

Chapter 5B

COMMERCIAL AND INDUSTRIAL SUBDIVISION



Subdivision and Infrastructure – Urban subdivision

This chapter is divided into two sections, as follows:

1. Commercial Subdivision
2. Industrial Subdivision

In the event of any inconsistency between this Chapter and Chapter 5A Urban Residential Subdivision, Chapter 5A prevails to the extent of the inconsistency.

1. Commercial Subdivision

1.1 Minimum Allotment Sizes

This section applies to land in the commercial zones described below. The Plan does not specify minimum lot sizes for subdivision of land in the commercial zones.

Zones: B1 Neighbourhood Centre
 B2 Local Centre
 B3 Commercial Core
 B4 Mixed Use
 B6 Enterprise Corridor

A minimum frontage of 5m and depth of 20m is preferred (except for strata subdivision).

This reflects the manner in which the majority of lands in commercial zones are currently developed. Commercial subdivisions will most likely be of a minor nature such as boundary adjustments and strata subdivision of existing buildings or consolidation of existing lots.

1.2 Design Elements

The subdivision layout and street design and capacity criteria for commercial areas are mutually interdependent. This plan encourages a design concept for commercial areas reflecting the constraints of particular sites, providing for the land use mix and integration with surrounding commercial areas.

1.2.1 Element: Area Design

OBJECTIVE	
To provide secure, convenient and efficient commercial subdivisions that meet the needs of commerce and shoppers and residents.	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. The subdivision responds to site characteristics. 2. The street network provides a high level of internal accessibility and good external connections for vehicles, pedestrians and cyclists. 3. The street and lot layout minimises infrastructure costs and enables efficient provision of physical services. 4. The street and lot orientation and lot 	<p>There are no recommended suggested solutions for this element, as each situation requires an individual approach.</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>dimensions facilitate the siting and design of energy efficient buildings.</p> <p>5. The lot design and layout provides a variety of lot sizes to enable commercial and other complementary uses permitted in the zones.</p> <p>6. The layout retains significant vegetation and habitat areas, incorporates natural features and minimises soil erosion.</p> <p>7. The layout is integrated with the surrounding urban environment, providing landscaped buffers and street landscaping.</p> <p>8. The layout provides for personal and property safety and minimises the potential for crime through surveillance by pedestrians and drivers of passing vehicles.</p> <p>9. A pedestrian and cycleway network is provided that is safe, attractive and efficient running in public space.</p> <p>10. The layout and ground level height of lots provides an acceptable level of protection from flooding.</p>	

1.2.2 Element: Major Movement Networks

The capacity of existing and the design of new movement (street) networks in commercial subdivisions should provide for the likely amount and type of traffic generated by future uses.

The network should provide for factors such as:

- type of commercial premises e.g. retail premises, bulky goods premises, restaurants or, cafes, office premises etc.;
- size of individual activities;
- amount of commercial related light industrial and complementary activities; and
- proximity to public transport

that effect traffic generation.

OBJECTIVE
To provide for the economical and efficient construction and maintenance of movement and access systems, with acceptable levels of amenity, safety and convenience, for all street users.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. The street network meets the local needs of all street users and for the likely traffic in a co-ordinated manner. 2. The existing and proposed arterial road network has the capacity to accommodate the projected traffic movements. 3. The proposed street network efficiently connects with external traffic routes. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>The proposal conforms to the Lismore Traffic Study and models developed by Rust PPK, or a Development Control Plan approved by Council which provides for all street users.</p> <p>OR</p> <p>A Traffic Study with the proposal provides for an integrated approach to movement systems in a manner specified in this Plan.</p> <p>Provision is to be made for arterial road corridors as specified in Chapter 1 of Part B of this plan.</p> <p>The development conforms to any adopted Development Control Plan for the area and/or Traffic Study with the proposal showing a road network meeting required service levels.</p> <p>The street network provides for bus routes and pedestrians and cyclists in accordance with the requirements of this plan.</p> <p>Road connections within and between the proposed development and the existing road network shall meet the requirements of Councils <i>"General Specification for the Construction of Road and Drainage Works"</i>.</p>

Minimum Standards and Techniques

1. Road classification for commercial streets should reflect the Lismore Traffic Study and models by PPK and Tables 1, 2 and 3.

Table 1: Classification of Commercial Streets

Street level/type and function	Design speed (km/hr.)
Service Lane	10
Local Street	40
Collector Street	60
Sub-arterial Road	60

1.2.3 Element: Local Street Networks

OBJECTIVE
To ensure existing and new street networks provide for commercial and ancillary usage whilst providing acceptable levels of access, safety and convenience.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>Function and structure</p> <p>1. The proposed street network has a clear structure not exceeding the function of the existing network.</p> <p>2. The network has clear physical distinctions between streets based on function, legibility, convenience, anticipated traffic volume, vehicle speed, safety and amenity.</p> <p>Safety, access and convenience</p> <p>3. Intersections along commercial streets are spaced to create safe and convenient vehicle movements.</p> <p>Mode choice</p> <p>4. There is provision for bus routes.</p> <p>Design and Character</p> <p>5. The street network takes account of the topography, vegetation and watercourses.</p> <p>6. The proposed street network takes account of the existing street network and streetscape.</p> <p>7. The street network is orientated, where practical, to promote building energy efficiency.</p> <p>Environmental Protection</p> <p>8. Future traffic will be within the acceptable capacity of the existing and proposed streets.</p> <p>Cost effectiveness</p> <p>9. Streets and carriageway widths and street lengths to optimise the cost effectiveness of the street network without comprising street function.</p> <p>10. The network provides for the cost effective provision of public utilities.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Function and structure</p> <p>Proposed streets link with other streets that have capacity to accommodate increased traffic.</p> <p>The street network reflects the characteristics specified in <i>Tables 1 and 3</i>.</p> <p>Safety, access and convenience</p> <p>The location of intersections are to meet Councils "<i>General Specification for the Construction of Road and Drainage Works</i>" and Austroads Guidelines.</p> <p>Streets should intersect only with streets of the same or next classification (Refer to <i>Table 1</i>).</p> <p>Mode choice</p> <p>Public transport routes and stops are provided as set out in Element 1.2.5 – Public Transport.</p> <p>Design and Character</p> <p>The street network permits establishment of streetscapes that incorporate the provisions of Element 1.5.1 - Streetscape and Landscape.</p> <p>Cost effectiveness</p> <p>The network caters for the provision of public utility networks including water, gas, sewerage, electricity and telecommunications.</p>

