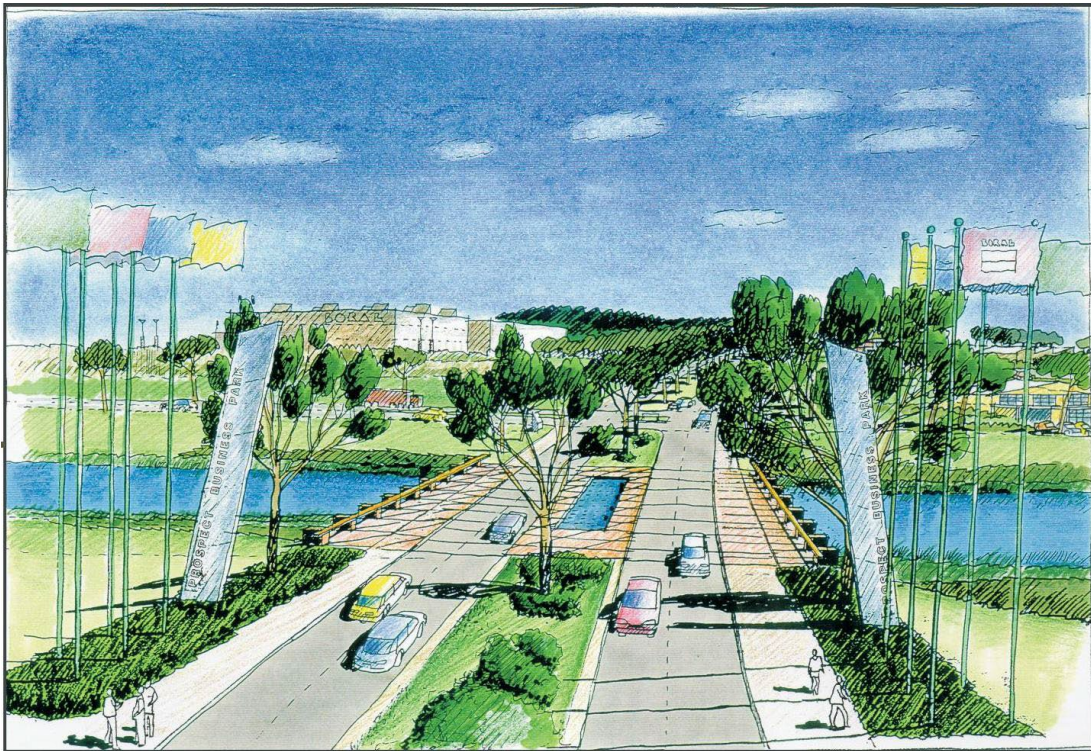


Figure 3: Illustration - Entry into employment lands

2.2.3 Entrance treatment

Objective

- O1. Create distinctive, high quality, landscaped gateways to the Estate.

Controls

- C1. Establish north and south entry gateways into the northern employment lands along the spine road to create a distinctive character.
- C2. Locate the site entry to the northeast area on Clunies Ross Street and integrate it with the landscape character.

2.2.4 Street trees and furniture

Objective

- O1. Establish a character and unifying element through street tree planting and furniture.

Controls

- C1. Use thematic street tree planting to complement the role of streets. Use different species for different street types and orientation.
- C2. Use a co-ordinated palette of street furniture throughout the Estate.
- C3. Ensure that lighting in public areas is of a style, colour and form that is compatible with the street furniture.

- C4. Co-ordinate the spacing of light poles with street trees.

2.2.5 Safety and security

Objective

- O1. Promote the feeling of safety.

Controls

- C1. Design buildings to overlook public and communal streets and other public areas to provide casual surveillance.
- C2. Through site planning, buildings, fences, landscaping and other features, clearly define territory and ownership of all public, common, semi-private and private space.
- C3. Provide appropriate lighting to all pedestrian paths between public and shared areas, parking areas and building entries, and light building entries to provide a sense of security for both residents and visitors.
- C4. Ensure no lighting spills onto or affects the amenity of residential areas.
- C5. Use robust materials which are aesthetically pleasing in public or communal spaces.
- C6. Ensure pedestrian site access and car parking are:
- clearly defined,
 - appropriately lit,
 - visible to others and
 - provide direct access to buildings from areas likely to be used at night.
- C7. Design major pedestrian, cycle and vehicle thoroughfares to:
- minimise opportunities for concealment;
 - avoid 'blind' corners;
 - maximise casual surveillance; and
 - allow 'long distance' sight lines.
- C8. Identify major pedestrian, cycle and vehicle thoroughfares, and reinforce them as 'safe routes' through:
- appropriate lighting;
 - the potential for casual surveillance;
 - minimised opportunities for concealment;
 - landscaping which allows long-distance sight lines; and
 - avoidance of 'blind corners'.
- C9. Site and design landscape and fencing so they do not present a security risk by screening doors, windows and major paths.
- C10. Provide safety fencing along the ridge line, suitably designed to allow for views and outlook.
- C11. Ensure landscaping maintains view corridors & clear sight lines.

2.3 Building and siting requirements

Where this Part of the DCP does not provide guidance on specific development matters, reference should be made to other Part of the DCP, such as Part G and Part D. Where there is

an inconsistency between this Part and any other Part of this DCP, this Part should take precedence

2.3.1 Land Uses

Objectives

- O1. The objectives for and land uses permissible within the Pemulwuy North Employment Lands are defined by:
- The WSEA SEPP 2009 (in relation to land zoned IN 1 as defined by that SEPP); and
 - The *Cumberland Local Environmental Plan 2021* (in relation to land zoned IN 2 and excluded from Precinct 10 of the Land Application Map of the WSEA SEPP 2009).

Controls

- C1. Provide a retail service centre catering for the needs of the workforce at a central location within the employment lands. Locate the centre on a corner allotment facing the north-south spine road so that it is readily accessible to the local workforce.
- C2. Provide recreational and community uses within the employment lands consistent with the provisions of the *Western Sydney Employment Area SEPP 2009*.
- C3. Ensure open space that provides active and passive recreation for the workforce. Open space should be readily accessible and well located and should be incorporated within individual developments as well as along public corridors.
- C4. Restrict retail activity on industrial land (having the potential to increase land prices and effectively push traditional industrial users out, and to threaten the industrial 'address' and image).

2.3.2 Lot Sizes and Site Cover

Objectives

- O1. Achieve a quality industrial park setting and ensure adequate provision is made for landscaping, parking and manoeuvring areas.
- O2. Create site layouts which consider the opportunities and constraints of the site.

Controls

- C1. Ensure a minimum lot size of 1 hectare, although, a range of lot sizes is anticipated to meet market demand.
- C2. Subdivisions of land should:
- seek to maximise solar access to all parts of the development;
 - encourage passive solar design; and
 - protect site attributes such as views, existing vegetation and other environmental features.
- C3. Subdivision of land should avoid the creation of battle-axe blocks or long and narrow blocks at right angles to street frontages.
- C4. Maximum site coverage is 60%. Local services including commercial, retail, community and recreational uses are excluded from this provision given the different design characteristics of these uses.

- C5. “Site area” is defined as the whole of the land to which an application relates and includes areas set aside for open space, drainage and other services. “Site coverage” is defined as the area of a site covered by buildings including awnings.
- C6. In the layout of the site, design the buildings and landscaping to provide direct, convenient and safe access to the street for the pedestrians.
- C7. On industrial sites, make adequate allowance for manoeuvring and turning of heavy vehicles on site. In accordance with the Roads and Maritime Service’s Policies, Guidelines and Procedures for Traffic Generating Developments, apply the design standard for “large rigid truck”.
- C8. Ensure that the width of an industrial allotment at the building line is equal to or greater than 24m and the average depth is equal to or greater than 45m.

2.3.3 Siting

Objectives

- O1. Achieve attractive streetscapes.
- O2. Provide a quality setting and to allow for landscaped curtilages between buildings and front property boundaries.
- O3. Create setbacks that allow for landscaping and visual amenity.
- O4. Provide solar access to sites and adjacent development.
- O5. On the former CSIRO lands, to create a consistent streetscape with the residential area along the Clunies Street frontage.
- O6. On the former CSIRO lands, to provide a setback on the southern boundary that allows for reasonable sunlight access and reduces visual dominance of employment buildings to the rear of the residential area.
- O7. Prescribe Asset Protection Zones (APZs) within the Pemulwuy northern employment lands for bushfire protection.

Controls

- C1. Setback buildings to the west of Clunies Ross Street as follows:
 - north-south spine road: buildings are to be setback 20 metres from the property boundary. The first 10 metres is to be landscaped in accordance with the Landscape section below;
 - all other roads: buildings are to be set back 8 metres from the property boundary. The first 3 metres is to be landscaped in accordance with the Landscape section below.
- C2. Setback buildings within the former CSIRO employment land consistent with Figure 4.
- C3. Within the former CSIRO employment land:
 - the Eastern Building Setback is the prescribed flood line based on the dam break Imminent Failure Flood (IFF) line;
 - new buildings are not permitted in the IFF zone;
 - car parking and like uses are permitted in the IFF zone;
 - new buildings are not permitted within the Asset Protection Zone (APZ);

- no new development, including buildings, car parking, fire trails and like activities, is permitted within the riparian corridor alignment agreed with a State environmental authority.
- C4. The setback controls may be varied where:
- a predominant street building line exists;
 - the current setback of buildings is staggered and continuity in street building line should be maintained;
 - there is no obvious street building line and new buildings should align with existing maximum and minimum building lines of development;
 - public domain improvements or environmental benefits such as solar access, protection of vegetation are achieved; or
 - where the building is located on a corner site and a lesser setback is consistent with streetscape objectives.
- C5. Setback buildings 10 metres from any public open space, including riparian reserves, and 20 metres from Greystanes Creek.
- C6. Site and design buildings to allow for casual surveillance of building entrances and the street.
- C7. Site buildings to allow for adequate lines of sight to building entrances, the street and carpark areas for pedestrians, cyclists and vehicles.
- C8. Locate offices to address and activate the street/s. The warehouse/factory functions as well as car parking, manoeuvring areas, loading and unloading facilities are to be located within the site.
- C9. Through layout of the site, the design of buildings and landscaping, provide direct and safe access to the street for pedestrians.
- C10. Large setbacks with significant car parking in front of buildings are not permitted on the principal street frontage.
- C11. Establish and maintain landscaping within the southern setback of the former CSIRO employment land.
- C12. Site and design buildings so that solar access to staff recreation areas on site and in adjoining developments is not compromised between 12 noon and 2pm (as measured at 21 June).
- C13. Site buildings to satisfy maintenance, utility and safety requirements.

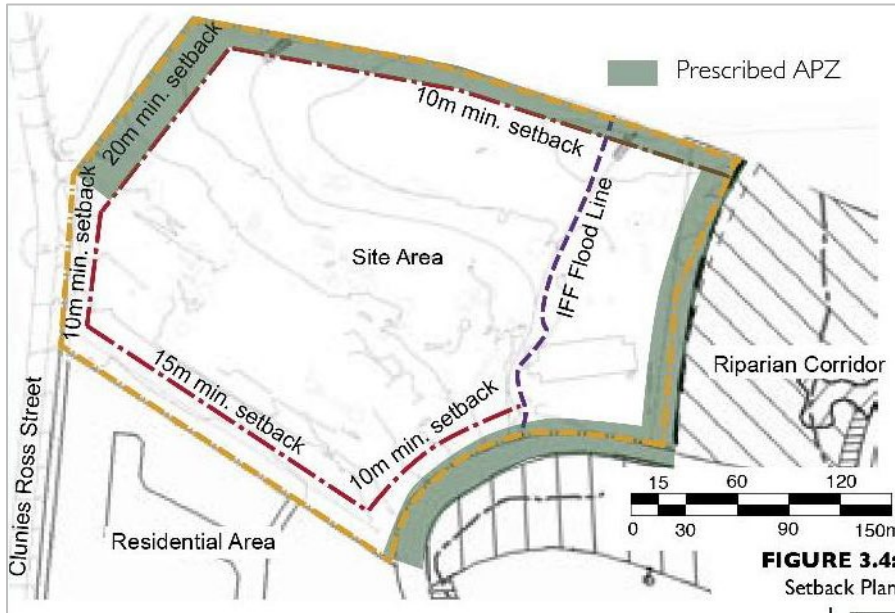


Figure 4: Setbacks - Former CSIRO employment land

2.3.4 Solar Access

Objectives

- O1. Consider mid-winter solar access to the office building areas within the Employment Land.
- O2. Achieve reasonable mid-winter solar access to primary indoor spaces and primary private open spaces within the residential area to the immediate south of the former CSIRO employment land.

Controls

- C1. Design office areas to consider north/south orientation in order to maximise solar access to the habitable area in midwinter.
- C2. Site and design buildings so that solar access to staff recreation areas on site and in adjoining developments is not compromised between 12 noon and 2pm (as measured at 21 June).
- C3. Within the former CSIRO employment land, ensure that the residential development to the immediate south of the employment area achieves a minimum 4 hours of direct sunlight to windows of the north facing living areas between 8.00am and 4.00pm midwinter, and 3 hours direct sunlight between 9.00am and 3.00pm to 50% of the private open space in mid-winter.

Note: Accompanying development applications, submit shadow diagrams showing the effect of shadows on public open space, adjoining properties and outdoor recreation areas at 9am, 12 noon and 3pm mid-winter.

- C4. Where industrial development abuts residential lots or streets, shadow diagrams shall:
 - be provided demonstrating the impact on adjoining residential properties or public domain;
 - be based on a survey of the site and adjoining development;

- be at 9.00a.m., 12.00noon and 3.00p.m. at 21st June (private open space); and
 - be at 8.00a.m., 12.00noon and 4.00p.m. at 21st June (north facing living areas).
- C5. Additionally, ensure height of such industrial development does not exceed (in metres) the height allowed for the adjoining use along the common boundary, subject to meeting the controls of overshadowing.
- C6. If the existing lot or open space already receives less than 4 hours of sunlight then the development shall not further reduce this solar access.

2.3.5 Building heights and design

Objectives

- O1. Ensure buildings do not adversely affect views from the M4, Great Western Highway and Prospect Reservoir environs to Prospect Hill.
- O2. Create building forms with appropriate scale and height, taking into consideration site topography.
- O3. Encourage a high architectural standard of contemporary design and innovation.
- O4. Provide for low rise, large scale buildings generally in horizontal form.
- O5. Achieve a good quality development which complements the streetscape.
- O6. Provide for low rise and large scale building to reduce visual impact to the surrounding area.
- O7. Ensure building heights do not adversely impact on the amenity of adjacent residential areas.
- O8. Ensure the scale and character of the development is compatible with other employment-generating development in the precinct concerned.
- O9. Ensure buildings are compatible with the height, scale, siting and character of existing residential buildings in the vicinity.
- O10. On development adjoining residential land, to store goods, plant, equipment and other material resulting from the development within a building, or to suitably screen them from view from residential buildings and associated land.

Controls

- C1. Ensure that the height and scale of buildings in the Northern Employment area are sensitive to views from the environs of Prospect Reservoir and the M4 Motorway. Generally 12 metres is the building height limit in the Northern Employment area. In the former CSIRO land, building heights shall not exceed 12.2 metres.
- C2. In the former CSIRO land, ensure compliance with Part D to protect adjacent residential amenity.
- C3. In the former CSIRO land, new buildings should not exceed the height of RL 63.0 metres (AHD).

- C4. In the former CSIRO land, the height level of buildings at the 15 metre setback line from the southern boundary, which abuts the residential lands, shall not exceed RL 61.5 metres (AHD).
- From this maximum height level, the height of buildings may increase away from the southern boundary setback to the highest level permitted for the site providing there are no increased overshadowing effects on the adjoining residential lands.
- C5. Ensure the architectural treatment of building facades is directed by energy efficiency and other environmental design considerations.
- C6. Articulate building facades to address all street frontages. Building facades can be articulated using architectural elements which include:
- variable roofs and skyline silhouettes (for example: saw toothed or pitched roofs and innovative skillion curved or 'floating' roof forms);
 - varying façade alignments;
 - 'breaking-up' facades with windows, changing wall alignments and the use of decorative features and structural features.
 - variation in materials, finishes and colours;
 - location, style and quantity of windows;
 - blade and fin walls;
 - cantilevered or overhanging elements;
 - verandahs, terraces, sun shading devices;
 - colonnades; or
 - variation in height.
- C7. Architectural style is to contribute to the quality of the Estate, with emphasis on the horizontal lines and planes.
- C8. Integrate roof top plant and services into building/roof forms or screened and compatible with the building design. Mobile phone towers are not permitted on tops of buildings unless integrated into the building/roof design.
- C9. Articulate building entries so they are easily identifiable.
- C10. Locate service areas including waste/recycling areas and external storage areas away from principal frontages and adequately screen them from view from any public road.
- C11. Locate loading docks, roller shutters and other building openings that detract from the appearance of the building so they are not visible from the principal street frontage.
- C12. Minimise cut and fill to protect existing drainage patterns and maintain integrity of the groundwater system.

2.3.6 External materials and colours

Objective

- O1. Contribute to the visual quality of the Pemulwuy northern employment lands through selection of building materials and colours.

Controls

- C1. Use materials and colours for buildings and roofs that are subtle (no strong hues), recessive (mid-tone) and non-reflective.

- C2. Create varied facades through choice of external materials, including masonry, metal panels, CFC panels, metal sheeting for walls and roofs.
- C3. Express one predominant external material. The range of external materials on any individual building should be limited and compatible.
- C4. Ensure that dado panels or similar are a minimum height of 2 metres to all external walls. Construct dado panels of face brick, masonry, or other material that provides a high standard of finishes.
- C5. Pre-colour metal deck roofs in landscape tones.
- C6. Use only low maintenance and robust materials.
- C7. Minimise variations in colour. Accent colour is acceptable, e.g. for corporate logos and architectural details.
- C8. Ensure that external finishes are graffiti resistant.

Note: Indicate details of external materials and colours on the plans accompanying development applications.

2.3.7 Energy and water efficiency

Objectives

- O1. Encourage site planning and building design that optimises site conditions to achieve energy efficiency.
- O2. Design working environments that minimise energy and water use.
- O3. Encourage use of building materials that minimise impact on development.
- O4. Use passive and active design initiatives that respect the principles of ecological sustainable development.
- O5. Implement sustainable practices, e.g. water efficiency and conservation measures to reduce water consumption, and the use of solar energy for heating appliances.
- O6. Encourage Water Sensitive Urban Design Principles (WSUD) for the new development.
- O7. Encourage the use of rainwater tanks for outdoor use and toilet flushing in accordance with the requirements of Sydney Water;
- O8. Encourage the use of permeable paving, wherever possible, to increase water filtration into the ground.

Controls

- C1. Ensure all building development (including additions and alterations) complies with the requirements of the Building Code of Australia (BCA), and relevant reports accompany applications for construction.
- C2. In designing the orientation, internal layout and design of buildings, minimise energy consumption for heating and cooling. Aspects to consider include:
 - light penetration to internal areas;
 - natural ventilation;

- passive solar design;
 - shading devices to minimise glare; and
 - solar access to outdoor recreation areas.
- C3. Select building materials which, where feasible:
- use renewable resources;
 - are energy efficient;
 - are low maintenance;
 - are recycled or recyclable;
 - are non polluting;
 - are non-ozone depleting; and
 - avoid where possible the use of PVC.
- C4. Install rainwater tanks to provide water for flushing toilets and other non-potable uses.
- C5. See Section 2.7.1 below under Stormwater Management for controls for water flow and quality management during and particularly after development, and for Stormwater plans to minimise pollutant loads.
- C6. Ensure compliance with Part G Water Sensitive Urban Design (WSUD).

2.3.8 Landscaping

Note: “Landscaping” incorporates vegetation, gardens, outdoor staff recreation areas, natural site features and watercourses, but does not include that part of the site used for driveways, parking or outdoor storage.

Objectives

- O1. Encourage a high standard of landscaping to enhance the streetscape and amenity of the Pemulwuy north employment lands.
- O2. Accommodate outdoor staff areas.
- O3. Provide for retention of water for irrigation and drainage purposes.
- O4. On sites adjacent to the open space corridors, to select species to complement the plant species in the corridors.
- O5. Screen the interface to the adjacent residential uses.
- O6. Soften the impact of built form and car parking areas.

Controls

- C1. Design the landscape of both hard and soft landscape features to create a quality industrial park setting. Hard landscape features include paving, terracing, retaining walls and kerbing. Soft landscape features refer to vegetation (including grass, shrubs and trees).
- C2. Within the landscape masterplan, identify existing waterbodies, creeks and creeklines on the site and provide for protection and rehabilitation of riparian zones within the site.
- C3. Design landscaping to visually unify and enhance the overall quality of the Pemulwuy north employment lands.

- C4. Provide outdoor amenity/recreation facilities for employees within the landscaped areas, to meet the likely needs of the workforce.
- C5. Protect existing significant trees and incorporate them into the design.
- C6. Provide landscaping as both hard and soft areas. However, provide and maintain approximately 15% of a site as soft landscaped area at ground level. The location of the landscaped areas will be determined at the development application stage having regard to meeting the criteria contained in this section. Landscaping design of both hard and soft landscape features should create a unified setting.
- C7. Where feasible, drain hard stand areas to soft landscaping areas to improve on-site infiltration of stormwater.
- C8. Provide non-slip finishes to paving.
- C9. Design landscaping to complement the buildings on site, the adjoining developments and streetscape, and to be compatible in scale.
- C10. Separate landscaped areas from vehicle areas with an effective physical barrier.
- C11. In the former CSIRO land, where a site adjoins a non- industrial use, provide a mature planting buffer and secondary acoustic fence within the industrial lot within the side and rear setbacks. Adequate acoustic buffers are required so that any impact is minimised.
- C12. Plant local indigenous species with mulched beds to help improve water quality and reduce water consumption.
- C13. Plant to highlight pedestrian and vehicular access points and building entries.
- C14. Landscape informally to promote parkland quality. Structured treatment may be used to enhance entries, etc.
- C15. Provide earth mounding in the landscaped setback along the north-south spine road. Embankments should be no steeper than 1:4 gradient in order to enable vegetation to be grown and maintained.
- C16. Landscape carparks to complement the surrounding landscaped areas, soften car parking areas and provide shade for parked cars. Plant a minimum of one tree for every four car parking spaces. Provide landscaping around the perimeter of carpark areas.
- C17. In open parking areas, plant 1 shade tree per 4 cars within or around the parking areas, except in the instance of central carpark divides (see Part D of this DCP).
- C18. Install automatic irrigation systems for all landscaped areas on the developed lots. Design them to meet specific site requirements. Consider minimising water consumption and preventing salinity in the design of landscaping and irrigation systems; prefer irrigation systems that monitor soil moisture conditions.
- C19. Install a drip irrigation system to all soft landscaped areas to reduce water use. Connect this system to rainwater storage tanks where possible.
- C20. Design landscaping to assist energy conservation in buildings and have regard to microclimatic conditions and shading control.

- C21. Design landscaping to encourage safety by ensuring street surveillance is possible, paths are not excessively screened, and lighting is provided to pathways and building entries.
- C22. Design landscaping and setbacks to create an environment that encourages walking and the pedestrian use of public streets.
- C23. Submit a separate landscape masterplan with the first application received to subdivide land in each stage of the development. Requirements for subdivision include:
 - details of landscape concepts including thematic street planting, lighting and street furniture proposals to guide future development;
 - proposals for entry gateways in the north and south as appropriate;
 - identification of existing and proposed open space and vegetation corridors including riparian land, drainage corridors, stormwater detention ponds;
 - identification of existing natural features such as waterbodies and creeklines;
 - reference to and consistency with any relevant bushland management plan;
 - location and extent of pedestrian and cycleway networks; and
 - demonstrate provisions for linkages of the above facilities to facilities on adjoining land.

2.3.9 Signage

The purpose of this section is to establish Council's specific objectives and development controls for the provisions of signage in the Cumberland City LGA. This section should be read in conjunction with State Environmental Planning Policy No. 64 Advertising and Signage (SEPP 64). For the purposes of this section, signage has the same meaning as defined in SEPP 64 (or equivalent):

- advertisement;
- business identification sign; and
- building identification sign.

Any application to which this section applies must also consider Council's large display advertising policy.

Objectives

- O1. Encourage signage that contributes to the aesthetic integrity of the Pemulwuy north employment lands.
- O2. Ensure signage does not detract from the visual appearance of the buildings and locality.
- O3. Provide the opportunity for an approved use to adequately state the nature of the business conducted on the premises.
- O4. Regulate signage so that it contributes to the identity of the site.
- O5. Ensure signage does not compromise the safety of the M4 user.
- O6. Ensure illuminated signs do not unduly affect the amenity of the surrounding areas or interfere with driver's vision.

