WEST DAPTO OPEN SPACE DESIGN MANUAL

wollongong
city of innovation

Document Revision Status

Author	Revision No.	Review	Date Issue
D. Pollock	Draft A	A. Goldie	1 April 2019
D. Pollock	EMC Draft	A. Goldie	7 June 2019
D. Pollock	Draft for Council	A. Goldie	20 June 2019
D. Pollock	Final - Post exhibition	A. Goldie	15 November 2019

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OPEN SPACE

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1.0 Project Description

1.1 Introduction

The manual provides design guidance to promote design innovation, excellence as well as to ensure that proposed developments adhere to and facilitate the delivery of the West Dapto Vision, and Council's open space requirements.

This manual outlines the open space requirements and Design Standards to be achieved in the lodgement of all plans for subdivision applications in The West Dapto Urban Release Area and surrounding suburbs.

1.2 Objectives of Design Manual

- To set design objectives and requirements for open space in the West Dapto Urban Release Area.
- To be utilised by both external and internal stakeholders as well as professionals involved with the development, planning and design of open space within the West Dapto Urban Release Area and surrounding suburbs.

1.3 Policy Location

The manual should be read in conjunction with (but not limited to) the following development controls and Strategic Plans:

- Wollongong City Council West Dapto Vision 2018;
- Wollongong City Council DCP 2009 -
  - Chapter D16: *West Dapto Urban Release Area;*
  - Chapter B2: *Residential Subdivisions;*
  - Chapter E2: *Crime Prevention Through Environmental Design;*
  - Chapter E6: *Landscaping;*
  - Chapter E10: *Aboriginal Heritage;*
  - Chapter E11: *Heritage Conservation;*
  - Chapter E13: *Floodplain Management;*
  - Chapter E14: *Stormwater Management;*
  - Chapter E15: *Water Sensitive Urban Design;*
  - Chapter E17: *Preservation and Management of Trees and Vegetation;*
  - Chapter E23: *Riparian Land Management;*
- West Dapto Development Contribution Plan 2017;
- Wollongong City Council Urban Greening Strategy 2017-2037;
- Wollongong City Council, Wollongong Social Infrastructure Planning Framework 2018-2028;
- Wollongong City Council Civil Specifications 2019;
- Recreational and Open Space Planning Guidelines for Local Government 2010 Department of Planning;
- West Dapto Social, Cultural and Recreational Needs Study – Facility and Open Space Recommendations – Final Report (Elton Consulting, 2007);
- Play Wollongong Strategy 2014 – 2024 – in particular the Background Research Report 2014;
- Wollongong City Council's Public Art Policy 2016, and Animating Wollongong: Public Art Strategy and Guidelines 2016-2021;
- Wollongong City Council - *Vegetation Management Guidelines for Development Applications;*
- West Dapto Open Space Technical Manual;
- Transport Canberra and City Services (TCCS) publication – *'Design Standards for Urban Infrastructure, 24 - Sportsground Design.'*

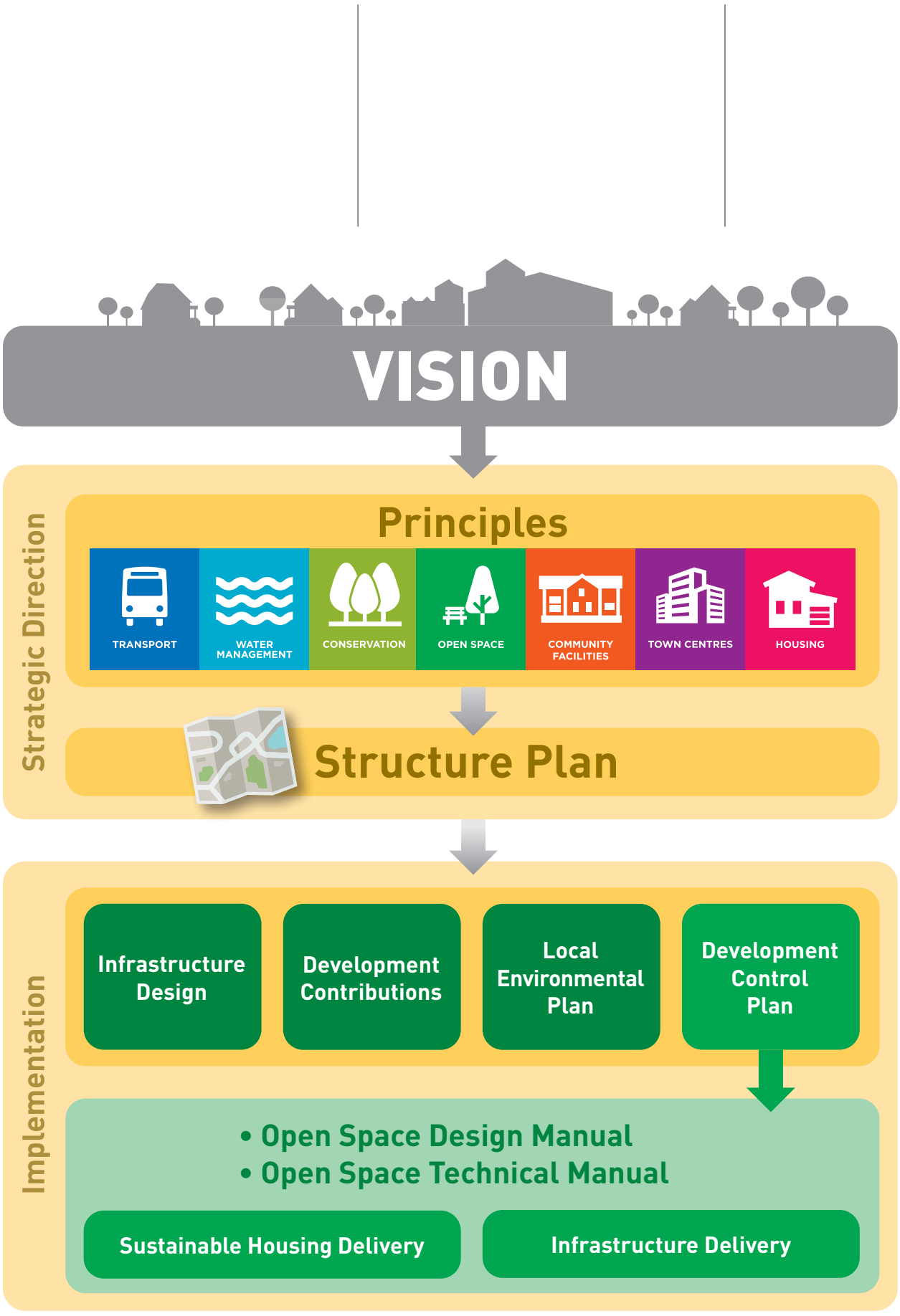


Figure 1
Structure and relationships of principles to planning tools

2.0 West Dapto Open Space Hierarchy

2.1 General Design Principles

Objectives

Open space should be planned and designed to achieve the following key objectives:

Well distributed network of open space – the design of neighbourhoods must provide a connected network of accessible, attractive, and usable public open spaces and natural areas.

Flexibility of design - open space and natural areas must provide for a variety of recreational, sporting, play, and social needs of the community. Sufficient size and flexibility of design must be incorporated to accommodate the needs of the community as they change over time.

Competing functions - flooding and water management, traffic and road infrastructure, cultural heritage and biodiversity must be accommodated without compromising the open space and recreation functions.

Open space embellishment - open space should not contain an excessive amount of embellishments that results in an unsustainable maintenance cost to the community. Embellishments should be appropriate to the intended catchment of users and to the type of park and associated service level of maintenance.

Active (formal) and Passive (informal) functional split – the West Dapto Urban Release Area open space provision must provide for an equal split between active (formal) and passive (informal) recreation.

Crime Prevention Through Environmental Design (CPTED) – CPTED principles are applied in the planning and development of open space, community facilities, and town and village centres.

Connectivity - open spaces must be connected with shared paths, pathways, and trails to other facilities and places of interest. These include: heritage sites, riparian areas, schools, shops, community facilities, public transport nodes, employment centres, and natural areas.

Urban Greening - the West Dapto Urban Release Area presents unique opportunities to increase the quality and quantity of vegetation with the provision of street tree planting, enhancement of existing remnant vegetation, revegetation of riparian areas, and the provision of significant tree planting within open space.

Conservation - the West Dapto Urban Release Area presents opportunities to preserve remnant and regrowth bushland vegetation, and enhance ecological connectivity.

Amenity - open space and natural areas will provide for a variety of recreational and social needs of the community and contribute to the local landscape character.

Value – open space design must deliver quality infrastructure that is robust and made from durable materials and finishes, and neat, uncomplicated designs that minimises maintenance requirements and discourages vandalism.

2.2 Open Space Hierarchy - Function and Catchment Distance

'Catchment' refers to the area and resident (or future resident) population intended to be serviced by the open space facility. The catchment area for an open space facility also relates to the size and function of the facilities to be provided. As illustrated in table 1 below, open space facilities are intended to service city wide, district, neighbourhood or a local catchment.

It is important to note that land parcel size is not the only criteria defining a catchment level to be provided. The proposed function of the open space incorporating the future needs of the community is equally as significant in determining likely catchment.

As part of the open space network for West Dapto, open space is required at all hierarchy and catchment levels. This relationship is illustrated in table 1 below.

Open Space Hierarchy Table

Function and service	Size	Catchment radius (distance)
Local Passive (Informal)	0.5-2 ha	400-600m
Local Active (Formal)	1-2 ha	400-600m
Neighbourhood Passive (Informal)	2-4 ha	2km
Neighbourhood Active (Formal)	3-5 ha	2km
District Active (Formal)	5-8 ha	Southern ward of LGA
City wide Active (Formal)	8 + ha	Facility to serve the whole LGA

Table 1

Open space provision standards (based on NSW Recreation and Open Space Planning Guidelines for Local Government (2010) and the Elton Report (2007) recommendations).

Open Space Hierarchy and Function

The section 94 Development Contribution Plan provides for open space and recreational facilities including neighbourhood and local parks within each stage of the West Dapto Urban Release Area.

Figure 2
Open space hierarchy and functions

City Wide

Sports Park

Darkes Town Centre Sports Park

Cleveland Road Sports Precinct.

These facilities will provide a range of sporting fields and recreational opportunities designed to align with the West Dapto Open Space Design Manual.

District - South Wollongong

Community Leisure Centre

West Dapto Community Recreation and Leisure Centre.

Neighbourhood (min 2 - 4ha size)

Active (Formal) Recreation

Large scale open space designed to facilitate organised outdoor sports and training eg AFL, soccer, rugby league, rugby union, netball, basketball hockey, cricket, baseball and softball, etc.

Passive (Informal) Recreation

Unorganised or structured outdoor sport eg walking, running, cycling, fitness stations, youth spaces, play spaces such as playgrounds, kick about areas and children learn to ride facilities.

Local (min 0.5 - 2ha)

Active (Formal) Recreation

Small scale open space designed to facilitate organised outdoor sports with the provision of modified sportsfields or multi purposed courts to provide active recreational opportunities eg basketball and netball.

Passive (Informal) Recreation

Open space for unorganised activities promoting outdoor movement for all age, eg walking, running, cycling, youth spaces, playgrounds, kick-about areas as well as spaces for picnicking and family gatherings.

3.0 Open Space Categories

3.1 Neighbourhood Parks

Principles

Catchment
Neighbourhood parks are larger scale spaces for residents and visitors providing both active (formal) and passive (informal) recreational opportunities. Neighbourhood parks are intended to service a neighbourhood of residential areas with a catchment radius of 2km depending on the functions of the open space.

Activation and Flexibility
Neighbourhood parks should aim to have five sources of activation to provide a diversity of active and passive recreational opportunities. Neighbourhood parks should have the flexibility to cater for a wide variety of recreational experiences, activities, and formal sports to cater for all age groups and future community needs.

Neighbourhood park example, Rockley Oval 'Googong' Queanbeyan

Active (Formal) and Passive (Informal) Split
Active open space is defined by the Greater Sydney Commission as land set aside for the primary purpose of formal outdoor sports for the community. Active open space supports team sports, training and competition'.

Neighbourhood parks across West Dapto must provide a range of recreational opportunities that must be evenly split between active (formal) and passive (informal). The location of a park will influence the design, function and the range of outdoor recreation, sport and exercise opportunities in response to the size, shape, topography, landscape setting and adjacent land uses.

Passive (informal) open space is land set aside for parks, gardens, linear corridors, conservation bushland and nature reserves. These areas are made available for informal recreation, play and physical activity. Examples of passive (informal) recreation are cycling, exercise stations, running, walking, play spaces, sitting and picnicking.

Neighbourhood Parks adjacent to Natural Areas
Neighbourhood parks, which are near to natural areas zoned as E2 Environmental Conservation, and E3 Environmental Management zones such as bushland or riparian areas, can accommodate self-directed recreational activities such as walking, running and cycling within these areas. This will increase access to these areas and create activity nodes for passive surveillance, and encourage social interaction in a natural setting.

Multi-purpose Sportsfield
Neighbourhood parks must be capable of accommodating multi-purpose sports fields for training and competition in addition to providing attractive green environments for hosting community events.

Site Interpretation
Neighbourhood parks should respond to the local setting and characteristics, and where possible incorporate references to local Indigenous and historical features in the form of interpretive signage and or public art.

General Requirements

- **Utilities** - Where land is to be dedicated to Council for future open space the land must include appropriate utility mains including but not limited to water, sewer, stormwater and power, that can be connected when the embellishment design is carried out.
- **Size** - Neighbourhood parks require a minimum provision for open space of two (2) to five (5) hectares with a particular emphasis on the provision of active (formal) recreational opportunities. The size of the park should respond to the specific requirements of the sport code.
- **Riparian corridors** – Neighbourhood parks cannot incorporate riparian corridors in open space area calculations.
- **Frontage requirements** - Neighbourhood parks should be located along a mimor collector road with an additional smaller order road leading to car parking. Seventy-five percent (75%) of the neighbourhood park must have road frontage with no boundary less than thirty (30) metres.
- **Connectivity** - to achieve active transport outcomes in the West Dapto Urban Release Area it is essential that community facilities and neighbourhood parks are connected with shared paths and linked to public transport nodes to ensure pedestrians and cyclists can safely access open space.
- **Equal Access paths** - entry points and internal pathway networks must achieve equitable access. At least one continuous pedestrian path providing access to the major features of the park must be designed to AS1428.1.2009 'Design for Access and Mobility-general requirements for access'.
- **Passive Surveillance** - residential dwellings must be orientated to overlook neighbourhood parks to allow passive surveillance and deter anti-social activities. This includes incorporating **Crime Prevention Through Environmental Design (CPTED)** principles, such as the facilitation of casual community surveillance through layout and design.
- **Inclusive Playgrounds** - play spaces planned for open space should be inclusive with the provision of accessible play features. Supporting infrastructure such as accessible parking and paths of travel are required to help meet the needs of carers and children accessing the space.
- **Amenities** - public toilets are required. The number of cubicles required is subject to an objective assessment of potential demand through a needs analysis.