1.2.4 Element: Pedestrian and Cyclist Facilities

OBJECTIVE
To encourage walking and cycling between residential, commercial and industrial areas.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>Planning</p> <p>1. The commercial street and path network provides a network of safe pedestrian and cyclist routes with connections to adjoining pedestrian and cyclist routes.</p> <p>Location and Design</p> <p>2. The location of footpaths and cycleways in the street is determined by:</p> <ul style="list-style-type: none"> • low vehicle speed; • cyclist and pedestrian safety and comfort; • on-street parking; • location of infrastructure services; • landscaping; • safety; and • cost efficiency. <p>3. The design of footpaths and cycleways is to:</p> <ul style="list-style-type: none"> • permit casual surveillance; • be aligned to permit safe and convenient use; and • permit shared use. <p>Safe Crossings</p> <p>4. Safe street crossings are to be provided for all street users with safe sight distances, pavement markings, warning signs and safety rails (where appropriate).</p> <p>Construction</p> <p>5. Pedestrian and cyclist paths are constructed to provide a stable surface for projected users which is easily maintained</p>	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Planning</p> <p>Cycleway facilities are to provided in accordance with the Lismore Cycleway Plan</p> <p>OR</p> <p>an approved Traffic Study which provides for an integrated approach to movement systems in a manner specified in this Plan.</p> <p>Location and Design</p> <p>Footpaths and cycleways are to be provided in collector streets and in accordance with the Lismore Cycleway Plan.</p> <p>Safe Crossings</p> <p>Street crossings are to be provided in accordance with the Lismore Cycleway Plan.</p> <p>Crossings are to be designed to reflect anticipated street traffic volumes.</p> <p>Construction</p> <p>Footpaths are to be constructed in accordance with Councils "<i>General Specification for the Construction of Road and Drainage Works</i>".</p> <p>Cycleways are to be constructed of an asphalt sealed or equivalent standard pavement.</p>

Minimum standards or techniques

Refer to Chapter 5A Element 4.4

1.2.5 Element: Public Transport

OBJECTIVE
To increase the opportunity for choice in mode of transport to places of employment and shopping and provide convenient and accessible cost effective and energy efficient public transport services.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>Planning</p> <p>1. The commercial trunk/collector street is to provide for public transport.</p> <p>Route location and design</p> <p>2. Convenient connections to adjoining areas and other public transport routes provide for ease of movement of buses.</p> <p>3. Buses are to be able to safely gain access to the area without complicated manoeuvres.</p> <p>4. Street alignment and geometry of commercial access streets are to allow for the unimpeded movement of buses, without retracing the route.</p> <p>Bus stop location and design</p> <p>5. Public transport stop to provide for pedestrian safety, security, comfort and convenience.</p> <p>6. Bus stops are designed to prevent vehicles overtaking a stationary bus, or vehicle site distances adequate to ensure safe pedestrian crossings.</p> <p>7. Bus stops are located and designed to provide shelter, seats and adequate lighting (where required) and timetable information.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Planning</p> <p>Where a Development Control Plan or other planning instrument exists, routes that conform with that plan</p> <p>Route location and design</p> <p>Routes for bus services are to be designed in accordance with Austroads Standards and Table 2.</p> <p>Bus stop location and design</p> <p>The location of bus stops is to relate to the pedestrian network.</p>

Minimum Standards and Techniques

Table 2: Minimum Requirements for Bus Routes

STREET CARRIAGEWAY WIDTHS	
One-way: 6.5 metres	
Two-way: 9.0 metres or 7.5 metres where bus bays are provided with a traffic calming and management.	
TURNING CIRCLES	
Maximum desirable pavement crossfall:	3%
Maximum desirable longitudinal gradient:	6%
Absolute maximum gradient:	6%
Radius 15 metres for single bus	
ROUNDBABOUTS	
Absolute maximum gradient:	12%

1.3 Physical Infrastructure

1.3.1 Element: Road Reserve and Carriageways

OBJECTIVES	
<p>To provide an appropriate street reserve width to accommodate the required carriageway, and to provide for the primarily pedestrian function of the verges.</p> <p>Carriageway width to be sufficient to enable the street to perform its required traffic and parking functions efficiently, safely and conveniently.</p> <p>Carriageway construction standards to minimise both capital cost and future maintenance costs.</p>	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objectives may be achieved where:</p> <ol style="list-style-type: none"> 1. Minimum street reserve width at any point to be not less than the sum of the minimum widths required for the carriageway and verges. 2. Carriageway width providing two lanes for moving traffic (one each way), and a parking lane each side wherever there is frontage to commercial lots. 3. Lane widths to be appropriate for the movement and parking of service vehicles, and for access to lots with minimum interference to moving traffic. 	<p>The following suggested solutions represent ONE WAY of meeting the objectives and performance criteria:</p> <p>Road reserve and carriageways are provided in accordance with Table 3.</p>

Minimum Standards and Techniques

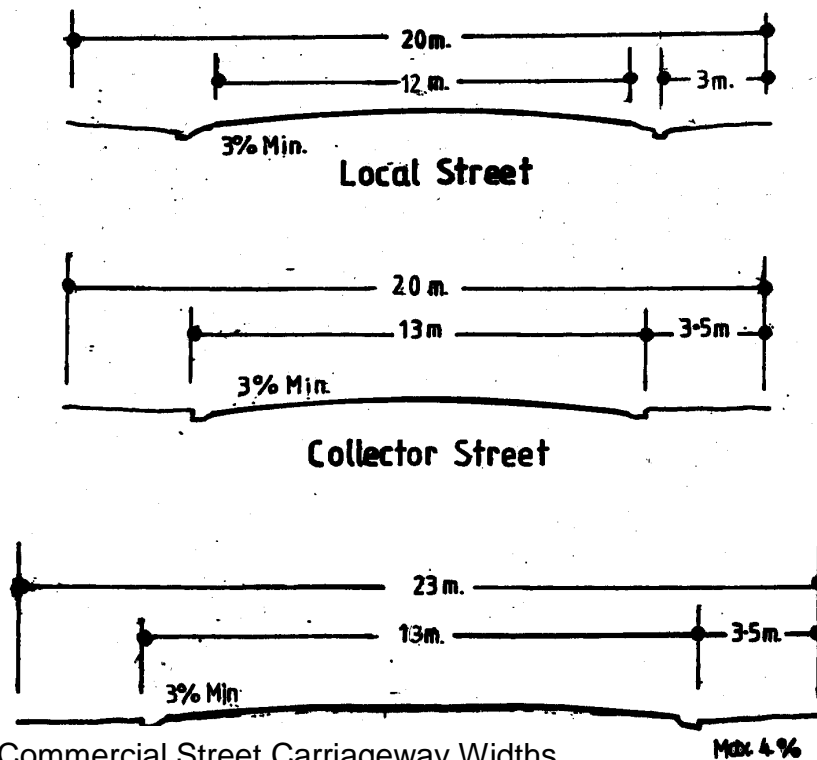


Figure 1: Commercial Street Carriageway Widths

Table 3: Characteristics of Commercial Streets (refer Table 1).