Controls

- C1. Relate advertising, other than real estate signs, to the use occurring on the respective property. i.e.: to serve only to identify the occupants of the premises.

- C2. Locate directional and tenancy signage in a convenient point close to the main entry to a development.
- C3. Locate signs below parapet level.
- C4. Moving, blinking or flashing signs are prohibited.
- C5. Incorporate signage into the architectural elements of the building of a size, shape and colour that does not detract from the architectural character of the building.
- C6. Where council has a fixed building line, advertisements will generally not be permitted between the building line and street alignment. Council will consider allowing business identification signs that serve only to identify the occupants of the premises, within the building line, provided they comply with the standards set out below. Council will also consider advertisements in the form of logos and trademarks, where they are incorporated into landscaping design.
- C7. Provide no more than one wall sign per occupancy, on the facade of the unit with which that occupancy is associated. The sizes and dimensions of such signage shall have regard to existing signage on other units, and dimensions of 2m x 1m are permitted without consent.
- C8. Where there is only one occupant for an entire building, provide no more than one wall sign per building facade.
- C9. Directory boards are to be comprised of not more than one (1) panel per unit. Each panel is:
 - to be uniform in size, colour and dimensions;
 - not to exceed 0.2 square metres per panel; and
 - to serve only to identify the number of the unit and the name of the respective occupant.
- C10. Locate the directory board on or behind the building line setback adjacent to the entrance to the site, unless with the prior consent of Council. Where the directory board is proposed to be located within the building line setback incorporate it into the landscaping to Council's satisfaction.
- C11. Ensure that signage is easily readable.
- C12. Locate and display illuminated signs in a manner that does not cause glare, distract drivers or adversely impact on the amenity of nearby residences.



Figure 5: Example of tenancy signage

2.3.10 Fencing

Objectives

- O1. Allow for security in the Pemulwuy north employment lands.
- O2. Ensure that the design of fencing contributes to the streetscape and amenity of the Pemulwuy north employment lands.
- O3. Provide for the amenity of adjacent residential land.

Controls

- C1. Avoid fencing between the building and the principal street frontage, where possible.
- C2. Where fencing is required for safety or security reasons to be forward of the building line, ensure that it is of a standard and style that does not detract from the landscaping and main building facades. Pre-painted solid metal fencing will generally not be acceptable. Provide details of fencing at the development application stage.
- C3. Locate fencing so it does not impede sight lines for drivers.
- C4. Ensure that fencing complements all landscaping to minimise visual impacts to the adjacent residential areas whilst providing site security.
- C5. Restrict fences fronting Clunies Ross Street to a height of 1 metre above natural ground level.
- C6. Within the Pemulwuy north employment lands, open form front fences to a height of 1.8 metres will be considered having regard to the presentation and design of the fence;

C7. Use graffiti-resistant materials and finishes on fencing.

2.3.11 Exempt and complying development

See Part 5 (General Commercial and Industrial Code) of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. This SEPP controls certain Commercial and Industrial development with respect to:

- internal alteration to a building that is used as bulky goods premises, commercial premises, premises for light industry or a warehouse or distribution centre; or
- change of use of [Commercial and Industrial] premises;
- mechanical ventilation systems;
- shop front and awning alterations; and
- skylights and roof windows.

Part 1 of the SEPP defines the general requirements for exempt and complying development for Commercial and Industrial purposes.

Part 2 controls general exemptions such as Access ramps, Bollards, Demolition, Minor building alterations, Privacy screens, Scaffolding, hoardings and temporary construction site fences, Replacement of identification signs, Temporary builders' structures, and Water features and ponds.

2.4 Transport

2.4.1 Principles for a Transport Plan

Guiding principles and performance targets for the establishment of a transportation system for Pemulwuy were based on SEPP 59 (*State Environmental Planning Policy No. 59 – Central Western Sydney Economic and Employment Area*). These principles have guided the precinct plans on which this DCP is based. With the transferral of much of the land to which this DCP applies to the *State Environmental Planning Policy (Western Sydney Employment Area) 2009* (WSEA SEPP), the “existing precinct plans” (upon which this section of the DCP is based) continue to apply in determining a development application.

Note: see clause 26 (Development on or in vicinity of proposed transport infrastructure routes) of the WSEA SEPP.

Objectives

- O1. Address transport targets.
- O2. Establish guiding principles for design and layout of the site consistent with increasing the mode split towards public transport and non private vehicle usage and minimise vehicle kilometres travelled (VKTs).
- O3. Provide for all modes of transport, including roads, transit ways, walking and cycling facilities, which are integrated into the surrounding network of each mode.
- O4. Identify a range of transport infrastructure which addresses site requirements including the staging and funding proposals.
- O5. Identify links to the Transitway network outlined by *Action for Transport 2010*.
- O6. Recognise freight and industry transport requirements including:
 - linkages from the site to the M4 Motorway; and
 - initiatives for integrating freight handling between industries.

Controls

- C1. Reduce the mode split of 'car as driver' for the journey to work by at least 10% (e.g. from 75% to 65%) compared to the existing surrounding area.
- C2. Reduce the total VKT (vehicle kilometres travelled) to be generated by the proposed development by at least 5% below that which would be generated by a 'conventional' approach to development".

2.4.2 Regional transport requirements

Objectives

- O1. Provide regional transport infrastructure which will achieve the transport targets established in clause 2.4.1.
- O2. Develop regional transport infrastructure that will service the needs of the site and integrate into an improved regional transport network.
- O3. Provide infrastructure which recognises the need to integrate all modes of transport including public transport, private vehicle transport, walking and cycling.
- O4. Develop measures to mitigate potential adverse transport impacts generated by the development of Pemulwuy on surrounding areas.

Controls

- C1. Provide regional (and local) transport infrastructure improvements that are consistent with the Deeds of Agreement between the owners and the Roads and Maritime Services.

2.4.3 Transport design guidelines – land use location

Objectives

- O1. Generate efficient travel patterns across the site to reduce VKTs.
- O2. Maximise the use and support the viability of public transport services.
- O3. Avoid potential conflicts between various land uses.

Controls

- C1. Locate higher traffic generating land (office, retail) uses in close proximity (within 400 metres, walking distance) to public transport stops, nodes or interchanges on regional transport routes (such as the transitway) to reduce traffic generation and improve public transport usage and service viability.
- C2. Provide appropriate and conveniently located services such as shops and open space to reduce trip length and encourage use of pedestrian / cycleway networks.
- C3. Ensure that land uses are well integrated with public transport stops, nodes and interchanges so as to provide safe, attractive and inviting environments for public transport patrons.
- C4. Separate residential and employment precincts to avoid potential road function conflicts.

- C5. Favour co-locating similar or co-dependent employment developments within close proximity in order to generate potential synergies in transport and freight, so as to:
- maximise simultaneous servicing by one vehicle thereby reducing the number of trips entering and leaving the site;
 - improve trip containment levels within the site; and
 - manage travel demand. The location of co-dependent developments is primarily market driven. However, the marketing and sales promotion strategies employed can have a significant impact on the type of land uses attached to the development site and should be employed as a travel demand management tool.

2.4.4 Access and circulation

Objectives

- O1. Ensure safe access movements to/from the Pemulwuy north employment area.
- O2. Provide access through the employment area to improve the regional road network.
- O3. Provide access to the employment area for employment land uses which minimise impacts on the surrounding local community.
- O4. Construct roads in such a way to accommodate the anticipated traffic volumes and in particular heavy vehicles. For example, to ensure that road access facilities are commensurate with the scale and extent of the proposed development and compatible with the surrounding traffic network.
- O5. Provide a 50 metre road reserve which allows for the future provision of a 25 metre wide transitway by the RMS.
- O6. Minimise potential conflict between street traffic and pedestrians caused by the vehicular movements to and from the site.
- O7. Minimise potential conflict between service vehicle (heavy vehicle) with smaller vehicle.

Controls

- C1. Ensure that intersections into the Pemulwuy north employment lands are designed with sound traffic planning principles and relevant guidelines including but not limited to:
 - Roads and Maritime Services' *Road Design Guide*;
 - Roads and Maritime Services' *Guide to Traffic Generating Development* (1993);
 - AUSTROAD - *Guide to Traffic Engineering Practice*; and
 - while ensuring that walking and cycling are encouraged and not impeded.
- C2. Direct property access to north-south link will not be permitted other than in circumstances stated below.
- C3. The number of road access points to the north-south link is restricted, and at full development no direct property access from the north-south link will be permitted. Provide access from a limited number of service roads and separate the intersections by a minimum distance of 500 metres. Therefore, there are only two service road intersections with the north-south link between the northern boundary and Butu Wargun Drive.
- C4. Direct property access from the north-south spine road, is only permitted as an interim arrangement during the staged construction of the development. Direct access to

properties north of Butu Wargun Drive is permitted until the north-south spine road is constructed to the southern boundary of Pemulwuy north employment lands.

- C5. Provide the north-south link through the employment precinct so that direct and efficient access for freight and other heavy vehicles is provided to employment lots from the regional road network.
- C6. Ensure site access allows vehicles to enter and exit in a forward direction
- C7. Within the former CSIRO employment land, ensure vehicular access to and from the site is via Clunies Ross Street only, as illustrated in Figure 6. Direct vehicular access to the residential land is not permitted.
- C8. Within the former CSIRO employment land, provide a potential access point at the southern end of site boundary to Clunies Ross Street for emergency vehicles, as illustrated in Figure 6.
- C9. Within the former CSIRO employment land, ensure that emergency Access for fire appliances has a minimum width of 6m with 7m passing bays and internal radius of 6m for corners.
- C10. Within the former CSIRO employment land, ensure driveway width, configuration and location shall accord with 'Roads and Maritime Services' *Guide to Traffic Generating Development* (1993) and *Australian Standard AS 2890.1: 2004*.
- C11. Within the former CSIRO employment land, position access to Clunies Ross Street as far as practicable, to minimised impacts to adjoining residential development. Locate the driveway as far north as practicable having regard to sight lines along Clunies Ross Street.
- C12. Design internal circulation road and heavy vehicle manoeuvring areas to comply with the requirements of the following:
 - *AS2890.1-2004*;
 - *AS2890.2-2002*; and
 - *NSWB Guidelines for Emergency Vehicle Access*.

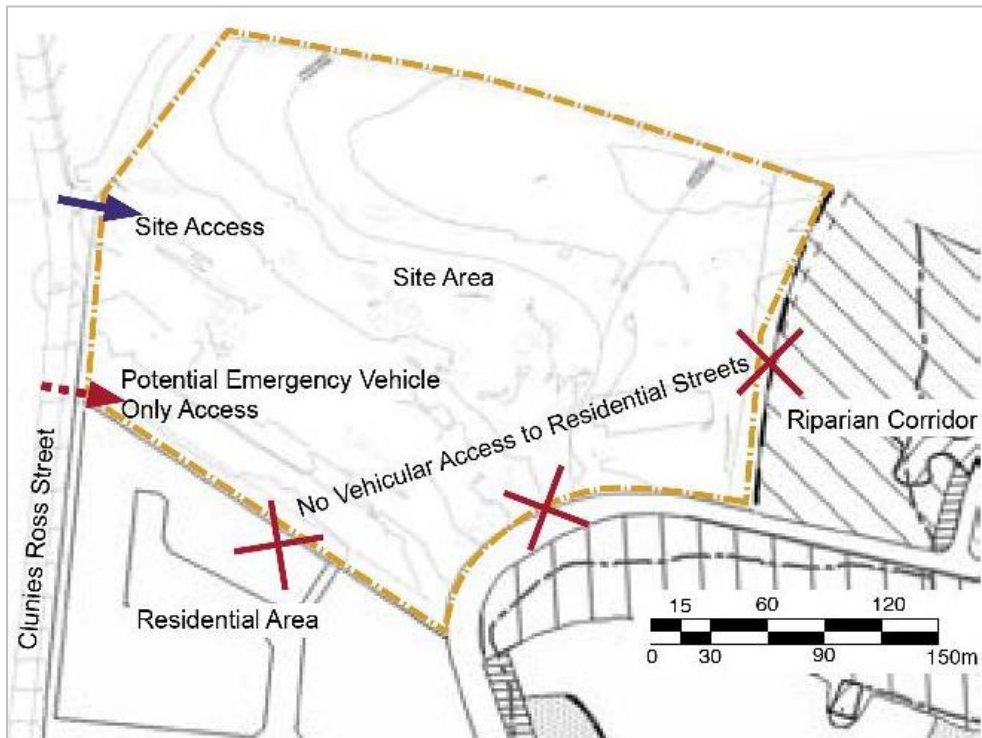


Figure 6: Site access within the former CSIRO Employment land

2.4.5 Parking

Objectives

- O1. Encourage a reduction in the level of vehicular traffic by reducing parking requirements.
- O2. Ensure adequate parking for various land uses and sustain the market viability of the development.
- O3. Ensure that all car parking demands generated by any development are accommodated on the development site.
- O4. Design parking supply in accordance with the site's urban design principles. Thus, to:
 - ensure that the provision of off street car parking facilities does not detract from the visual character, particularly the streetscape of an area; and
 - ensure that the location of driveways, parking and servicing areas are efficient, safe and suitably landscaped.
- O5. Implement parking strategies which minimise adverse impacts on local communities and wider land uses. For example, to minimise conflict between service vehicles (heavy vehicles) and smaller vehicles within the site.

Controls

On-Street Parking

- C1. Note that the provisions of on-street parking for various road types within the road hierarchy are summarised below in Section 2.4.7, which indicates that on-street parking would be appropriate on some roads with the exception of the north-south spine road and the first 500 metres of the east-west link from Greystanes Road.

- C2. Design on-street parking to be consistent with the design principles and dimensional requirements of *Australian Standards AS2890.5* and *1742.11*.
- C3. In the provision of on-street parking, do not compromise street security and urban design / streetscape objectives.

Off-Street Parking Design

- C4. Design off-street parking to be consistent with the design principles and dimensional requirements of *Australian Standards AS2890.1: 2004*. Include in the design, compliance with driveway dimensions and location, sight distances, and dimensions for circulation aisles and grade / ramps.
- C5. Design off-street parking to ensure that vehicles are able to efficiently access parking spaces within minimal manoeuvring.
- C6. Suitably landscape off-street parking areas to minimise visual dominance.

Off-Street Parking Supply

- C7. Note that the parking requirements of developments within the Pemulwuy north employment lands are assessed on a site-by-site basis due to the varying parking demands of particular land uses.
- C8. Use Part G clause 3.8 (Parking and Vehicular Access) of this DCP as the appropriate guidelines for the supply of off-street parking. However, consider these guidelines as maximum provisions rather than minimum provisions, as a means of encouraging public transport use (dependent upon provision of public transport).
- C9. Minimise off-street parking supply, having regard to:
 - access to public transport (located within 400 metres);
 - likely employee usage of pedestrian and cycleway links to the employment precinct;
 - surveys of existing similar developments indicate a lower parking demand;
 - land use synergies with surrounding land uses;
 - the ability to manage the use of on street parking; and
 - complimentary/shared use of parking facilities.

2.4.6 Service areas

Objectives

- O1. Provide adequate access for heavy vehicles.
- O2. Design road networks to minimise freight and heavy vehicle movements through the employment zones.
- O3. Create separation between service areas (loading and unloading docks) and parking in order to avoid traffic congestion;
- O4. Ensure that service areas are located and designed to facilitate convenient and safe usage.

Controls

- C1. Position loading/unloading facilities so they:
 - do not interfere with visitor and employee parking spaces;
 - minimise any potential noise impacts; and
 - avoid delivery vehicles standing on any public roads, footways, laneways or service roads.
- C2. Provide adequate on-site manoeuvring to enable all vehicles to enter and leave the site in a forward direction.
- C3. Design access and circulation design within developments to comply with requirements specified by Australian Standards AS2890.2 2002. This will allow heavy vehicles to efficiently and safely access sites from the road network and internal facilities such as loading docks and courier type drop off zones.
- C4. Design all roads to be wide enough to allow passage of regular service vehicles and emergency vehicles. These factors have been considered in the development of the road hierarchy described in the Section on Public Road Design.

2.4.7 Public road design

Objectives

- O1. Create a clearly defined road hierarchy based on use, function, amenity and geometric design requirements.
- O2. Maximise the efficiency of the Pemulwuy road network to reduce trip lengths and enhance the viability of public transport.
- O3. Allow efficient movement through Pemulwuy for regional traffic while discouraging such traffic into the employment or residential areas.
- O4. Provide convenient and efficient access for freight transport to the employment precinct.
- O5. Provide a safe road network for all modes using the roads including private and public transport, cyclists, pedestrians and mobility impaired persons.
- O6. Design streets that enhance the physical and visual connectivity of neighbourhoods.

Controls

- C1. Ensure that the internal road network layout should be permeable for direct pedestrian movements, but sufficiently constrained in order not to attract regional traffic into the employment or residential precincts.
- C2. Ensure that detailed design of the road network (i.e. intersection layout, pavement materials) is consistent with the traffic engineering principles of the RMS' *Road Design Guidelines* or the *Austroad Guide to Traffic Engineering Practice*.
- C3. Design roads so as to minimise the traffic noise impact on adjacent properties, particularly at approaches to residential areas.
- C4. Design roads and bridges so as to accommodate, wherever possible, the continuity of vegetation corridors and habitat to promote fauna movements.

The Spine Road

- C5. Currently, one traffic lane is provided in each direction. In future. Consider providing a dual lane carriageway with two through traffic lanes in each direction.
- C6. The RMS to provide two bus only transitway lanes within the road reserve (one in each direction) plus median, shoulder and footpath/cycleways.
- C7. Ensure no parking in the road reserve.
- C8. Ensure no direct property access.
- C9. Provide a 1.2 - 1.75 metre width footpath located on both sides away from the kerb.
- C10. Provide a cycleway separated from the road pavement.

Butu Wargun Drive (west of Prospect Hill)

- C11. Ensure the potential to utilise clearway conditions during peak periods.
- C12. Ensure parking provision in carriageway during non-clearway periods (or indented) providing two through traffic lanes in each direction at peak times and one through lane in each direction at other times.
- C13. Provide a 1.2 metre - 1.75 metre width footpath located on both sides away from the kerb.
- C14. Provide a designated cycle lane.

Access streets

Note: Access streets contain an indicative traffic volume of less than 6,000 vehicles per day depending upon particular land uses. Cyclists are to share the road with vehicles.

- C15. Provide a 20 metre road reserve.
- C16. Provide an 8 metre carriageway where no on-street parking is permitted and heavy vehicle turning movements can be accommodated.
- C17. Provide access to all sites.
- C18. Provide a 1.2 - 1.5 metre width footpath located both sides away from the kerb.
- C19. Ensure that employment precinct road widths provide sufficient space to allow heavy vehicles to enter and exit lots safely in a single forward turning movement.
- C20. In cul-de-sacs, provide a 12-metre kerb radius turning area.

2.4.8 Public transport

Objectives

- O1. Achieve a minimum 10 per cent increase in non-private vehicle mode splits for journey to work compared to a “conventional development” approach.
- O2. Provide a rapid bus transitway through the site which creates links between the site and the regional transport network.

- O3. Ensure that public transport stops, nodes and interchanges are safe, attractive and Development Controls

Controls

Rapid Bus Transitway

- C1. Provide public transport access points to maximise the proportion of employees who are located within 400 metres safe walk of a bus stop on a regular bus route.
- C2. Integrate Transitway Stations where possible with the surrounding land uses. In particular, the transitway stations should be located near the service centre, local activities, associated businesses and the public domain.
- C3. Align the transitway to follow the north-south Spine Road through the employment precinct.
- C4. Ensure the proposed transitway comprises:
- two transitway lanes, one in each direction;
 - 2 stations;
 - stations that provide adequate accessibility, shelter, and commuter information to encourage usage. This will include facilities and linkages for pedestrians and cyclists.

Local public transport

- C5. Ensure that local bus feeder services from the residential and employment precincts are able to provide access to the site and future Transitway.
- C6. Provide link feeder services to surrounding local areas, i.e. Greystanes, to improve access, catchment size and hence service viability.
- C7. Provide appropriate facilities at bus stop locations to encourage increased use and safety. Such facilities would include bus lay-bys, speed controls to protect pedestrians, shelters and seating for waiting passengers, display of timetable information and street lighting for security.
- C8. Co-locate bus stops should with after-hour business or other activity wherever possible.
- C9. The alignment and geometry of roads that form bus routes need to allow for efficient and unimpeded movement of buses without facilitating high traffic speeds. Where potential traffic calming devices are installed along bus routes, specific design requirements for bus access must be employed.
- C10. Implementation of 'Demand Management' by promoting alternative modes of travel to the private car. This would include distribution of information packs on bus services and cycle routes, free bus tickets and advertising of services.

C11. Indicative performance guidelines for bus routes are as follows:

- Minimum geometric layout:
 - Radius: 12.5 metres
- Road grades:
 - Max. desired pavement crossfall: 3%
 - Max. desired gradient: (within 50 metres of stations): 6%
 - Absolute max. gradient: (within 50 metres of stations): 12%

(Source: RMS and AUSTROADS)

2.4.9 Pedestrian and cycle routes

Objectives

- O1. Encourage trips to be undertaken by walking and cycling instead of private vehicle.
- O2. Promote connectivity throughout Pemulwuy.
- O3. Create a clearly defined pedestrian and cycleway network within and through Pemulwuy.
- O4. Make connections to regional cycle links and between major areas of proposed and existing open space and other recreational, community and employment land uses.
- O5. Ensure non-vehicular links provide a safe and secure environment, both in terms of road safety and personal security, which encourages walking and cycling.

Controls

- C1. Create pedestrian and cycle linkages between the residential precinct and areas of open space, recreational, community and employment land uses.
- C2. Locate and design walking and cycling networks to:
 - provide direct routes between key trip origins and destinations;
 - minimise steep grades; and
 - be safe in terms of road safety and person security.

Pedestrian

- C3. Undertake detailed design of pedestrian control and protection facilities in accordance with the relevant sections of the Australian Standards (AS1742) and council's Work Specifications for Subdivision and Development. This includes pedestrian crossings, signage, local area traffic management and disabled access.
- C4. Ensure pedestrian-only footpaths have a minimum width of 1.2 metres (wider footpath may be required in areas of high pedestrian activity such as community facilities, shops and other activity centres) and a maximum grade of 15 per cent, except where grades on Prospect Hill make this unachievable.

Cycleways

- C5. Design cycling routes within the road hierarchy to reflect the level of activity and function of the various roads such as dedicated cycleways on collector roads and shared access on local streets.

- C6. Link designated cycleway routes to the surrounding regional cycleway network. Cycle routes along open spaces are to be between 2.5 – 3.0 metres in width (where shared with pedestrians), and designated accordingly.
- C7. Dedicated cycle lanes are to be either line marked or separated from the road lanes.
- C8. Provide opportunities for the cycle network to link with the proposed regional cycle route.
- C9. Use cycle routes to link all amenities and areas of interest, including commercial/retail areas, play areas and viewpoints.
- C10. Ensure technical design requirements such as pavement design and intersection/crossing treatments are consistent with *AUSTROADS Guidelines (1998) Guide to Traffic Engineering Practice*, Part 14, Bicycles.
- C11. Distribute secure bike parking throughout the cycleway network and likely destination points. Parking facilities range from simple hitching rails to secure bike lockers. Key locations would be within the employment precinct, near public transport linkages, and at the village centre.
- C12. Provide for cycle refuge facilities at cycleway access points with collector roads.

2.5 Heritage

2.5.1 Guiding Principles

Clause 8 of Schedule 4 of the *State Environmental Planning Policy (Western Sydney Employment Area) 2009* states that:

In making provision for or with respect to heritage conservation, a development control plan must address:

- the impact of proposed development on indigenous and non-indigenous heritage values; and
- opportunities to offset impacts on areas of heritage significance.

In terms of Archaeological and European Heritage, SEPP 59, upon which this DCP is based, requires that any precinct plan or DCP is to abide by the following relevant guiding principles:

- Have regard to the conservation of items of heritage significance identified in the SEPP 59 or any other environmental planning instruments or subject to an order under the *Heritage Act 1977*; and
- Have regard to development should be planned to minimise impacts on areas of high biodiversity or Aboriginal heritage significance and should seek to enhance the values of these areas.

2.5.2 Archaeology

Objectives

- O1. Protect site locations.
- O2. Reflect Aboriginal occupation and history in the public areas.