  Public toilet buildings in parks should be designed, located and constructed in accordance with **Crime Prevention through Environmental Design (CPTED)** principles, relevant Australian Standards and Building Codes. The amenities must:

  - use infrastructure that is readily maintainable
  - be sited to avoid nuisance to neighbours;
  - be within reasonable proximity to a car park or other demand source;
  - be in close proximity to a road, gate or internal maintenance access for servicing;
  - be sited where casual surveillance is possible from surrounding streets.
- **Co-location of social infrastructure**- Neighbourhood parks could include the co-location of leisure and recreational facilities. This could be achieved by co-locating facilities within a multi-purpose community facility as recommended in the Wollongong Social Infrastructure Planning Framework.
- **Car parking** – Neighbourhood park design must include off street parking within the park to facilitate parking for visitors. Car parking within the park should not visually dominate and always incorporate substantial shade tree planting.
- **Park lighting** - Lighting should facilitate evening sports activities on fields and pathways that link to car parking areas. The lighting must be in accordance with AS2560.1:2018 Sports Lighting Part 1: General Principles, AS 2560.2.3 - 2002 Specific Application for football (all codes). Final determination of an appropriate lighting standard, for any particular pathway location, shall be subject to Council approval. Lighting design must consider illumination and spill requirements for functions.

- **Emergency and maintenance vehicles** – Neighbourhood park designs are required to provide appropriate entry points and route alignments for emergency and maintenance access. Emergency access to sporting fields must be carefully planned to allow vehicles to treat injured players.
- **Public art** – park designs should accommodate appropriate public art. Public art can enhance and enrich our experience of a public space by representing and interpreting the local heritage and culture of the area.
- **Signage** - park signage is to be provided at all entries. Refer to West Dapto Open Space Technical Manual.
- **Waste** – litter bins should be located near a road so that trucks are not required to enter the park to service them.
- **Urban Greening** - Significant feature tree planting is required with the aim of establishing canopy and shaded pathway networks, recreational spaces, car parks, and play spaces with 30 percent of the park provided with natural shade.

Active (Formal) Recreation Requirements

- The active (formal) recreational component provided would be in the form of multi-sport fields to accommodate demand for local sports training and competition, including soccer, rugby union, rugby league, cricket, and AFL. Refer to section 5.2 for sports field requirements.
- Gradients of fields are to be no greater than 2 percent. Correct preparation of the subgrade and playing surface, and final grading is the most important design component affecting the performance of a sportsfield.
- Orientation of fields must be between north, and 15 degrees east of north depending on specific sporting requirements of the sporting code to be accommodated.
- The active (formal) recreational spaces are to be designed with appropriate drainage to ensure they are not significantly damaged by flooding, are self draining (ie no entrapped low points) to ensure that they are available for play within three (3) days of a rain/flood event.
- Tennis, netball, and basketball courts are examples appropriate active recreational components in neighbourhood parks.

Passive (Informal) Recreation Requirements

- The remnant bushland which may form part of the neighbourhood park, can cater for passive recreational uses

Examples of play space and fitness station

as well as achieving the West Dapto Vision conservation principles with acceptable impacts on biodiversity values. Activities such as walking, running and cycling can be integrated, creating experiences enhanced by the site features.

- Neighbourhood parks can offer opportunities for community gardens and conservation themes such as bird watching and nature walks.
- Fitness and exercise stations can be used by all ages to create opportunities for self-directed recreational exercise.
- Youth spaces are required to be incorporated into neighbourhood parks. Youth recreational spaces should aim to cater for a range of activities such as Parkour, ping pong tables, re-bound walls, skate features, BMX, and pump tracks. Seating areas for hanging out spaces should also be incorporated.
- Play spaces within the neighbourhood park should provide play equipment and experiences that provide a range of opportunities for play. Play spaces should be planned to be inclusive. The provision of a children's learn to ride area is an example of a desire play feature.
- Park design must incorporate picnic areas of different sizes with shelters and tables, water, barbecues, and waste stations located offline from the pathway networks.
- Neighbourhood parks should be capable of hosting community events such as market days.

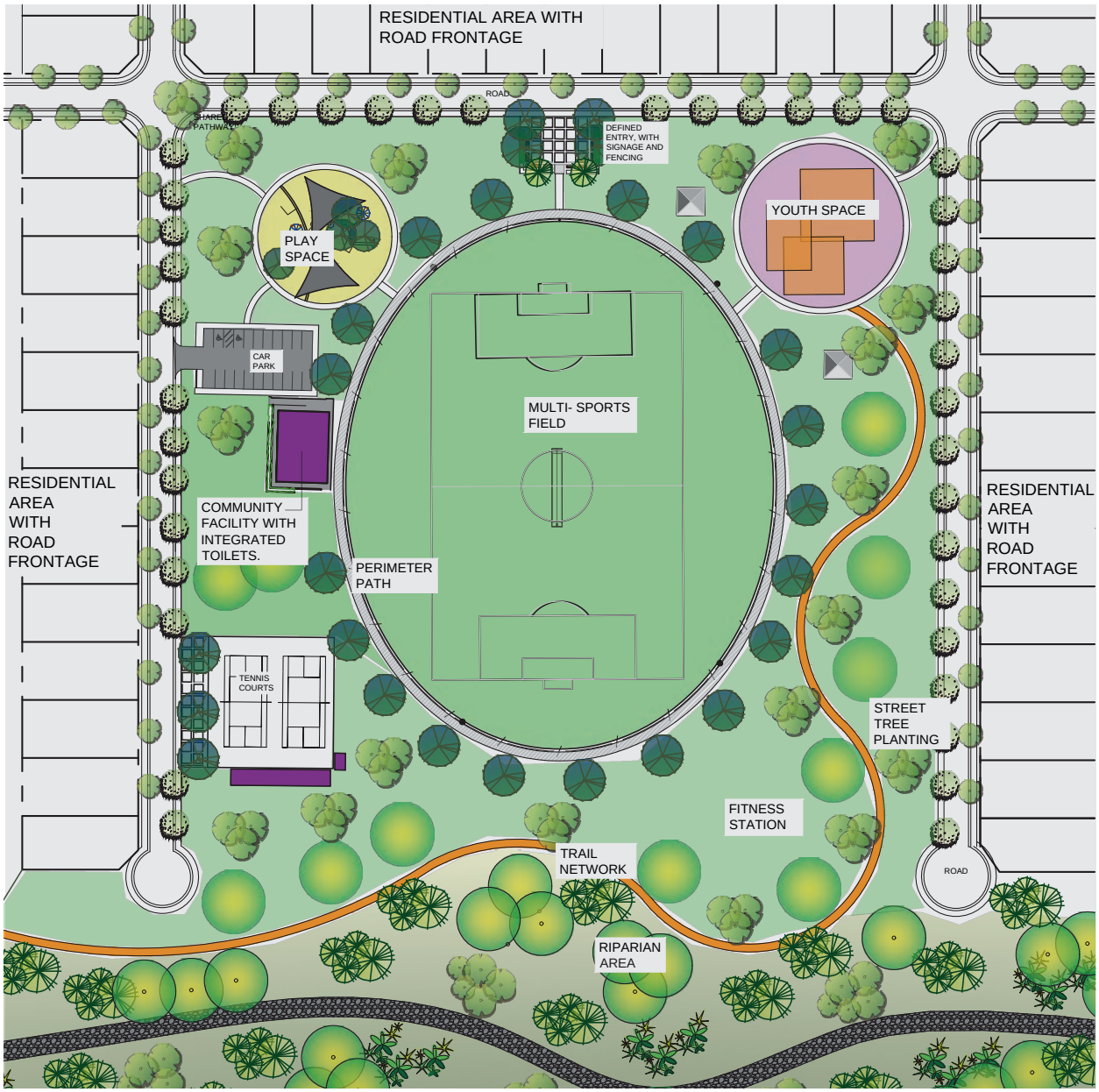


Figure 3
Typical features of a of good neighbourhood park design

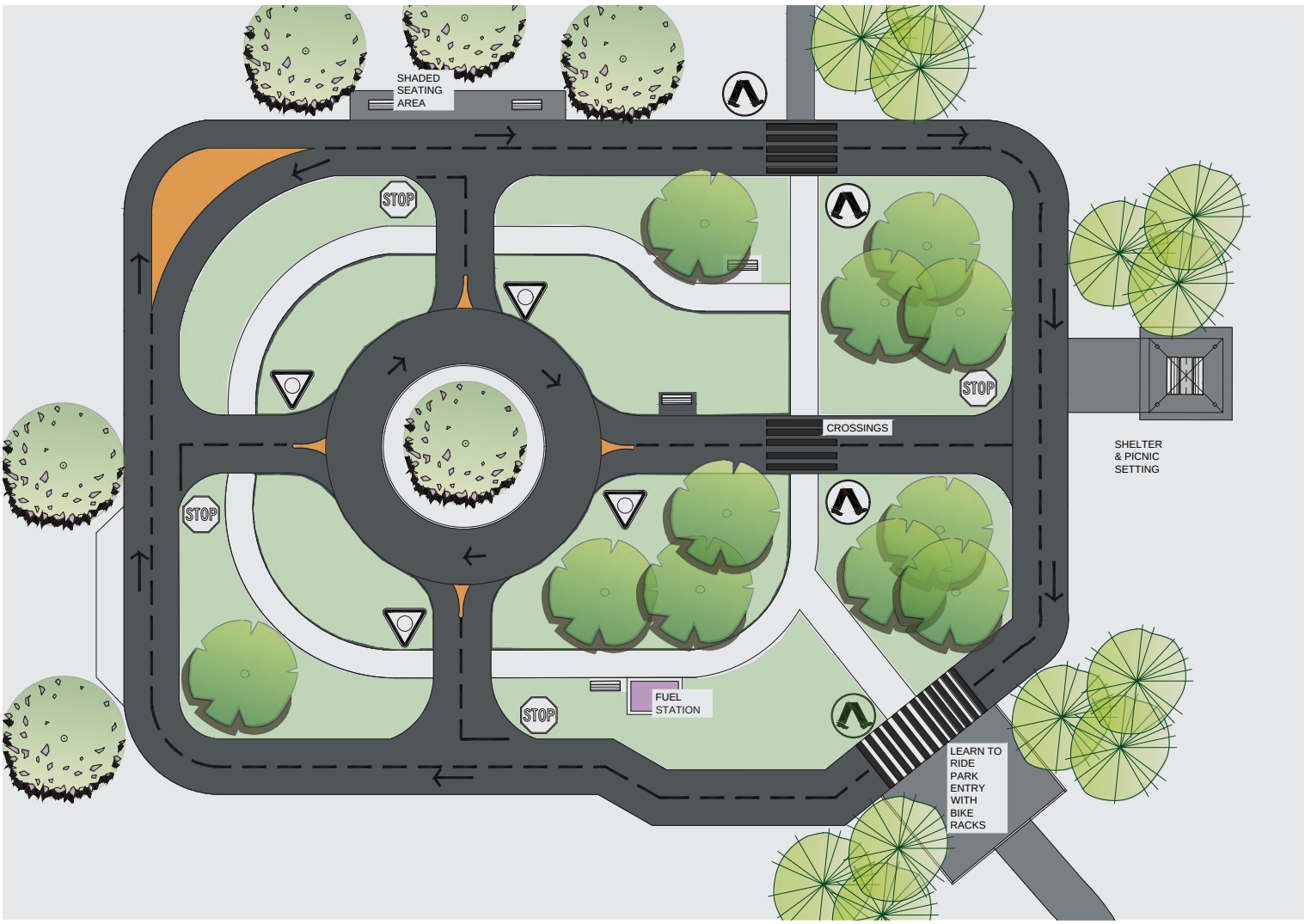


Figure 4 *Typical Learn to Ride facility layout plan*

Learn to Ride facility feature, Stuart Park Wollongong

Learn to Ride facility feature, Mt Stromlo Canberra

3.2 Local Parks

Principles

Access
Local parks should be accessible and be a safe walking distance within 400m-600m of the surrounding residential area.

Passive Surveillance
Local parks must be located in a highly visible location to allow for passive surveillance. The park should have direct residential frontage with four road frontages. This includes incorporating **Crime Prevention Through Environmental Design (CPTED)** principles, such as the facilitation of casual community surveillance through layout and design.

Recreation opportunities
Local park features and activations must service the immediately adjacent residential population. Local parks should provide a range of recreation spaces with a flexible design.

Level of Embellishment
Local parks should not contain an excessive amount of embellishments that results in an unsustainable maintenance cost to the community. Features such as an integrated path network with variable seating options complemented by significant tree planting must be primary features of park designs. Embellishments should be appropriate to the type of park and associated service level, and to the intended catchment of users.

Shade
Significant shade planting must be incorporated into the park design with at least 40 percent of the park provided with natural shade. Tree species should be selected from a minimum of three genus types.

Requirements

- **Size and Gradient** - Local parks require a minimum area of zero point five (0.5) to two (2) hectares with a particular emphasis on the provision of a range of recreational opportunities. The minimum provisions for informal ball sports (kick-about areas) should be 40m wide x 60m long with a maximum gradient of 5 percent and minimum of 2 percent.

- **Frontage requirements** - Local parks must be located on residential streets and not adjacent to major roads. The park should have direct residential frontage with four road frontages.
- **Passive Surveillance** - residential dwellings must be orientated to overlook neighbourhood parks to allow passive surveillance and deter anti-social activities.
- **Connectivity** - to achieve active transport outcomes in the West Dapto Urban Release Area it is essential that local parks are connected with pathways and shared paths to ensure pedestrians and cyclists can safely access open space.