Characteristic	Service Lane	Local Street	Collector Street	Sub-arterial
<u>Road Reserve Width</u> metres	18	20	20 Design for intersections & roundabouts etc.	23 Design for intersections & roundabouts etc.
<u>Carriageway Width</u> (pavement cement stabilised)	Travel 2 x 3.5 Parking 1 x 2.5 Total 9.5 metres	Travel 2 x 3.5 Parking 2 x 2.5 Total 12 metres	Travel 2 x 3.5 Parking 2 x 3 Total 13 metres	Travel 2 x 3.5 Parking 2 x 3 Total 13 metres
<u>No. travel lanes</u>	2	2+	2+	2+
<u>Parking in reserve</u>	Carriageway	Carriageway	Carriageway	Prefer none
<u>Kerb type</u>	Upright	Upright	Upright	Upright
<u>Footpath</u>	1 x 3	2 x 3	2 x 3.5	2 x 3.5
<u>Cycleway</u>	Road	Road	Provided	Provided

1.3.2 Element: Verges

OBJECTIVE
To provide an area between the street carriageway and commercial lots sufficient to maintain the functions of safety, amenity and convenience.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> Verge widths are to provide adequately for: <ul style="list-style-type: none"> safety and visibility; street amenity e.g. street landscaping, seating, public art and other civic facilities; new building projects and associated spaces e.g. terraces, plazas, parks etc.; utility services; pathways. Verge crossfalls are to be suitable for: <ul style="list-style-type: none"> lot access; pedestrian movement; drainage. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Road reserve and carriageways are provided in accordance with <i>Table 3</i>.</p> <p>Additional width may be required where a dual use path (pedestrian and cycleways) are proposed.</p> <p>Maximum crossfalls in verge 4%.</p>

1.3.3 Element: Parking

OBJECTIVES
<p>To provide sufficient and convenient parking for shoppers, employees, visitors and commercial vehicles.</p> <p>To ensure that parked vehicles do not obstruct the passage of vehicles on the carriageway, or create traffic hazards.</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objectives may be achieved where:</p> <p>1. Provision of a parking lane on the carriageway of all commercial streets, where there is adjacent frontage of commercial lots.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objectives and performance criteria:</p> <p>Parking is to be provided in accordance with Table 3.</p>

1.3.4 Element: Street Construction

OBJECTIVE
<p>To construct streets that support the design and intended use without unnecessary construction and whole of life cycle costs.</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>1. The pavement edging and landscaping support the function of the street.</p> <p>2. The pavement edge:</p> <ul style="list-style-type: none"> • controls vehicle movements by delineating the carriageway; • assists in the control of stormwater. <p>3. Street pavement surfaces are;</p> <ul style="list-style-type: none"> • well designed and durable enough to carry wheel loads of travelling and parked vehicles; • ensure the safe passage of vehicles, pedestrians and cyclists; • discharge of rainfall; • all-weather access; • reasonable travel comfort. <p>4. Public street construction and whole of life cycle costs are kept low.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Pavement and landscape materials are used to distinguish different street functions.</p> <p>Pavement edging in accordance with <i>Table 3</i>.</p> <p>Flexible pavement and kerb construction is to be based on the requirements outlined in Councils <i>"General Specification for the Construction of Road and Drainage Works"</i>.</p>

1.3.5 Element: Utility Services

OBJECTIVE	
<p>To ensure that commercial areas are adequately serviced with sewerage, water, gas, fire fighting, electricity, street lighting and communication services in a timely, cost effective, co-ordinated and efficient manner.</p>	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. Design and provision of utility services are cost effective over their life cycle and incorporate provisions to minimise adverse environmental impact. 2. Compatible public utility services are located in common trenching in order to minimise the land required and the costs for underground services. 3. Public lighting shall be designed to maximise` energy efficiency. 4. Development occurs within locations where there is an adequate water supply for fire fighting. 5. Development is staged to ensure that each stage is fully serviced before a new area is released. 6. Water supply and sewerage networks are accessible, easy to maintain, and cost effective based on life cycle costs. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>The design and provision of utility services conforms to:</p> <p>Councils:</p> <ul style="list-style-type: none"> • <i>"General Specification for the Construction of Road and Drainage Works"</i>, • <i>"Specification for the Construction of Sewers"</i>, and • <i>"Specification for the Construction of Water Reticulation"</i>. <p>and</p> <p>the requirements of other relevant supply authorities.</p> <p>Lot layout to be designed to ensure that effluent from each lot can gravitate into the sewer. This might require a building envelope and minimum floor level.</p>

1.4 Stormwater Management

1.4.1 Element: Stormwater Drainage

OBJECTIVE	
<p>To provide major and minor drainage systems which:</p> <ul style="list-style-type: none"> adequately protects people and the natural and built environments to an acceptable level of risk and in a cost effective manner in terms of initial cost and on-going maintenance, and contributes positively to environmental enhancement of catchment areas. 	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>MAJOR SYSTEM</p> <ol style="list-style-type: none"> The major stormwater system has the capacity to safely convey stormwater flows resulting from the relevant design storm events under normal operating conditions. The major system has the capacity to convey safely, but possibly with flooding, stormwater flows resulting from events more extreme than the design storm without significant property damage. Community benefit is maximised through the retention of natural streams and vegetation, wherever practical. The major system is designed to ensure that there are no flow paths which would increase risk to public safety and property. <p>MINOR SYSTEM</p> <ol style="list-style-type: none"> The minor storm drainage system has the capacity to control stormwater flows under normal operating conditions for the relevant design storm with minimal risk of blockage. Drainage networks are well defined to ensure there are no hidden flow paths which could reduce their capacity to convey design flows. The design of the minor system takes full account of existing downstream systems. The minor system design allows for the safe passage of vehicles at reduced speed on streets which have been affected by runoff from the relevant design storm. The minor system is accessible and easily maintained. Where a portion of the minor system is within a site, access is available for maintenance. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>MAJOR SYSTEM</p> <p>The design and construction of major stormwater drainage systems are in accordance with the requirements of:</p> <ul style="list-style-type: none"> <i>Australian Rainfall and Runoff (1987)</i>, and Councils, "<i>General Specification for the Construction of Road and Drainage Works</i>". <p>The major system design is undertaken on a Total Catchment Management basis.</p> <p>The major system design outflow is matched to the capacity of any existing downstream system and where necessary detention basins etc. are provided to retard stormwater flows onto downstream properties.</p> <p>MINOR SYSTEM</p> <p>The design and construction of minor stormwater drainage systems are in accordance with the requirements of:</p> <ul style="list-style-type: none"> <i>Australian Rainfall and Runoff (1987)</i>, and Councils, "<i>General Specification for the Construction of Road and Drainage Works</i>". <p>The minor system design outflow is matched to the capacity of any existing downstream system.</p> <p>The minor system allows for the safe passage of vehicles at reduced speeds on streets which have been affected by runoff from a 1 in 20 year storm event.</p> <p>SITE DRAINAGE</p> <p>Where site topography prevents the discharge of stormwater directly to the street gutter or a Council controlled piped system, inter-allotment drainage is provided to accept runoff from all existing or future impervious areas that are likely to be directly connected.</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>11. The selection of materials used for the construction of the minor system is based on their suitability, durability, maintainability and cost-effectiveness.</p> <p>SITE DRAINAGE</p> <p>12. Subdivision design and layout provides for adequate site drainage.</p> <p>DRAINAGE OUTLETS</p> <p>13. All stormwater systems shall be designed to discharge appropriate water volume, velocity and quality to an acceptable legal point of discharge.</p>	<p>The design and construction of inter-allotment stormwater drainage systems are in accordance with the requirements of:</p> <ul style="list-style-type: none"> • <i>Australian Rainfall and Runoff (1987)</i>, and • Councils, "<i>General Specification for the Construction of Road and Drainage Works</i>".