Potential Archaeological Deposits:

Within the Employment Lands of Pemulwuy, two areas originally identified as having Potential Archaeological Deposits (PAD), were located in the northern section and south western corner of the Pemulwuy employment lands. Further investigations by Navin

Officer (2001) concluded that there were no areas of PAD on the site, and that no further mitigation measures were required on the previously nominated PADs. Nevertheless:

Controls

- C1. Take care when disturbing this area, and if archaeological material is observed during or after clearing, work should cease immediately and the Aboriginal community consulted and advice sought from NPWS.
- C2. Do not make site locations and descriptions publicly available.
- C3. Provide to developers and general maintenance staff only general knowledge of Aboriginal sites and their legal protection.
- C4. Prepare an education strategy for cultural heritage awareness for developers, contractors and Consent authority staff, including a fact sheet and sensitivity map indicating areas requiring particular attention and consultation with the Aboriginal community and NPWS.
- C5. Invite the Aboriginal community to actively participate in developing the education strategy.
- C6. Consult the Aboriginal community prior to and during clearing and preliminary ground work to collect artefacts if any, from areas to be developed.
- C7. Do not erect signs which draw attention to the archaeological sites, so as to prevent disturbance and defacement of Aboriginal/archaeological sites.
- C8. In naming parklands, reserves and roadways, incorporate recognition of Aboriginal occupation and the history of the area. Consult the Aboriginal community in the naming of these features.
- C9. Consult the Aboriginal community on the development of any walking routes or areas within the precinct which incorporate descriptive signs and interpretation.
- C10. Develop a program to educate the local community in the pre-European history of the site.
- C11. Recreate and manage the cultural landscape in conjunction with the local Aboriginal community by vegetating open space to resemble the natural landscape prior to European settlement.

Note: The former CSIRO employment land is highly disturbed. It has been mostly cleared and subject to many years of use for research laboratories and associated stock holding areas associated with a CSIRO sheep research laboratory. Previous disturbance is associated with WW II occupation by a U.S. Army Camp. Consequently, there are no Aboriginal Archaeological management measures applicable to the former CSIRO employment land.

2.5.3 European Cultural Heritage

For more information, see the Prospect Hill Conservation Management Plan.

Objectives

- O1. Protect the integrity of the crown of Prospect Hill.
- O2. Research and document the history of the site of Pemulwuy and its role in the history of Sydney.
- O3. Educate the community on the history and role of the site.
- O4. Utilise the history of the site as a theme in its redevelopment.
- O5. Protect Prospect Hill from development sited below RL 97, which approximately defines the curtilage of the Prospect Hill State Heritage Registered Area.

Controls

- C1. See Section 2.4.4 for controls for the Prospect Hill State Heritage Registered Area.
- C2. Record Pemulwuy as a whole in its current state photographically, utilising aerial photography and possibly digital video recording.
- C3. All documentary, cartographic and photographic material related to the development, growth, buildings and history of the site should be sourced, accessioned and archived. Collect copies of accessible historic material into an archive which must be lodged in the care of an organisation which is acceptable to Council and where it is available for research and educational purposes. Identify archive material held elsewhere and cross-reference it with the above archive. A written description of major structures should accompany the photographic record.
- C4. Ensure that all development adjacent to the Prospect Hill State Heritage Registered Area is accompanied by a Heritage Assessment with all Development Applications. The Heritage Assessment shall be in accordance with the three documents listed below under 2.4.4 C3.
- C5. In the instance where a broad Heritage Assessment of the interface between the Prospect Hill State Heritage Registered Area and the adjoining sites has been undertaken, submit a Statement of Environmental Effects addressing this Heritage Assessment with all Development Applications.

2.4.4 Prospect Hill State Heritage Registered Area

Objectives

- O1. Protect the integrity of the Prospect Hill State Heritage Registered Area.
- O2. Research and document the history of the Prospect Hill State Heritage Registered Area and its role in the history of Sydney.
- O3. Educate the community on the history and role of the site.
- O4. Utilise the history of the site as a theme in its redevelopment.

Controls

- C1. Maintain the prominence of Prospect Hill as a significant remnant geologic and topographic element. Site and design development so that views of the ridgeline are maintained.
- C2. Maintain the views from Prospect Hill towards the Blue Mountains and St. Bartholomews, Prospect.
- C3. Ensure that future use, landscape interventions, heritage interpretation and vegetation management of the Prospect Hill SHRA are informed by and consistent with:
 - The Prospect Hill Conservation Management Plan (Conybeare Morrison: 2005);
 - The Prospect Hill Heritage Landscape Study and Plan (Government Architect's Office: 2008); and
 - The Prospect Hill Heritage Interpretation Plan (MUSEcape: 2009).
- C4. Ensure that all development adjacent to the Prospect Hill State Heritage Register Area is accompanied by a Heritage Assessment with all Development Applications. The Heritage Assessment shall be in accordance with the three documents listed above under C2.
- C5. In the instance where a broad Heritage Assessment of the interface between the Prospect Hill State Heritage Register Area and the adjoining sites has been undertaken, submit a Statement of Environmental Effects addressing this Heritage Assessment with all Development Applications.
- C6. Prepare management plans for open space and other public domain areas, and identify how they will inform and educate the community and utilise the history of the site as a theme of the redevelopment, using interpretative trails, signage, environmental design and other features.

2.6 Biodiversity

Ecological objectives for the northern employment lands take into account the provisions of SEPP 59, upon which this DCP is based, *National Parks and Wildlife Act 1974*, the *Threatened Species Conservation Act 1995*, *Environment Protection and Biodiversity Act*, recommendations of the *Urban Bushland Biodiversity Survey - Stage 1: Western Sydney (NPWS, 11 99 111)*, *Rivers and Foreshores Improvement Act 1948* and *Fisheries Management Act 1994*.

2.6.1 Biodiversity in Development Areas

Objectives

- O1. Maintain and enhance the existing level of biodiversity during and after development.
- O2. Incorporate ecological and archaeological resources into the creation of public open space.
- O3. Rehabilitate and regenerate native vegetation.
- O4. Protect significant trees.
- O5. Reintroduce local indigenous species where feasible, especially in drainage areas, open spaces and landscaped areas.

- O6. Create fauna movement corridors within the site and to external ecological resources (where practicable allowing for other site uses).
- O7. Reduce water and fertiliser demand.
- O8. Protect threatened species.
- O9. Manage weeds.
- O10. Plant and manage the site to minimise hazards and manage impacts from bushfire.
- O11. Manage litter and waste to minimise impacts.
- O12. Control and minimise impacts from sediment disturbance and erosion.
- O13. Manage feral and domestic animals to minimise impacts on native flora and fauna.
- O14. Protect water quality and aquatic habitat.
- O15. Involve the community.

Controls

Local species

- C1. Undertake a tree survey to identify and flag all significant trees on the site to be retained.
- C2. Prepare a bushland management plan prior to development which identifies areas to be revegetated, the species to be used and other detailed conservation area management issues.
- C3. Ensure tree removal is approved under Cumberland Local Environmental Plan 2021.
- C4. Ensure tree removal is subject to Arborist Assessment and recommendation.
- C5. Use locally indigenous plant species, including threatened and regionally significant species in drainage areas, streetscapes, open spaces and landscaped areas. This will not only enhance biodiversity but will reduce water and fertiliser demand.
- C6. Select plant species used in the development of the site from the 'Indigenous Plant List -Holroyd' from Table D2.1 of the BASIX Specifications.
- C7. Retain existing canopy species typical of Grey Box Woodland unless significant harm is likely to result.
- C8. Where possible, retain significant mature trees with high ecological value as habitat for the Grey Headed Flying Fox (e.g. Melaleuca swamps, Banksia woodlands, mangroves and riparian woodlands).
- C9. Avoid lopping or removing Grey Box Woodland canopy species greater than three metres tall.
- C10. Collect and propagate seeds of locally indigenous species prior to development. Use these, hardened on site, in revegetating the open space corridors.
- C11. Prohibit species other than locally indigenous species in the central ridgeline corridor and strongly discourage them in the service / open space corridors.

- C12. Retain and enhance continuous canopy in the open space corridors to allow for possible squirrel glider movement onto the site.
- C13. Retain and maintain hollow-bearing trees on site for their fauna habitat value wherever possible.
- C14. Incorporate in the design of sites sufficient space to allow for tree establishment, where proposed. This includes the provision for the development of deep structural roots.
- C15. Investigate the use of native grasses in service / open space corridors rather than kikuyu, couch or other conventional non-native grasses.

Weeds

- C16. A priority listing of target and noxious weeds should be outlined in the bushland management plan, including lantana, African olive, small-leaved privet and large-leaved privet.
- C17. The bushland management plan should address weed management and removal methods such as hand weeding, spraying etc. The plan should give attention to the corridor areas.
- C18. Remove all weeds, including any non-indigenous native species.
- C19. Weed control should be an integral part of maintaining and enhancing biodiversity of the corridors.
- C20. Involve the community in weed removal and replanting programs; continue to involve community in maintenance to instil a sense of ownership.
- C21. Replant cleared areas with locally indigenous plants following weed removal, to minimise soil erosion.

Waste Management

- C22. Provide adequate signs and rubbish bins to encourage proper disposal of litter.
- C23. Secure rubbish bins sufficiently to prevent feral cats, dogs, rats or other undesirable species from opening them.
- C24. Maintain and empty bins on a regular basis to prevent waste accumulating.
- C25. Incorporate litter and waste management in the community consultation strategy.

Creeklines (see also clause 2.6.2 Fauna Movement Corridors, below)

- C26. Rehabilitate, enhance and re-establish on-site waterways including creeklines and drainage lines.
- C27. Identify locations within the corridor network, in addition to the central ridgeline, where understorey regeneration can be promoted. Plantings should allow for a continuous canopy along the length to facilitate movement of non ground-dwelling fauna.
- C28. Only plant locally indigenous species in vegetating the corridor network including threatened and regionally significant species.

- C29. Commence planting and/or install fencing as soon as possible following weed removal, to minimise erosion.
- C30. Provide an appropriate buffer either side of creeklines. Rehabilitate vegetation within the buffer and remove weeds.
- C31. Install appropriate pollution controls such as gross pollutant traps in upper catchments (at site boundary if necessary) to prevent ingress of litter.
- C32. Prepare a sediment and erosion control plan with particular emphasis on the open space corridors and creekline.

Sediment and erosion controls

- C33. Ensure appropriate sediment and erosion controls are implemented on site.
- C34. Prepare a sediment and erosion control plan for each stage of the development.

Feral and domestic animals

- C35. Prepare a feral and domestic animal management plan incorporating strategies outlined in the Background Report.
- C36. Implement an education program on responsible pet ownership.

Fire

- C37. Prepare a Fire Management Plan for the protection of life and property within Pemulwuy north employment lands. The Fire Management Plan should identify suitable fire regimes for the protection and maintenance of biodiversity.
- C38. Ensure that fire management elements are incorporated into the design of the central ridgeline i.e. fire trails.
- C39. Identify appropriate fire management regimes for vegetation management.
- C40. Provide external hydrants for bushfire operations.
- C41. Plant fire retardant species within the landscape areas.
- C42. On the former CSIRO lands, provide roads of 6 metres in width for fire appliances access with passing bays for opposing vehicles.

Community involvement

- C43. Ensure that Aboriginal community are involved in reserve and corridor design, revegetation and interpretation programs.
- C44. Develop an educational program highlighting the significance of the site and how the community can be involved in restoring and maintaining the conservation area and open space corridors.
- C45. Prepare a community consultation strategy to involve the community in ongoing biodiversity management including preparation of the bushland management plan.
- C46. Involve the community, including local school groups in Streamwatch programs.

2.6.2 Fauna movement corridors

Note: The main fauna corridor within Pemulwuy is proposed within the residential area. It is a predominantly vegetated corridor with some passive recreational and aesthetic functions. This corridor should be located along the central ridgeline separating the employment lands from residential development. See also C26 to C32 above on Creeklines.

Objective

- O1. Extend the ridgeline fauna movement corridor westward to provide additional opportunities to link to Greybox Reserve and Prospect Reservoir.

Controls

- C1. Plant vegetation in riparian corridors, to facilitate fauna movement through the other open space corridors and street trees.
- C2. Provide vegetation which will facilitate movement through the site of non-ground dwelling fauna as well as providing additional foraging habitat.
- C3. Within development applications, provide details which demonstrate how connectivity with off-site ecological linkages can be achieved.

2.7 Environmental management

2.7.1 Stormwater management during construction

The Pemulwuy employment lands can be divided into two main catchments. These are:

- the Pemulwuy north employment lands, approximately 82 hectares, that drain to the Greystanes Creek; and
- the Pemulwuy south employment lands, approximately 134 hectares that drain to Prospect Creek.

Development of the Pemulwuy employment lands without proper mitigation measures will increase the flow volumes and pollutant loads discharged to these creeks. Greystanes Creek is a tributary of the Toongabbie Creek and is located in the upper Parramatta River catchment. A Stormwater Management Plan was prepared for this catchment by the four catchment councils and the Upper Parramatta River Catchment Trust. See Appendix A.

A riparian corridor in the north of the Pemulwuy north employment lands is constructed, capable of conveying the 1%AEP flood flows. Water flows in a naturalistic creek channel, providing aquatic habitat and riparian vegetation as well as cycle and pedestrian pathways. It links to the constructed wetland basin in the north eastern part of the Lands to maintain suitable water quality as well as providing further aquatic habitat. Where possible, make maximum use of regional detention basins or water quality control ponds just downstream of the Lands.

Objective

- O1. Prevent sediment polluting creeks during construction of the development.

Controls

- C1. Prior to construction a sediment and erosion control strategy will be developed in accordance with the *"Blue Book" 2004* and Council's requirements. See DCP Part G for Council's requirements.
- C2. Sediment and Erosion control plans are required for new developments to prevent pollution of the creeks during the construction phase of the development. The plans are

required to be prepared in accordance with the Managing Urban Stormwater guidelines including the *Managing Urban Stormwater: Soils and Construction* published by the Department of Housing.

- C3. Stage development activities to minimise land disturbance.
- C4. Limit earthworks and disturbance of stable rehabilitated landforms.
- C5. Divert clean run-off from upstream areas around disturbed areas.
- C6. Stabilise and vegetate areas immediately following the completion of works.
- C7. Provide temporary sediment basins, fences, catch drains, check dams and other structures to collect and treat run-off from disturbed areas.
- C8. Monitor discharges from sediment basins and flocculation as required to limit TSS concentrations in water discharged from the basins to 50 mg/L.
- C9. Provide vegetated buffer strips around all water bodies and drainage channels.
- C10. Temporarily stabilise stockpiles and disturbed areas exposed for more than 15 days.
- C11. Restrict vehicle access to designated entry and exits.

2.7.2 Stormwater management after development

Objectives

- O1. Provide a development consistent with the principles of total watercycle management but recognising potential salinity problems.
- O2. Limit stream velocities to prevent erosion and scour of local waterways.
- O3. Reduce pollutant loadings to maintain downstream water quality.
- O4. Prevent the contamination of surface water or groundwater by stormwater run-off.
- O5. Ensure reduced demand for imported mains water by water conservation measures and re-use of stormwater in accordance with the principles of Water Sensitive Urban Design.
- O6. Protect the downstream aquatic ecosystems and riparian vegetation of any creek corridors.
- O7. Ensure that additional stormwater runoff generated by the development does not adversely affect peak flows, velocities and water levels downstream of the site in the full range of flood up to 1 in 100 year storm event.
- O8. Meet catchment wide water quality objectives of EPA's Interim Environmental Objectives and Sydney Harbour and Parramatta River Catchment.
- O9. Ensure that additional stormwater runoff generated by the development does not adversely affect peak flows, velocities and water levels downstream of the site in the full range of floods.

Controls

- C1. The treatment objectives for the Upper Parramatta River catchments are listed below in Table 1. The objectives outlined in this table are consistent with Council's Stormwater Management Plans.
- C2. Ensure stormwater management systems are incorporated in the initial stages of design and infrastructure provided prior to the development of individual sites.
- C3. Design on-site stormwater management measures to the water quality objectives of:
- the Stormwater Management Plan;
 - the flow requirements of the UPRCT; and
 - Cumberland City Council.
- C4. Where feasible, incorporate in the proposed stormwater management measures, natural treatment mechanisms and features.
- C5. Integrate public open space with the trunk stormwater drainage corridors.
- C6. Where practical, reuse stormwater collected on developed lots. This can include rainwater tanks. This should be encouraged to minimise pollutant exports and reduce the hydrologic impacts associated with the development.
- C7. Carry out further stormwater management consultation with authorities during the development application stage.
- C8. As part of the development process, undertake detailed hydrologic, hydraulic and water quality modelling.
- C9. Design stormwater systems including on-site storage so that there are no linkages between surface and groundwaters to minimise the risk of contamination of surface waters by potentially saline groundwaters.
- C10. Use the results of the monitoring program required by the Soil Erosion section of this plan to inform surface water management practices as required.

Table 1: Upper Parramatta River Catchment Stormwater Management Plan

Pollutant	Description	Retention Controls
Litter	All anthropogenic material	70% of objects 5mm diameter or greater
Coarse Sediment	Coarse sand	80% of the load particles 0.5mm or less
Nutrients	Total phosphorus and Total Nitrogen	45% retention of the load
Fine Particulates	Fine sand	50% of the load for particles 0.1mm dia. or less
Cooking Oil/Grease	Free Floating Oils that do not emulsify in aqueous solutions	90% of the load with no visible discharges
Hydrocarbons	Anthropogenic hydrocarbons that can be emulsified	90% of the load with no visible discharges

Source: Upper Parramatta River Catchment Stormwater Management Plan

- C11. Design and maintain development so that downstream flows are not adversely affected, based on comparison of peak flows, velocities and water levels in the 2 year ARI, 100 year ARI and probable maximum floods at critical points further downstream
- C12. Arrangements for the expansion of the regional detention basin (200m to the north of the Pemulwuy north employment lands in Blacktown City Council LGA) must be confirmed and proposals identified as part of any application for the subdivision of land in the Pemulwuy north employment lands.
- C13. Should it prove impractical or impossible, for whatever reason, to modify the detention basin to meet the above-stated objective that downstream off-site flows are not adversely affected, a flood retarding basin should be provided within the Pemulwuy north employment lands to satisfy that objective.
- C14. During any development and construction, remove at regular intervals any sediment from the Pemulwuy north employment lands deposited off site in the flood basin of the Pemulwuy north employment lands or the downstream creek channel, and again prior to completion of construction.
- C15. On the former CSIRO lands:
- provide on-site Stormwater Detention for the entire site;
 - provide an above ground detention basin that accords with Upper Parramatta River Catchment Trusts requirements;
 - install end of line proprietary water quality devices which are capable of removing gross pollutants and fine sediment, at suitable locations before discharging into the basin;
 - utilise the aboveground detention basin to facilitate further settling of suspended solids and the removal of nutrients; and
 - the recommended wetland ponding size for the Greystanes Creek catchment is 1.4 hectares surface area.

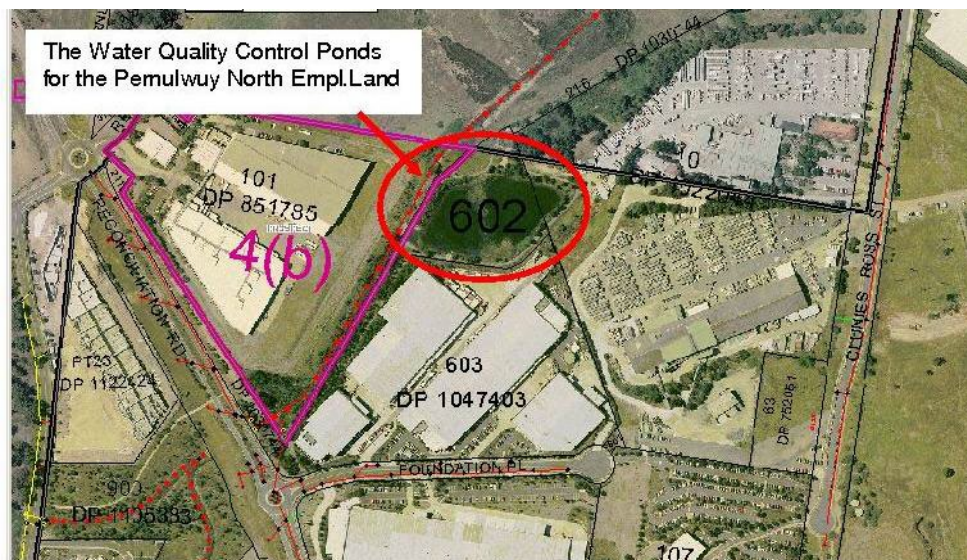


Figure 7: The constructed wetlands - Pemulwuy North Employment Lands

2.7.3 Stormwater Plans

Objectives

- O1. Employ source controls to minimise the pollutant loads discharged from individual development sites.
- O2. Apply conveyance controls to the local and trunk drainage systems to minimise the pollutant load transferred from the development sites to the discharge points.
- O3. Use Discharge controls immediately prior to discharge from the employment land to Greystanes Creek. This will ensure that water quality of the downstream creek is protected.

Controls

- C1. Prepare Stormwater Plans to accompany development applications for individual lots in the Employment Lands.
- C2. Ensure these Plans are consistent with Stormwater Management Plans prepared by councils by direction from the EPA.
- C3. Adopt a treatment for the individual lots which addresses source controls issues.
- C4. Incorporate Convergence and Discharge Controls in the design of the drainage infrastructure for the site. In summary the controls are:
 - Source Controls = controls applied to the individual lots to address specific pollutants associated with the specific development;
 - Conveyance Controls = controls applied to the local and trunk drainage systems these may include grass swales, and streams incorporating ponds, riffle zones and macrophytes; and
 - Discharge Controls = controls prior to discharge from the Pemulwuy north employment lands prior to run-off flowing into Greystanes Creek. These include gross pollutant traps, wetlands and water quality control ponds.

Source controls

- C5. Pollution Prevention – Minimise the amount of impervious areas on the development lot, bund and roof all chemical and fuel storage areas, roof vehicle servicing and refuelling facilities, separate run-off from 'clean' and 'dirty' areas of the lot.
- C6. Stormwater Harvesting = Maximise the amount of stormwater run-off used on the development lot. Investigate the feasibility of re-using stormwater runoff for dust suppression systems, vehicle washing and wheel washes, and irrigation of landscaped areas of the lot.
- C7. Oil/Water and Oil/Grit Separators = Use oil/water and oil/grit separators and first flush basins to treat run-off from 'dirty' areas of the development lot. Design these systems to meet the pollution retention criteria for hydrocarbons and coarse sediment in Table 1.
- C8. Buffer Strips = landscape approximately 15% of the area of the lots. Where the development lot layouts allow, use the landscaping to treat run-off from the primary treatment devices. Plant vegetated buffer strips to reduce the amount of fine sediment and nutrients discharged from the lot to the wetlands and water quality control ponds.

Conveyance controls

- C9. Grass Swales = Use open grass swales in the detailed design of the subdivision in preference to conventional kerb and gutter and pipe drainage. Swales reduce flow velocities limiting erosion of the stream banks. The lower velocities and filtration through vegetation reduces fine sediments, nutrients, hydrocarbons and heavy metals discharged to the treatment ponds.
- C10. Watercourse Profiles = one watercourse is provided through the Estate to collect stormwater run-off, draining to the northern water quality control ponds. Where feasible the watercourse, should include a meandering low flow invert, ponds and riffle zones, and aquatic and riparian vegetation.

Discharge controls

- C11. Provide gross pollutant traps, incorporating a screen and coarse sediment sump, upstream of the ponds and wetlands. Design these to achieve the pollutant reduction targets set out in Table 1 for coarse sediment and litter.
- C12. Provide Constructed Wetlands and Water Quality Control Ponds for tertiary treatment of stormwater before it is discharged from the Pemulwuy north employment land to Greystanes Creek. The wetlands and ponds have been sized to meet the treatment objectives for sediments and nutrient outlined in the stormwater management plans. The ponds and wetlands should be located off-line with a bypass channel used to divert flows during large storms around the ponds. The ponds, where feasible, should consist of a series of shallow densely planted zones and deep water areas.

2.7.4 Water quality control pond management

Objectives

- O1. Provide dry weather flows and minimise changes in the hydrologic regime of Greystanes Creek.
- O2. Provide a safe, efficient urban water management system which also contributes to the amenity, appearance and urban structure of the Pemulwuy north employment lands.
- O3. Achieve multiple use of drainage systems.

Controls

- C1. In addition to the Water Quality Control Pond (a constructed wetland) on site, the Pemulwuy north employment lands may also use regional detention basin immediately north of the Lands.
- C2. Prepare an Operational Plan for the pond. This should set out how flow releases in the main water body are managed to improve baseflows in the downstream creek, which suffers from decreased base flows due to urbanisation of the catchment.
- C3. Note that hard edges may be required to prevent creation of mosquito habitat.
- C4. Design the outlet into the pond to allow water levels to be varied for aquatic plant management.
- C5. Regularly maintain the gross pollutant traps and coarse sediment sumps to prevent a build-up of sediment in the main water bodies.