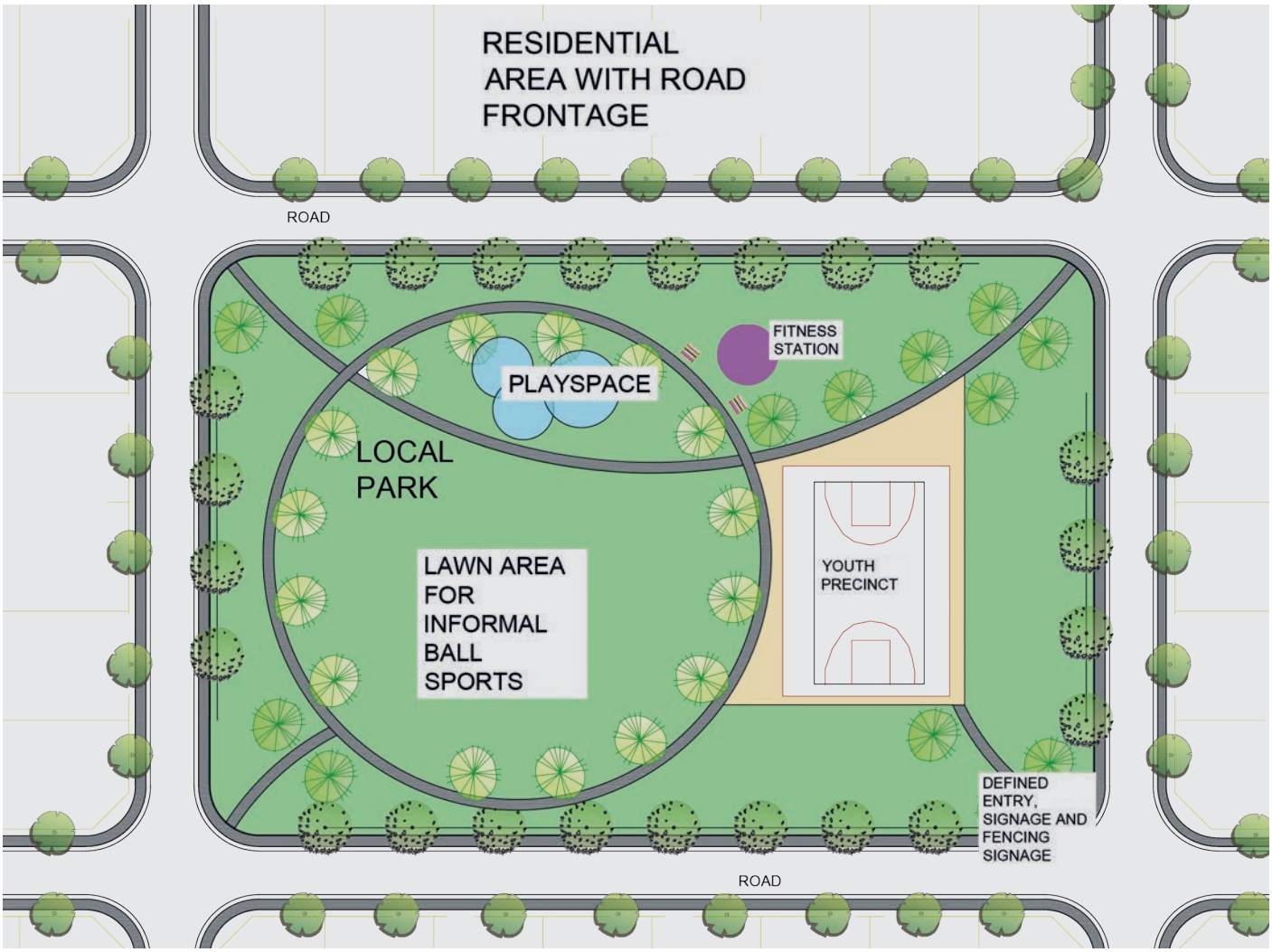
Top: Play feature, Emu Park West Dapto

Middle: Half basketball court, Emu Park West Dapto

Bottom: Skate features West Epping Park, source City of Parramatta

- **Equal Access paths** - Entry points and at least one route within the internal pathway network linking key park features must achieve equitable access as per AS 1428.
- **Play spaces** - within the local park play spaces should provide play equipment and experiences that provide a range of opportunities for play. Play spaces should be planned to be inclusive.
- **Youth spaces** – park designs are required to respond to the progression of children to youth and include facilities such as ball courts and skate elements.
- **Amenities** - Provision of infrastructure such as toilets is not required as most visitors are able to return to their homes if necessary.
- **Park Lighting** - none required. Street lighting only.
- **Emergency and Maintenance Vehicles** – Maintenance and emergency access must be provided.
- **Signage** - park signage is to be provided at all entries. Refer to West Dapto Technical Manual.
- **Waste** – Litter bins should be located as close as possible to entrances and or road frontages for servicing, and near high activity areas such as play spaces.
- **Urban Greening** - Tree planting is a major focus of local parks with mass planting bed provision confined to focal areas only or where slopes exceed 25 percent. Significant feature tree planting is required with the aim of establishing canopy and shaded pathway networks, recreational spaces, and play spaces with 40 percent of the park provided with natural shade. A variety of genus of tree planting to be selected to provide diversity.
- **Picnic nodes** - picnic areas with tables and a variety of seating areas are to be provided through the park. Facilities such as shelters with furniture to accommodate family gatherings such as birthday parties, must be included.

Figure 4
Local Park typical features



4.0 OPEN SPACE DESIGN GUIDELINES

4.1 Natural Areas

Objectives

The West Dapto Urban Release Area presents opportunities to preserve and enhance remnant and regrowth vegetation and other biodiversity values. Natural areas such as riparian environments and remnant and regrowth bushland zoned as E2 (Environmental Conservation) and E3 (Environmental Management) are an important community asset. They provide opportunities to learn about flora and fauna and appreciate and enjoy the environment. The primary purpose of natural areas is conservation however balanced passive (informal) recreation is a key secondary function of natural areas in urban settings.

Requirements

Trails and Rest Areas

Activities such as walking, running and cycling can be integrated, creating varied experiences enhanced by the diversity of landforms and site features. The creation of appropriate trail networks and rest areas in natural areas will increase access and create activity nodes for passive surveillance, encouraging social interaction in a natural setting.

By allowing controlled access for the public it can also deter damaging activities such as rubbish dumping and other anti-social activities. Designing a trail network within natural areas may also prevent the proliferation of informal trails and reduce impacts on biodiversity values. Trailheads or trail access points should be visible and defined by signage and/or fencing.

Conservation

The primary objective for natural areas is to ensure their ongoing conservation. Conservation can include rehabilitation of areas which have suffered misuse or have been impacted by previous land uses. Areas of thriving natural habitat are to be preserved to ensure they are not adversely impacted by development and human activity. Natural areas or parts of natural areas with biodiversity values of high conservation significance are to be protected and managed to minimise the potential for adverse impacts. As part of this protection there is a requirement for native grasses and groundcovers to be utilised adjacent to natural areas in place of Kikuyu.

Vegetation Management Plans

Vegetation Management Plans must

Good example of walking trail within a conservation area (Tasmania)

be developed for all natural areas such as riparian environments and remnant bushland. All works recommended in the Vegetation Management Plans must be undertaken by a licenced bush regeneration company. Embellishments such as trails proposed within a natural area must be integrated and considered as part of the Vegetation Management Plan. Monitoring and ongoing maintenance is required to ensure the effectiveness of the Vegetation Management Plan. Refer to Wollongong City Council Vegetation Management Guidelines for Development Applications.

Recreation and Conservation

Any embellishment works need to be targeted at providing recreation opportunities that minimise the impact to vegetation and wildlife. Low impact recreation such as walking, track running, cycling (on track only), observation points, and rest areas are suitable activities.

Trails and seats should be located away from high conservation areas.

Works within natural areas must make appropriate provisions to accommodate suitable activities and inhibit degrading ones such as vegetation vandalism, firewood collection, four wheeled driving, and motorbike riding.

Access and Frontages

Subdivision design must provide good connectivity to streets and pathway networks, with the majority of the natural area having road frontages to allow for passive surveillance. Road frontages also provide an offset as a fire protection measure to residential dwellings. Vehicle barriers should be incorporated into the design where perimeter access control is required consistent with the open space fencing requirements listed in the technical manual.

CPTED Principles in Trail design

Trails for walking and running should be designed in consideration of Crime Prevention Through Environmental Design (CPTED) in order to facilitate casual community surveillance.

CPTED elements can guide trail design to reduce the likelihood of crime and enhance community safety. For example, routing walking trails around the perimeter of natural areas and the creation of active edges will encourage casual surveillance into these areas.

Routing walking trails on the perimeter will also allow for a clear line of sight for users enabling them to see what is ahead. This is an essential element of people's perception of safety and will therefore encourage use of the trail.

As part of the trail route design the applicant will be required to include a comprehensive risk assessment following CPTED principles within the Development Application documentation. Refer to DCP2009 Chapter E2 Crime Prevention through environmental design.

Good example of walking trail within a conservation area Wisemans Park, Gwynneville

Figure 5
Natural Area within
Subdivision typical layout

Riparian Corridors

Refer to Chapter E23: Riparian Land Management for riparian corridor objectives.

Classification of Watercourses

All watercourses within the Wollongong Local Government Area have been classified into one or more of the following three (3) categories, depending upon the nature and function of each watercourse:

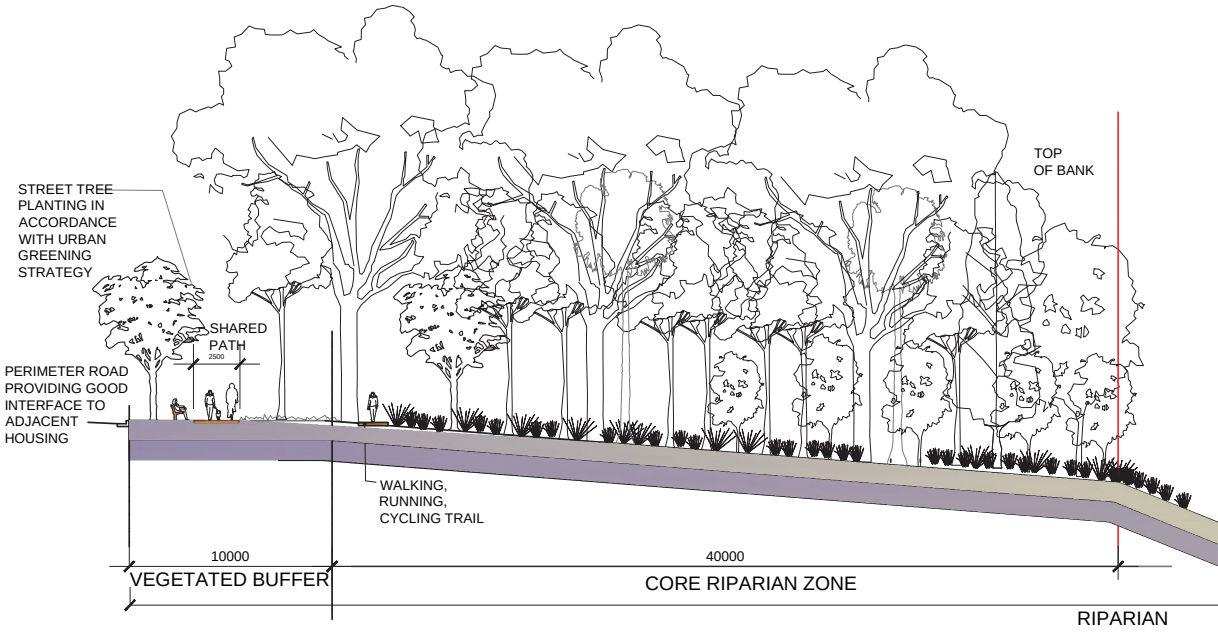
- **Category 1: Environmental Corridor** – This category aims to provide extensive habitats for terrestrial and aquatic fauna and to maintain and restore the viability of riparian vegetation as well as protect water quality and provide bank stability.
- **Category 2: Terrestrial and Aquatic Habitat** – This category aims to maintain or restore the natural functions of a stream in order to maintain the viability of riparian vegetation and provide suitable habitat for terrestrial and aquatic fauna as well as improve water quality and provide bank stability.
- **Category 3: Bank Stability and Water Quality** – This category aims to minimise sedimentation and nutrient transfer.

Requirements

- **Frontage requirements** – subdivision layouts should provide a road frontage to all riparian areas.
- **Services** - services must be located on the outer edge of the riparian corridor.
- **Pathways** - locate shared pathways and walking trails sensitively so they do not compromise the integrity of the riparian corridor and facilitate passive (informal) recreation.
- **Passive (Informal) Recreation** - integrate infrastructure such as picnic facilities and exercise equipment sensitively to facilitate passive (informal) recreation. Riparian areas accommodate self-directed recreational activities such as walking, running and cycling. This will increase access to these areas and create activity nodes for passive surveillance, and encourage social interaction in a natural setting.
- **Riparian Vegetation Communities** – subdivision design must retain existing communities and revegetate where necessary riparian vegetation communities to achieve creek bank stability.
- **Access** - the ecological integrity of existing riparian vegetation must be protected by limiting access to the watercourse to strategic locations where the stream bed and bank stability will not be compromised.

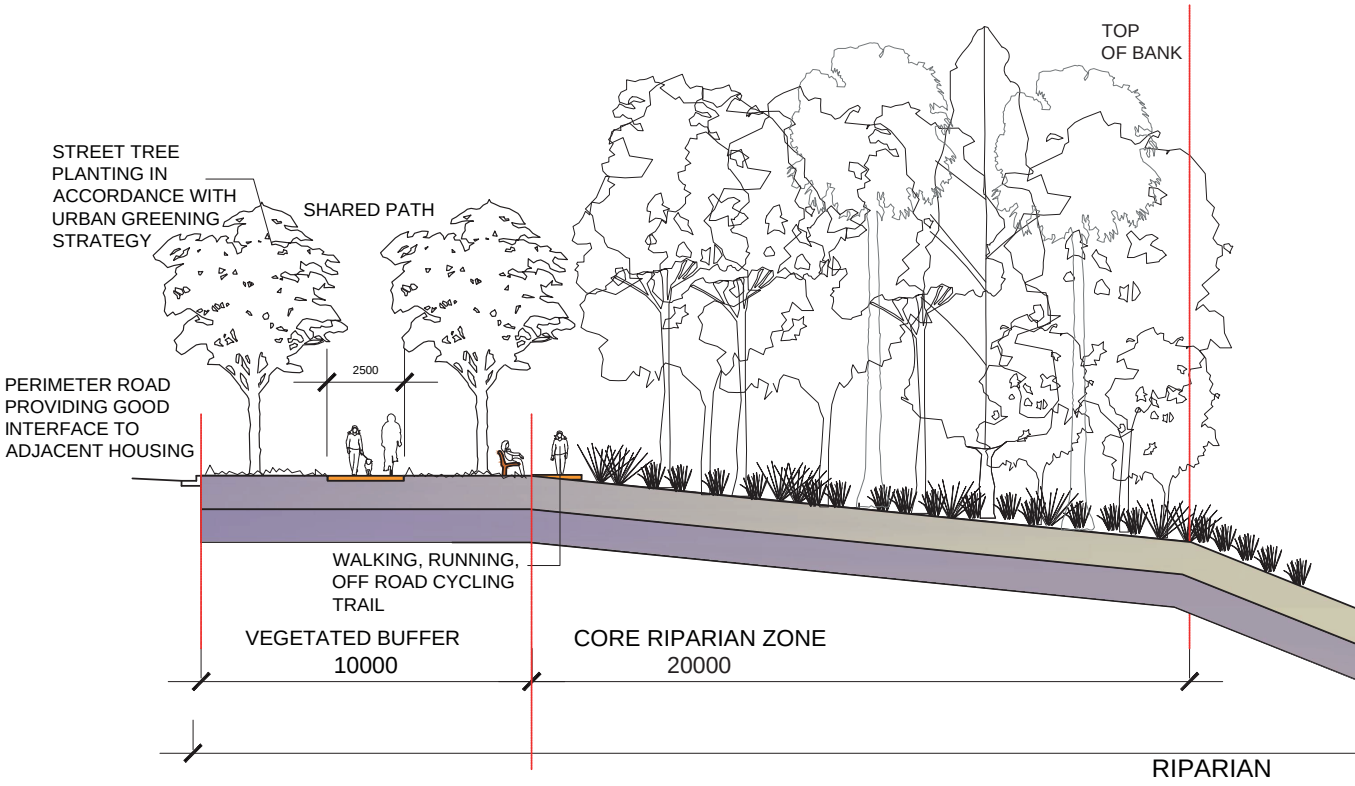
Riparian Corridor - Category One

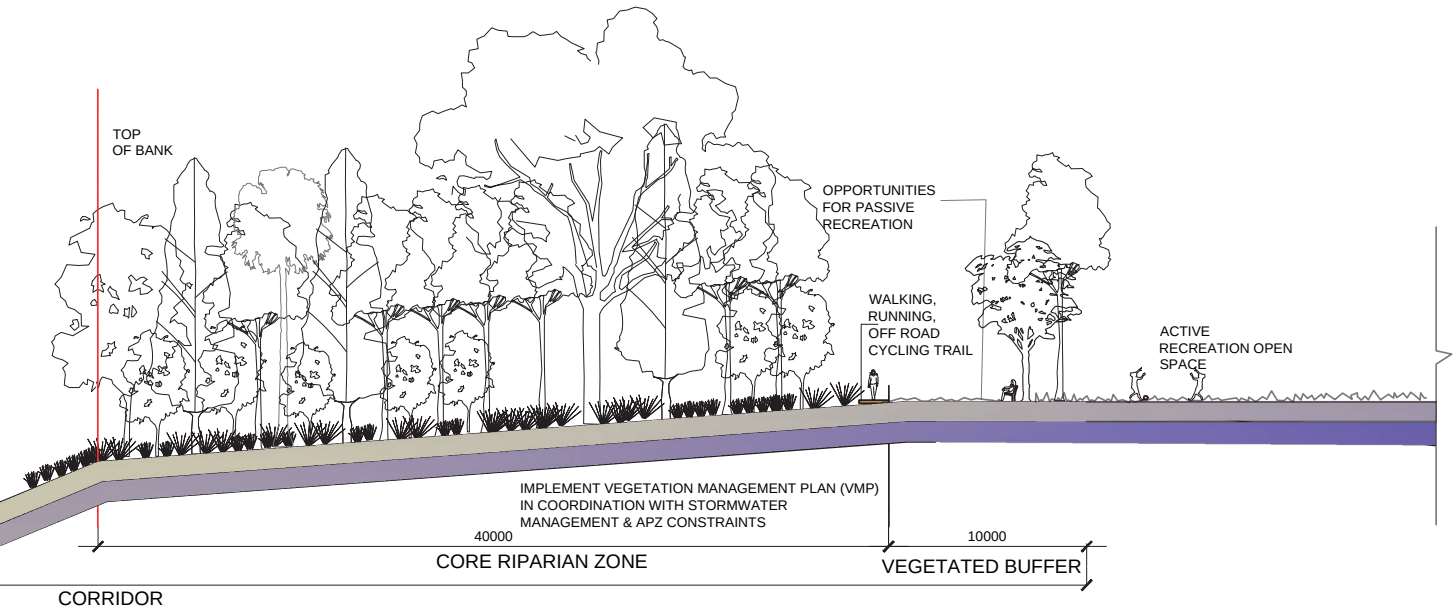
Figure 6 *Typical Riparian Corridor Frontage Category One*