1.4.2 Element: Water Quality Management

OBJECTIVE
<p>To provide water quality management systems which:</p> <ul style="list-style-type: none"> • ensure that disturbance to natural stream systems is minimised, and • stormwater discharge to surface and underground receiving waters, both during construction and in developed catchments, does not degrade the quality of water in the receiving waters.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. Adequate provision is made for measures during construction to ensure that the land form is stabilised and erosion is controlled. 2. The system design optimises the interception, retention and removal of water-borne pollutants through the use of appropriate measures prior to discharge to receiving waters. 3. The system design minimises the environmental impact of urban runoff on surface receiving water quality and on other aspects of the natural environment e.g. vegetation, by employing techniques which are appropriate and effective in reducing runoff and pollution travel. 4. Point sources of pollution in the catchment should be identified and their impact minimised until their impact can be eliminated. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>An Erosion and Sediment Management Plan is prepared by properly qualified personnel using recognised and locally accepted design methodologies.</p> <p>The Erosion and Sediment Management Plan is to comply with the Department of Land and Water Conservation's <i>Urban Erosion and Sediment Control Manual</i>, Council's "<i>General Specification for the Construction of Road and Drainage Works</i>" and <i>Soil erosion and sediment control guidelines</i>.</p> <p>Water pollution control ponds or wetlands are developed (where appropriate) for final treatment before discharge to the wider environment and should be sited to minimise impacts on the natural environment.</p>

1.5 Streetscape and Lot Layout

1.5.1 Element: Streetscape and Landscape

OBJECTIVE	
<p>To provide an attractive commercial streetscape that:</p> <ul style="list-style-type: none"> reinforces the functions of street network, enhances the amenity of the area generally and future buildings and are sensitive to the landscape and environmental conditions of the locality. 	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> The street and landscape design achieves: <ul style="list-style-type: none"> the creation of commercial environments with character and identity; compliments attractive streetscapes in established areas; provision for street tree planting, taking into account the natural landscape, the image and role of the street, soils, selection of appropriate species and services; and use of existing features such as vegetation, landmarks etc. The design of the landscape in public streets: <ul style="list-style-type: none"> defines a theme for new streets or complements existing streetscapes; is sensitive to site attributes; complements the function of the street; reinforces desired traffic speed and behaviour; is of an appropriate scale to street width and the likely bulk of buildings; promotes safety and casual street surveillance; incorporates existing vegetation, promotes the planting of native vegetation in environmentally sensitive areas; maximises landscaped areas, where appropriate; enhances pedestrian comfort; achieves effective line of sight for pedestrians, cyclists and motorists, provides adequate lighting; and satisfies maintenance and utility requirements and minimises their visual impact of above ground utilities. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>The plan conforms to a Development Control Plan or commercial centre strategy approved by Council which provides for landscaping and public facilities.</p> <p>OR</p> <p>A Landscape Plan is submitted that demonstrates how the Performance Criteria are met showing:</p> <ul style="list-style-type: none"> the street reserves and indicative locations of the carriageway, parking lanes/bays, cycleways and footpaths, traffic management devices; location of existing vegetation to be removed and/or conserved; location, species and general character of tree planting and hard and soft landscape treatment; indicative location of buildings. <p>Landscape is in accordance with Council's "<i>Landscape Guidelines</i>" and any approved landscaping strategy.</p> <p>Compliance with the performance criteria is achieved by a Landscape Plan showing:</p> <ul style="list-style-type: none"> boundaries and areas of open and landscaped space; existing vegetation and proposed character of landscape treatment; general arrangement of hard landscaping elements and major earth works; indicative treatment of floodways and drainage lines; landscape plantings in buffers is to be dense to minimise future maintenance.

1.5.2 Element: Lot Layout

OBJECTIVES
<p>To provide a range and mix of lot sizes to suit a variety of commercial uses with areas and dimensions to meet user requirements.</p> <p>To provide lots that are orientated, to minimise energy consumption.</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objectives may be achieved where:</p> <p>SIZE</p> <p>1. Lots have the appropriate area and dimensions for the siting and construction of a commercial building, the provision of storage space, vehicle access, manoeuvring and parking and landscaping.</p> <p>USER REQUIREMENTS</p> <p>2. Lot frontages are orientated to streets and open spaces so that personal and property security, deterrence of crime and vandalism, and surveillance of footpaths and open spaces are facilitated.</p> <p>3. Lot design is to preclude the need to reverse onto the public street and collector and arterial roads in particular.</p> <p>ORIENTATION AND ENERGY</p> <p>4. Lots are orientated, where possible, to facilitate the siting of buildings to take advantage of micro-climate and on-site solar access.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objectives and performance criteria:</p> <p>SIZE</p> <p>A variety of lot sizes should be provided to meet market demand.</p> <p>Lots should be regular and rectangular in shape.</p> <p>Lot shape and area should be sufficient to permit easy access to the rear of the lot.</p>

1.5.3 Element: Subdivision of Buildings

OBJECTIVES
To allow separate titles to be created for parts of a development.
To provide for the effective and efficient management of common or shared facilities.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objectives may be achieved where:</p> <ol style="list-style-type: none"> 1. The range and extent of body corporate activities are limited to those legally permitted. 2. The street and lot layout clearly defines the public, communal and private areas of a development, including the function, ownership and management of landscape and access areas. 	<p>The following suggested solutions represent ONE WAY of meeting the objectives and performance criteria:</p> <p>Such measures may include:</p> <ul style="list-style-type: none"> • creating separate sites for each commercial space; • incorporating car parking facilities in the same strata lot as the shop or office to which they relate or are identified as communal property; • designing buildings to minimise the need for corporate building management; • ensuring that cost effective management is practicable where communal landscape or shared facilities are provided.

Minimum Standards and Techniques

1. The building/s were erected in accordance with a Development Consent issued after 27/2/92 by Lismore City Council under the Lismore Local Environmental Plan, 1992 or subsequent LEP, otherwise development approval is required.
2. The building/s have been completed in accordance with relevant legislation.
3. Separate utility service meters / junctions are provided to each commercial space and if necessary any common area.

Note:

Applicants should be aware of the requirements of s37 of the Strata Schemes (Freehold Development) Act, 1973.

2. Industrial Subdivision

2.1 Minimum Allotment Size

This section applies to subdivision of land in the industrial zones of the Lismore Local Environmental Plan 2012. The LEP 2012 minimum lot size for IN1 General Industrial and IN2 Light Industrial zones is generally 1500m². This Plan provides for a variety of lot sizes, above 1500m², for subdivision of land in the industrial zones in order to meet market demand and requirements of a variety of industrial uses.