- C6. Develop an operational manual for the wetland pond that outlines the requirements for inspections and maintenance.
- C7. Integrate the landscaping with the design of the waterbodies to improve the amenity of the area.
- C8. Maximise use of regional facilities to achieve the run off flow rate and water quality controls.
- C9. As an industrial catchment with native landscaping, there will generally be insufficient nutrients to promote excessive aquatic weed growth. However, should any aquatic weed management measures be required, implement the following methods:
 - changes in basin water levels;
 - harvesting of the aquatic weed; or
 - application of herbicides approved for aquatic weed management by the EPA.
- C10. Seek to attain a 1.4 hectare area for the wetland pond.

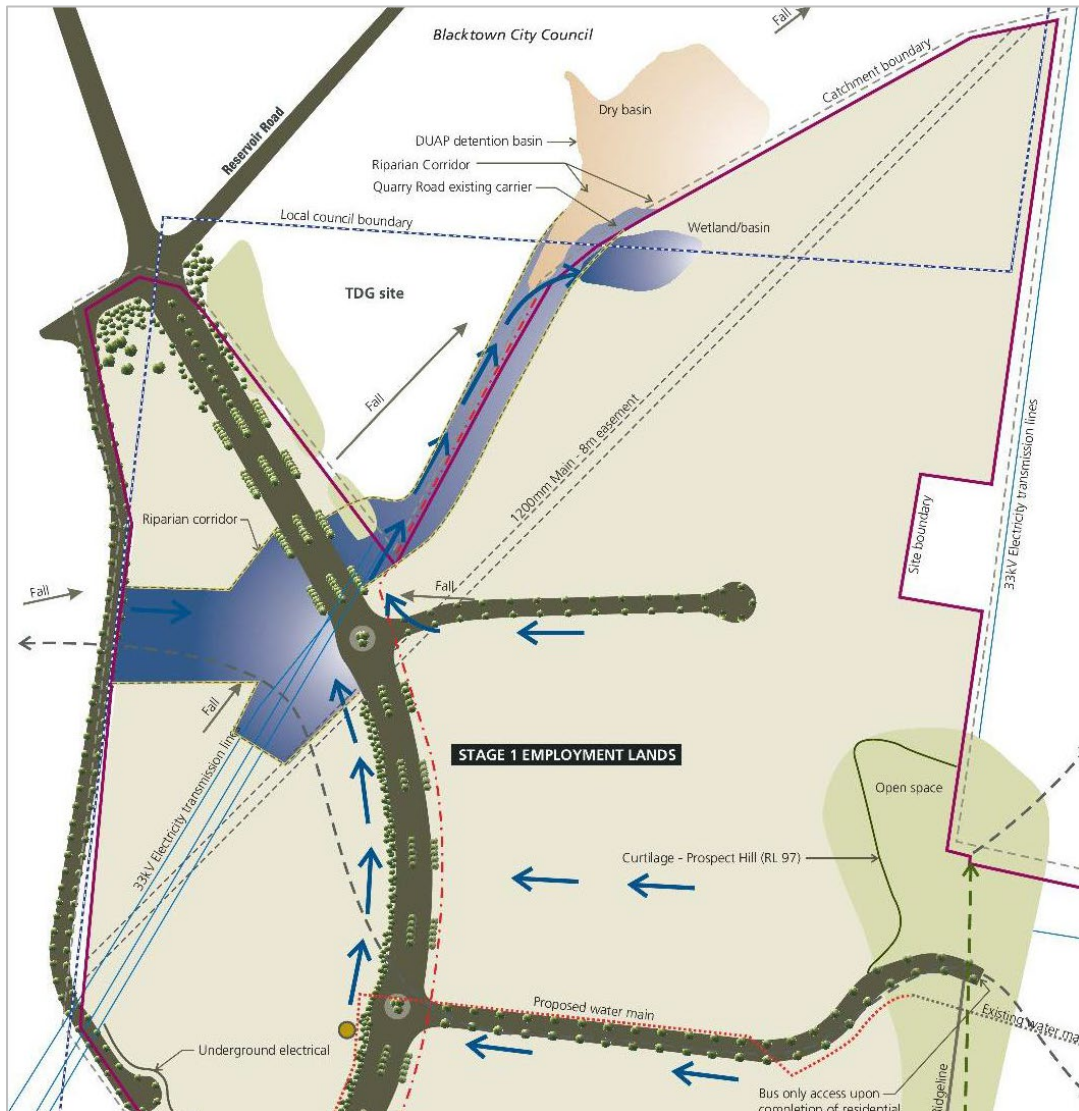


Figure 8: The constructed wetland and riparian corridor Pemulwuy North Employment lands

2.7.5 Flood Risk Management

Controls

- C1. Design any proposed structure with a floor level (habitable, office, storage, and/or shop) a minimum of 500mm above the 1% AEP flood level.
- C2. In the Pemulwuy North Employment Lands, the riparian channel cross-section has been designed so that the Probable Maximum Flood levels (called Flood Prone Land) will be contained within the 40 metre riparian corridor. Development is prohibited within this corridor.
- C3. Design road systems to provide a flood-free evacuation route.
- C4. On the former CSIRO lands, site all new buildings outside the Imminent Flood Failure (IFF) zone, and provide them with adequate free board to the IFF levels.

2.7.6 Site Contamination and Remediation

The Pemulwuy Employment Lands largely comprise land that has been quarried as part of Prospect Quarry.

Historical and present land uses include:

- quarrying and overburden stockpiles;
- recycling of construction materials;
- quarry maintenance buildings; and
- pine plantation and naturally vegetated areas.

State Environmental Planning Policy 55 requires Council to consider contamination issues in determining development and subdivision applications. Given the limited range of past and present land uses, the possibility of site contamination is considered to be low.

However, to ensure that land is free from contamination, a Stage 1 Preliminary Environmental Audit was required to be submitted with the first development application received for the Pemulwuy north employment lands.

A Site Audit Statement was also provided to address the former CSIRO site.

Objectives

- O1. Ensure the appropriate assessment, remediation, validation and auditing of potentially contaminated land to reduce the risk of harm to human health or the environment.
- O2. Ensure land is suitable for the intended use.
- O3. Ensure that future occupants or workers at the site are not exposed to contaminated materials.
- O4. Undertake investigations and remediation consistent with Cumberland DCP Part G.

Controls

- C1. Initiate an unexpected findings protocol to address the potential discovery of contaminated soil or other hazardous materials during bulk earthworks activities.
- C2. As a result of the protocol, ensure that appropriate Stage 2 assessment, and (where necessary) remediation and validation occurs.
- C3. Make provision in the protocol to inform Council of the discovery of such materials.
- C4. Before the lodgement of any development application for the site, complete a groundwater Assessment in accordance with 'Schedule B(6) Guidelines for Risk Bases Assessment of Groundwater Contamination' in the National Environmental Protection Councils National Environment Protection (Assessment of site Contamination) Measure (1999).
- C5. Remediation is required to render the site suitable for the proposed land use, consistent with the above Stage 1 Environmental Audit.
- C6. Ensure the remediation of the site is certified by a NSW EPA Accredited Site Auditor.

2.7.7 Earthworks procedures

Objective

- O1. Ensure that any fill utilised throughout the site is clean and complies with relevant standards.

Controls

- C1. Evaluate each portion of the Pemulwuy north employment lands as required by the Phase 1 Investigation provided by an environmental consultant for:
- Existing soil condition down to bedrock;
 - Groundwater monitoring; and
 - Validation of both fill zone foundation and proposed fill material to provide material within acceptable EPA criteria for re-use.
- C2. Provide approval of the above by a NSW DEEC&W Accredited Site Auditor to allow placement of fill and the excavation and re-use of on-site material to provide a revised landform.
- C3. Upon the validation and approval of fill foundation and fill material, place and compact material generally in accordance with:
- all material <300 mm in size;
 - compaction up to 98% standard compaction to building and road lots;
 - moisture content 60-90% of optimum; and
 - compaction to 95% standard in landscaped areas. Rip landscaped areas to a depth of 300/450 mm and mix in organic material to improve soil quality as required.
- C4. Final verification of placement of clean fill material will be undertaken through the process of design/construction Quality Assurance Audits.

2.7.8 Salinity

A site investigation, entitled *Greystanes Estate Salinity Assessment*, carried out by ERM in June 2001, undertook limited field testing of the *DLWC Draft Salinity Hazard Mapping for Western Sydney*, and found areas of known salinity and extensive salinity hazard within the Pemulwuy north employment lands, associated with the riparian corridors in particular.

Objectives

- O1. Minimise disturbance to natural hydrological systems as a result of development.
- O2. Ensure the proper management of land affected by salinity.
- O3. Prevent damage to buildings and infrastructure caused by salinity.
- O4. Manage and mitigate impacts from salinity.

Controls

Monitoring

- C1. Undertake monitoring of groundwater levels to provide additional information on which to base future design.
- C2. Establish monitoring wells in two cross-sections in the creek located adjacent to the northern boundary of the Pemulwuy North Employment Lands.
- C3. The monitoring program should consist of monthly sampling for a minimum period of 5 years or until development is commenced on all lots within the Northern Employment Lands, in addition to sampling after rainfall events greater than 20 millimetres in 24 hours.
- C4. These results should be consolidated into a single report at the end of each 12 month period.
- C5. For development proposed in the areas known as at risk of salinity and extensive salinity hazard, this report must be used to refine building location, layout and design as appropriate and salinity prevention and management measure must be addressed in development applications submitted to the consent authority. Some measures that could be considered include:

Building slabs/concrete

- C6. In order to prevent moisture rising through the slab, firstly lay a thick layer of sand on the building site. Next, lay a damp-proof membrane of thick plastic.
- C7. Concrete can be made more resistant to salinity by increasing its strength to reduce the permeability. A sulfate resistant concrete can also be used which will reduce reinforcement corrosion. A minimum of 65 millimetres of concrete cover on strip or slab reinforcement is recommended in saline environments. Compaction and curing of the concrete are also advised.

Bricks

- C8. A brick damp course which is correctly installed will prevent moisture moving into the bricks. It is possible to use exposure quality bricks which are more resistant to water and salt. Waterproofing can also be added to the mortar to prevent water entry.

Parks and Gardens

- C9. Plant gardens which do not require a lot of watering. This includes use of native plants which do not require excess watering, deep rooted trees to prevent the ground water table rising, the use of mulch, and the reduction of lawn areas. See section 'Landscaping' above.
- C10. Where automatic watering systems are installed, measure soil moisture content to ensure they work, and to counter the possibility of over-watering.
- C11. Do not locate gardens close to buildings, as watering may affect foundations or render the dampcourse ineffective.

Site design

- C12. Avoid disturbance of natural flow lines, as this is where the salinity is first likely to appear. This includes retaining native vegetation along watercourses and rehabilitation of disturbed areas using native vegetation.
- C13. Minimise throughflow when designing stormwater management, and this includes the careful design and construction of detention and retention basins to avoid high velocity runoff and soil erosion in susceptible areas.

2.7.9 Noise impacts

Objectives

- O1. Reduce road traffic noise.
- O2. Limit noise impacts from vehicle traffic upon nearby and adjoining residential land.
- O3. Implement a strategic approach in new industrial areas to ensure that amenity objectives are not compromised.
- O4. Achieve an equitable share of the amenity, as per The NSW Government's *Industrial Noise Policy*.
- O5. More evenly distribute allowable amenity noise limits amongst the employment sites.
- O6. Minimise the risk of adverse cumulative impacts.
- O7. Provide some flexibility in sharing the noise within each zone.
- O8. Ensure that the use of the land does not create an offensive noise or add significantly to the background noise level of a locality.

Controls

Road traffic noise

- C1. Construct the north-south spine road and the east-west road in a manner that minimises road traffic noise. Utilise the range of road design measures within the NSW Government's *Environmental Criteria for Road Traffic Noise* (ECRTN).
- C2. Permit bus only access on the east-west road between the residential and industrial areas prior to the establishment of the North-South spine link.
- C3. Before opening the east west road to other classes of traffic the consent authority must consider the noise impacts likely to arise, in particular, whether the ECRTN criteria relevant to the northern residential area will be exceeded.

Industrial noise controls (west of Clunies Ross Street)

- C4. Employment lands in the Pemulwuy have been divided into 5 noise zones for the purpose of managing noise impacts (See Figure 9). Each zone has an amenity limit that should not be exceeded (by all sites operating within that zone) at any residential receiver. The limits for each zone are shown in Figure 9 are set out in Table 2. Note that this map may be out of date, and that measures must be taken at the "Nearest Affected Residential Location", whether that residence has been constructed or not.

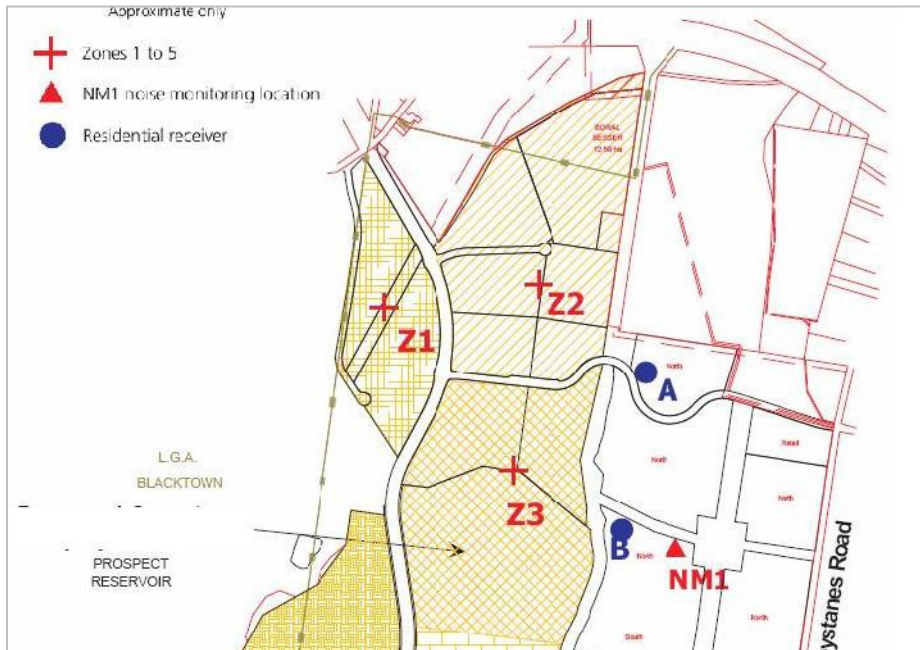


Figure 9: Noise zones - Pemulwuy North employment lands

Table 2: Noise Emissions Limits (LAeq) at Nearest Affected Residential Location

Noise Emissions Limits (LAeq) at Nearest Affected Residential Location						
Period	Noise from Zone 1	Noise from Zone 2	Noise from Zone 3	Noise from Zone 4	Noise from Zone 5	Residential Noise Criterion
Day	50dBA	50dBA	49dBA	49dBA	51dBA	55dBA
Evening	40dBA	40dBA	39dBA	39dBA	45dBA	45dBA
Night	35dBA	35dBA	34dBA	34dBA	40dBA	40dBA

Industrial noise (the former CSIRO land)

- C5. The noise criteria presented in Table 3 is applicable to the residential receivers on the former CSIRO land.

Table 3: Noise Criteria for residences adjoining the former CSIRO Employment Land - dBA re 20 μ Pa

Noise Criteria for Residences Adjoining the former CSIRO Employment Land - dBA re 20 μ Pa		
Time of Day	Intrusive LAeq (15 minute) Criterion	Amenity LAeq (period) Criterion
Day - 7am - 6pm	51	47
Evening - 6pm - 10pm	51	44
Night - 10pm - 7am	46	42

- C6. Site garbage collection, machinery, parking areas, and air conditioning plants away from adjoining residential area and where necessary, screen them by barrier or other acoustical treatment.

- C7. Where the residential interface is not shielded from employment generated noise by employment buildings (south-west corner), provide a noise barrier to allow for acceptable acoustic outcomes at the residential receiver (see above table);
- C8. Incorporate acoustic measures, such as an acoustic barrier, into the built form to mitigate noise impacts on the adjacent residential lands.
- C9. Accompany all Development Applications for potential noise generating industries adjacent to residential zoned land with documentation from a qualified Acoustic Engineer specifying noise standards.
- C10. Ensure compliance with the relevant requirements such as the Noise Guide for Local Government New South Wales Industrial Noise Policy.
- C11. Comply with Acoustic Standards: Noise Limits (Table 7.7.2 from *Noise Impact Assessment* by Richard Heggie Associates Pty Ltd) measured at the residential boundary.
- C12. Provide a noise impact assessment with Development Applications that propose activities with operating hours outside Council's standard business hours.

Note: 24 hour operation of business use is permissible providing the residential receiver noise criteria (as mentioned above) are achieved.

2.7.10 Air quality

Objectives

- O1. Ensure no adverse impacts on residences both within and surrounding Pemulwuy.
- O2. Ensure minimal emissions.

Controls

- C1. Provide air quality control measures during and after development of the Estate.
- C2. Address the relevant air quality guidelines within each development application in the employment area for industrial uses.
- C3. During construction, implement appropriate mitigation measures such as truck washing bays and wetting of dirt roads.
- C4. Ensure that the use of any premises and machinery is in accordance with the *Protection of the Environment Operations Act 1997*.
- C5. If any proposed use or activity within the site falls into Schedule 1 of the *Protection of the Environment Operations Act 1997*, the occupier must hold a licence from the NSW OEH, or its equivalent.
- C6. Within the Statement of Environmental Effects of a Development Application, include an assessment of air quality according to EPA standards.
- C7. Ensure that the endorsement of any machinery used does not result in air pollution emissions that exceed EPA guidelines.

Appendix A – Stormwater Management Plan

STORMWATER MANAGEMENT

A.1 INTRODUCTION

Stormwater management measures will be required as part of the development of the employment lands to protect the water quality of downstream creeks. The site is divided into two main catchments these are:

- the Northern Employment Lands, approximately 82 hectares, that drain to the Greystanes Creek; and
- the Southern Employment Lands, approximately 134 hectares that drain to Prospect Creek.

Development of site will increase the flow volumes and pollutant loads discharged to these creeks. Greystanes Creek is a tributary of the Toongabbie Creek and is located in the upper Parramatta River catchment. A stormwater management plan was prepared for this catchment by the four catchment councils and the Upper Parramatta River Catchment Trust.

The Southern Employment Lands are located in the Prospect Creek catchment. Fairfield, Holroyd, Bankstown and Liverpool Councils have prepared a stormwater management plan for this catchment. The stormwater management plans provide pollutant retention criteria for new developments and rank treatment objectives for various types of developments.

Currently it is anticipated that the majority of the employment lands will be developed for a range of uses which would typically include warehouses, transport facilities, distribution centres, manufacturing and supporting offices. The minimum lot size is one hectare.

A.2 STORMWATER MANAGEMENT OBJECTIVES

Stormwater management objectives for water quality for new urban areas are set out in Council's stormwater management plans. These objectives include measures to manage pollutants generated during the construction and operational phase of the development. Stormwater management measures for the Greystanes Estate also address the issue of water quantity.

A.2.1 Construction Objectives

Sediment and Erosion control plans are required for new developments to prevent pollution of the creeks during the construction phase of the development. The plans are required to be prepared in accordance with the manual *Managing Urban Stormwater: Soils and Construction* (NSW Department of Housing, 1998). Measures that will be implemented include:

- staging development activities to minimise land disturbance;
- limiting earthworks and disturbance of stable rehabilitated landforms;
- diversion of clean run-off from upstream areas around disturbed areas;
- stabilise and vegetate areas immediately following the completion of works;
- provide sediment basins, fences, catch drains, check dams and other structures to collect and treat run-off from disturbed areas;
- sediment basins sized for the 1 in 3 month design storm based on the majority of fill materials being coarse-grained;
- monitoring discharges from sediment basins and flocculation as required to limit TSS concentrations in water discharged from the basins to 50 mg/L;
- vegetated buffer strips around all water bodies and drainage channels;
- temporarily stabilisation of stockpiles and disturbed areas, not associated with the on-going quarry operations, exposed for more than 15 days; and
- restricting vehicle access to designated entry and exit points.

A.2.2 Operational

The treatment objectives for Prospect Creek and the upper Parramatta River catchments are listed in Table A.1 and Table A.2 respectively.

The range of urban land uses produce different types and quantities of pollutants and consequently the stormwater treatment strategies used to mitigate these impacts vary depending on the type of development proposed. To assist in selecting the appropriate treatment strategies the *Upper Parramatta River Stormwater Management Plan* (SMP) ranks the treatment objectives for a range of urban land use based on their importance for that particular land use. Rankings provided in the listed in Table A.3 below.

The stormwater management strategy for a new development is required to address all the listed pollutants, however in the case of an industrial development only the pollution retention criteria for objectives ranked (a) to (e) need to be met.

A.3 STORMWATER MANAGEMENT STRATEGY

A.3.1 Stormwater Management Principles

Stormwater management principles listed below for the employment lands have been developed to meet water quantity objectives, the water quality treatment objectives set out in the SMP's and to address the broader issues of water sensitive urban design. Key stormwater management principles to be used in the design of stormwater management systems in the employment lands are:

- stormwater management systems will be incorporated in the initial stages of design;
- on-site stormwater management measures will be used, where feasible to meet catchment wide water quality objectives;
- the proposed stormwater management measures will incorporate, where feasible, natural treatment mechanisms and features;
- integration of the public open space with the trunk stormwater drainage corridors;
- on-site stormwater reuse will be encouraged to minimise pollutant exports and reduce the hydrologic impacts associated with the development;
- stormwater systems designed so that there are no linkages between surface and groundwaters to minimise the risk of contamination of surface waters by potentially saline groundwaters;
- the results of the monitoring program required by Section 2.7 of this Plan should be used to inform surface water management practices as required;
- development should be designed so that downstream flows off-site are not adversely affected.
- for the Northern Employment Lands, avoid any increases in flood peak flows, velocities and water levels at all downstream points in the full range of flood magnitudes, taking into account the planned developments on the adjoining sites and modifications to the DUAP basin.
- for the Southern Employment Lands, avoid any increases in flood peak flows and velocities at all downstream points in the full range of flood magnitudes, taking into account the planned developments on the adjoining sites.
- these principles are designed to meet the following key objectives:
 - limit stream velocities to prevent erosion and scour of local waterways;
 - reduce pollutant loadings to maintain downstream water quality;
 - prevent the contamination of surface water or groundwater by stormwater runoff;
 - reduced demand for imported mains water by water conservation measures and re-use of stormwater;
 - protection of downstream aquatic ecosystems and riparian vegetation; and
 - enhance the scenic and recreational value of creek corridors and water quality control ponds.

A.3.2 Stormwater Plan

A stormwater plan will be prepared to accompany the development applications for the employment lands.

The stormwater plan for the sub-division of the land will address issues associated with the conveyance and discharge controls. Source controls will be designed at the development application stage for the individual lots. In summary the controls are:

- Source controls: controls applied to the individual lots to address specific pollutants associated with the specific development;
- Conveyance controls: controls applied in the local and trunk drainage systems these include grass swales, and streams incorporating ponds, riffle zones and macrophytes; and
- Discharge controls: controls prior to discharge from the estate prior to run-off flowing into the creeks. These include gross pollutant traps, wetlands and water quality control ponds.

Source controls

- A range of source controls can be used to minimise the pollutant loads discharged from the individual development lots. The type of controls adopted will depend on the nature of the development. Stormwater management plans will be prepared and submitted with the development applications for the individual lots.
- Pollution Prevention - Minimise the amount of impervious areas on the site, bund and roof all chemical and fuel storage areas, roof vehicle servicing and refuelling facilities, separate run-off from 'clean' and 'dirty areas' of the site.
- Stormwater Harvesting – Maximise the amount of stormwater run-off used onsite. Investigate the feasibility of re-using stormwater run-off for dust suppression systems, vehicle washing and wheel washes, and irrigation of landscaped areas of the site.
- Oil/Water and Oil/Grit Separators - Oil/water and oil/grit separators and first flush basins are to be used to treat run-off from 'dirty' areas of the site. These systems will be designed to meet the pollution retention criteria for hydrocarbons and coarse sediment in Tables A.2 and A.3. Oil/grit separators are to be provided for all site car parks with more than 12 spaces. Treatment devices are to be sized to treat the run-off from the 90th percentile rainfall event, (BCC 2001).
- Buffer Strips - Approximately 15% of the lots will be landscaping. Where the site layouts allow the landscaping will be used to treated run-off from the primary treatment devices. Vegetated buffer strips will be used to reduce the amount of fine sediment and nutrients discharged from the site to the wetlands and water quality control ponds. Research by the CRC for Catchment Hydrology on vegetated buffer strips found that a six metre wide strip can reduce sediment loads by up to 90% and nutrient loads by up to 70%, (CRC 1997).