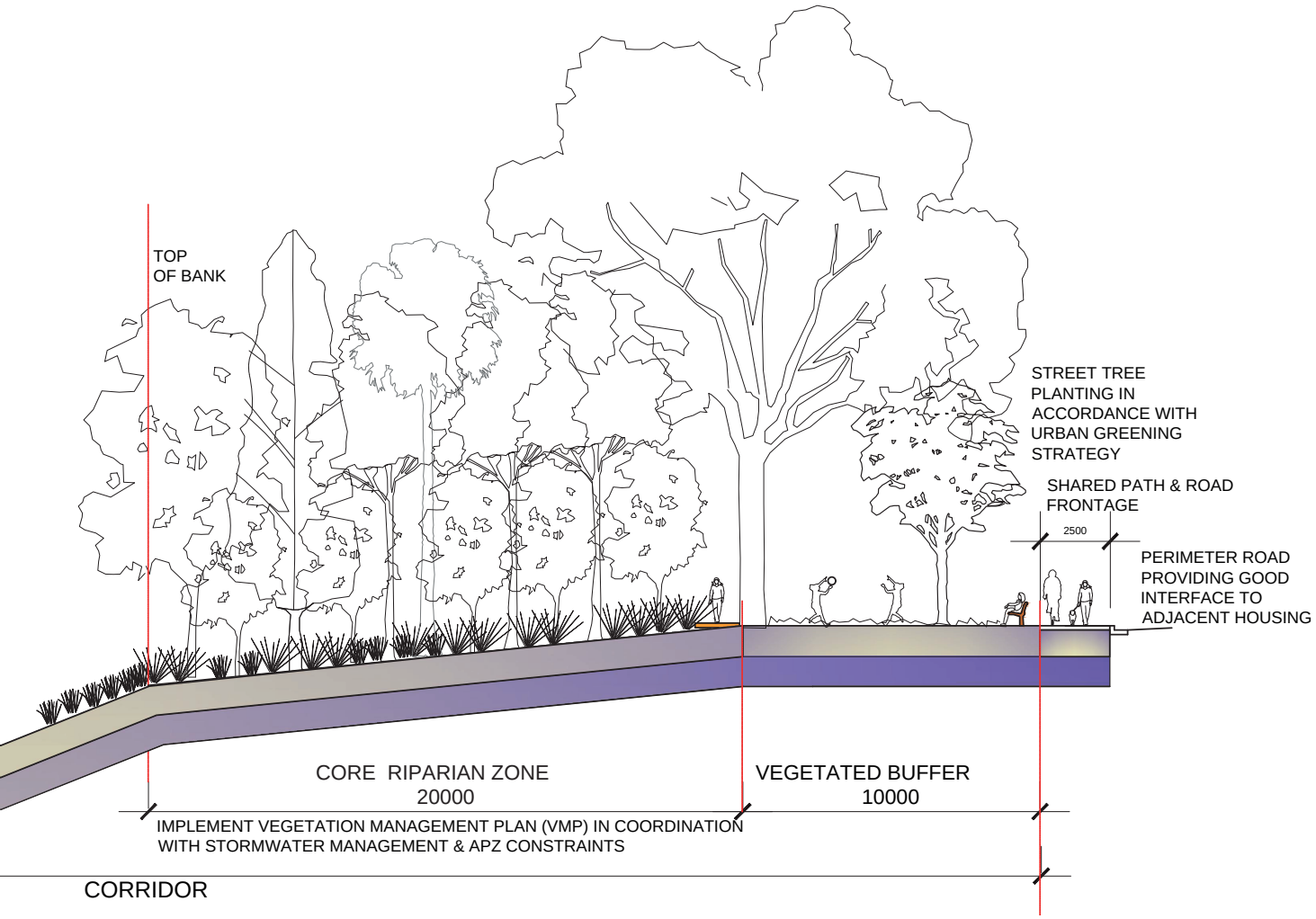


Riparian Corridor - Category Two

Figure 7 *Typical Riparian Corridor Frontage Category Two*

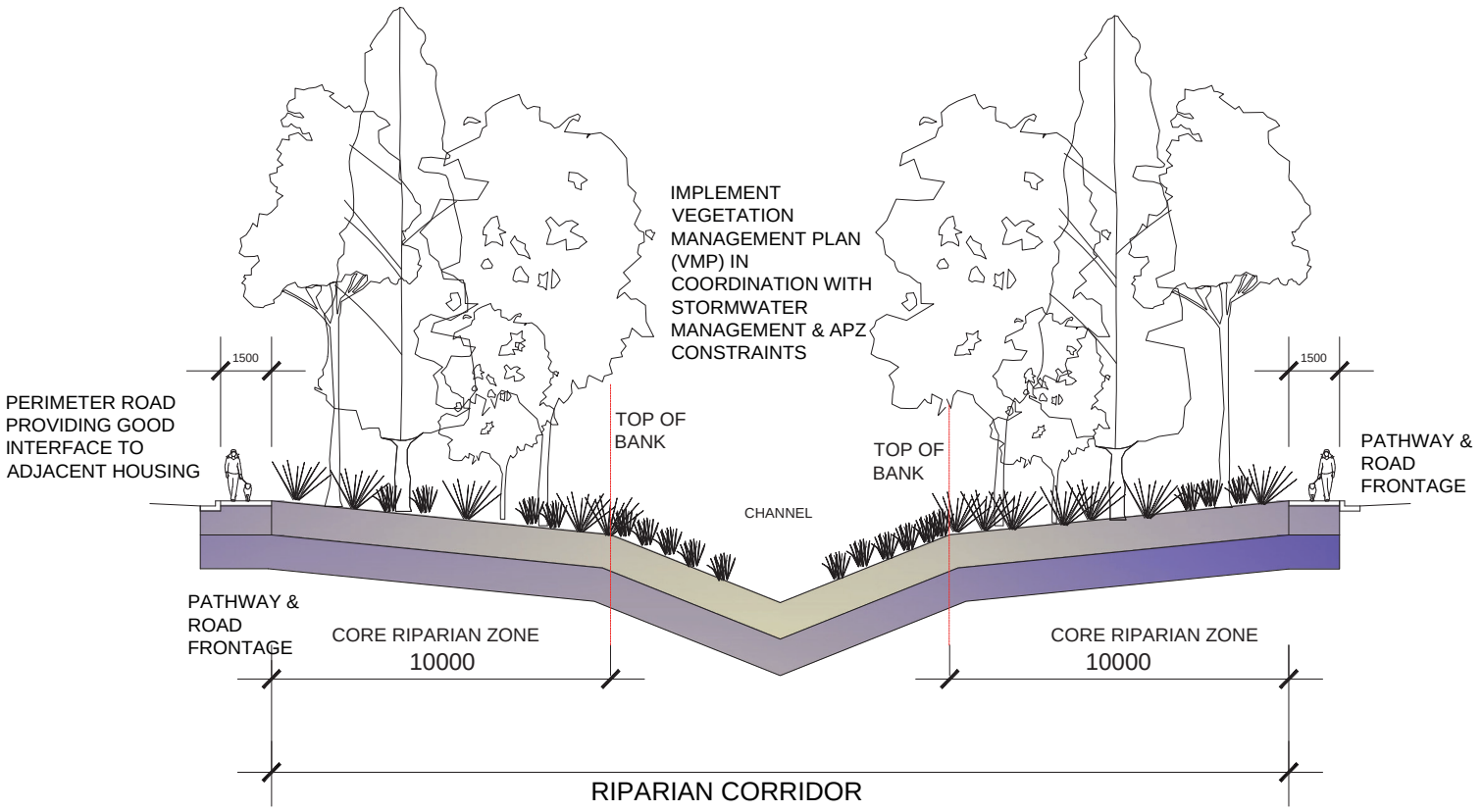



TOP
OF BANK
OPPORTUNITIES
FOR PASSIVE
RECREATION
WALKING,
RUNNING,
OFF ROAD
CYCLING TRAIL
ACTIVE
RECREATION OPEN
SPACE
IMPLEMENT VEGETATION MANAGEMENT PLAN (VMP)
IN COORDINATION WITH STORMWATER
MANAGEMENT & APZ CONSTRAINTS
40000
10000
CORE RIPARIAN ZONE
VEGETATED BUFFER
CORRIDOR


TOP
OF BANK
STREET TREE
PLANTING IN
ACCORDANCE WITH
URBAN GREENING
STRATEGY
SHARED PATH & ROAD
FRONTAGE
2500
PERIMETER ROAD
PROVIDING GOOD
INTERFACE TO
ADJACENT HOUSING
CORE RIPARIAN ZONE
20000
VEGETATED BUFFER
10000
IMPLEMENT VEGETATION MANAGEMENT PLAN (VMP) IN COORDINATION
WITH STORMWATER MANAGEMENT & APZ CONSTRAINTS
CORRIDOR

Riparian Corridor - Category Three

Figure 8 *Typical Riparian Corridor Frontage Category Three*



4.2 Open Space Water Management

Objectives

The design of stormwater management at times has a significant impact on open spaces as it is often integrated. The required facilities should not impede the recreational function of an open space and where possible it should be designed to complement and enhance recreational opportunities.

Permanent detention basins and panels can not be included in open space calculations. Dual use of open space and detention areas must be carefully considered, as there are safety hazards associated with pairing of stormwater management in open space, which may not be obvious to users. Stormwater facilities should be located in consideration of the activity areas function.

The key criteria for the design of stormwater and flood management infrastructure in open space should be aesthetics, safety, maintenance, and public access risk analyses.

Stormwater engineers and landscape architects have a key role in shaping open space and contributing to community benefits that go beyond flood mitigation.

Requirements

Safety

If stormwater and flood plain management infrastructure are integrated into open space it must be demonstrated that all aspects of public access risk analysis, safety and aesthetics have been achieved in the design.

The design of stormwater must be in accordance with 'Queensland Urban Drainage Manual Third Edition 2013 - provisional, Department of Energy Pnd Water Supply'. This requires that water management functions are assessed and graded for their ability to safely accommodate public interaction. Where possible the design should offer opportunities for the public to interact with components of the water cycle management system and provide environmental education. Fencing to prevent public access should only be used where all other safety in design measures are not feasible.

Safety in Design Report

A Safety in Design Report is required for the investigation of proposed stormwater infrastructure in open space design, considering the location, type and size of infrastructure necessary, as well as public access requirements and proposed recreational use. Types of stormwater structures may include pipe inlets / outlets, basins, grates and surface flow paths. The associated risks arising from the proposal must be detailed, and how those risks are to be mitigated. This report is required to identify and rectify any potential design safety issues such that future risks can be mitigated during the operational phase of the proposal.

Slope Gradients

The side slopes of detention basins should be a maximum gradient of 16 percent or flatter to allow easy egress up the likely wet surface. Areas with slopes steeper than 25 percent cannot be turfed and will require steps and a handrail to assist egress at regular intervals. Drainage swales and pits and pipes should not impede maintenance operations and the recreational function of a park.

Stormwater Management and Active (Formal) Sports

It is essential that the active (formal) sportsfield component of open space is designed to ensure that it is not significantly affected by flooding and is available year round for competition play except during the flooding event. Sportsfields should be located outside the 10 percent Annual Exceedance Probability (AEP) flood extent. Sportsfields incorporated into open space designs should be available for play with good diversion and subsurface drainage around any active playing areas. Designs of sportsfields should minimise the frequency of maintenance as a result of stormwater run-off.

Stormwater Management and Passive (Informal) Sports

The preservation of the natural waterways and riparian corridors also provides an important community asset that could provide passive recreational opportunities. Low impact recreation such as walking, track running, cycling (on track only) can be integrated into riparian corridors providing an opportunity for off road pedestrian linkages.

If the proposed subdivision water management infrastructure is intended to be dual purposed with open space activities (eg an informal ball sports area within a detention basin) there are specific requirements that must be provided:

- Side slope gradients cannot exceed 16 percent
- Informal ball sports area gradient cannot exceed 5 percent
- Informal ball sports minimum available area to be 40m x 60m. Any stormwater infrastructure such as outlets, weirs, and swales must be located outside this proposed area so as not to impede usage.
- Informal ball sport area to be provided with adequate subsurface drainage.

Urban Greening and Stormwater Management

Tree planting for shade and amenity wherever possible should be integrated in the floodplain. For example, basin floors and some bank designs offer scope for planting when compatible with the required open space provision. Where trees are proposed to be planted in a floodplain, flood modelling and flood impact mapping must be undertaken to identify the impact on flood behaviour and flood levels resulting from the change in vegetation densities and hydraulic roughness. The flood modelling and impact mapping should be undertaken as part of a flood study prepared by a suitably qualified civil engineer in accordance with Chapters E13 and E14 of the Wollongong DCP2009. This information will need to demonstrate compliance with Clause 7.3 of the Wollongong LEP and Chapter E13 of the Wollongong DCP2009, with respect to flood impacts.

Urban greening and stormwater management, Nyrang Park, Keiraville. A good example of pathways located at top of bank in open space

4.3 WCC Urban Greening Strategy

Objectives

The Wollongong Urban Greening Strategy 2017-2037 aims to strategically increase the quality and quantity of all vegetation in an urban setting, particularly tree canopy cover on all land types.

The West Dapto Urban Release Area presents unique opportunities to increase the quality and quantity of vegetation with the provision of street tree planting, enhancing existing remnant vegetation and riparian areas, and the provision of significant feature tree planting within open space.

Open space should integrate natural areas such as riparian environments and remnant and regrowth bushland and the active recreational areas with provision of significant tree planting. Open spaces, which are greener and well shaded, will attract people and encourage them to stay longer.

Tree planting is a form of place making as it creates a pleasant place for users. Tree planting provides environmental benefits such as; shade and cooling, protection from prevailing winds, storing carbon, an increased sense of local identity, encouragement of outdoor activity, provision of habitat for local wildlife, and increased property values.

Tree planting can frame view corridors and provide privacy.

Tree planting is an essential part of shade provision for open space and associated facilities such as play spaces, seating areas and pathways. Provision of appropriate tree planting around play spaces is considered essential to provide shade for children and carers. Natural shade of play spaces by the provision of evergreen or deciduous trees is preferred to built shade structures.

Street Tree Planting Requirements

- Street tree planting provides a great opportunity to create streetscapes which deliver amenity and environmental performance. Street tree species selected should aim to create avenues of trees which provide shade and visual amenity. A variety of genus and species should be utilised to create diversity. Street tree species selected can be drawn from the West Dapto Open Space Technical Manual Tree Species List or as recommended by Parks and Open Space Manager.
- The equivalent of one (1) street tree for each lot on residential road frontages (ie with locations adjusted for driveway crossings, lighting, sightlines, utility services and the like) will generally be required to enhance the appearance of the locality.