In general, this Plan specifies the following lot layout:

- a satisfactory size and shape, and
- a lot size of 1500m² where the proposed subdivision is accompanied by a development plan which demonstrates that the land can be satisfactorily developed for an industrial purpose in accordance with Chapter 3 - Industrial Development.

Note. The above minimum lot size does not apply to industrial strata or community title lots.

2.2 Design Elements

The subdivision layout and street design criteria for industrial estates are mutually interdependent. This plan encourages a design concept for industrial estate/parks reflecting the constraints of particular sites and integration with surrounding industrial areas.

2.2.1 Element: Estate Design

OBJECTIVE	
To provide secure, convenient and efficient industrial subdivisions that meet the needs of industry.	
PERFORMANCE CRITERIA	SUGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. The subdivision responds to site characteristics. 2. The street network provides a high level of internal accessibility and good external connections for large vehicles, pedestrians and cyclists. 3. The street and lot layout minimises infrastructure costs and enables efficient provision of physical services. 4. The street and lot orientation and lot dimensions facilitate the siting and design of energy efficient buildings. 5. The lot design and layout provides a variety of lot sizes to enable industrial and other complementary uses permitted in the zone. 6. The layout retains significant vegetation and habitat areas, incorporates natural features and minimises soil erosion. 7. The layout is integrated with the surrounding urban environment, providing 	<p>There are no recommended suggested solutions for this element, as each situation requires an individual approach.</p>

PERFORMANCE CRITERIA	SUGESTED SOLUTIONS
<p>landscaped buffers and street landscaping.</p> <p>8. The layout provides for personal and property safety and minimises the potential for crime through surveillance by pedestrians and drivers of passing vehicles.</p> <p>9. A pedestrian and cycleway network is provided that is safe, attractive and efficient running in public space and avoiding areas that are not easily observable at night.</p> <p>10. The layout and ground level height of lots provides an acceptable level of protection from flooding.</p>	

2.2.2 Element: Major Movement Networks

The design of movement (street) networks in industrial subdivisions should provide for the likely amount and type of traffic generated by future uses.

The network should provide for factors that effect traffic generation such as:

- type of industry;
- size of individual industries;
- amount of industry related retailing and complementary activities and
- proximity to public transport.

OBJECTIVE	
To provide for the economical and efficient construction and maintenance of movement and access systems, with acceptable levels of amenity, safety and convenience, for all street users.	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. The street network meets the local needs of all street users and for the likely traffic in a co-ordinated manner. 2. The existing and proposed arterial road network has the capacity to accommodate the projected traffic movements. 3. The proposed street network efficiently connects with external traffic routes. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>The proposal conforms to a Development Control Plan approved by Council which provides for all street users.</p> <p>OR</p> <p>A Traffic Study submitted with the proposal provides for an integrated approach to movement systems in a manner specified in this Plan.</p> <p>Provision is to be made for arterial road corridors as specified in Council's Regional City Plan.</p> <p>The development conforms to any adopted Development Control Plan for the area and/or Traffic Study with the proposal showing a road network meeting required service levels.</p> <p>The street network provides for bus routes and pedestrians and cyclists in accordance with the requirements of this plan.</p> <p>Streets are to be designed to restrict the traffic volume on each street to a limit appropriate to the street classification.</p> <p>Street layout is to exclude unplanned through traffic.</p> <p>Road connections within and between the proposed development and the existing road network shall meet the requirements of Councils "<i>General Specification for the Construction of Road and Drainage Works</i>".</p>

Minimum Standards and Techniques

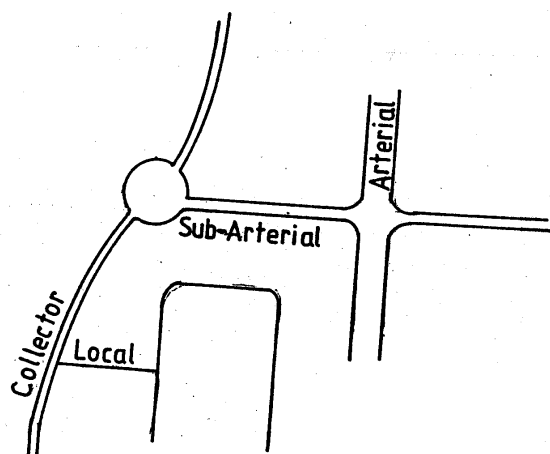


Figure 2: Road Hierarchy

Table 4: Classification of Industrial Streets

Street level/type and function	Design speed (km/hr.)	Stopping distances (metres)
Local Street	40	30
Collector Street	40	30
Sub-arterial Street	60	70
Arterial Road	80	100

2.2.3 Element: Local Street Networks

OBJECTIVE	
To create street networks which provide for industrial usage whilst providing acceptable levels of access, safety and convenience.	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>Function and structure</p> <p>1. The proposed street network has a clear structure not exceeding the function of the existing network.</p> <p>2. The network has clear physical distinctions between streets based on function, legibility, convenience, anticipated traffic volume, vehicle speed, safety and amenity.</p> <p>Safety, access and convenience</p> <p>3. Intersections along industrial streets are spaced to create safe and convenient vehicle movements.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Function and structure</p> <p>Proposed streets link with other streets that have capacity to accommodate increased traffic.</p> <p>The street network reflects the characteristics specified in Tables 4, 5 and 6.</p> <p>Safety, access and convenience</p> <p>Intersections are spaced as set out in Table 5.</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>Mode choice 4. There is provision for bus routes within Sub-arterial Streets.</p> <p>Design and Character 5. The street network takes account of the topography, vegetation and watercourses.</p> <p>6. The proposed street network takes account of the existing street network and streetscape.</p> <p>7. The street network is orientated, where practical, to promote building energy efficiency.</p> <p>Environmental Protection 8. Future traffic will be within the acceptable capacity of the existing and proposed streets.</p> <p>Cost effectiveness 9. Streets and carriageway widths and street lengths should optimise the cost effectiveness of the street network without comprising street function.</p> <p>10. The network provides for the cost effective provision of public utilities.</p>	<p>The locations of intersections are to meet Council's "General Specification for the Construction of Road and Drainage Works".</p> <p>Total number of intersections should be minimised.</p> <p>Streets should intersect only with streets of the same or next classification (refer to Table 4).</p> <p>Mode choice Public transport routes and stops are provided as set out in Element 2.2.5 – Public Transport.</p> <p>Design and Character The street network permits establishment of streetscapes that incorporate the provisions of Element 2.2.1 - Estate Design.</p> <p>Cost effectiveness The network caters for the provision of public utility networks including water, sewerage, electricity and telecommunications.</p>

Minimum Standards and Techniques

Table 5: Desirable Minimum Intersection Spacing - Industrial Streets

Street Type	Same side of street (metres)	Opposite side of the street (metres) Left/right Right/left
Local Street	Austroads	Pt. 5.
Collector Street		
Sub-arterial Street		