Conveyance controls

- Grass Swales – In the detailed design of the sub-division open grass swales can be used in preference to conventional kerb and gutter and pipe drainage. Swales reduce flow velocities limiting erosion of the stream banks. The lower velocities and filtration through vegetation reduces fine sediments, nutrients, hydrocarbons and heavy metals discharged to the treatment ponds.
- Typical pollutant removal rates are; total suspended solids – 75 -100%, hydrocarbons 75-100%, nutrients - 50-75%, and heavy metals – 60%, (EPA 1997a).
- Watercourse Profiles – Three main watercourses will be provided through the site to collect stormwater run-off. Two for the southern employment lands draining to the southern water quality control ponds and the second drains to the northern water

quality control ponds. Where feasible, the watercourses will include a meandering low flow invert, ponds and riffle zones, and aquatic and riparian vegetation.

Discharge Controls

- **Gross Pollutant Traps** – Gross pollutant traps incorporating a screen and coarse sediment sump will be provided upstream of the ponds and wetlands. These will be designed to achieve the pollutant reduction targets set out in Tables A.2 and A.3 for coarse sediment and litter.
- **Constructed Wetlands and Water Quality Control Ponds** - Wetlands and ponds will be provided for tertiary treatment of stormwater before it is discharged from the estate to Prospect Creek or Greystanes Creek. The wetlands and ponds have been sized to meet the treatment objectives for sediments and nutrient outlined in the stormwater management plans. The ponds and wetlands would be located off-line with a bypass channel used to divert flows during large storms around the ponds. The ponds, where feasible, should consist of a series of shallow densely planted zones and deep water areas. The relationship between the three levels of stormwater treatment in the treatment train approach is shown in Figure 10 below.

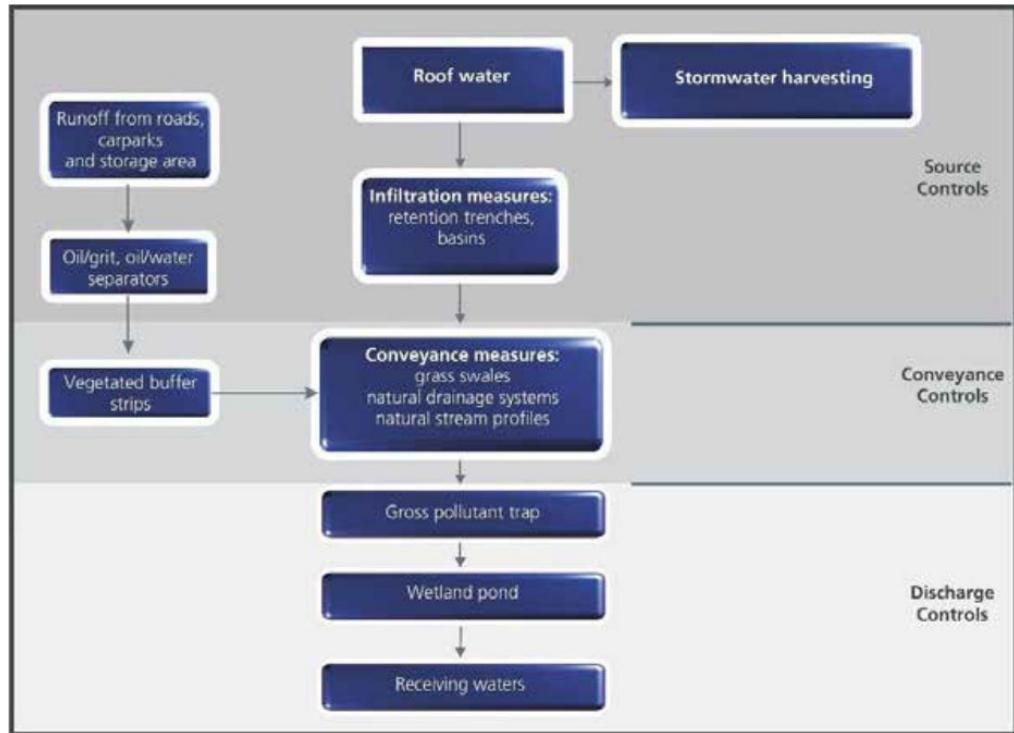


Figure 10: Stormwater management system

A.4 STORMWATER POLLUTION LOAD ASSESSMENT

To provide preliminary sizes for the water quality ponds, a level one pollution load assessment was completed, as defined in the EPA guidelines, (EPA 1997c). This level of stormwater quality model is suitable for preliminary sizing, but given the size and scales of the development would need to be supported by a more detailed, level two water quality model, at the detailed design phase.

For the purposes of the modelling existing pollutant loads were estimated assuming that the entire area of the quarry was a rural catchment. Due to the lack of site specific water quality data Event Mean Concentrations (EMC's) based on the Sydney Water's water quality monitoring data for a range of land

uses in the catchment. No EMC data is available for quarries so average rural EMC values have been used. This is a conservative approach and under-estimates the existing pollutant loads. Pollutant loads after development with no controls were estimated using average EMC values for industrial catchments. The surface area of wetland/water quality control ponds necessary to achieve the pollutant reduction targets was then calculated. Pond sizes have been calculated based on achieving two levels of treatment the first is the treatment objectives outlined in the SMP's and the second is to reduce post-development pollutant loads to the rural pollutant loads. Wetland surface areas were estimated using the surface loading rates included in the EPA's guidelines *Managing Urban Stormwater Treatment Techniques*. These are described as Option 1 and Option 2 respectively in the tables below. Details of the pollution load assessment are included in Appendix A of this paper and summary of the results are provided in Tables A.4 – A.6.

A.5 RECOMMENDATIONS

Staged sediment and erosion control plans should be prepared for the development of the infrastructure for the employment lands. Sediment and erosion plans should also be submitted with the individual development applications for the lots. The plans should be prepared in accordance with the guidelines published by the NSW Department of Housing *Managing Urban Stormwater Soils and Construction*.

The stormwater management strategy outlined in Section A.3.2 should be adopted for the site so that the water quality objectives set in the relevant SMP's are met and exceeded. These measures include a 'treatment train' approach with site specific controls included on the individual lots and conveyance and discharge controls included during the design of the infrastructure for the employment lands. Water quality control ponds (WQCP) are to be included in both the northern and southern employment lands. These are to have a minimum surface area of 1.4 and 2.0 hectares respectively. WQCP's will be designed to achieve the treatment objectives set out in both the Prospect Creek and Upper Parramatta River SMP's for suspended solids and nutrients for the Southern Employment lands and Northern Employment Lands respectively. Approximately 50% of the water quality control ponds are to be shallow wetland area planted with appropriate species of emergent macrophytes. The remaining areas are deeper open water zones. The ponds should have a minimum hydraulic retention time of twelve days.

The effectiveness of the proposed stormwater management measures is to be confirmed using more detailed water quality modelling. The model should use appropriate EMC values, a daily time step and a ten year simulation period that incorporates years with rainfall totals similar to the 10th, 50th and 90th percentile years, (EPA 1997c).

A.6 REFERENCES

Bankstown, Fairfield, Holroyd and Liverpool City Councils, 1999 Prospect Creek Catchment Stormwater Management Plan

BCC 2001 Blacktown City Council, 2001 Stormwater Quality Control Policy

CRC 1997 Cooperative Research Centre for Catchment Hydrology, 1997 Controlling Sediment and Nutrient Movements within Catchments - Industry Report.

Cooperative Research Centre for Catchment Hydrology, 1997 Urban Stormwater Pollution – Industry Report.

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EPA 1997a Environment Protection Authority, November 1997 Managing Urban Stormwater. Treatment Techniques.

EPA 1997b Environment Protection Authority, April 1997 Managing Urban Stormwater. Strategic Framework. Draft.

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New South Wales Department of Housing, August 1998 Managing Urban Stormwater: Soils and Construction

Lower Hunter and Central Coast Regional Environmental Management Strategy, 1999 Water Sensitive Urban Development. Implementation Issues for the Lower Hunter & Central Coast.

Patterson Britton and Partners, January 2000 Greystanes Estate General Services Plan

PPK Environment and Infrastructure, April 2001 Drainage Services Plan for the Employment Land

Upper Parramatta River Catchment Trust, July 1999 Upper Parramatta River Catchment Trust Stormwater Management Plan

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CUMBERLAND
CITY COUNCIL

PART F2-10

REGENCY GREEN INDUSTRIAL ESTATE

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1. Introduction

1.1 Land to which this Part applies

This Part applies to land zoned IN1 General Industrial known as the Regency Green Industrial Estate as shown in Figure 1. This site is formerly known as part of the RAAF Stores Depot.

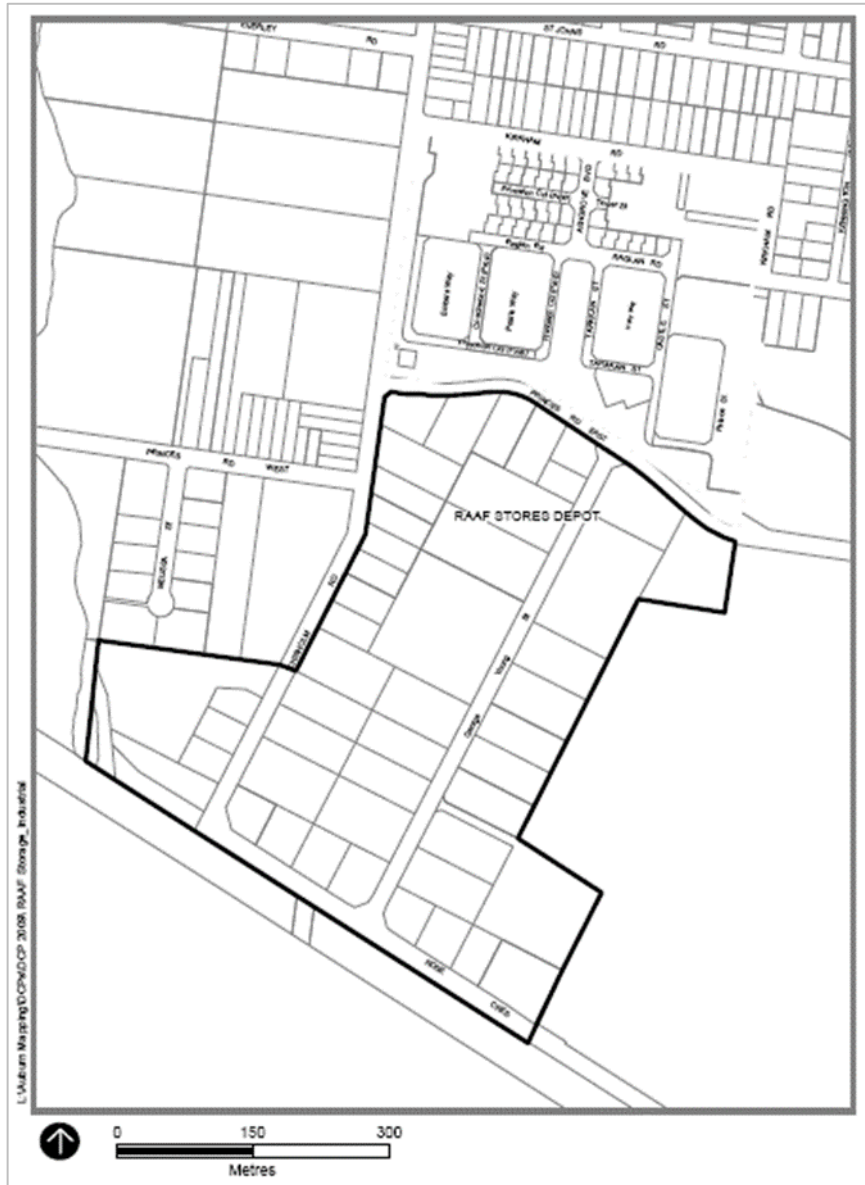


Figure 1: Area to which this Part applies

1.2 Purpose of this Part

The purpose of this Part is to create a quality industrial business estate comprising a range of allotment sizes supported by a functional and high quality public domain (as per the Former RAAF Stores Depot Public Domain Plan).

2. Objectives and controls

2.1 General

Objectives

- O1. Ensure the economic development and use of the industrial zoned land that forms part of the former Regents Park RAAF Stores Depot site.
- O2. Enhance and reinforce the existing industrial development in the surrounding area and within the Regency Green Industrial Estate.
- O3. Enhance employment opportunities in the area.
- O4. Ensure a high standard of industrial development on the site and to encourage this high standard in future development in surrounding industrial areas.
- O5. Ensure development responds to its context and is aesthetically and environmentally compatible with the existing built environment and the public domain.
- O6. Ensure development contributes to improvements to the public domain.
- O7. Encourage design that will enhance the existing character of the locality.
- O8. Ensure development adheres to principles of ecologically sustainable development.
- O9. Ensure that redevelopment is integrated with surrounding development.

2.2 Staged development

On 23 June 2004 development consent DA-608/2003 was granted by Council (see Council report 260/04 – CCLO2-04) for the staged development of part of the former RAAF Stores Depot (Lots 102 and 103 DP 1048829). Stage 1 included subdivision of the site into 41 industrial lots, civil works including roads, drainage and provision of public open space, site re-grading, removal of trees, and landscaping.

The Stage 1 development consent also approved a master plan (*Regency Green Industrial Estate Draft Master Plan*, prepared by Woods Bagot, dated May 2004). The relevant provisions within the *Regency Green Industrial Estate Draft Master Plan* have been incorporated in this Part. In addition, condition 2(c) of the development consent required that the industrial development and associated drainage and any ancillary works within each allotment intended for industrial use, be the subject of further development consent pursuant to the provisions of Section 80(5) of the *EP&A Act 1979*.

Objectives

- O1. Ensure that the distribution of floor space is such that the scale of buildings reinforces the desired streetscape character.
- O2. Ensure that the built form and scale of development maintains and enhances the amenity and visual quality of the locality, the public domain and adjoining areas.

Controls

Site coverage and setbacks

- C1. The total ground floor area of all buildings shall not exceed 70% of the area of the allotment. Where an industrial building comprises more than one (1) unit, the total ground floor area shall not exceed 60% of the area of the allotment.
- C2. New buildings along the street frontage shall be setback a minimum of 3m. The setback zone shall not be used for car parking, storage or display of goods.
- C3. In the case of an allotment with side boundaries angled to the road alignment, the setback line shall be perpendicular to the side boundary and the setback shall be 3m at its closest point.
- C4. Lots to the south of where Building 40 (as shown in Figure 3 was located shall have a 20m front setback in order to retain the existing trees as shown (refer to Figure 2 below).

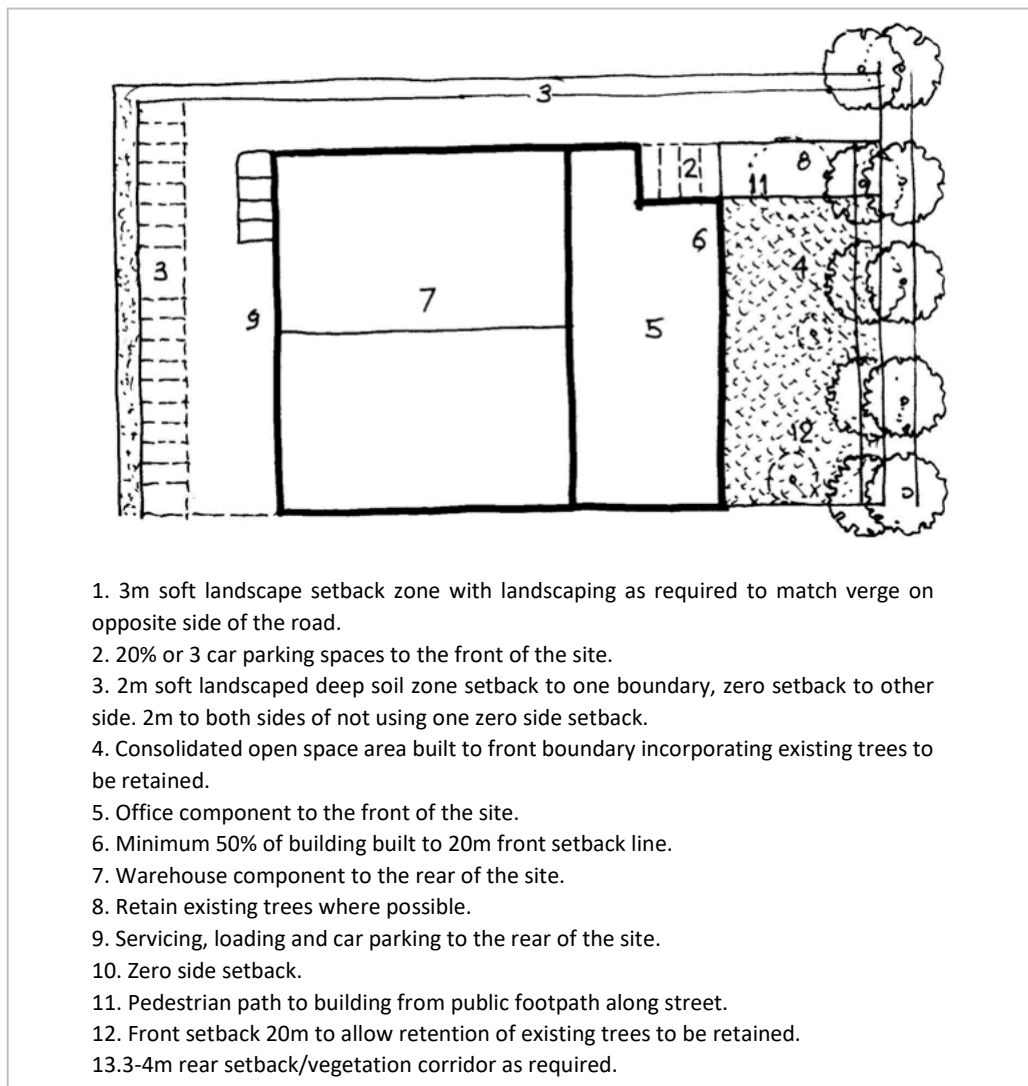


Figure 2: Typical boulevard allotment plan with 20m setback for existing trees.

- C5. A minimum of 50% of the front facade of the building shall be built to the minimum specified front setback to ensure a strong reading of the street address. A 2m articulation zone shall be allowed.
- C6. No setback shall be required from internal laneways or minor access driveways.
- C7. Side boundaries shall have a landscaped deep soil zone of at least 2m where the building is not built to either boundary. Where one side setback is zero the other side shall have a 4m deep soil zone.
- C8. Rear boundaries shall have a landscaped deep soil zone of 3m unless the lot does not back onto another within the development in this case the deep soil zone will be 4m. This zone shall be planted in accordance with the revegetation plan as shown in Figure 3.



Figure 3: Revegetation plan.

- C9. Allotments bounding Duck River shall have a 30m setback from the mean high water line. Refer to Figure 4 below.

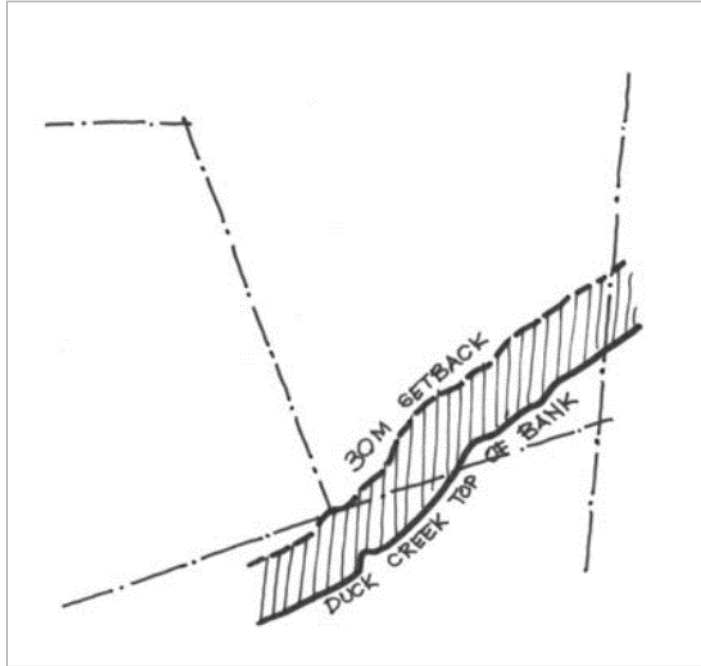


Figure 4: Setback from Duck Creek (Duck River).

- C10. Lots shall use a zero side setback to one boundary except where access is required.
- C11. Landscaping with appropriate native species shall be provided to setbacks and alongside vehicle access driveways. Refer to Table 1- Regents Park plants list.
- C12. Components of the buildings which incorporate ancillary offices, showrooms and customer service areas shall be located along the allotment frontage and shall be of a high standard of architectural design.

2.3 Allotment size and configuration

Objectives

- O1. Development creates or maintains an overall variety of allotment sizes to facilitate a wide range of industrial, warehousing and related activities.
- O2. Allotment sizes and configuration enable the efficient siting of buildings and associated activities.

Controls

- C1. The average minimum site width shall be 30m. Refer to Figure 5 below.

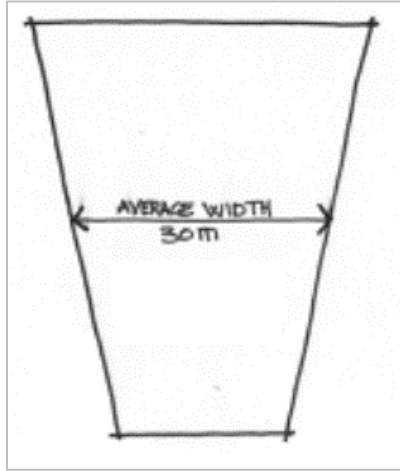


Figure 5: Average site width.

- C2. Battle-axe allotments accessed by narrow frontages shall not be permitted.
- C3. Allotments use opportunities for shared access. Refer to Figure 6 to 8 showing allotment plans for mid-block, corner blocks and multi-unit sites.

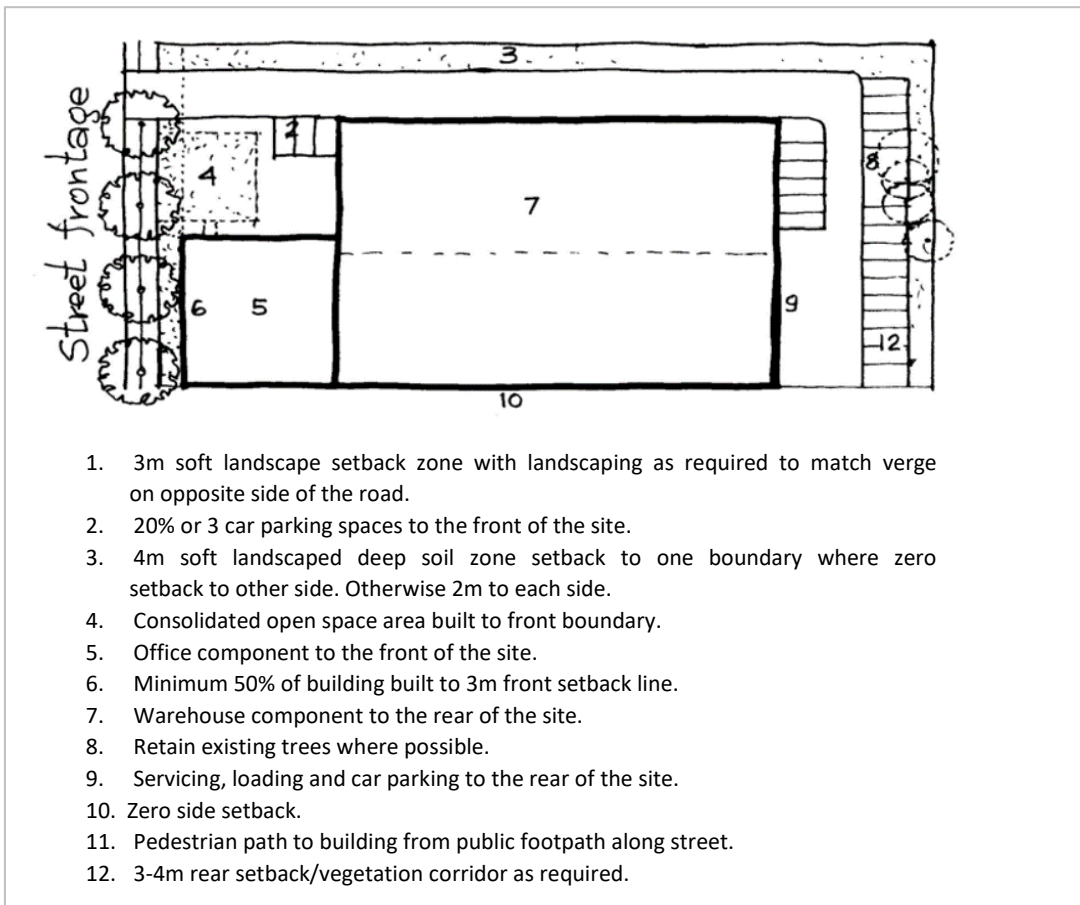


Figure 6: Typical mid block allotment plan.