Significant tree canopies contribute to urban amenity

New street tree planting, Paynes road Kembla Grange

- The location of street trees should take into account overhead and underground services.
- Where street trees are to be installed in areas with hard surfaces such as town and village Centres, suitable grates are to be laid around the tree to protect the roots and enable water infiltration.
- Minimum plant requirements for street trees is 100 litre container size, in accordance with AS 2303: 2018 Tree Stock for Landscape Use.
- Trees to be planted in accordance with the standard detail. Refer to West Dapto Open Space Technical Manual for detail.
- The planting of the street trees should occur, after at least 80 percent of the dwelling construction and infrastructure work has been completed for the subdivision.
- Where coal wash or heavy clay forms the subgrade of proposed street tree and verge planting a minimum depth of natural soil must be provided to allow healthy root growth. Refer to West Dapto Open Space Technical Manual for details and typical sections.
- A minimum of 52 weeks establishment period should be applied to all new tree plantings. Longer establishment periods may apply under DA conditions.

Tree Planting in Open Space Requirements

Tree planting is required in open space to provide shade and amenity. Canopy trees should be planted to provide shade to active recreational nodes such as sporting fields, basketball and netball courts, exercise stations, play spaces as well as seating areas.

A planting plan must be prepared as part of all open space submissions. Tree planting should be utilised to define spaces and functions in open space.

- Tree planting must be integrated with pathway networks. Tree planting must be offset from pathways in consideration of the tree's mature height and spread.
- Significant feature tree planting should be integrated into open space with the aim of establishing canopy and shade to amenities, parking and play spaces.
- Minimum plant requirements for amenity trees within open space are 75-200 litre container size.
- Tree planting must be spaced adequately to allow deck mowers to access all turfed areas or grouped together in mulch beds.
- Where coal wash or heavy clay forms the subgrade of proposed open space areas a minimum depth 600mm of

natural soil must be provided to allow healthy root growth.

- In lawns, tree pits are required to be backfilled with site soil if good quality or with good quality soil, mixed with a suitable soil conditioner. Trees in lawn areas are to be installed with a mulch ring of minimum 1500mm radius and 75 mm thickness.
- Tree planting locations must be compliant with service authority offset requirements.
- As per the WCC Urban Greening Strategy, provision of canopy cover is of the highest priority. Tree species should be selected to provide the maximum canopy size that fits within the context of the selected location.
- Further guidance on tree planting as required to be advised by Parks and Open Space Manager.
- Fruit trees and bush tucker tree species are permited in open space.

Planting in Natural Areas Requirements

Where remnants of existing vegetation will be retained, environmental weeds should be selectively controlled prior to enhancement planting. Weed-free mulch should be laid evenly to a nominal thickness of 75 mm over the prepared subsoil, except along waterways subject to flooding where erosion control matting or similar materials resistant to water movement are to be used.

- Select plants that are indigenous to the local area and appropriate to the existing vegetative community, and include a range of shrub, groundcovers and grass species. Species selection in natural areas is to be consistent with the recommendations in the Vegetation Management Plan. Plant a mixture of tube stock and plants in pots up to 140 mm, to achieve the maximum survival potential.
- Pioneer species should be used in conjunction with slower more permanent species, as to provide shade and protection during the establishment period.
- Plant at sufficient density (recommended average density of 6 native grasses per m2) with the tree component spaced at about 4 to 6 m centres to achieve substantial cover of the ground surface at the time of the Maintenance Inspection.
- Water and weed the rehabilitation area to ensure the site is well established at the time of the inspection, with plants conditioned to survive dry periods without supplementary watering. An approved temporary fence may be required around rehabilitation areas to deter deer and other pests.
- Further guidance on planting for Natural Areas is provided in Council's Vegetation Management Plan Guidelines or as otherwise advised by Council officers.

Protection of Existing Vegetation

Objectives

West Dapto presents opportunities to preserve remnant vegetation and enhance ecological connectivity.

The planning, design and location of open space should aim to preserve and enhance remnant native bushland and riparian areas. Existing trees are considered a valuable asset in the community.

A subdivision application must incorporate the following requirements:

Requirements

- Tree survey of existing trees on the site and trees on adjacent properties, accurately located by a registered surveyor, indicating the trunk location and level to Australian Height Datum (AHD) and an accurate portrayal of the canopy spread,
- The applicant must engage an Australian Qualifications Framework (AQF) Level 5 consulting arborist to prepare an Arboricultural Impact Assessment (AIA) in the initial stages of planning the development to determine which trees are suitable to be retained and integrated into the open space. The suitability of vegetation for incorporation should be based on the tree's health, amenity value and significance of the tree.
- The arborist must assess trees from a public safety risk, where they are located in close proximity to proposed

active recreation spaces, pathways and play spaces. In assessing existing remnant/regrowth vegetation the arborist should carry out an AIA to make recommendations for pruning, dead wooding or removal of hazardous trees. This AIA must address the health, amenity value and Useful Life Expectancy (ULE) rating of each tree.

- Where appropriate an AIA Level 3 assessment may be required;
- Should the land be bushfire prone the landscape plan must be coordinated with the Arborist Report and in accordance with the Planning for Bushfire Protection Guidelines.
- The arborist must provide a Tree Protection Plan (TPP) outlining the specifications for tree protection to be in place during the construction phase including any pruning requirements. All development activity must be in accordance with the Australian Standard 4970 – Protection of Trees on Development Sites.
- Tree protection fencing for retained trees must be installed as per the arborist recommendations prior to the commencement of any excavation or land clearing works.
- The applicant may also be required to have an arborist inspect and report on the tree/s at monthly intervals during construction. This report must be submitted to the Principal Certifying Authority.
- Tree protection details to be as per the Wollongong City Council Civil Specification 2019.

Significant stand of existing vegetation West Dapto Road

4.4 Equal Access

Objectives

Open space should be designed by applying Universal Design principles to promote equal access and connectivity for everyone from the very young to youths and the elderly, families, carers, and people of all abilities.

The design of open spaces should provide equitable access to allow people to access the park in accordance with the Disability Discrimination Act as specified in AS 1428. This will ensure that the design of the open space will eliminate obstacles and barriers that prevent access by people of all ages and abilities and create an inclusive open space that considers as many people's needs as possible.

Open spaces should be easy to navigate, interesting and attractive. They should offer a variety of landscape settings to explore, and provide opportunities to connect with others. Pathways and paved areas must be provided for all weather pedestrian access to key areas and facilities such as lookouts, amenities and play spaces.

Equal Access Requirements

- Points of entry to the park must be compliant with Australian Standard AS1428.1.2009 'Design for Access and Mobility general requirements for access'.
- At least one compliant path of travel must be designed linking to key features or facilities contained within the park such as play spaces, picnic areas and toilets.
- A pathway must link to the park from the Equal Access Parking spaces.

4.5 Material Selection

Objectives

The West Dapto Planning principle for infrastructure is to utilise robust and durable materials with high quality finishes that minimise maintenance requirements and discourage vandalism.

Materials and furniture items within an open space that are difficult to maintain and difficult or costly to replace can have a significant impact on both the aesthetics, function of a park, and the long-term maintenance costs.

Requirements

Open Space infrastructure materials must be:

- vandalism and graffiti resistant
- constructed with low maintenance high quality, durable materials.
- robust and fire resistant
- non-corroding and non-corrosive
- sustainable, with low whole of life costs
- sourced locally where possible (such as site rock)
- comply with relevant Australian standards

Typical materials suitable for use are galvanised steel, stainless steel, aluminium, stone (sourced locally), concrete, recycled hardwood and non-toxic paint.

Refer to West Dapto Open Space Technical Manual for specifications.

Top: Equal access pathway. City of Parramatta

Above: Equal access pathway

High quality, durable seats, East Corrimal

4.6 Open Space Maintenance

Objectives

Open space and park infrastructure must be easy to maintain and financially sustainable. Parks shall not be over-embellished with multiple pieces of bespoke infrastructure. Often the most important elements in parks such as paths, trees, grass, and seats are the simple and long lasting features of parks that appeal to the community. Careful design and planning is required to ensure sustainable ongoing maintenance costs and achieve long lifecycles.

Requirements

- Maintenance access must be provided into open space. Access must be unobtrusive and be separated from pedestrian access points.
- Mass planting in centre medians within roads are not supported unless safe maintenance zones can be provided.
- A minimum of one maintenance access point should be provided at strategic locations along road frontages to provide for maintenance and emergency access.
- A driveway should be formed to create the maintenance access point. A controlled access device such as a removable bollard, gate or lock rail to be installed at each driveway. A 3.5m wide reinforced concrete driveway should be provided as per WCC Civil Specification 2019.
- Where a maintenance access route crosses an internal path, the path must be reinforced to withstand maintenance equipment traversing it.
- Provide for vehicular access to park facilities and areas requiring regular cleaning and ongoing maintenance (toilets, playgrounds, refuse bins, barbecues, mown areas, firebreaks, etc.). Wherever possible all weather access should be provided to these facilities and areas.
- Provide access to stormwater infrastructure such as stormwater detention basins, drainage swales/ channels, stormwater pits, manholes, water quality treatment facilities (eg wetlands, bio retention basins, etc.), and stormwater quality improvement devices (eg GPT's, CDS units, etc.).'
- Feature garden beds in open space should be minimal and be relative to the size, function and service of the public open space. For example, a local park would have minimal to no feature garden beds whereas a neighbourhood park with a civic space may include them.
- A maintenance schedule is required for all open spaces detailing soft and hard landscape features such as areas of turf, mass planting beds, edging, fencing and furniture.

5.0 OPEN SPACE INFRASTRUCTURE DESIGN

5.1 Play Spaces

Objectives

People of all ages and abilities engage in play. Play helps to enhance mental and physical wellbeing. Play happens at our parks, natural areas, beaches, public swimming pools, playgrounds, outdoor exercise stations, skate facilities, youth precincts, public art installations, ball courts, bicycle tracks and many other locations.

The West Dapto Urban Release Area is in a unique position to enable, enhance and promote play opportunities by providing a broad range of quality facilities and infrastructure.

Wollongong City Council has developed a strategy - 'Play Wollongong' which has been developed to guide the future direction of play across the Wollongong Local Government Area (LGA). This strategy focuses specifically on toddlers to 12 year olds. Youth spaces are also required to respond to the natural progression of children to teenagers as outlined in the 'Social Cultural and Recreational Needs Study for the West Dapto New Release Area' Elton, 2007.

Design Principles

Distribution - quality play opportunities must be equitably distributed across the city, including large regional play spaces and smaller local play spaces. Ensure play spaces meet the function, service, size and catchment distance requirements of the park type.

Access - play spaces must be easily accessed by walking and cycling and encourage healthy living and independent access by children.

Engagement - ensure meaningful engagement is undertaken with the surrounding community including children, in relation to play space planning. Work with the local community and engage school children and young people when planning and designing play spaces. Involve children and the broader community in the design of public art features and in accordance with Council's Public Art Policy.

Below left: Play equipment, Bankbook Park Wongawilli

Below right: Inclusive equipment, Bankbook Park Wongawilli

Inclusive and age appropriate design - play spaces are to be inclusive of all ages and abilities and encourage participation in play. Well-designed play spaces provide a range of age-appropriate experiences that can help to foster independence, support social interaction, develop learning and encourage creativity.

Informal play spaces - informal play spaces and the provision of natural play elements are to be given priority, recognising the benefits of connecting with nature. Children who are able to access natural play environments regularly are more active and resistant to stress, and play in more imaginative, diverse and creative ways. Natural elements that feature in good play space design include wet/dry creek beds, bridges and tunnels, mounds and slopes, plants and where possible existing trees.

Appropriate risk and challenge - play spaces must provide children with an appropriate level of risk and challenge while complying with relevant safety standards. Play spaces that encourage children to take manageable risks allow them to test their limits.

General Requirements

Playgrounds in parks should be designed, located and constructed in accordance with the following requirements:

- Certification is required that the impact attenuation surfacing and associated landscaping comply with the relevant Australian Standards *AS/NZS 4442:1996* Playground Surfacing Specification Requirements and Test Method.
- Certification is required that the play spaces and play equipment comply with the relevant Australian Standards *AS/NZS 4486.1:1997 Playgrounds and Play Equipment. Part 1: Development, Installation, Inspection, Maintenance and Operation, Standards Australia.*
- Certification is required that the play equipment comply with the relevant Australian Standards *series AS 4685.1, AS4685.2, AS4685.3, AS4685.4, AS4685.5, AS4685.6, AS85.11.*
- Ensure play elements complement and enhance other recreation opportunities in a park. Where possible playgrounds should be linked to other areas of play including open activity areas, natural areas and recreation facilities such as shared paths and basketball courts.
- Ensure play equipment is readily maintainable and approved by WCC. A list of preferred Council suppliers can be provided to assist with the selection of suitable equipment.
- A minimum of five-year manufacturer's warranty is required for any off the shelf equipment.
- Custom playground equipment is permitted in neighbourhood playgrounds only unless approved by WCC.
- Playground design should achieve a balance between carer supervision and independent play. Carer involvement in the play of young children is essential to reduce the risk and severity of accidents. However, older children need to be able to play without constant adult supervision, to maximise opportunities for social development.
- Fencing of play spaces is not encouraged. The location of play spaces should be carefully considered to design out the need for fencing. Where there is no alternative for the location of a playground, a safety fence is permitted between playgrounds and a main road, a water body with standing water, a shared pathway, when play elements are less than 20m from the road frontage, bikeway or water body.
- CCA treated timber must not be used in the construction of play equipment, fencing and furniture within playgrounds.
- The installation of water play elements requires specific involvement and approval of Council during the concept development stage to undertake risk analysis and to plan for sustainable water use.
- Incorporate natural shade and seating and other park furniture.

Playground Surfacing

Surfacing of playgrounds should comply with the following Council requirements.

- Grade the site to produce a gentle fall (maximum 2 percent) towards the perimeter of the playground to

enhance drainage, particularly away from fall zones and areas of high traffic or activity. A shallow swale or low bund may be required at strategic locations around the playground to divert overland flow.

- Typical drainage treatment will include the installation of a robust plastic agricultural drain fitted with a filter sock around the outer edge and below the under surfacing area, with disposal to the stormwater system.
- Construct an extruded 200 x 200mm reinforced concrete edge around the perimeter of the playground under surfacing and fill the entire area with an appropriate impact attenuation material, in accordance with AS/NZS 4422. The edge must be set back at least 2.5 m from any item of play equipment to provide adequate circulation and maintenance space.
- All features within 1.0 m of the proposed playground such as seats should be incorporated within the boundary of the surfacing by at least 0.5 m, to enhance the aesthetics of the playground and for ease of maintenance of the park.
- Impact attenuation should be provided over the entire fall zone and circulation space around play equipment, as specified in the AS 4685 series, and/or by the equipment manufacturer.
- WCC does not support the use of sand as soft fall due to poor performance, hygiene and high maintenance requirements.
- Solid impact attenuation surfacing such as wet pour synthetic surfacing should be installed under swings, basket swings, slippery dip exits, fireman's poles, and at the entrance and exits of flying foxes. Coverage should extend the length and width of a flying fox unit.
- All finished grass and impact attenuation surfaces should be flush with the concrete edge and internal solid surfacing if applicable, to avoid trip hazards.

Left: Wet pour surface treatment under swings. 'Brickworks' Bulli

Above: Inclusive play features, Beltana Park Googong Queanbeyan

Shade

The siting of playgrounds and infrastructure such as seating should take into account the relationship to existing mature vegetation. Advanced stock of suitable tree species should also be planted to provide future shade around playgrounds. More permanent shade structures such as shade sails are often required over larger play elements in neighbourhood playgrounds.