2.2.4 Element: Pedestrian and Cyclist Facilities

OBJECTIVE
To encourage walking and cycling between residential, commercial and industrial areas.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>Planning</p> <p>1. The industrial street and path network provides a network of safe pedestrian and cyclist routes with connections to adjoining pedestrian and cyclist routes.</p> <p>Location and Design</p> <p>2. The location of footpaths and cycleways in the street is determined by:</p> <ul style="list-style-type: none"> • low vehicle speed, • cyclist and pedestrian safety and comfort, • on-street parking, • location of infrastructure services including postal services, • landscaping, • safety, and • cost efficiency. <p>3. The design of footpaths and cycleways is to:</p> <ul style="list-style-type: none"> • permit casual surveillance, • be aligned to permit safe and convenient use, • permit shared use. <p>4. Access streets are to be designed to permit cyclist use of the street pavement.</p> <p>Safe Crossings</p> <p>5. Safe street crossings are to provide for all street users with safe sight distances, pavement markings, warning signs and safety rails (where appropriate).</p> <p>Construction</p> <p>6. Pedestrian and cyclist paths are constructed to provide a stable surface for projected users which is easily maintained</p>	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Planning</p> <p>Cycleway facilities are to provided in accordance with the Lismore Cycleway Plan</p> <p>OR</p> <p>an approved Traffic Study which provides for an integrated approach to movement systems in a manner specified in this Plan.</p> <p>Location and Design</p> <p>Footpaths and cycleways are to be provided in Collector Streets and in accordance with the Lismore Cycleway Plan.</p> <p>Safe Crossings</p> <p>Street crossings are to be provided in accordance with the Lismore Cycleway Plan.</p> <p>Crossings are to be designed to reflect anticipated street traffic volumes.</p> <p>Construction</p> <p>Footpaths are to be constructed in accordance with Councils "<i>General Specification for the Construction of Road and Drainage Works</i>".</p> <p>Cycleways may be constructed of an asphalt sealed pavement or equivalent standard concrete pavement.</p>

Minimum Standards or Techniques

Refer to Element 4.4 Chapter 5A.

2.2.5 Element: Public Transport

OBJECTIVE	
To increase the opportunity for choice in mode of transport to places of employment and provide convenient and accessible cost effective and energy efficient public transport services.	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>Planning</p> <p>1. The industrial Collector Street is to provide for public transport.</p> <p>Route location and design</p> <p>2. Convenient connections to adjoining areas and other public transport routes provide for ease of movement of buses.</p> <p>3. Buses are to be able to safely gain access to the area without complicated manoeuvres.</p> <p>4. Street alignment and geometry of collector streets are to allow for the unimpeded movement of buses.</p> <p>Bus stop location and design</p> <p>5. Public transport stops to provide for pedestrian safety, security, comfort and convenience.</p> <p>6. Bus stops are designed to prevent vehicles overtaking a stationary bus, or vehicle site distances adequate to ensure safe pedestrian crossings.</p> <p>7. Bus stops are located and designed to provide shelter, seats and adequate lighting (where required) and timetable information.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Planning</p> <p>Where a Development Control Plan or other planning instrument exists, routes conform with that plan.</p> <p>Route location and design</p> <p>Routes for bus services are to be designed in accordance with Austroad Standards and Table 2.</p> <p>Bus stop location and design</p> <p>The location of bus stops is to relate to the pedestrian network.</p>

2.2.6 Element: Flooding

OBJECTIVES	
To ensure the subdivision of flood prone land for industrial purposes provides for future development appropriate for the land.	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. Industrial subdivision is not permitted in floodways or on land not suited to the proposed use. 2. Finished ground levels which provide for floor levels to be constructed at or above the 1 in 20 flood event. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Subdivision and development of industrial land is to be in accordance with Chapter 8 - Flood Prone Lands.</p> <p>OR</p> <p>A Flood Study prepared on behalf of Council and/or other Council approved hydraulic consultants substantiate the proposed use of the land.</p> <p>No filling is permitted in floodways, other than to return landform to its original state.</p>

2.2.7 Element: Buffers to Avoid Land Use Conflicts

OBJECTIVE	
To minimise land use conflicts between industrial land and other potentially incompatible land uses through the establishment of appropriate buffers.	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. Buffer areas provided between industrial and residential land uses. 2. Landscape plans are to include the proposed treatment of buffer areas. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Subdivision of industrial land is to be in accordance with Chapter 3 - Industrial Development and Chapter 11 - Buffer Areas.</p> <p>OR</p> <p>A minimum 50m industrial buffer area is to be created between industrial and residential land uses.</p> <p>Buffer areas are to be landscaped in accordance with an approved landscape plan and prior to release of land titles plans.</p>

2.3 Physical Infrastructure - Street Design

2.3.1 Element: Road Reserve and Carriageways

OBJECTIVES	
<p>To provide an appropriate street reserve width to accommodate the required carriageway, and to provide for the function of the verges.</p> <p>Carriageway width to be sufficient to enable the street to perform its required traffic and parking functions efficiently, safely and conveniently, but in the interests of economy to be no greater than necessary for these purposes.</p> <p>Carriageway construction standards to minimise both capital cost and future maintenance costs.</p>	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objectives may be achieved where:</p> <ol style="list-style-type: none"> 1. Minimum street reserve width at any point to be not less than the sum of the minimum widths required for the carriageway and verges. 2. Carriageway width providing two lanes for moving traffic (one each way), and a parking lane each side wherever there is frontage to industrial lots. 3. Lane widths to be appropriate for the movement and parking of heavy vehicles, and for access to lots with minimum interference to moving traffic. 	<p>The following suggested solutions represent ONE WAY of meeting the objectives and performance criteria:</p> <p>Road reserve and carriageways are provided in accordance with Table 6.</p> <p>Cul-de-sacs should generally be avoided in industrial estates.</p>

Minimum Standards and Techniques

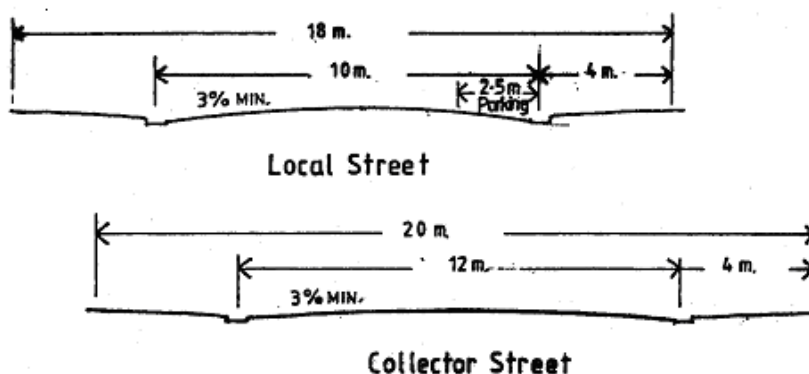


Figure 3: Carriageway Widths

Table 6: Characteristics of Industrial Streets (refer Tables 4 and 5)