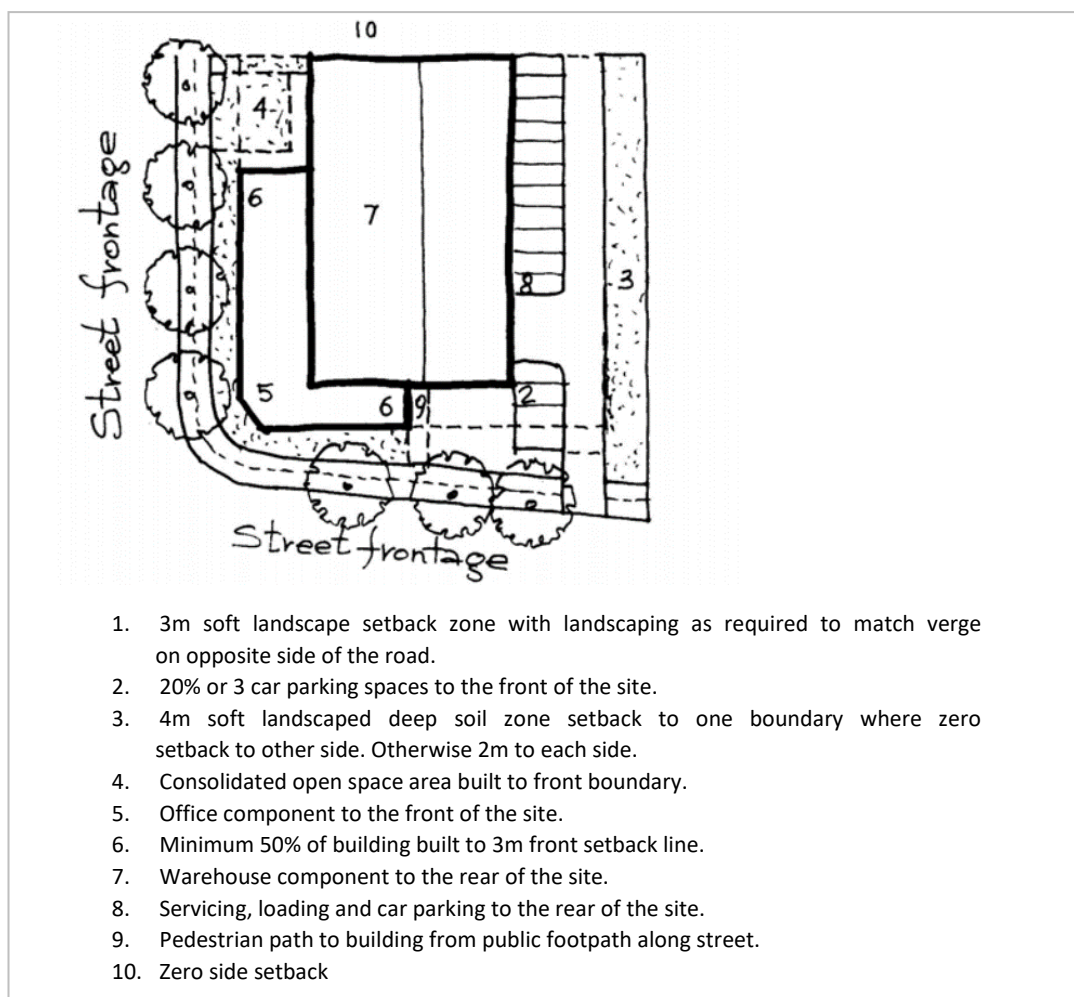


Figure 7: Typical corner block allotment plan.

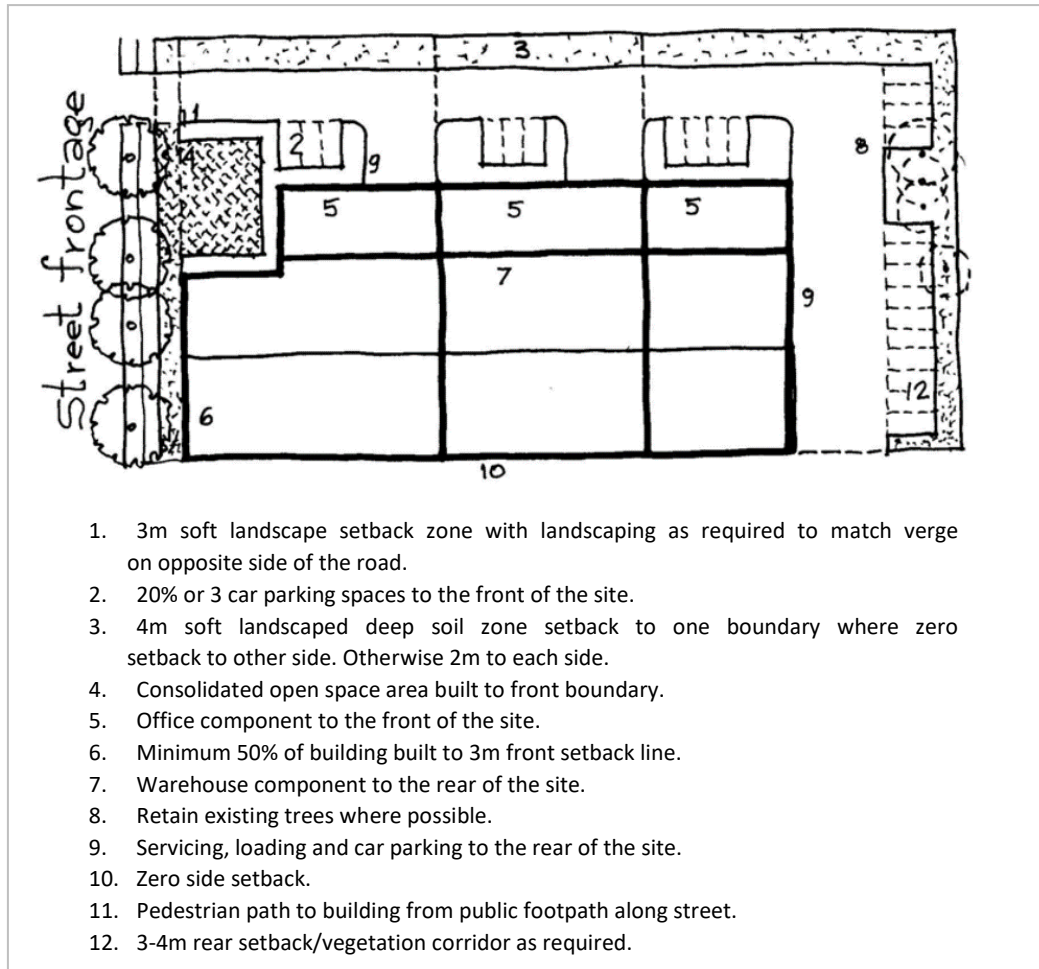


Figure 8: Factory unit allotment plan.

2.4 Building height and density

Objectives

- O1. Building height, scale and mass is similar to adjoining development.
- O2. Building form is designed to avoid detrimental effects upon the amenity and visual character of the locality.

Control

- C1. Building plants/service such as lift motor room, air conditioning equipment and exhausts shall either be concealed from view behind parapet walls or housed within the building envelope entirely.

2.5 Visual quality and building design

Controls

- C1. Loading, storage and external work areas shall be located where the visual quality of the locality is not compromised.
- C2. Buildings, fencing and landscape treatment shall be used to screen visually obtrusive activities and car parking.
- C3. Building facades to street frontages shall be of a contemporary architectural style. Refer to examples in Figure 9 and 10.



Figure 9: Examples of appropriate architectural character.



Figure 10: Examples of inappropriate architectural character.

C4. Design of industrial buildings shall include:

- elements which punctuate the skyline;
- distinctive roof forms;
- facades with visual variety in materials and form;
- architectural emphasis on the built form;
- roof and building form appropriate and indicative of building function;
- window forms to vary based on orientation and internal functions;
- entrance areas to be visually prominent within overall building form, by use of visual cues such as awnings, roof projections, blade walls or variation in materials scale or form; and
- introduce variation in unit design within building group.

Refer to Figure 11.

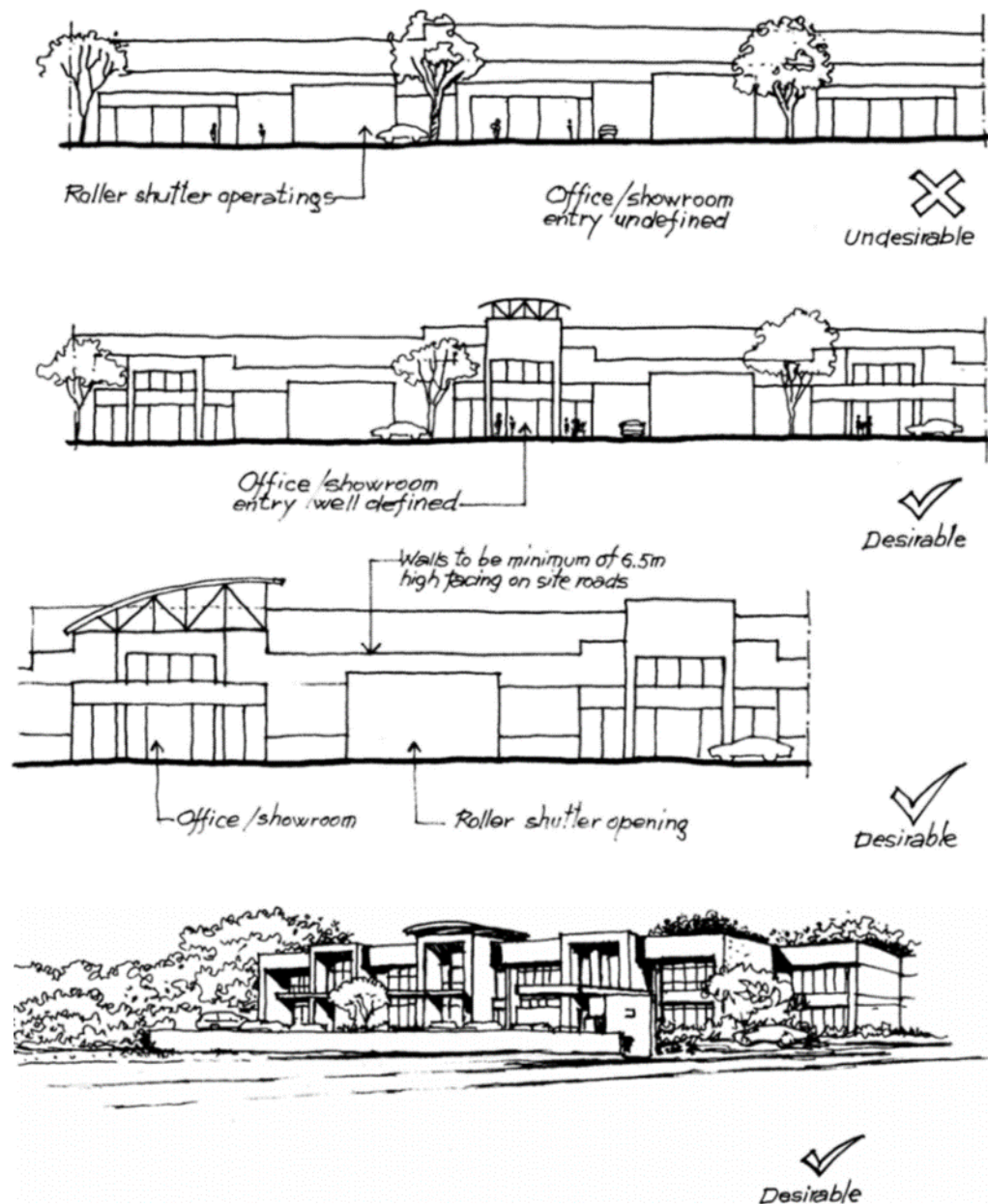


Figure 11: Building form.

- C5. Walls facing side roads shall be a minimum height of 6.5m.
- C6. On corner sites, built form shall emphasise the corner by massing and facade orientation. The office component of developments shall be located at the corner and the architectural form shall address the corner of the block by a chamfered footprint to the corner. Refer to Figure 12 to 15.

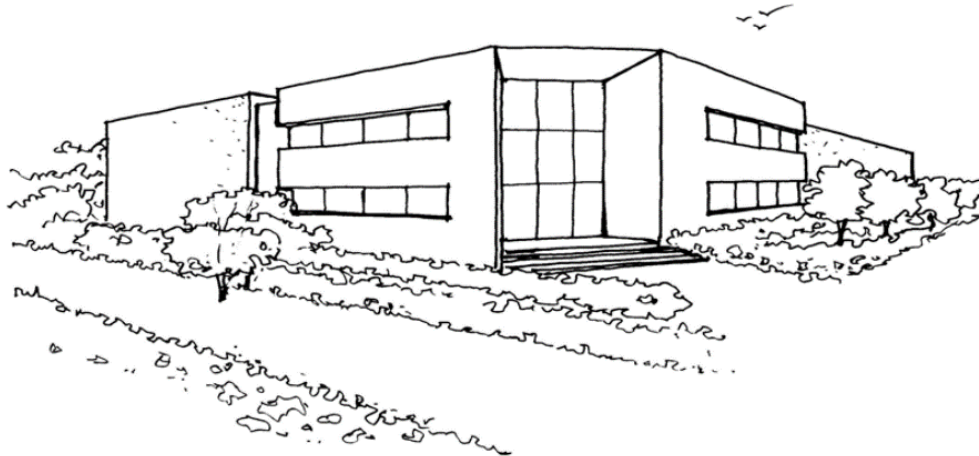
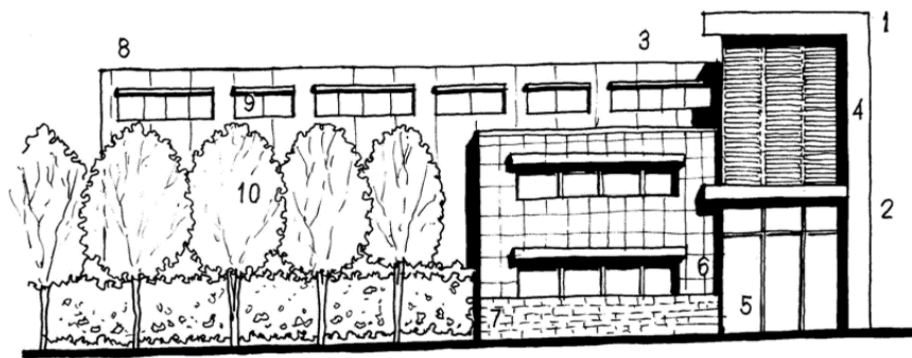


Figure 12: Example of chamfered corner treatment.



1. Entrance prominently identified by high building form
2. Blade walls articulate frontage and frame entry.
3. Parapet to cover all plant and equipment.
4. External horizontal louvres protect north facing glazing.
5. Entrance further articulated and protected by canopy.
6. Office windows with spandrel to allow placement of desks against external walls. Horizontal sun shading blades to north facing windows.
7. Variety of materials – Glazing, rendered blades, masonry to ground building and pre-finished panelling to office block.
8. Precast concrete warehouse.
9. High level windows for natural light to warehouse.
10. Landscape screen planting to warehouse on street frontage.

Figure 13: Options for building frontages – boxes and blades.

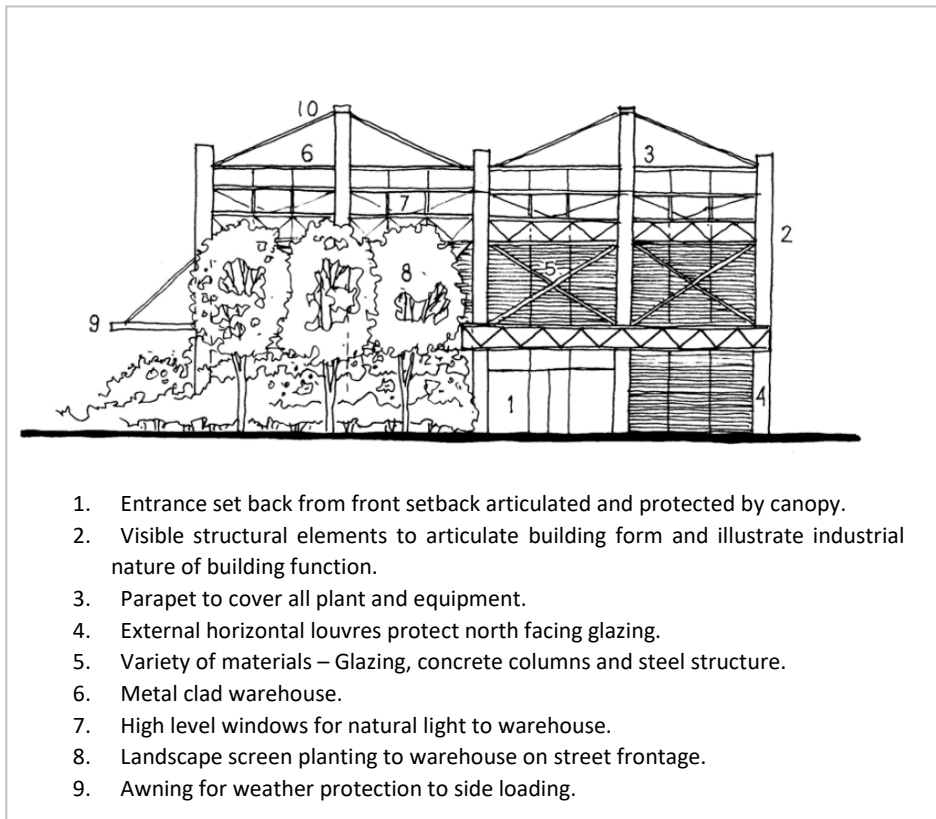


Figure 14: Options for building frontages – scaffolding elements, visible structure.

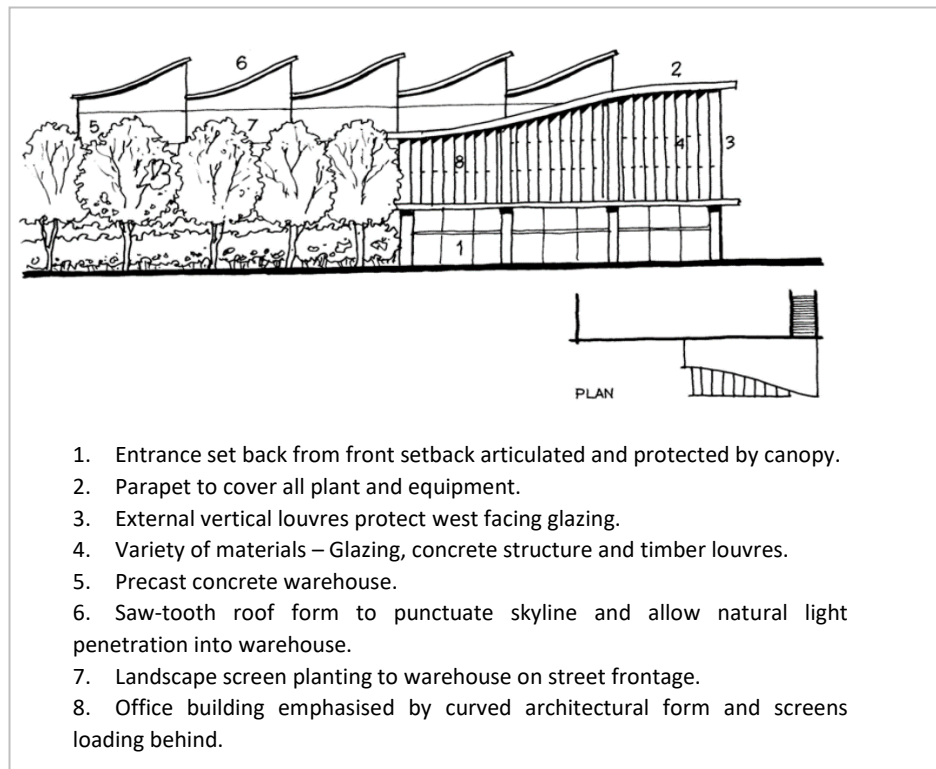


Figure 15: Options for building frontages – curves and roof form.

2.6 Landscape treatment

Controls

- C1. Large car parking areas shall be broken up using landscape zones. Car parking shall be located so as to integrate with the landscaping and provide a harmonious design for the site.
- C2. An area shall be provided for outdoor staff recreation (areas for sitting, eating and barbecues) being appropriate to the needs of the particular premises and incorporating adjacent open space or natural areas.

2.7 Landscape

Objectives

- O1. Open space areas within allotments are to comprise a high quality of landscape design to maintain the visual amenity and habitat potential of the locality.
- O2. Adequate open space areas are provided for the amenity of visitors and workers in the Estate.

Controls

- C1. All industrial allotment frontages shall be separate from the street by a minimum 3m wide landscape softworks buffer. This buffer shall contain trees, gravel, lawn and planting to match the verge on the other side of the street. Entrance and access pavements may cross this buffer.
- C2. A row of trees shall be planted within the 3m wide landscape buffer at the front of all the allotments fronting the George Young Street. The trees shall be planted as part of the future development of the individual lots. The trees shall be Eucalyptus moluccana (Grey Box), installation size 100 litre and at same spacing as the street trees planted within the road reserve of the Boulevard. These trees shall be planted at 1m within the site boundary and shall create the outer row of the double avenue of street trees along the Boulevard. The area under these trees shall be turfed.
- C3. All allotments with a boundary fronting the Princess Road East shall install soft landscaping within the 3m wide landscape softworks buffer. Informal copses of Eucalyptus leucoxylon 'Rosea' and entrance feature trees as identified shall be planted within this zone. The area under these trees must be turfed.
- C4. All garden beds shall be edged with a 150mm wide concrete strip.
- C5. Rear deep soil planting zones shall be mass planted, mulched garden bed in accordance with the revegetation plan prepared for the site where required.
- C6. All lots shall allow for a pedestrian access path from the pedestrian footpath on the street to the entrance of the building.
- C7. All unbuilt areas of the site not required for loading, carparking, or vehicle access shall be landscaped. The area of soft landscaping in the form of trees shrubs and lawns shall not be less than 15% of the site area including the consolidated open space area.
- C8. A consolidated open space area shall be provided on every lot in a distinct area (of proportions of approximately 1:1 to 2:3 or 3:2 width to depth). The area shall be built to the front property line.

- C9. The consolidated open space area shall be located to the front of the lot and extend to 1500mm past the building setback line and must be landscaped in such a manner to contribute to the overall public domain character of the site.
- C10. The size of the area to be provided shall be determined based on lot area. Refer to Figure 16.

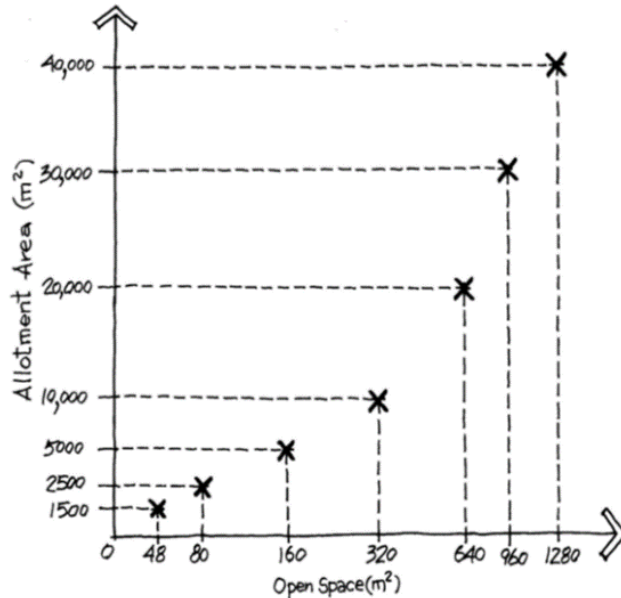


Figure 16: Consolidated open space area table.

- C11. The consolidated open space area shall be defined by the public footpath along the site boundary, the driveway, building or private paths.
- C12. The consolidated open space area shall contain street furniture, seating, bins, bike racks etc, lighting, planting, trees and paved areas (unit paving or gravel). It shall also contain a pergola structure for shade which shall also be built to the front property boundary. Refer to Figure 17.