Shade structures are not desirable within local playgrounds with a preference for shade from existing vegetation or supplementary advanced planting of shade trees.

Natural shade to play spaces, 'Melaleuca Park' Jordan Springs Sydney

5.2 Sportsfields

Objectives

The location and design of sportsfields is intended to encourage, promote and facilitate recreational pursuits in the community involving organised competitive sporting activities and games as well as informal recreation. Sportsfields of the West Dapto Urban Release Area must provide for the active (formal) sporting needs of the new population with the provision of sporting facilities such as AFL, soccer, rugby and cricket.

Sportsfield design and location must accommodate flooding and water management without compromising the open space and recreation functions. Sportsfields should be located outside the 10% Annual Exceedance Probability (AEP) flood extent. The fields should be available for play within 3 days after the rain event.

An internal and external pathway network for pedestrians and cyclists must be provided ensuring connectivity within the park and externally to residences and public transport.

The adjacent proposed residential housing must encourage passive surveillance by orientating the dwellings to overlook the open space and deter anti-social behaviour.

Requirements

Standard of Construction - sportsfield construction and layout must be in accordance with the Transport Canberra and City Services (TCCS) publication – 'Design Standards for Urban Infrastructure, 24 - Sportsground Design.'

Sportsfield design principles - the sporting fields are to be planned in consideration of the specific requirements of the relevant sport code such as field size, posts, nets, line markings and safety, in addition to the following points:

- Gradient of fields to be no greater than 2 percent slope.
- Orientation of the fields are to be between north and 15 degrees east of north depending on the particular code to be catered for.
- Provide supporting facilities appropriate to the standard of sportsfield.

Neighbourhood Park – West Epping Park, City of Parramatta. Image sourced from City of Parramatta

Fencing - Sportsfields should be fenced in accordance with the West Dapto Technical Manual, typically with a barrier fence separating road easement and active fields.

Goal Posts - Galvanised steel construction, with in ground sleeves.

Tree planting - sportsfield design must include significant shade tree planting with at least 30 percent of the off field areas of the park provided with natural shade.

Shelter - protection from dominant winds to improve spectator amenity must be provided wherever possible e.g. integrated tree planting to form wind breaks.

Utilities – sportsfields must be provided with all required utilities such as sewer, drainage and water and power connections.

Public amenities - an amenity block is required for Sports Field provision. Toilets with disabled access, showers and change facility must be provided as it is expected people will visit and stay in the park for extended periods. The number of cubicles and size of change rooms is subject to an objective assessment of potential demand.

Passive surveillance - the majority of the park should be road frontage with activated edges to encourage passive surveillance on the frontages. In addition, the park design must include the provision of pathways and shared pathways within the park boundaries to improve passive surveillance within the park.

Signage - park signage must be as per the West Dapto Urban Release Area Open Space Technical Manual to define entries.

Emergency Access – sports park design must include provision for compliant emergency access.

Car parking - provide car parking within the park to facilitate off street parking for visitors.

Any new sportsfield application needs to be accompanied by an assessment of future visitor parking demand (prepared by a suitably qualified transport consultant), and must include the provision of public car parking to facilitate off

Integrated perimeter control and tree planting, Towradgi

Standard Dimensions for Sportsfields

(Note: spectator area excluded).

SPORT	PITCH DIMENSION	RUN OFF AREA	ROTATION AREA/ SUBSTITUTION BENCH
AFL	177x 155m	6m from pitch perimeter	5 x 5m
CRICKET	138 x 119m	6m from pitch perimeter	6 x 2m
FOOTBALL	110 x 68m	6m from pitch perimeter	5 x 5m
RUGBY UNION	144x 69m	6m from pitch perimeter	5 x 5m
RUGBY LEAGUE	122x 69m	6m from pitch perimeter	5 x 5m
TOUCH FOOTBALL	76x 50m	6m from pitch perimeter	5 x 5m

Table 2
Sourced from Gold Coast Planning Policy II:
Land Development Guidelines Section 6 - Open Space Requirements

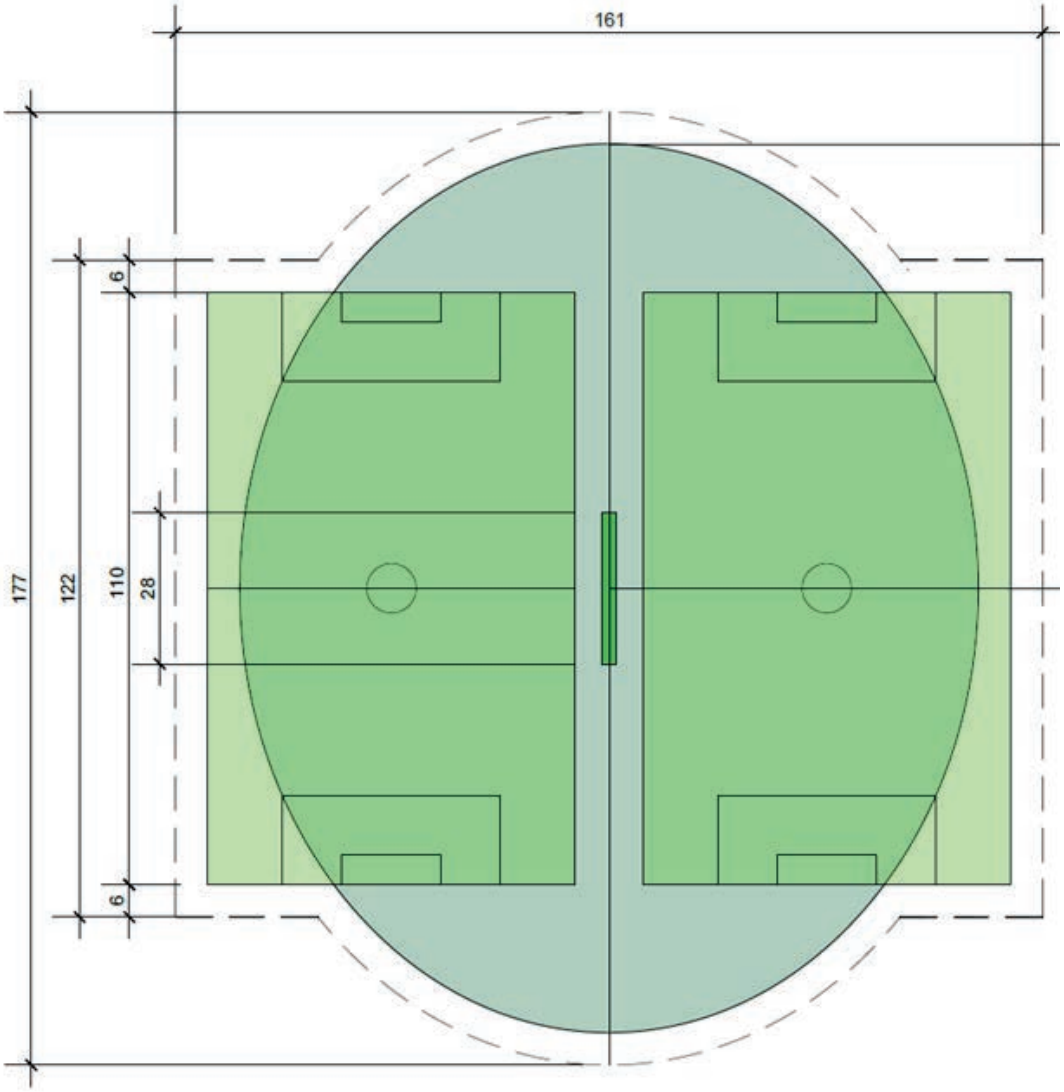


Figure 9
Typical layout multi-sportsfield layout for Cricket, AFL, and Soccer: sourced from Transport Canberra and City Services (TCCS) publication – 'Design Standards for Urban Infrastructure, 24 - Sportsground Design

street parking for visitors.

As part of the visitor demand assessment the applicant needs to:

- Undertake a site-specific on-street car parking capacity survey to establish the number of available on-street and off-street 'public' car parking spaces within a 250 metre radius of the facility.
- Establish the projected weekend sportsfield car parking demand based on surveys of similar existing facilities during peak weekend operation (Saturday and Sunday during winter sport season).
- Provide details of public transport links (proximity of bus and rail stations).
- Provide details of pedestrian and cycling routes.
- Car park design must be in accordance with relevant civil design standards - AS2890 series.
- Disabled car parking must accord with AS2890.6 with the number of spaces provided in accordance with BCA rates. These spaces must be located as close to the entrance of facilities as possible and be linked by an accessible path of travel as per AS1428.1.
- Car park design must include provision for buses.
- Car parking should not visually dominate the landscape and always incorporate substantial shade tree planting.
- Car parking must be linked to the pedestrian path networks within the park.
- A suitable number of bicycle racks to further encourage cycling must be provided. Bicycle racks must be located in areas with good passive surveillance.

Pathway networks - entry points and paths to internal key destinations such as sports fields and amenities must provide equitable access in accordance

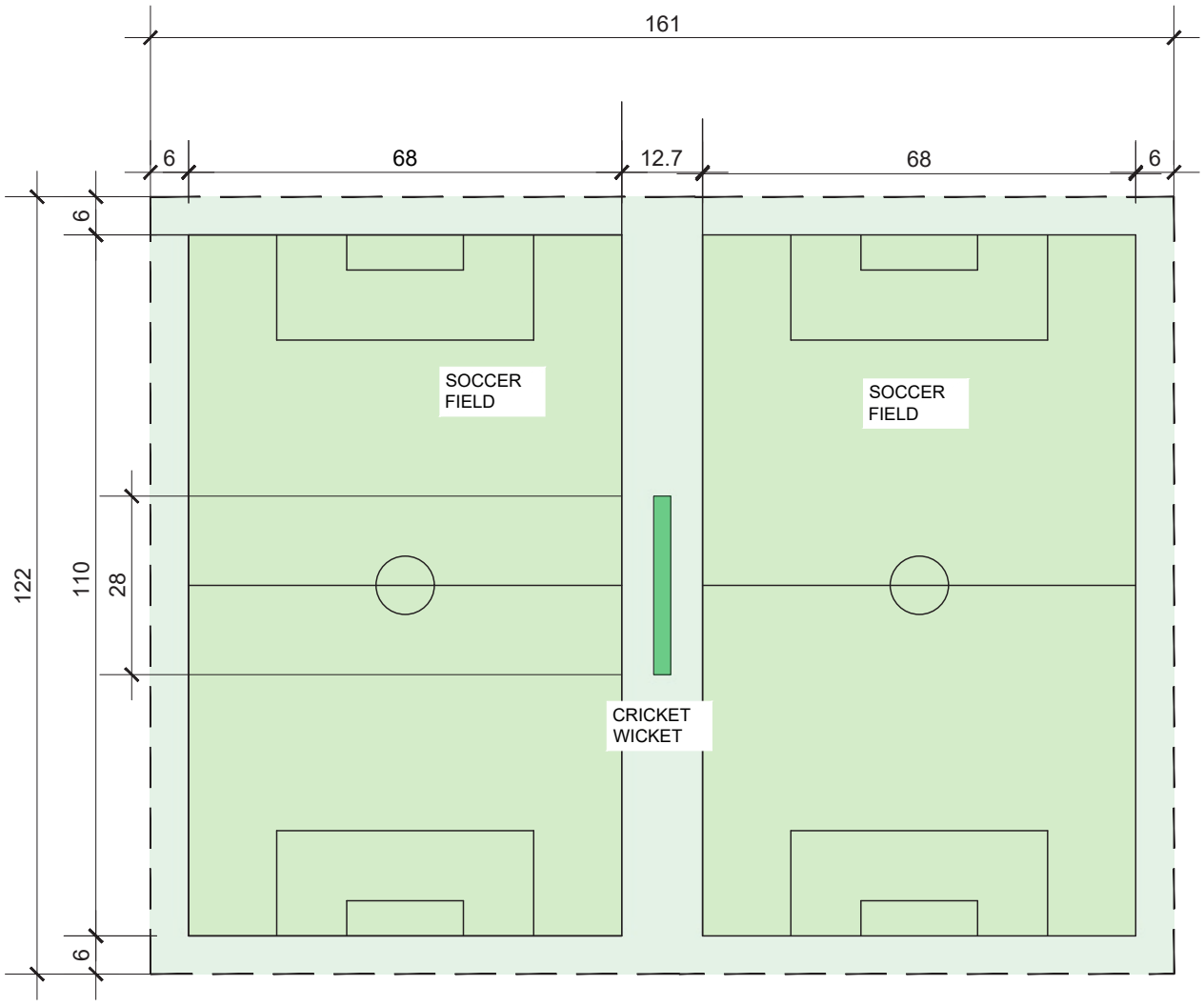


Figure 10
Typical layout for dual use – Soccer and Junior Cricket Transport Canberra and City Services (TCCS) publication – 'Design Standards for Urban Infrastructure, 24 - Sportsground Design

with the Disability Discrimination Act. The pathway network should use different widths, path finishes and detailing to establish a clear hierarchy

Perimeter control - the park perimeter is to be furnished with a suitable barrier to define vehicle entry points, including maintenance and emergency access points.

Water supply – Sportsfields are to be provided with a compliant water supply to allow the provision of water for visitors and maintenance of sportsfields.
In particular:

- Field irrigation water supply and irrigation system is required for sports grounds for maintenance. Explore opportunities for recycled water for sportsfield irrigation.
- Bubblers and water filling stations are required near play spaces and sports-fields where visitor use is high.

Lighting – sportsfields should comply with the appropriate Australian Lighting Standards, in particular:

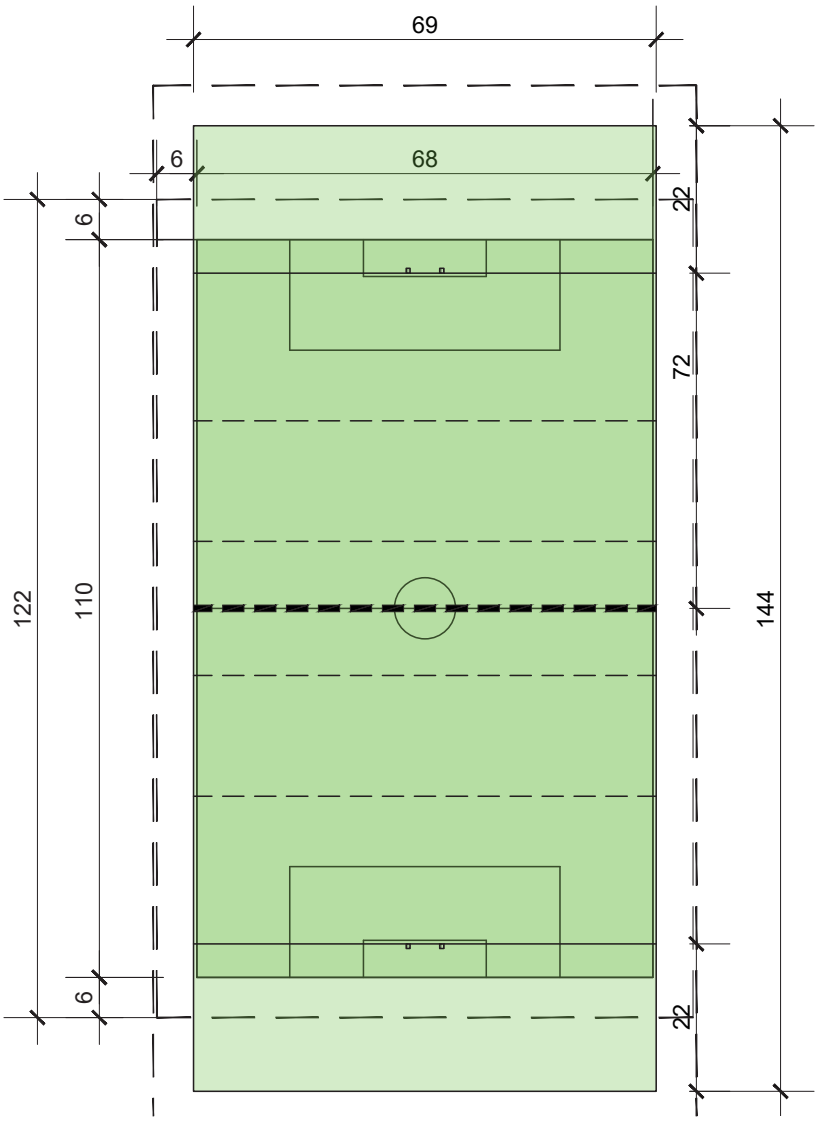
- Lighting to be provided to facilitate evening sports training and competition on sporting fields and pathway networks linked to car parking areas.
- Lighting design should consider illumination and spill requirements for functions, and the siting of light standards to enable free movement of specified mowing equipment.