Characteristic	Local Street	Collector Street	Sub-arterial Street
<u>Road Reserve Width</u> Metres	20	20	20 Design for intersections & roundabouts etc.
<u>Street Width</u> <u>Carriageway</u> (pavement cement stabilised) <u>Cul-de-sac bulb</u> Metres	Travel 2 x 3.5 Parking 2 x 2.5 Total 12 metres 15 m. radius	Travel 2 x 3.5 Parking 2 x 2.5 Total 12 metres	Travel 2 x 3.5 Parking 2 x 3 Total 13 metres
<u>No. travel lanes</u>	2+	2+	2+
<u>Parking in reserve</u>	Carriageway	Carriageway	Carriageway
<u>Kerb type</u>	Upright	Upright	Upright
<u>Footpath</u>	Nil	Nil	1 x 1.2 m. in verge
<u>Cycleway</u>	Road	Road	Good visibility with footpath 1 x 3.5 m.
<u>Verge width</u> Metres	2 x 4	2 x 4	2 x 4

2.3.2 Element: Verges

OBJECTIVE
To provide a buffer area between the street carriageway and industrial lots sufficient to maintain the functions of safety, amenity and convenience, but in the interests of economy not providing a width more than necessary.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> Verge widths provide adequately for: <ul style="list-style-type: none"> safety and visibility; amenity; utility services; and cycleways and pathways. Verge crossfalls are suitable for: <ul style="list-style-type: none"> lot access; pedestrian movement; drainage. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Road reserve and carriageways are provided in accordance with Table 6.</p> <p>Additional width may be required where a dual use path (pedestrian and cycleways) is proposed in a Trunk/Collector street.</p> <p>Maximum crossfalls in verge 4%.</p>

2.3.3 Element: Road Design Speeds, Alignment and Geometry

OBJECTIVE	
The provision of a street environment which allows all street users to travel, park and access allotments with safety and convenience.	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>1. Street speed, alignment and geometry are based on an appropriate design minimum speed.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Road design, alignment and geometry be in accordance with Council's <i>"General Specification for the Construction of Road and Drainage Works"</i>.</p> <p>Street speed, alignment and geometry provided in accordance with Tables 4, 5 and 6 where appropriate.</p>

2.3.4 Element: Parking

OBJECTIVES	
To provide sufficient and convenient parking for employees, visitors and commercial vehicles.	
To ensure that parked vehicles do not obstruct the passage of vehicles on the carriageway, or create traffic hazards.	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objectives may be achieved by:</p> <p>1. Provision of a parking lane on the carriageway of all industrial streets, where there is adjacent frontage of industrial lots.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objectives and performance criteria:</p> <p>Parking is to be provided in accordance with Table 6.</p> <p>Provision of on-street parking is to be one (1) car space per 12 metres of lot frontage.</p>

2.3.5 Element: Street Construction

OBJECTIVE
To construct streets that support the design and intended use without unnecessary construction and whole of life cycle costs.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. The pavement edging and landscaping support the function of the street. 2. The pavement edge: <ul style="list-style-type: none"> • controls vehicle movements by delineating the carriageway; • assists in the control of stormwater. 3. Street pavement surfaces are: <ul style="list-style-type: none"> • well designed and durable enough to carry wheel loads of travelling and parked vehicles; • ensure the safe passage of vehicles, pedestrians and cyclists; • discharge of rainfall; • all-weather access; • reasonable travel comfort. 4. Public street construction and whole of life cycle costs are kept low. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>Pavement and landscape materials are used to distinguish different street functions.</p> <p>Pavement edging in accordance with Table 6.</p> <p>Flexible pavement and kerb construction is to be based on the requirements outlined in Councils "<i>General Specification for the Construction of Road and Drainage Works</i>".</p>

2.3.6 Element: Utility Services

OBJECTIVE
To ensure that industrial areas are adequately serviced with sewerage, water, fire fighting, electricity, street lighting and communication services in a timely, cost effective, co-ordinated and efficient manner.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<ol style="list-style-type: none"> 1. Design and provision of utility services are cost effective over their life cycle and incorporate provisions to minimise adverse environmental impact. 2. Compatible public utility services are located in common trenching in order to minimise the land required and the costs for underground services. 3. Public lighting shall be designed to maximise energy efficiency. 4. Development occurs within locations where there is an adequate water supply for fire fighting and the demand of industry. 5. Development is staged to ensure that each stage is fully serviced before a new area is released. 6. Water supply and sewerage networks are accessible, easy to maintain, and cost effective. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>The design and provision of utility services conforms to:</p> <ul style="list-style-type: none"> • Council's specifications for the construction of road and drainage works, sewers and water reticulation; • The requirements of other relevant supply authorities.

2.4 Stormwater Management

2.4.1 Element: Stormwater Drainage

OBJECTIVES	
<p>To provide major and minor drainage systems which:</p> <ul style="list-style-type: none"> adequately protects people and the natural and built environments to an acceptable level of risk and in a cost effective manner in terms of initial cost and on-going maintenance, and contributes positively to environmental enhancement of catchment areas. 	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <p>MAJOR SYSTEM</p> <ol style="list-style-type: none"> The major stormwater system has the capacity to safely convey stormwater flows resulting from the relevant design storm events under normal operating conditions. The major system has the capacity to convey safely, but possibly with some flooding, stormwater flows resulting from events more extreme than the design storm without significant property damage. Community benefit is maximised through the retention of natural streams and vegetation, wherever practical. The major system is designed to ensure that there are no flow paths which would increase risk to public safety and property. <p>MINOR SYSTEM</p> <ol style="list-style-type: none"> The minor storm drainage system has the capacity to control stormwater flows under normal operating conditions for the relevant design storm with minimal risk of blockage. Drainage networks are well defined to ensure there are no hidden flow paths which could reduce their capacity to convey design flows. The design of the minor system takes full account of existing downstream systems. The minor system design allows for the safe passage of vehicles at reduced speed on streets which have been affected by runoff from the relevant design storm. The minor system is accessible and easily maintained. Where a portion of the minor system is within a site, access is available for maintenance. The selection of materials used for the construction of the minor system is based on their suitability, durability, maintainability and cost-effectiveness. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>MAJOR SYSTEM</p> <p>The design and construction of major stormwater drainage systems are in accordance with the requirements of:</p> <ul style="list-style-type: none"> <i>Australian Rainfall and Runoff (1987)</i>, and Council's, "<i>General Specification for the Construction of Road and Drainage Works</i>". <p>The major system design is undertaken on a Total Catchment Management basis.</p> <p>The major system design outflow is matched to the capacity of any existing downstream system and where necessary detention basins etc. are provided to retard stormwater flows onto downstream properties.</p> <p>MINOR SYSTEM</p> <p>The design and construction of minor stormwater drainage systems are in accordance with the requirements of:</p> <ul style="list-style-type: none"> <i>Australian Rainfall and Runoff (1987)</i>, and Council's, "<i>General Specification for the Construction of Road and Drainage Works</i>". <p>The minor system design outflow is matched to the capacity of any existing downstream system.</p> <p>The minor system allows for the safe passage of vehicles at reduced speeds on streets which have been affected by runoff from a 1 in 20 year storm event.</p> <p>SITE DRAINAGE</p> <p>Where site topography prevents the discharge of stormwater directly to the street gutter or a Council controlled piped system, inter-allotment drainage is provided to accept runoff from all existing or future impervious areas that are likely to be directly connected.</p> <p>The design and construction of inter-allotment stormwater drainage systems are in accordance with</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>SITE DRAINAGE 12. Subdivision design and layout provides for adequate site drainage.</p> <p>DRAINAGE OUTLETS 13. All stormwater systems shall be designed to discharge appropriate water volumes, velocity and quality to an acceptable legal point of discharge.</p>	<p>the requirements of:</p> <ul style="list-style-type: none"> • <i>Australian Rainfall and Runoff (1987)</i>, and • Council's, "<i>General Specification for the Construction of Road and Drainage Works</i>".