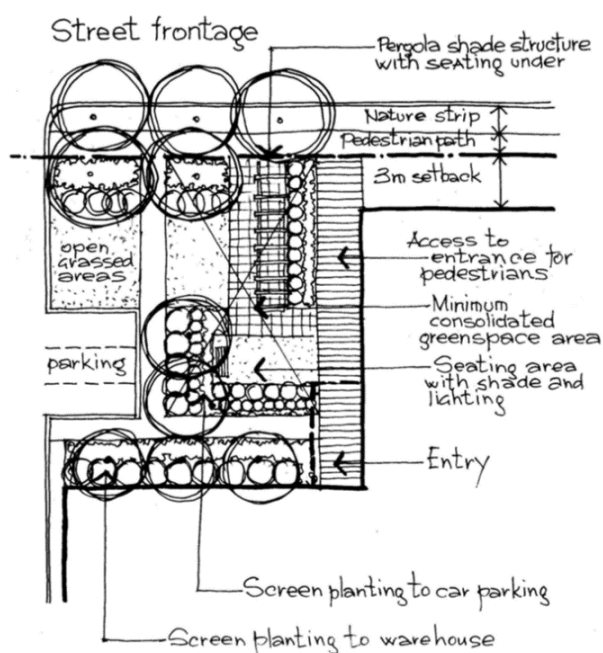


Figure 17: Example of a consolidated open space area.

- C13. All species planted within the front setback and consolidated open space areas are to be selected from the relevant proposed species list in Table 1.

Table 1: Regents Park plant list.

Botanical name	Common name	Mature size (Ht x sp)	Pot size
Focal theme trees			
<i>Angophora floribunda</i>	Rough Barked Apple Gum	20 x 6	Advanced, 100L, 3m Ht
<i>Araucaria cunninghamii</i>	Hoop pine	30 x 6	Advanced, 100L, 3m Ht
<i>Ficus rubiginosa</i>	Port Jackson Fig	20 x 6	Advanced, 100L, 3m Ht
<i>Flindersia australis</i>	Australian Teak	15 x 6	Advanced, 100L, 3m Ht
<i>Jacaranda mimosaeifolia</i>	Jacaranda	10 x 5	Advanced, 100L, 3m Ht
Avenue theme trees			
<i>Angophora floribunda</i>	Rough Barked Apple	20 x 10	Advanced, 100L, 3m Ht
<i>Corymbia maculata</i>	Spotted Gum	20 x 8	Advanced, 100L, 3m Ht
<i>Eucalyptus haemostoma</i>	Scribbly Gum	15 x 5	Advanced, 100L, 3m Ht
<i>Eucalyptus leucoxylon</i> 'Rosea'	Pink Flowering Yellow Gum	12 x 6	Advanced, 100L, 3m Ht
<i>Eucalyptus sideroxylon</i>	Ironbank	30 x 5	Advanced, 100L, 3m Ht
<i>Ficus rubiginosa</i>	Port Jackson Fig	12 x 7	Advanced, 100L, 3m Ht
<i>Jacaranda mimosifolia</i>	Jacaranda	12 x 6	Advanced, 100L, 3m Ht
<i>Lophostemon confertus</i>	Brush Box	12 x 6	Advanced, 100L, 3m Ht
<i>Pyrus ussuriensis</i> 'Red Spire'	Manchurian Pear	10 x 5	Advanced, 100L, 3m Ht
<i>Robinia pseudoacacia</i> 'Frissa'	Golden Robinia	10 x 5	Advanced, 100L, 3m Ht
<i>Tilia cordata</i> 'Green Spire'	Small leaved Linden		Advanced, 100L, 3m Ht
<i>Ulmus parvifolia</i>	Chinese Elm	8 x 4	Advanced, 100L, 3m Ht

Botanical name	Common name	Mature size (Ht x sp)	Pot size
Native trees buffer planting			
<i>Acacia decurrens</i>	Black Wattle	15 x 5	250mm Pot, 1.5m Ht
<i>Acacia parramattensis</i>	Sydney Green Wattle	10 x 4	250mm Pot, 1.5m Ht
<i>Allocasuarina littoralis</i>	Black She-oak	10 x 5	250mm Pot, 1.5m Ht
<i>Allocasuarina torulosa</i>	Forest She-oak	20 x 5	250mm Pot, 1.5m Ht
<i>Eucalyptus cerba</i>	Narrow Leafed Red Ironbark	20 x 10	250mm Pot, 1.5m Ht
<i>Eucalyptus eugenoides</i>	Thin-leaved Stringybark	25 x 5	250mm Pot, 1.5m Ht
<i>Eucalyptus tereticornis</i>	Forest Red Gum	40 x 5	250mm Pot, 1.5m Ht
<i>Eucalyptus moluccana</i>	Grey Box	40 x 5	250mm Pot, 1.5m Ht
<i>Syncarpia glomulifera</i>	Turpentine	50 x 5	250mm Pot, 1.5m Ht
Duck Creek open space planting			
<i>Acacia decurrens</i>	Black Wattle	15 x 7	Advanced, 100L, 3m Ht
<i>Acacia parramattensis</i>	Sydney Green Wattle		Advanced, 100L, 3m Ht
<i>Angophora floribunda</i>	Rough Bark Apple Gum	20 x 10	Advanced, 100L, 3m Ht
<i>Banksia integrifolia</i>	Coast Banksia	15 x 5	Advanced, 100L, 3m Ht
<i>Banksia spinulosa</i>	Honey Suckle Banksia	4 x 2	Advanced, 100L, 3m Ht
<i>Casuarina glauca</i>	Swamp Oak	20 x 10	Advanced, 100L, 3m Ht
<i>Callistemon salignus</i>	Willow Bottlebrush	9 x 4	Tube Stock
<i>Cupaniopsis anacardioides</i>	Tuckeroo		Advanced, 100L, 3m Ht
<i>Eucalyptus eugenoides</i>	Thin leaf Stringy Bark		Advanced, 100L, 3m Ht
<i>Eucalyptus gummiifera</i>	Bloodwood		Advanced, 100L, 3m Ht
<i>Eucalyptus haemastoma</i>	Scribbly Gum	20 x 10	Advanced, 100L, 3m Ht
<i>Eucalyptus leucoxylon</i> 'Rosea'	Pink Flowering Yellow Gum	15 x 7	Advanced, 100L, 3m Ht
<i>Eucalyptus robusta</i>	Swamp Mahogany	15 x 7	Advanced, 100L, 3m Ht
Feature shrubs			
<i>Dietes grandiflora</i>	Wild Iris	0.6 x 0.6	200mm pot
<i>Doryantes excelsa</i>	Gymea Lily	1.5 x 0.6	200mm pot
<i>Pennisetum alopecuroides</i>	Fountain Grass	0.6 x 0.6	200mm port
<i>Plumbago auriculata</i> 'Blue'	Blue Plumbago	1.2 x 1.2	200mm port
<i>Phormium tenax</i> 'Maori Maiden'	Yellow Leaf Flax	0.6 x 0.6	200mm port
Native shrubs			
<i>Anigozanthus flavidus</i> 'Bush Gem'	Dwarf Kangaroo Paw	0.6 x 0.6	200mm port
<i>Banksia spinulosa</i>	Banksia	1.5 x 1.0	200mm port
<i>Bursaria spinosa</i>	Sweet Bursaria	1.5 x 1.5	200mm port
<i>Callistemon citrinus</i>	Lemon-scented Bottlebrush	2.5 x 2.0	200mm port
<i>Dianella revoluta</i>	Mauve Flax Lily	0.6 x 0.6	200mm port
<i>Dillwynia juniperina</i>	Prickly Parrot-Pea	1.0 x 1.0	200mm port
<i>Kunzea ambigua</i>	Tick Bush	2.5 x 1.5	200mm port
<i>Lomandra longifolia</i>	Long-leaf Mat Rush	0.8 x 0.8	200mm port
<i>Lomandra multiflora</i>	Spiny Leafed Mat Rush	0.8 x 0.8	200mm port
<i>Poa labillardieri</i>	Native Tussock	0.8 x 0.8	200mm port
<i>Westringia glabra</i>	Westringia	1.2 x 1.0	200mm port
Groundcovers & climbers			
<i>Hardenbergia violacea</i>	Native Sarsparella	0.3 x 1.0	150mm pot
<i>Hibbertia aspera</i>	Rough Guinea Flower	0.3 x 1.0	150mm pot
<i>Kennedia rubicunda</i>	Dusky Coral Pea	0.3 x 1.0	150mm pot
<i>Viola hederacea</i>	Native Violet	0.3 x 0.3	150mm pot
Boulevard front setback planting			
<i>Anigozanthus flavidus</i>	Tall Kangaroo Paw	1 x 1	Tube Stock

Botanical name	Common name	Mature size (Ht x sp)	Pot size
<i>Banksia 'Candlesticks'</i>	<i>Banksia 'Candlesticks'</i>	0.4 x 1	150mm pot
<i>Banksia spinulosa</i>	<i>Banksia</i>	1.5 x 1.0	200mm pot
<i>Dietes Bicolour</i>	Wild Iris	0.7 x 0.5	150mm pot
<i>Dianella revoluta</i>	Mauve Flax Lily	0.6 x 0.6	200mm pot
<i>Doryanthus excelsa</i>	Gynea Lilly	1.5 x 0.7	200mm pot
<i>Grevillea 'Moonlight'</i>	<i>Grevillea 'Moonlight'</i>	4 x 2	200mm pot
<i>Lomandra longifolia</i>	Long-leaf Mat Rush	0.8 x 0.8	150mm pot
<i>Lomandra multiflora</i>	Spiny Leafed Mat Rush	0.8 x 0.8	150mm pot
<i>Hardenbergia violacea</i>	Native Sarsparella	0.3 x 1.0	150mm pot
<i>Pennisetum alopecuroides</i>	Swamp Foxtail Grass	0.6 x 0.5	Tube Stock
<i>Phormium tenax 'Moori Maiden'</i>	New Zealand Flax 'Moori Maiden'	1 x 1	200mm pot
<i>Plumbago auriculata</i>	Blue Plumbago	3 x 2	200mm pot
<i>Westringia fruticosa</i>	Coastal Rosemary	1.5 x 1	200mm pot
<i>Westringia glabra</i>	Violet westringia	1.5 x 1	200mm pot
Northern Link Road front setback planting			
<i>Anigozanthos flavidus</i>	Tail Kangaroo Paw	1 x 1	Tube Stock
<i>Banksia 'Candlesticks'</i>	<i>Banksia 'Candlesticks'</i>	0.4 x 1	150mm pot
<i>Dietes Bicolour</i>	Wild Iris	0.7 x 0.5	200mm pot
<i>Dianella revoluta</i>	Mauve Flax Lily	0.6 x 0.6	200mm pot
<i>Doryanthus excelsa</i>	Gynea Lilly	1.5 x 0.7	200mm pot
<i>Grevillea 'Misty Pink'</i>	<i>Grevillea 'Misty Pink'</i>	3 x 2	200mm pot
<i>Grevillea 'Robyn Gordon'</i>	<i>Grevillea 'Robyn Gordon'</i>	1.5 x 2	200mm pot
<i>Lomandra longifolia</i>	Long-leaf Mat Rush	0.8 x 0.8	150mm pot
<i>Lomandra multiflora</i>	Spiny Leafed Mat Rush	0.8 x 0.8	150mm pot
<i>Hardenbergia violacea</i>	Native Sarsparella	0.3 x 1.0	150mm pot
<i>Pennisetum 'Burgundy giant'</i>	<i>Pennisetum 'Burgundy giant'</i>	1.2 x 0.7	Tube Stock
<i>Phormium tenax 'Dazzler'</i>	New Zealand Flax	1 x 1	200mm pot
<i>Phormium tenax 'Flamingo'</i>	New Zealand Flax	1 x 1	200mm pot
<i>Themeda 'Bush Joey'</i>	<i>Themeda 'Bush Joey'</i>	0.4 x 0.4	Tube Stock
<i>Westringia fruticosa</i>	Coastal Rosemary	1.5 x 1	200mm pot
<i>Westringia glabra</i>	Violet westringia	1.5 x 1	200mm pot
General front setback planting			
<i>Anigozanthos flavidus</i>	Tail Kangaroo Paw	1 x 1	Tube Stock
<i>Banksia 'Candlesticks'</i>	<i>Banksia 'Candlesticks'</i>	0.4 x 1	150mm pot
<i>Dietes Bicolour</i>	Wild Iris	0.7 x 0.5	150mm pot
<i>Dianella revoluta</i>	Mauve Flax Lily	0.6 x 0.6	200mm pot
<i>Doryanthus excelsa</i>	Gynea Lilly	1.5 x 0.7	200mm pot
<i>Grevillea 'Moonlight'</i>	<i>Grevillea 'Moonlight'</i>	4 x 2	200mm pot
<i>Lomandra longifolia</i>	Long-leaf Mat Rush	0.8 x 0.8	150mm pot
<i>Lomandra multiflora</i>	Spiny Leafed Mat Rush	0.8 x 0.8	150mm pot
<i>Hardenbergia violacea</i>	Native Sarsparella	0.3 x 1.0	150mm pot
<i>Phormium tenax 'Lime Light'</i>	New Zealand Flax	1 x 1	200mm pot
<i>Plumbago auriculata</i>	Blue Plumbago	3 x 2	200mm pot
<i>Poa labillardieri</i>	Common tussock-grass	0.04 x 0.04	Tube Stock
<i>Westringia fruticosa</i>	Coastal Rosemary	1.5 x 1	200mm pot
<i>Westringia glabra</i>	Violet westringia	1.5 x 1	200mm pot

- C14. The consolidated open space area shall be located to achieve best orientation to create a comfortable micro climate.

- C15. Public safety through open surveillance of the building frontage shall be achieved at all times.
- C16. Landscaped areas shall be separated from vehicle areas by a kerb or other effective physical barrier
- C17. Landscape planting shall be provided on the overland flow easement and the batter slopes of Lot 47 to Lot 51 DP 1081545 in accordance with the following principles:
 - planting shall be 100% native with 70% indigenous to the area;
 - planting of the stormwater easement area shall incorporate riparian species but shall not obstruct the overland flow; and
 - the area incorporating the banks surrounding the building platform to the boundary with the reserve shall be fully landscaped with mass planting and clear trunked trees which shall not obstruct the visual connection to the reserve.
- C18. Fencing shall be integrated into the landscape design theme so as to minimise its visual impact while providing required site security.
- C19. Warehouse facades on street frontage shall be screened with a landscape buffer unless they are built to the setback line.
- C20. For plant selection, biodiversity, plant supply and specification refer also to the Former RAAF Stores Depot Public Domain Plan.

2.8 Business Identification Signage

Objectives

- O1. To provide coordinated signage throughout the public and private domain that is distinctive and aesthetically pleasing.
- O2. To ensure visual impact of signs on adjoining residential areas is minimised through design and illumination standards
- O3. Advertising signs and structures are incorporated within the overall design theme of the industrial component of the site. Refer to Figure 18.
- O4. Development minimises the visual impact of signs and structures upon adjoining residential areas through design and illumination standards.

Controls

- C1. Signs shall be limited to identifying the user/tenant of the industry by their name, logo or trademark. Illustrative advertising of products or services shall not be allowed.

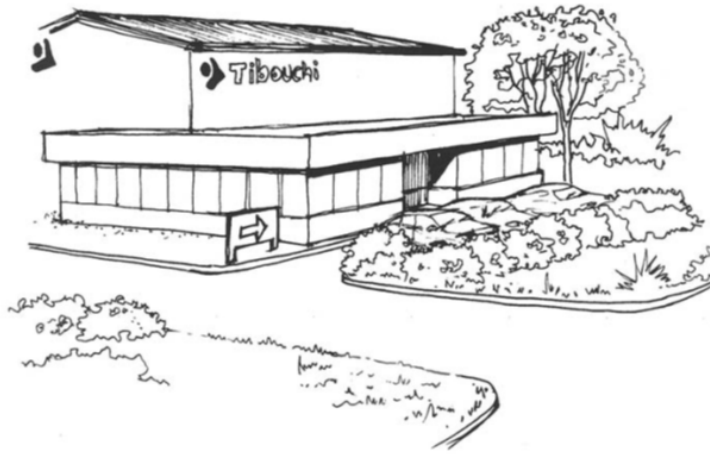


Figure 18: Distinctive, coordinated signage integrated with development.

- C2. Illumination of signs shall not cause nuisance or annoyance to pedestrians, vehicles or adjoining residential properties.
- C3. Signs shall be placed so that they do not obscure vehicular sightlines and vehicular control signs.
- C4. Non illuminated signs shall use reflective material for typography and directional arrows.
- C5. Word spacing shall be regular and excessive variation in length of lines shall be avoided.
- C6. Signs shall not be placed above the roof line or parapet
- C7. Identification signs shall be placed perpendicular to approaching traffic, no closer than 3m to any property line.
- C8. One identification sign shall be provided. More than one may be used where a site has more than one vehicular entrance, on different sides of the building or where the nature of the site and adjacent roads require more than one sign for adequate identification.
- C9. Building identification signage shall be in the form of a single free standing primary signage element. This element shall be setback 2m from the front allotment boundary. Secondary signage may be located on the building facade.
- C10. The 2m setback area shall be planted with low ornamental plants and shrubs which do not obscure signage and are consistent with the landscape principles of the site. Refer to Figure 20.
- C11. Signage shall be not more than 1.5m in height and shall incorporate a solid base element 600mm high of stone construction. This is illustrated in Figure 19 to 21.

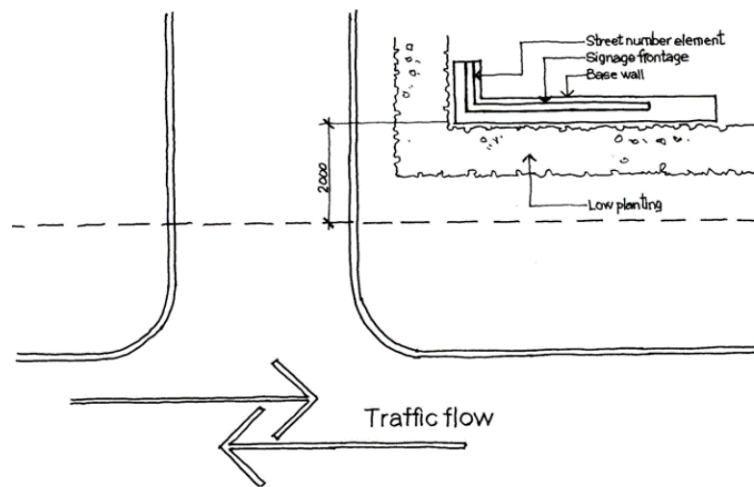


Figure 19: Signage – plan view.

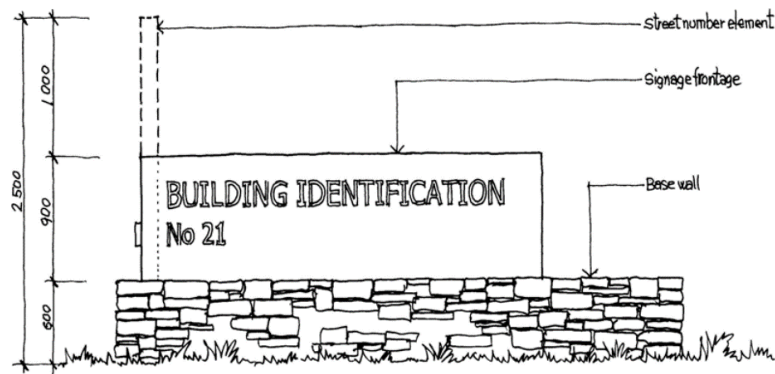


Figure 20: Signage – elevation.

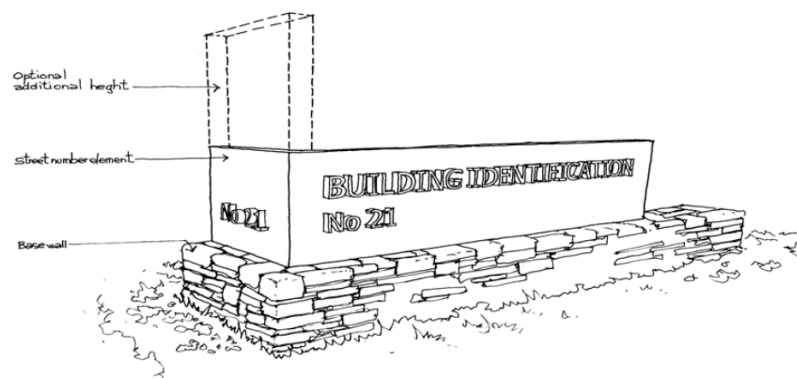


Figure 21: Signage – perspective illustration.

- C12. Signs shall not have a front face area greater than 5m² excluding the base wall face area.
- C13. Signs shall be placed parallel to the road alignment. Where the sign is located after the access driveway for approaching traffic an element of the sign shall be perpendicular to the approaching traffic and as a minimum shall indicate the street number and may be up to 2.5m in height. Refer to Figure 20.
- C14. Signs on the front facade of the building shall not be greater than 1/3 of the total length of the front facade and not longer than 12m in total length.
- C15. Identification signs on a secondary street frontage shall be 50% of the size of those on the primary frontage.
- C16. Pylon signs shall not be allowed.

2.9 Lighting, privacy and security

Lighting

Objectives

- O1. Provide a functional and coordinated site lighting system which contributes to a safe and visually attractive environment
- O2. Ensure lighting does not cause distraction to vehicle drivers on internal or external roads or to the occupants of adjoining properties and residential land.
- O3. The impact of lighting upon adjoining sites, particularly residential areas, is minimised by controlling the intensity, design and location of lighting facilities.

Controls

- C1. Lights shall be placed so as to cause no glare or excessive light spillage on neighbouring sites. External lighting complies with the Australian Standard 4282 (INT) 1995 – Control of the Obtrusive Effects of Outdoor Lighting.
- C2. All parking areas and driveways shall be illuminated to a minimum level of between 25 and 50 lux at ground level. The standard adopted for the surrounding roads is 50 lux.
- C3. Security lighting fixtures shall not project above the facade of the nearest adjacent building and shall be shielded. Shields shall be painted to match the surface to which they are attached. Security lighting fixtures shall not substitute for parking area or pedestrian path lighting fixtures and shall be restricted to lighting only loading and storage locations or other limited service areas.
- C4. Exterior wall mounted flood lights shall be prohibited except for security lighting to the rear of buildings.
- C5. Accent illumination shall be provided at key locations, such as building entries and driveways. The tops of footings of all lighting standards shall be a minimum of 100mm below adjacent surface levels.
- C6. Buildings shall be externally lit using a system of lighting that accentuates the architectural features.



Figure 22: Lighting to emphasise building form.

Fencing

Objective

- O1. Fences and walls are designed to ensure that they do not have a detrimental effect on the visual amenity of the public domain.

Controls

- C1. Fencing along street boundaries of a height greater than 1m shall be located behind a landscape buffer with a minimum setback of 3m.
- C2. Fencing shall be either transparent or integrated into the building form. It shall be designed to ensure its materials and colours blend into the landscape and allow through visual access. Refer to Figure 23.
- C3. Solid fencing shall be designed to read visually as part of the building form and be constructed of the same or complementary materials to the building.
- C4. Fences shall not be erected in front of landscaping along street frontages.



Figure 23: Example of transparent fencing.

Safety and security

Objective

- O1. The design and ongoing development of the site is consistent with the principles of Crime Protection through Environmental Design (CPTED).

Controls

- C1. Clear sightlines between public and private spaces shall be provided.
- C2. Effective lighting for public places shall be provided.
- C3. Landscapes and physical locations that channel and group pedestrians into target areas shall be provided
- C4. Access to internal areas or high risk areas shall be restricted.
- C5. Design shall incorporate clear transitions and boundaries between public and private space.
- C6. Space management strategies shall be undertaken, including activity coordination, site cleanliness, rapid repair of vandalism and graffiti and replacement of burnt out lighting.

2.10 Ecologically sustainable development principles

Objectives

- O1. Encourage a high standard of environmental design.
- O2. Minimise energy use in buildings while providing a comfortable working environment.
- O3. Substantially reduce carbon dioxide emissions compared to similar developments through the design of buildings.
- O4. Minimise potable water mains demand of non-residential development by implementing water efficiency measures.
- O5. Buildings are designed to minimise energy consumed for heating and cooling
- O6. Buildings reduce reliance on existing energy supplies through the use of renewable energy technologies.
- O7. Water efficiency is increased by appropriate building design, site layout, internal design and water conserving appliances.

Controls

- C1. Buildings shall aim to achieve a north-south orientation.
- C2. Air conditioning shall be zoned to enable the most efficient heating and cooling of the building
- C3. Roof and wall insulation shall be used in office components of buildings to reduce winter heat loss summer heat gain.
- C4. Cross ventilation shall be maximised by using high level roof ventilators. Where practical and appropriate, skylights and/or wind powered ventilators are to be installed.
- C5. Stairwells shall be positioned to create a stack effect to enhance natural ventilation to upper floors.
- C6. Windows shall be protected from summer sunlight by eaves and sunshade devices where appropriate.
- C7. Buildings shall be finished in lighter colours to increase heat reflectivity.
- C8. Low energy lighting shall be used.
- C9. Buildings shall use renewable energy technologies, including:
 - photovoltaic cells;
 - battery storage; and
 - natural ventilation.
- C10. Water conserving landscape techniques shall be employed; such as drought tolerant species selection, soil additives, irrigation zoning, limited turf areas and planting to reflect micro climates.
- C11. The ancillary office component of development shall be to the north of the site.
- C12. Roofs shall be designed to maximise penetration of natural light.