Waste Requirements - consideration must always be given to the location of bins so that emptying can be undertaken as efficiently as possible, in particular:

- Bins should be located as close as possible to entrances and or road frontages of parks or high activity areas such as BBQ or picnic facilities.
- Bins should be located near a road or the perimeter of the open space to allow the bins to be serviced without the need to drive the collection trucks into the park.

Turf specification for fields – Kikuyu (Pennisetum clandestinum) installed as per West Dapto Open Spaces Technical Manual. Refer to sports turf detail.

Figure 11
Typical dual use layout for Rugby and Soccer



5.3 Open Space Frontages

Objectives

Good design of park perimeters is essential to activate the park and enable passive surveillance. The majority of the park should be road frontage to allow for passive surveillance.

Parks should have active edges with the provision of pathways or shared pathways to enable passive surveillance.

Requirements

- The majority of park perimeters must be surrounded by a road network with footpath or shared pathways with defined entry points.
- Neighbourhood parks must be located along a minor collector road with additional smaller order roads leading to car parking. Seventy-five percent (75%) of the neighbourhood park must have road frontage. No boundary to be less than thirty (30) metres.
- Local parks should have direct residential frontage with four road frontages.
- Residential dwellings should be oriented to allow passive surveillance.
- All park perimeters should be provided with a suitable barrier to define vehicle entry points including emergency and maintenance access.
- Street trees should be provided to the perimeter of all parks.
- Signage across Council's parks must be consistent and of a high standard. Messages should be consolidated to reduce visual clutter. Refer to West Dapto Urban Release Area Open Space Technical Manual.

5.4 Pathways

Objectives

All neighbourhood and local parks must be linked to the shared pathway network. Walking and cycling is a very important component of active transport in the West Dapto transport system to achieve a sustainable, healthy and active community. Creating attractive walking routes will contribute greatly to the health and vitality of communities.

A hierarchy of internal pathways should be developed to connect the park perimeter pathways to key features and facilities within the open space. At least one internal path should be Equal Access connecting to the main entry point and linking to key facilities in the park such as sportsfields, picnic areas, toilets and play areas.

Pathways should link to shared pathways in riparian areas and to the street network. Walking and running trails are permitted in natural areas subject to careful route mapping in consideration of high conservation areas, natural

Below left: Open space frontage treatment, Penrith NSW

Below: Internal pathway networks, Stuart Park Wollongong

landform, existing gradients, and points of interest. Trails should minimise impacts on existing landform and vegetation and other biodiversity values.

Tree planting should be integrated with pathway networks to provide shade and amenity.

Requirements

- All paths to be designed in accordance with WCC Civil Specification 2019.
- All concrete pathways shall have a minimum of 1500mm width.
- Utilise light and natural colours for pavement and surfaces to reduce heat absorption.
- The selection of planting adjacent to paths should be in consideration of Safety in Design Principles and not provide places of concealment.
- Trees should be offset from pathways to allow sufficient area for the root zone in consideration of the species and mature size.

Shared Pathways

Objectives

Active transport is achieved with the provision of convenient, connected, direct and attractive shared pathway networks between residences, schools, town and village centres, community facilities, parks and public transport nodes. The aim is to increase participation in all forms of cycling and walking by the development of safe, connected networks of shared pathways.

Site analysis of open spaces should map existing shared pathway and footpath networks. The parks need to connect to shared pathway networks to create safe and easy access to the park by bike, scooter or walking.

Neighbourhood parks should integrate the shared pathway network. The shared pathway network could be integrated into transmission easements, riparian areas and open space to create convenient pedestrian and cycle links that are safe, scenic and direct.

Shared path bridges are planned as part of the West Dapto Section Development contributions plans on major riparian corridors to allow direct linkages and maximise accessibility between precincts and land uses.

Requirements

Shared pathway networks must provide both connectivity within the proposed subdivision, and form part of the wider context of the West Dapto Urban Release Area active transport network.

- A site analysis should be undertaken mapping any existing or proposed shared path networks within the park's catchment area prior to commencement of shared pathway route planning.
- Shared pathway networks can be integrated into the riparian corridors to provide an off road cycle network.

Below: Shared pathway, Squires Way Wollongong

Bottom: Shared pathway adjacent to riparian area, Cordeaux Road Mt Kembla

- Utilisation of the riparian corridors can create pedestrian and cycle links that maximise accessibility between open spaces. Shared pathways should be located where possible outside the 10 percent Annual Exceedance Probability (AEP) flood extent.
- For any shared pedestrian footpath/ cycleway, a minimum 2.5 metre width is required and widened to 3 metres if the shared footpath/cycleway is adjacent to any embankment or structure.
- Fencing must be provided where required with safety fencing ie cycle rails.
- Where possible incorporate a level 0.6m shoulder (maximum cross fall of 2.5%) along both sides of a pathway. No planting should occur in this shoulder to create a safe and level run off area.
- All pedestrian footpaths or shared pathways / cycle ways should be designed in accordance with the requirements of Australian Standard AS 1428-2001. The maximum gradient for such pathways should be one in 14 with handrails, or 1 in 20 without, wherever practicable. The pathway should be constructed of concrete, except where varied by Council.
- Shared pathways should be designed in accordance with RMS NSW Bicycle Guidelines. These comprehensive guidelines assist in the planning and construction of high quality bicycle transport facilities in NSW including on-road and off-road facilities, intersection treatments, parking, line marking and signage. This document is to be read in conjunction with Austroads Guides part 6A: Pedestrian and Cyclist Paths, which prevails where there are differences between these two sets of guidelines.
- Provide end of trip facilities such as bubblers, water bottle filling station, seating and picnic facilities within parks.
- Provide bicycle parking at all parks.

Trails

Objectives

A trail is a component of the active transport network that is compatible with natural areas. Trail networks can facilitate activities such as walking, jogging and on trail cycling. The trail networks within a natural area should be planned around the high conservation areas, natural landform, existing gradients, and points of interest. Trails should minimise impacts on existing landform and vegetation and other biodiversity values.

Trails can also provide access to undertake maintenance in a natural area.

Requirements

- Trail construction materials can vary dependent on site conditions and anticipated uses.
- All walking trails should be in accordance with Australian Standard 2156.2:2001 - Walking Tracks Infrastructure Design. This standard specifies requirements for the structural design of walking track structures, to protect natural and cultural assets.

Concrete pathway adjacent to riparian area, Wongawilli

- Trail heads or trail access points must be visible. Trails should have good lines of sight.
- As part of the trail route design the applicant will be required to undertake a comprehensive risk assessment following CPTED principles.
- A hierarchy of trails should be determined with variable pathway widths dependent on function (with a minimum of 1.5m width). The width of a trail should respond to not only the hierarchy but also respond to natural features and vegetation.
- Trails should be designed to ensure that they are not significantly damaged in a storm event with a hard wearing surface preferred unless there is significant existing vegetation which may be impacted.
- Trails in natural areas, should incorporate long sweeping bends and meanders, with crests and gentle rises and falls, to create interest and assist drainage.
- Raised walkways and minor footbridges are permitted in natural areas in low-lying areas and areas of high environmental sensitivity. Materials for raised walkways and bridges must be durable, hardwearing and slip resistant. Structural components should be corrosion resistant such as galvanised steel and Fibre Reinforced Plastic (FRP). All boardwalks and pedestrian bridges to be designed in accordance with Australian Standard 2156.2:2001 - Walking Tracks Infrastructure Design.

Off Road Cycling

Objectives

Open space designs should provide a safe and fun environment to allow for cycling. Mountain biking is a rapidly growing recreational activity in NSW and the riparian corridors of West Dapto provide a unique opportunity for both a formal shared pathway network and for on trail off road cycle network.

Trail networks for off road cycling within a natural area should be planned in consideration of high conservation areas, natural landform, existing gradients and points of interest. Trails should minimise impacts on existing landform, vegetation and other biodiversity.

Planning, design and management of off road cycling trails can minimise environmental impacts, provide a quality experience for riders to enjoy and appreciate open space, and minimise conflict between park users.

Requirements

- The Australian Mountain Bike Trail Guidelines for trail planning, design and construction should be utilised to create a sustainable mountain bike network. Off road bike tracks must be designed and constructed so that water flows are managed and riders and other users are contained on the tracks. This is crucial to reduce erosion, sediment travel, track widening and proliferation, vegetation damage, and associated maintenance requirements.

Left: Off road cycling trails, Mt Kosciuszko

Below: Off road cycling trails Wollongong

5.5 Car Parking

Objectives

Car parks should be located in areas which have natural surveillance from adjoining residential areas. Car parking within the park should not visually dominate and always incorporate substantial shade tree planting.
Car parking should be separated from dedicated play spaces so there is no conflict between vehicles and pedestrians.

Requirements

- Car park design within open space must comply with relevant civil design Australian Standards.
- Car parking within the park should not dominate the development and provide shade to a minimum of 50 percent of parked vehicles. This should be achieved by the provision of medians and planting beds within the car parks to allow for shade tree planting. Appropriate soil volumes must be provided in consideration of proposed stocking rate.
- Planting beds must have sufficient deep soil area for the trees to grow. The minimum dimension of the planting bed is 2.4 metres by 5.5 metres (one car space). If an elongated bed design is required, the minimum width of available soil is 1.5m.
- Pedestrian and vehicular movement is to be clearly separated by use of design devices such as kerbs, bollards and or fencing.
- Car parking must be linked to the pedestrian path networks of the park.
- Trees in car parks should be long-lived large canopy species that do not excessively drop branches or soft fruit that may damage vehicles.
- Car parking should incorporate water sensitive urban design principles.

Car Park and integrated shade planting. Stewart Street Wollongong

5.6 Public Art

Objectives

Public art as defined in the WCC Public Art Strategy & Guidelines is 'a broad term that refers to a range of sculptural installations in the public realm. Public art can be enduring in the form of iconic, stand-alone work and integrated artistic elements. Ultimately, public art embraces its environment, and helps create places that inspire investigation and interaction, and are enjoyable and meaningful in their own right'.

Public art can enhance open spaces by:

- creating a sense of place,
- enhancing and enriching our experience in a public space by representing the local history of the area,
- increasing amenity and activating the open space,
- providing a medium to educate on the culture and heritage of an area.

Public art is permitted in neighbourhood and district parks only, due to the long term maintenance costs of the work.

Requirements

Public artwork and design proposals must be submitted to be assessed by the Public Art Advisory Panel and comply with the following requirements to be considered for approval:

- The artwork should not portray or depict material in a way which discriminates against or vilifies a person or section of the community on account of race, ethnicity, nationality, gender, age, sexual preference, religion, disability, mental illness or political belief.
- The artwork must principally include the work of artists and art-forms or designers and should not contain advertising or promotional material for any other product or service.
- The artwork must be the original work of the submitter and must have obtained all necessary clearances and approvals for subjects or materials featured in the work.
- The artwork should not employ sexual appeal in a manner which is exploitative and degrading of any individual or group of people.
- The artwork should not present or portray violence unless it is justifiable in the context.
- The artwork should not use language which is inappropriate in the circumstances.
- Public art should be located offline from pathways to ensure they do not create a hazard.
- Items should not have any sharp edges that could be a hazard to people.
- Artworks should be designed to prevent finger and head entrapment.
- A maintenance report is required to be prepared by the artist at the end of the project addressing the following:
  - a description of the artwork (including digital images and the date of completion);
  - artist/artist team contact details;
  - completed list of construction drawings;
  - a maintenance schedule
  - an agreement relating to decommissioning of an artwork once it has reached its intended lifespan, has been damaged or destroyed, and is no longer safe;
  - the method of construction, the types of materials used and details of the fabrication company (if relevant);
  - any specific instructions or products to be used when cleaning and maintaining the artwork.

Public art Bald Hill Stanwell Park

BMX Pump track (Barden Ridge). Image sourced from Sutherland Shire Council

5.7 Skateboarding, Scooting & BMX

Objectives

Parks need to cater to the needs of both young and older children with the provision of facilities for skateboarding, scooting, roller blading, and BMX riding.

This section does not relate to the provision of formal skate facilities but to features and elements where skating, scooting and roller blading can occur without conflict with other open space users. BMX riding activities can be accommodated in separate BMX and pump tracks.

Requirements

All concrete pathways can be used for skateboarding, scooting and roller blading.

- Hard landscape elements such as concrete steps, ramps, retaining walls, and steps that are not intended as skate facilities should integrate skate deterrent devices.
- Skating, scooting and roller blading provisions should be located offline from where young children are playing. Surface treatment changes such as unit pavers can be integrated to define skate area.
- Skate specific forms and typical furniture such as wedge boxes and fun boxes can be integrated adjacent to pathway networks to address the needs.
- For design guidelines for BMX facilities refer to BMX (Sports Dimension Guide) - Department of Local Government, Sport and Cultural Industries (Gov of WA).

Right: Skate feature, Holborn Park Berkeley

5.8 Park Furniture

Objectives

Open space furniture selection should be appropriate to the size, function and service of the open space. Parks should not contain an excessive amount of park furniture that results in an unsustainable maintenance cost to the community. For example, a local park would have minimal furniture whereas a neighbourhood park with a greater intensity of use may have a variety of park furniture such as multiple seating options, barbecues, and picnic tables with shelters, drinking fountains and bike racks.

The required provision of furniture and amenities within the park hierarchy is detailed in the West Dapto Open Space Technical Manual – Furniture.

Requirements

- All specifications for park furniture are detailed in the West Dapto Urban Release Area Open Space Technical Manual. Below are some examples of requirements needed.
- Seats should be provided at regular intervals and at points of interest such as play spaces and sporting fields. Seats should be offset from the trail so as not to affect the path of travel. Refer to Open Space Technical Manual for seat specification.
- Seats are to be constructed on an extended concrete pad to allow for wheelchairs, prams, walkers etc. Seats are to be positioned with a continuous accessible path of travel where possible.
- Tree planting should be positioned to complement seat positions to maximise shade.
- Picnic nodes (picnic table with shelter) should be located adjacent to places of special interest, and to complement, and enhance other recreational opportunities in the park. The picnic node must have accessible pedestrian paths from adjoining car parks and roads.
- Within a neighbourhood park, electric barbeques are generally provided as part of a picnic node and must be covered by a shelter.

Picnic shelter, Sheaffes Road Kembla Grange

5.9 Lawn Areas

Objectives

Grass areas provide opportunities for formal and informal recreation in open space. Grass areas should be as large as possible to create functional and flexible spaces to suit a large array of recreational activities.