2.4.2 Element: Water Quality Management

OBJECTIVE
<p>To provide water quality management systems which:</p> <ul style="list-style-type: none"> • ensure that disturbance to natural stream systems is minimised, and • ensures stormwater discharge to surface and underground receiving waters, both during construction and in developed catchments, does not degrade the quality of water in the receiving waters.

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> 1. Adequate provision is made during construction to ensure that the land form is stabilised and erosion is controlled. 2. The system design optimises the interception, retention and removal of water-borne pollutants through the use of appropriate measures prior to discharge to receiving waters. 3. The system design minimises the environmental impact of urban runoff on the surface receiving water quality and on other aspects of the natural environment by employing techniques which are appropriate and effective in reducing runoff and pollution travel. 4. Point sources of pollution in the catchment should be identified and their impact minimised until their impact can be eliminated. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>An Erosion and Sediment Management Plan is prepared by properly qualified personnel using recognised and locally accepted design methodologies.</p> <p>The Erosion and Sediment Management Plan is to comply with the Department of Land and Water Conservation's <i>Urban Erosion and Sediment Control Manual</i>, Council's "<i>General Specification for the Construction of Road and Drainage Works</i>" and "<i>Soil Erosion and Sediment Control Guidelines</i>".</p> <p>Water pollution control ponds or wetlands are developed (where appropriate) for final treatment before discharge to the wider environment and should be sited to minimise impact on the natural environment.</p>

2.5 Streetscape and Lot Layout

2.5.1 Element: Streetscape and Landscaping

OBJECTIVE	
<p>To provide an attractive industrial streetscape that:</p> <ul style="list-style-type: none"> reinforces the functions of the street network, enhances the amenity of the area generally and future buildings and is sensitive to the landscape and environmental conditions of the locality. 	
PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objective may be achieved where:</p> <ol style="list-style-type: none"> The street and landscape design achieves: <ul style="list-style-type: none"> the creation of industrial environments with character and identity; compliment any attractive streetscapes in established areas; provision for street tree planting, taking into account the natural landscape, the image and role of the street, soils, selection of appropriate species and services; and use of existing features such as vegetation, landmarks etc. The design of the landscape in public streets: <ul style="list-style-type: none"> defines a theme for new streets or complements existing streetscapes; is sensitive to site attributes; complements the function of the street; reinforces desired traffic speed and behaviour; is of an appropriate scale to street width and the likely bulk of buildings; promotes safety and casual street surveillance; incorporates existing vegetation; promotes the planting of native vegetation in environmentally sensitive areas; maximises landscaped areas, where appropriate; enhances pedestrian comfort; achieves effective line of sight for pedestrians, cyclists and motorists, provides adequate lighting; satisfies maintenance and utility requirements and minimises their visual impact of above ground utilities. 	<p>The following suggested solutions represent ONE WAY of meeting the objective and performance criteria:</p> <p>A Landscape Plan is submitted that demonstrates how the Performance Criteria are met showing:</p> <ul style="list-style-type: none"> the street reserves and indicative locations of the carriageway, parking lanes/bays, cycleways and footpaths, traffic management devices; location of existing vegetation to be removed and/or conserved; location, species and general character of tree planting and hard and soft landscape treatment; and indicative location of buildings. <p>Landscape is in accordance with Council's "<i>Landscape Guidelines</i>" and any approved landscaping strategy.</p> <p>Compliance with the performance criteria is achieved by a Landscape Plan showing:</p> <ul style="list-style-type: none"> boundaries and areas of open and landscaped space; existing vegetation and proposed character of landscape treatment; general arrangement of hard landscaping elements and major earth works; indicative treatment of floodways and drainage lines; landscape plantings in buffers is to be dense to minimise future maintenance.

2.5.2 Element: Lot Layout

OBJECTIVES
<p>To provide a range and mix of lot sizes to suit a variety of industrial uses with areas and dimensions to meet user requirements.</p> <p>To provide lots that are orientated, where practical that minimises energy consumption.</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objectives may be achieved where:</p> <p>SIZE</p> <p>1. Lots have the appropriate area and dimensions for the siting and construction of an industrial building, the provision of storage space, vehicle access, manoeuvring and parking and landscaping.</p> <p>USER REQUIREMENTS</p> <p>2. Lot frontages are orientated to streets and open spaces so that personal and property security, deterrence of crime and vandalism, and surveillance of footpaths and open spaces are facilitated.</p> <p>3. Lot design is to preclude the need to reverse onto the public street and collector arterial roads in particular.</p> <p>ORIENTATION AND ENERGY</p> <p>4. Lots are orientated, where possible, to facilitate the siting of buildings to take advantage of micro-climate and on-site solar access.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objectives and performance criteria:</p> <p>SIZE</p> <p>Lots should have a minimum area of 2000m². A lot size of 1500m² may be considered where the subdivision plan is accompanied by a development plan that shows the land can be developed in accordance with Chapter 3 - Industrial Development.</p> <p>A variety of lot sizes should be provided to meet market demand.</p> <p>Lots should be regular and rectangular in shape.</p> <p>Lot shape and area should be sufficient to permit easy access to the rear of the lot and allow trucks to manoeuvre on-site without reversing onto or off the lot.</p> <p>Generally a frontage to depth ratio between 1:2 and 1:3 is considered satisfactory.</p>

2.5.3 Element: Subdivision of Buildings

OBJECTIVES
<p>To allow separate titles to be created for parts of a development.</p> <p>To provide for the effective and efficient management of common or shared facilities.</p>

PERFORMANCE CRITERIA	SUGGESTED SOLUTIONS
<p>The objectives may be achieved where:</p> <p>1. The range and extent of body corporate activities are limited to those legally permissible.</p> <p>2. The street and lot layout clearly defines the public, communal and private areas of a development, including the function, ownership and management of landscape and communal areas.</p>	<p>The following suggested solutions represent ONE WAY of meeting the objectives and performance criteria:</p> <p>Such measures may include:</p> <ul style="list-style-type: none"> • limiting communal land to driveways only; • designing buildings to minimise the need for corporate building management; and • ensuring that cost effective management is practicable where communal landscaping or shared facilities are provided. <p>Separate utility service meters / junctions are provided to each unit and if necessary, any common area.</p>