- C13. Landscaping shall be used to shade exposed walls from summer sun. Deciduous species shall be included where summer shade and winter sun is desirable.
- C14. All developments shall reuse grey water wherever appropriate, feasible and practical.
- C15. New developments shall connect to recycled water if serviced by a dual reticulation system for permitted non potable uses such as toilet flushing, irrigation, car washing, fire fighting and other suitable industrial purposes.
- C16. Where a property is not serviced by a dual reticulation system, development shall include an onsite rainwater harvesting or an onsite reusable water resource for permitted non potable uses such as toilet flushing, irrigation, car washing, fire fighting and other suitable industrial purposes.
- C17. Development shall install all water using fixtures to meet the WELS (Water Efficiency Labelling Scheme) rated industry standards.

2.11 Stormwater management

Objectives

- O1. Take advantage of opportunities for the multiple use of stormwater management areas for recreation and amenity.
- O2. Avoid stormwater discharge impacts on downstream properties and natural waterways.
- O3. Protect water quality and minimise gross pollutants leaving the site.
- O4. Reduce the pressure of new development on existing water supply and drainage infrastructure.
- O5. Treat and manage stormwater in an equitable manner for all future occupants of the estate.
- O6. Incorporate highly innovative financially responsible water quality management strategy.
- O7. Stormwater drainage is designed to integrate with landscape concept plans prepared for the site.
- O8. Drainage design minimises the environmental impact of stormwater run-off.
- O9. Stormwater management systems provide the community with opportunities for the reuse of stormwater
- O10. Lot owners are responsible for management of stormwater on their site in terms of both water quality and quantity.

Controls

- C1. The drainage system has the capacity to accommodate the 1-in-100 year flood event without risk or damage.
- C2. The stormwater drainage system shall be integrated with the landscape concept plan.
- C3. The maximum permissible site discharge (PSD) and minimum site storage requirement (SSR) shall be in accordance with the Table 2.

Table 2: Maximum permissible site discharge

PSD Zone	Description of zone in which the proposed development is located	PSD L/S/ha	SSR M ³ /ha
I	Duck River Catchment – generally bounded by Duck River, Park Road, Rose Crescent and the M4 Motorway	80	530

Specific details relating to boundaries are to be confirmed with Council's drainage engineer.

- C4. Detention storage shall not be located in any natural watercourse or overflow flow path, and functions independently during any events up to and including Council's 100 year ARI event.
- C5. On-site detention basins shall be provided with an overflow spillway directed towards the trunk drainage system.
- C6. On-site detention storage shall be designed so that run-off is stored underground.
- C7. All stormwater quality control structures shall have the capacity to intercept and filter run-off from the one (1) year average recurrence storm event.
- C8. Gross pollutant traps and devices shall be located underground with readily available access for maintenance or are screened.
- C9. Development shall comply with the Stormwater Drainage in Part G of this DCP.
- C10. Stormwater management shall be undertaken in accordance with the principles contained in the Water Cycle Management Plan prepared by Storm Consulting dated November 2003.
- C11. On-site detention for the industrial estate shall be provided for each lot.
- C12. Each lot shall provide water quality treatment consisting of oil and grease separation, gross pollutant and nutrient retention.

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CUMBERLAND
CITY COUNCIL

PART F3-3

YENNORA DISTRIBUTION PARK

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1. Introduction

The following controls apply to Yennora Distribution Park, being land described as Lot 2 DP 711948, and known as 14-54 Dennistoun Avenue, Yennora.

The subject property is one of the most significant industrial sites in Sydney and Cumberland City. The combination of size, location, accessibility and the well developed railway infrastructure provides a strategically important asset having local, regional and state status.

The site has been used historically as a major wool warehousing and distribution centre. In recent times other storage and distribution activities have developed on the site.

In the short to middle term, the property will continue to be used for wool related activities and other conforming uses.

The vision for the site is to maximise its efficient use and development as a strategic industrial property, which will be a major employment and business centre in Holroyd and the greater metropolitan area.

This vision, including redevelopment and change of use of existing buildings and development of vacant land, must be carried out while ensuring operations and activities have regard to the impact on the features of the site and surrounds.

2. General objectives

Objectives

- O1. Establish a strategic planning framework to guide the future development of the site.
- O2. Acknowledge the strategic importance of the site as a generator of major economic and employment activity for both Cumberland City, and for the Sydney Region.
- O3. Recognise the regional significance of the site as a potential major inter-modal distribution centre servicing western Sydney.
- O4. Identify opportunities to enhance the economic potential of the site as an inter-modal distribution centre servicing western Sydney.
- O5. Ensure that future development on the site satisfies environmental and design standards and satisfies community expectations.

3. Objectives and controls

3.1 Building Form

Objectives

- O1. Ensure that any new building works comply with the *Building Code of Australia*.
- O2. Ensure a high standard of visual and environmental quality.

Controls

- C1. All building works associated with the construction of new standalone premises are to comply with the Building Code of Australia.
- C2. The compliance of existing buildings with contemporary building and fire standards will be determined when alterations are proposed to such buildings.
- C3. Any future building works proposed to take place on those parts of the site in close proximity to adjacent residential zones must have regard to the following:
 - the visual appearance of the development when viewed from surrounding areas;
 - the reflective qualities of proposed external building treatments and their potential to cause nuisance glare; and
 - the possible impact of noise, vibration and dust generated by operations and activities in the proposed building or surrounds.
- C4. Building facades to all street frontages and a minimum of a 3 metre return, shall be constructed of brick, split masonry block or pre-cast exposed aggregate panels, with a minimum of 3.5mm aggregate. No standard concrete block work can be permitted. Painted masonry will not be accepted unless the applicant can demonstrate that the building has outstanding architectural merit incorporating special features.
- C5. Side and rear walls, not visible from the street, can be constructed in galvanised iron, zincalume, fibre cement or pre-colour coated metal sheeting. Council encourages the use of pre-colour coated metal sheeting, as this cladding is more aesthetically pleasing and environmentally sustainable.
- C6. Roof cladding is acceptable in tiles, galvanised iron, zincalume, or pre-colour coated metal sheeting. Locate roof ventilators, exhaust towers, hoppers and the like, as far as practicable, so as not to be readily visible from any public or residential area.

3.2 Building setbacks

Objectives

- O1. Ensure suitable setback from street frontages to enable the landscaping treatment of such when viewed from public areas.
- O2. Ensure that the physical separation between industrial and residential land uses, which is characteristic of the existing development on site can be maintained over the longer term.

Controls

- C1. A minimum setback of 30.48 metres from the frontage to Dennistoun Avenue.
- C2. All buildings and hardstand areas must be setback a minimum of 15 metres from boundaries to all other public roads.
- C3. Car parking and hard stand areas may be permitted within the setback distance subject to Council consent.

3.3 Fire safety

Controls

Given the size of the tenancies and the current nature of activities and uses on the site, fire safety is one of the major issues relating to any new use or development proposed.

- C1. In any development proposal on this site, provide detailed information on the proposed uses or activities, so that Council can assess the likely fire hazard of the proposed use and ensure appropriate fire fighting measures are implemented.
- C2. Attention is also drawn to the fire safety provisions for industrial buildings contained in the *Building Code of Australia* (BCA) and the *Environmental Planning and Assessment Act 1979* (EP&A Act). Particular attention should be given to Part C2 of the BCA - "Floor Area Limitations", Part D - "Means of Egress" and Part E1 - "Fire Fighting Services and Appliances". Development applications lodged with Council for approval, may be referred to the NSW Fire Brigades.

3.4 Vehicle access

Objectives

- O1. Ensure that vehicle movements generated by the existing and future uses of the property are concentrated on non-residential streets surrounding the property.
- O2. Ensure the safe and efficient movement of vehicles within the site.

Controls

- C1. Works to Council satisfaction are to be carried out on the entry point to the site from Dennistoun Avenue to physically restrict the ability for trucks to enter or exit the site from this point.
- C2. All proposals for additional development are to demonstrate how heavy vehicle movements associated with the additional development will be minimised on neighbouring residential streets.
- C3. Heavy vehicle access to the site is permitted only through the existing main site entrance on Loftus Road and the entrance on Byron Road.
- C4. No access to and from the site is permitted from Dennistoun Avenue after 7.00pm and before 6.00am Monday to Friday and is to be closed all day on Saturday and Sunday.
- C5. No new site access points are permitted onto Dennistoun Avenue or Byron Road.
- C6. New vehicle access points to the site may only be obtained from Loftus Road.
- C7. Access to and from the site between the hours of 7.00pm and 6.00am is restricted to those occupiers who have written approval from Council for hours of operation extending into that time period. During these times access will be restricted to the Loftus Road entrance where a security guard is to deny access to vehicles attempting to enter the premises without consent to operate during these hours. A logbook documenting after hours access shall be available for inspection by Council upon request.
- C8. Development proposals must be supported by a description of proposed internal site movements.

- C9. Development applications will be referred to the Roads and Maritime Service in accordance with the provisions of Schedule 3 of the *State Environmental Planning Policy (Infrastructure) 2007*.
- C10. Traffic generation rates for future development will be assessed to determine whether developer contributions will be conditioned for traffic calming devices on Dennistoun Avenue.
- C11. Trucks accessing and leaving the site northwards are required to utilise:
 - the Cumberland Highway via Woodpark Road, Fairfield Road and Dursley Road and Loftus Road; or
 - McCredie Road and Sturt Street. (When traffic signals are provided at Sturt Street and Cumberland Highway, then the McCredie Road and Sturt Street route will be the only access route permitted.)
- C12. Trucks accessing and leaving the site southwards are required to utilise Fairfield Road, Dursley Road and Loftus Road; or Pine Road and Loftus Road
- C13. Trucks accessing the site are not to use Military Road, Chetwynd Road, Sherwood Road/ Centenary Road, Fowler Road, Dennistoun Avenue or Byron Road (between Carrington Road and Guildford Road West).

Signs must be erected on all entrance gates advising truck drivers that they are not to park or queue in Dennistoun Avenue, Byron Road or any other residential street in the vicinity of the Yennora Distribution Park. Such signs are to include details of the required access and egress routes to and from the Yennora Distribution Park as set out in Part D.

3.5 Car parking provision

Objectives

- O1. Ensure that adequate car parking exists for persons employed on the site.
- O2. Ensure that the amount of car parking on site has regard to the unique characteristics of car parking demands generated by land uses on the property.

Controls

- C1. Provide car parking for any warehousing, non-warehousing and distribution related activities on the site consistent with the provisions of the parking section in Part G of this DCP.
- C2. Ensure the design of any future car parking areas complies with Council's requirements specified in the parking section in Part G of this DCP.

3.6 Amenity issues

Objective

- O1. Ensure that existing and proposed land uses on the site have minimal impact on nearby residential amenity.

Controls

- C1. Stack shipping containers to a maximum height of four containers, unless it can be shown that shipping containers stacked to a greater height will not adversely affect the visual amenity of the adjoining residential area or be unsafe.

- C2. Demonstrate to Council's satisfaction that any proposed development will have minimal impact on the amenity of adjacent residential areas. Comply with the requirements of Part D of this DCP.
- C3. Hours of operations will be determined accordingly. Such assessment must comply with the acoustic standards set out in the OEH's "Industrial Noise Policy";
- C4. Operations are restricted to the hours of 7.00am - 6.00pm Monday to Friday and 7.00am - 12 noon Saturday with no operations on Sundays or public holidays.
- C5. Operations outside these hours, up to 24 hour operations, will be considered by Council upon submission of an acoustic report which is deemed 'acceptable' by Council and prepared by a suitably qualified acoustic engineer.

Notes:

In order to determine the acceptability of an acoustic report, Council's officers may, depending on the level of complexity of the acoustic report, refer such report to a second acoustical engineer for appraisal at full cost to the applicant.

The proposed occupations of existing or future buildings within the YDP that are located adjacent to residential areas must be industries prepared to operate within the restricted hours. Consideration of 24 hour operations within buildings adjacent to residential areas will only be given under particular circumstances where an acceptable acoustic report has been received for an industry that has an operation that will not interfere with the peace and repose of nearby residents.

3.7 Landscaping

Objectives

- O1. Ensure that all future development is appropriately landscaped in order to contribute to the aesthetic appeal of workplace environments.
- O2. Contribute to a reduction in building mass and bulk when buildings are viewed from public areas and from nearby residential areas.
- O3. Increase the likelihood of long-term survival of landscaping by using species which are adapted to the local environment, and to minimise the potential for exotic species to invade remnant bushland on the site.

Controls

- C1. Proposals for new building works are to incorporate landscaping as part of overall building design.
- C2. Landscaping is to be conducted utilising locally indigenous native plant species.
- C3. Landscaping works adjacent to the locally and regionally significant remnant vegetation on the site are to be designed as a buffer zone to reduce building impact, weed invasion and assist in the long term preservation of Areas "A" and "B" on the plan contained in Appendix 2 in this DCP.

Note: See also Part D of this DCP.

3.8 Remnant Vegetation

Objectives

- O1. Recognise the local and regional significance of remnant vegetation this exists on the site.
- O2. Recognise the State (Schedule 2, *Threatened Species Conservation Act 1995*) and National (ROTAP - Rare or Threatened Australian Plant) significance of *Acacia pubescens* which is present in the undeveloped north-eastern portion of the site.
- O3. Recognise the presence of any Endangered Ecological Communities and species listed under schedule 1 of the *Threatened Species Conservation Act (TSCA) 1995* which contained on the site.
- O4. Ensure that all future development addresses the provisions of the *Environmental Planning and Assessment Act, 1979*, and the *Threatened Species Conservation Act 1995*, especially the specifications contained in any relevant Recovery Plan in respect of vegetation communities and individual species present on the site.

Controls

- C1. No development is permitted within Areas “A” and “B” on the plan contained in Appendix 1 of this DCP without consideration of the provisions of the *Threatened Species Conservation Act 1995*.
- C2. Development immediately adjacent to the Areas “A” and “B” on the plan contained in Appendix 1 must demonstrate that it causes minimal impact on remnant vegetation.
- C3. Development outside of Areas “A” and “B” must ensure there is no threat to any threatened species.
- C4. A management plan for the native vegetation present at the Yennora Distribution Park has been prepared. The long-term aim of this plan is the retention and management of an Endangered Ecological Community and a threatened plant species. The management plan incorporates the following:
 - a description of the flora species present in the remnant native vegetation on the site;
 - evaluation of the conservation significance of the native vegetation on the site;
 - recommendations to minimise the impact of proposed additions to the existing industrial development on the site;
 - recommendations for the management of the native vegetation on the site; and
 - recommendations for future site landscaping.

3.9 Stormwater management

Objectives

- O1. Ensure that stormwater is controlled so as to avoid damage to private and public property.
- O2. Ensure that any new hard stand and roofed areas do not result in any net increases in down stream flows during storm events.
- O3. Ensure that uncontrolled stormwater flows do not threaten the long term survival of remnant vegetation.

Controls

- C1. Provide all roofing and hard stand areas with adequate drainage systems.
- C2. Incorporate on site stormwater detention systems in the design of any new hard stand area or new building works. The design of such detention works are to be in accordance with Council's "On-site Stormwater Retention Policy" and certified to:
 - Council's satisfaction upon completion of works; and
 - Compliance with Council's other drainage requirements.

3.10 Infrastructure and services

Objective

- O1. Ensure that all required services and infrastructure are provided in accordance with appropriate standards.

Controls

- C1. Provide water, sewer, telecommunication, gas and electricity to new development to Council's and servicing authority standards.
- C2. Construct all new roads and hardstand areas to Council's satisfaction (see Part A and D of this DCP).
- C3. Carry out bulk earthworks to Council's satisfaction.

3.11 Site contamination and land filling

Objectives

- O1. Recognise that existing undeveloped areas on site are largely free of contamination.
- O2. Recognise that no data exists on the possible contamination of developed land on site.
- O3. Ensure that Council is satisfied that no new building works take place on land contaminated by previous land uses.
- O4. Ensure future building works are constructed on stable sub-surfaces.

Controls

- C1. Council requires evidence of existing site contamination prior to the approval of new building works on the site.
- C2. New building works are to demonstrate the geotechnical stability of sub-surface conditions prior to Council issuing a Construction Certificate.

3.12 Railway infrastructure

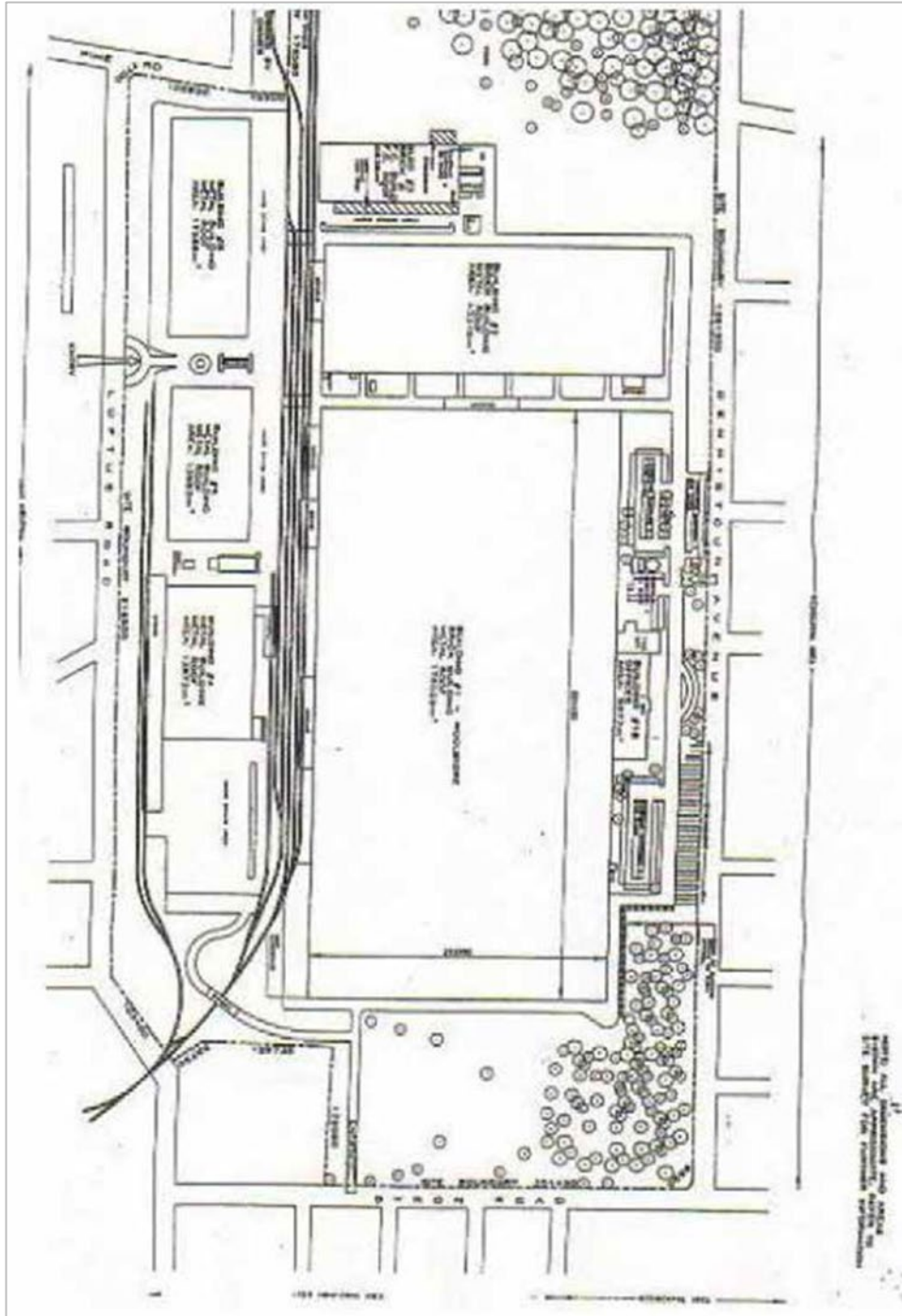
Objective

- O1. Ensure that the future development of the railway infrastructure does not negatively impact upon the amenity of surrounding residential development.

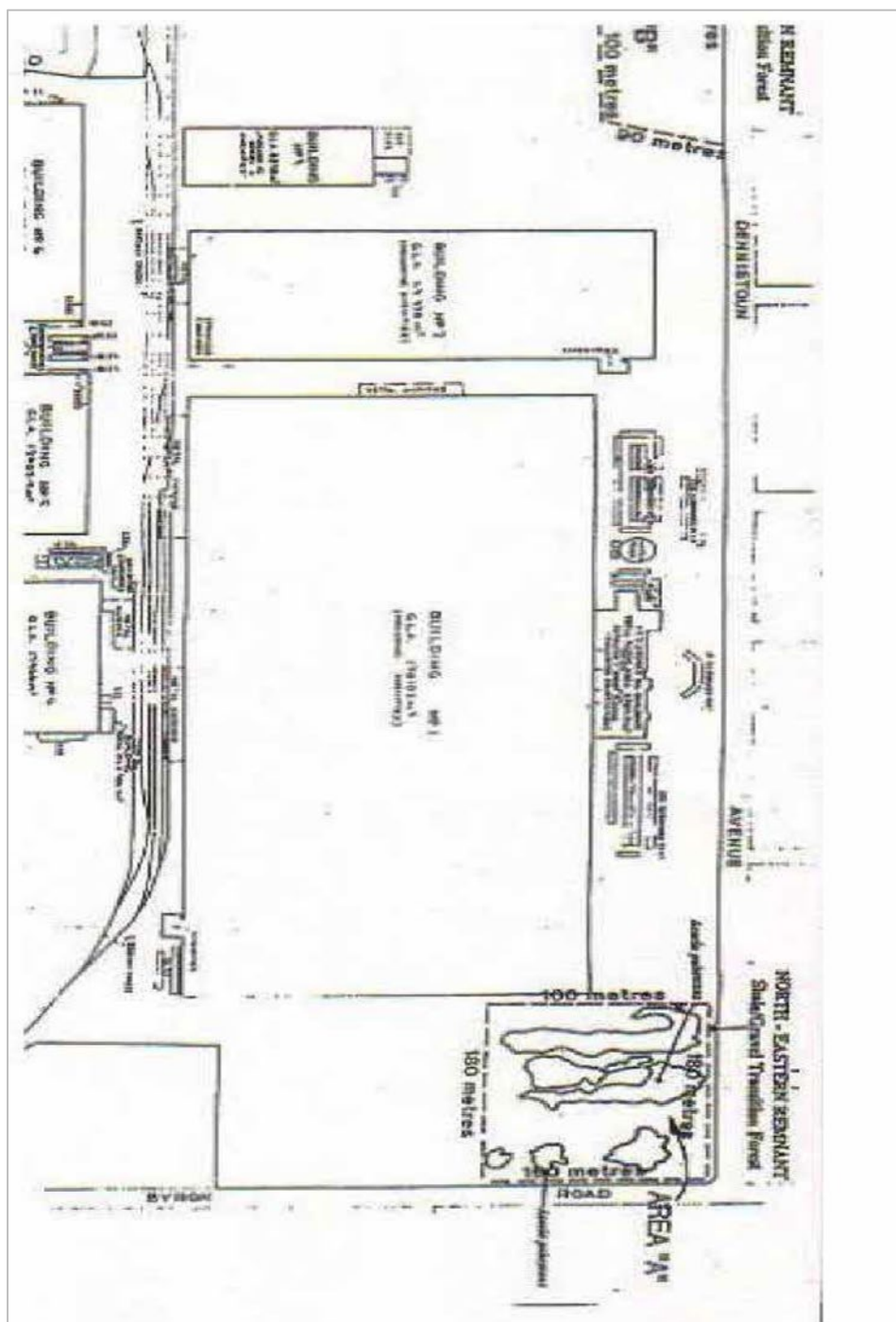
Controls

- C1. Future development applications involving the upgrading and development of new rail infrastructure are to provide a detailed description to Council of the nature of use of such infrastructure.
- C2. Ensure that train arrivals and departures and carriage shunting operations are restricted to between the hours of 7.00am to 6.00pm Monday to Friday, 7.00am to 12.00 noon Saturday, with no operations on Sundays and public

Appendix 1 – Site Plan for Yennora Distribution Park



Appendix 2: Remnant Vegetation Areas in Yennora Distribution Park



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