Requirements

- Informal grass areas for ball sports or unorganised sport should be a minimum dimension of 60m long x 40m wide.
- Lawns should generally be kept clear of furniture elements such as signs, seats, lights, bins.

- Trees in lawns should be spaced to allow ease of mowing and be planted with a maintained 1.5m radius mulch ring where no edge is specified.
- The gradient of lawn areas proposed for informal kick about areas should have a slope of less than 6 percent and greater than 2 percent to allow for surface drainage and safe ball play.
- The maximum slope of turfed areas in public open spaces is to be to be 25 percent to ensure the safety of individuals carrying out maintenance. Areas with slopes steeper than 25 percent must be treated as a mass planting bed and may need stabilisation with a geo fabric.
- Stones, sticks and roots should be removed from all soil profiles.
- Turf areas should have a minimum of 100mm depth of top soil.
- For lawn species and construction details refer to West Dapto Open Space Technical Manual.

5.10 Mass Planting Beds

Objectives

Mass planting beds are defined as a mulched area that is densely planted. Mass planting beds in open space should be minimal and be relative to the size, function and service of the public open space. For example, a local park would have minimal to no mass planting beds whereas focal areas of a neighbourhood park with a civic space may benefit from appropriately sized mass planting beds.

In riparian zones mass planting beds will form part of the re-establishment of the original riparian vegetation community and therefore may be of considerable size dependent on the order of the stream being revegetated.

Although mass planting beds can be an important amenity improvement in the right location, the priority for open space upgrades should always be the establishment of canopy trees, groups of trees and feature trees.

All vegetation established in or around any open space shall be located to maximise passive surveillance opportunities, maintain clear lines of sight and avoid the creation of concealment areas.

Requirements

- Areas with slopes steeper than 25 percent must be planted as a mass planting bed or constructed with materials specifically designed to stabilise the slope.
- All planting areas are to be prepared to a minimum depth of 300mm and free of weed species. This may require the importation of planting mix or a mixture of weed free site soil and soil conditioner.
- If planting areas are required, the garden beds should not be narrower than 750mm for grasses only, and 1500mm for a mix of trees and grasses.
- Planting beds should have hard and robust masonry construction edges installed. The edging should be straight, or with long sweeping curves with no acute angles, which would require hand mowing.
- Planting beds should comprise a mix of native canopy trees, groundcovers and grasses.
- Plants shall comply with AS 2303:2018 be healthy, of good form and be true to species and size. They must be free from pests and disease, and shall not be root bound.
- Advanced trees and grasses are to be planted in good quality soil and humus. The planting hole shall be twice the width and the same depth as the plant container.
- Any sites adjoining any natural areas or creek lines with native vegetation must use locally indigenous species (no cultivars) in the landscape plan and must have regard to any impacts of water flows and flooding.
- Planting selection should be based on a weeds risk assessment to prevent the dispersal of inappropriate species into natural areas.
- Mulch for all planting areas shall be hardwood clip mulch. Mulch is to be free of weed material and seed, debris and foreign matter. The contractor shall spread a 75mm thickness of approved mulch on all mass planting beds and 75mm thick mulch ring around all trees in lawn areas. The stems of all plants shall be kept free of mulch to protect the stem from possible rot.

5.11 Water Supply

Objectives

Open spaces must be provided with a water supply to allow the provision of water for maintenance of landscape areas as well as provision of water for bubblers. Taps should be provided in a park to allow the cleaning of infrastructure and the maintenance of turf and planting areas.
Bubblers and water filling stations are also required near play spaces and active recreation nodes where it is expected that people stay longer.
Water supply for irrigation of sportsfields should be obtained from sustainable sources such as recycled or harvested water supplies.

Requirements

- A minimum size of 25mm water service connection is required at the park boundary with a water meter and at least one vandal proof water tap.
- Taps should be located near the edge of the landscaping and turf to be maintained. The tap should not interfere with maintenance activities such as grass mowing.
- Taps to be placed in fifty (50) metre intervals.
- Water supply connections should be located within twenty five (25) metres of a maintenance vehicle access point.
- All water provided from Council's reticulated water supply system shall be metered and all irrigation systems shall comply with the back-flow prevention requirements of AS3500 Plumbing and Drainage - Part 1. Locate water supply connections and back-flow prevention devices away from public access points adjacent to other park infrastructure or within landscape beds where possible.
- Bubblers should be provided in parks in key locations, on shared pathway networks and near play spaces and active recreation nodes where visitor use is high.
- A dog drinking bowl must be added to bubblers in proposed dog parks.

5.12 Fencing And Barriers

Objectives

Wherever possible, the need for fencing should be designed out of open space proposals. However, there may be special circumstances where fencing or barriers may be required, such as along road frontages of a park to prevent illegal vehicle access to open space or natural areas, or to provide protection from potential hazards such as permanent water bodies.

As detailed above, play space design should avoid the need for fencing by careful planning and placement of the play environment wherever possible.

The type of fence or barrier to be provided in open space should be consistent with the park type and existing site characteristics. Fencing must be robustly constructed and made from durable materials with high quality finishes that minimise maintenance requirements.

Requirements

- Fence rails and the tops of bollards should be generally installed following the overall slope of the land, without minor dips and bumps.
- Vehicle barriers are to be installed along the perimeter of natural areas, along road frontages and near public entrances and facilities. Refer to the West Dapto Technical Manual for a range of appropriate fence types.
- Barrier materials to control and define the entry points into natural areas should be as simple and robust as possible, such as quarry sawn sandstone 'logs', timber railing fences, bollards, or galvanised pipe and timber posts as detailed in the Open Space Technical Manual.
- Designated access gates to be provided for emergency and maintenance vehicles as detailed in the Open Space Technical Manual.
- Ensure that fencing adjacent to riparian areas does not result in the undesirable obstruction of the free flow of floodwaters, or obstruct the connectivity and movement of fauna along riparian corridors.

- Fencing is required where there is a danger of children gaining access to high risk areas (eg around stormwater drain head walls, outlets and stormwater quality improvement devices) or where the drop height exceeds 1.0m. Fencing to be installed in accordance with stormwater design best practice and relevant standards. Refer to the West Dapto Urban Release Area Open Space Technical Manual for a range of appropriate fence types.
- A safety fence is permitted when play elements are less than 20m from the road frontage, shared pathway or water body.

5.13 Retaining Walls

Objectives

Wherever possible, the need for retaining walls should be designed out of open space proposals. Retaining walls will only be permitted in special circumstances such as to achieve accessible paths of travel or to retain the natural ground levels around significant vegetation.

Requirements

- Retaining walls over 1000mm high are to be designed and certified by an experienced chartered structural engineer and will require safety fencing.
- Retaining walls must be constructed with low maintenance high quality, durable materials. In this regard, masonry and stone walls are preferred as retaining structures.
- Boulder walls may only be constructed where natural stone is a feature of the site and the retaining walls are less than one metre in height.
- Timber retaining walls are not acceptable.

Retaining Wall, Bulli

5.14 Dog Parks

Objectives

The term 'dog park' is generally given to designated fenced dog off leash areas that contain a variety of landscape features and/or equipment that offer different activities and experiences for dog owners and their dogs. They are defined areas which offer a safe and controlled environment for dogs to play, socialise, interact and exercise with other dogs and their owners. Dog parks can contribute to enhancing social connectivity and improving community health. The provision of dog parks may also reduce impact on sensitive natural habitats by the creation of purpose built facilities.

The Companion Animal's Act 1998 states that dogs under effective control of a companion person are allowed in open space. Under the Act, dogs are not allowed within 10m of children's play equipment and in areas specifically prohibited by Council.

Dog parks must be located where people want to go, where people will feel safe, where natural surveillance is achieved through passing cars and/or foot traffic, and a site that is not within 50 metres of residential houses.

The design and detailing of dog exercise embellishments should blend in and complement the landscape quality of the space.

Requirements

- Minimum area required for a fenced dog park is 0.25 to 1.0 hectares.
- Dog parks must not be placed inclose proximity toto children's playgrounds.
- Dog parks cannot be co-located with formal sportsfields.
- The site must have car parking options.

Dog exercise areas should have the following features as a minimum:

- The installation of double gate systems to allow people to enter/exit the facility easily with their dogs not being able to run away. The entry point must be treated with a hard surface such as concrete;
- The installation of two entrance points to allow people to enter/exit without conflict if encountered;
- provision of a 1.2m high perimeter fence with tree planting to create natural shade around the perimeter;
- seating for visitors;
- waste bins at each entry point;
- a maintenance access gateway;
- a water service to allow for the provision of water for dogs and owners with water fountains and dog bowls;
- regulatory signage;
- open ball play area;
- dog agility equipment.

Dog exercise equipment

5.15 Waste Collection

Objectives

Bins should be located as close as possible to entrances and or road frontages of parks, or high activity areas such as BBQ or picnic facilities. Bins should be located near a road or the perimeter of the open space to allow the bins to be serviced without the need to drive the collection trucks into the park.

Bins shall not be provided in natural areas.

Requirements

- Consideration must always be given to the location of bins so that emptying can be undertaken as efficiently as possible.
- Provide a dispenser for dog waste bags on all bins at neighbourhood parks.
- Bins generally should be positioned offset from a pathway network on a concrete base with a minimum dimension of 1.2 x 1.2m in close proximity to either an entry point or an area of high activity.
- 240 litre size wheelie bins to be used with or without enclosure, depending on type of park.
- Refer to the West Dapto Open Space Technical Manual for specifications for waste bins.

5.16 Transmission Easements

Objectives

Transmission easements primary function is the distribution of power, however they can provide important links between the open space networks. Transmission easement areas should be accessible to the public where possible with the integration of pedestrian/cycle linkages.

Site analysis of open spaces should map existing shared pathway and footpath networks and plan to integrate a safe and easy access to the park by bike, scooter or walking through the transmission easement where possible.

Permitted uses and requirements for treatment of transmission easements vary. Professionals involved with the development, planning, design and integration of transmission easement in open space must consult with electricity service providers.

A general guide of permitted activities is as follows:

- grazing;
- water storage dams, subject to sufficient clearances from conductors and towers;
- non-metallic fences up to three metres in height. Metallic fences, or fences incorporating metallic materials, must be suitably earthed and sectionalised, and are subject to approval by electricity service providers;
- dog exercise could be considered in transmission easement areas where there is good access and parking.

Requirements

The following guidelines apply:

- Pedestrian paths should connect to adjacent open space pathways and shared pathway networks;
- At least one key path must be provided for each transmission easement area;
- When a more complex path network is proposed the design should use different widths to establish a clear hierarchy. Minimum clear footpath width of 1500mm.

5.17 Signage

Wollongong City Council follows the guidelines of the NSW Geographical Names Board (GNB) for the assignment of names to parks, sportsgrounds, and natural areas within the Wollongong Local Government Area. Council will consider the naming of parks, sportsgrounds, natural areas and general community use lands (including features within those) based on the following:

- names of Aboriginal origin and Indigenous significance to the local area;
- botanical reference native to the area;
- historical or cultural significance to the local area;
- geographical relevance of the immediate area;
- a person's name or
- a group – charitable, social/cultural community.

It is acknowledged that the GNB's primary directive is to give precedence to the use of names of Aboriginal origin associated with the feature or a name with an historical background in the area of the feature. Council will utilise these long standing practices wherever possible.

Signage across Council's parks needs to be consistent and of a high standard. Messages should be consolidated to reduce visual clutter. Refer to the West Dapto Open Space Technical Manual for specifications.

Below and bottom: Small interpretive signage examples, Endeavour Drive, Wollongong

Below: Large interpretive signage 'Purrungully' West Dapto

6.0 SUBMISSION REQUIREMENTS

Requirements for submission of Landscape Concept plans to Wollongong City Council when seeking approval for a subdivision development application, which contains open space:

- **Site Analysis plan** - shows relationship of the open space to the development as well as its relationship to the surrounding open space network and original neighbourhood or precinct plan. Connectivity must be shown to shared pathway networks and linkages to key destinations such as town and village centres, community facilities, schools and public transport.
- **Open Space inventory** - assessment of the existing and planned recreational facilities in the surrounding neighbourhood precinct.
- **Landscape Plan** - Refer to Chapter E6: Landscape for Lodgement of a Landscape Plan. A statement from both a registered landscape architect and civil engineer that the proposed open space design complies with the West Dapto Open Space Design Manual.
- **Arboricultural Impact Assessment (AIA) report** - to cover existing vegetation. Arborist report must correlate the cut and fill plans with proposed trees to be retained and removed.
- **Flooding impacts on proposed open space** – mapping of flood impacts on proposed open space. For example sportsfields are to be located outside the 10 percent AEP flood extents and are available year around for competition play except during the flooding event.
- **Formal and Informal recreation** - concept designs must demonstrate the achievement of an equal split of active (formal) and passive (informal) play.
- **Vegetation Management Plan** – a VMP must be provided to cover riparian areas and areas of remnant / regrowth vegetation.

7.0 DEFINITIONS

Active (formal) open space

As defined by Greater Sydney Commission 'Active open space is land set aside for the primary purchase of formal outdoor sports for the community. Active open space supports team sports, training and competition'.

Passive (informal) open space

Is land set aside for parks, gardens, linear corridors, conservation bushland and nature reserves. These areas are made available for informal recreation, play and physical activity. Examples of passive (informal) recreation are cycling, exercise stations, running, walking, play spaces, sitting and picnicking.

Consulting Arborist

An arborist qualified to be consulted in the preparation of subdivision documentation must have achieved an AQF Level 5 (or equivalent) qualification.

Dog park

The term 'dog park' is generally given to designated fenced dog off leash areas that contain a variety of landscape features and/or equipment that offer different activities and experiences for dog owners and their dogs.

Landscaped area

A landscape area is a part of a site used for growing plants, grasses and trees which does not include any building, or hard paved area.

Natural areas

Natural areas are reserves created to protect the ecological biodiversity and habitat values of the land, the flora and fauna of the land, and other ecological values of the land. Natural areas include riparian environments and remnant, regrowth and restored bushland. Natural areas protect the aesthetic, heritage, recreational, educational and scientific values of the land. The management of the natural area protects and enhances the values and quality of the land and facilitates public enjoyment of the land with measures directed to minimising or mitigating any disturbance caused by human intrusion.

Public Art

Is defined in the WCC Public Art Strategy & Guidelines 'Public art is a broad term that refers to a range of sculptural installations in the public realm. Public art can be enduring in the form of iconic, stand-alone works and integrated artistic elements. Ultimately, public art embraces its environment and helps create places that inspire investigation and interaction, and are enjoyable and meaningful in their own right'.

Remnant vegetation

Any patch of native vegetation around which most or all of the native vegetation has been removed.

Shared pathway

A concrete or paved path, which is a shared pedestrian/cycleway with a minimum width of 2.5 metres designed in accordance with the requirements of Australian Standard AS 1428-2001 and WCC Civil Specification 2019.

Trail

A trail is usually a path or track to facilitate activities such as walking, jogging and on trail cycling. Trail construction materials can vary from compacted natural ground or compacted gravel to asphalt and concrete.

Tree Protection Zone

The Tree Protection Zone (TPZ) is defined as the optimal distance from the trunk of a tree that should be maintained free of development and construction activity in accordance with AS4970-2009 in order to protect the tree and keep the tree viable.

Urban Greening

Is strategically increasing the quality and quantity of all vegetation in open green spaces and on all land types in an urban setting with a particular emphasis on the increase of canopy cover.

Universal Design is the process of designing for everyone. It is the "design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation and specialised design", Ron Mace, 1997.

Vegetation Management Plan (VMP)

A VMP is a map-based report to assist the landowner to manage a site to ensure that biodiversity on the site is protected, maintained and enhanced.

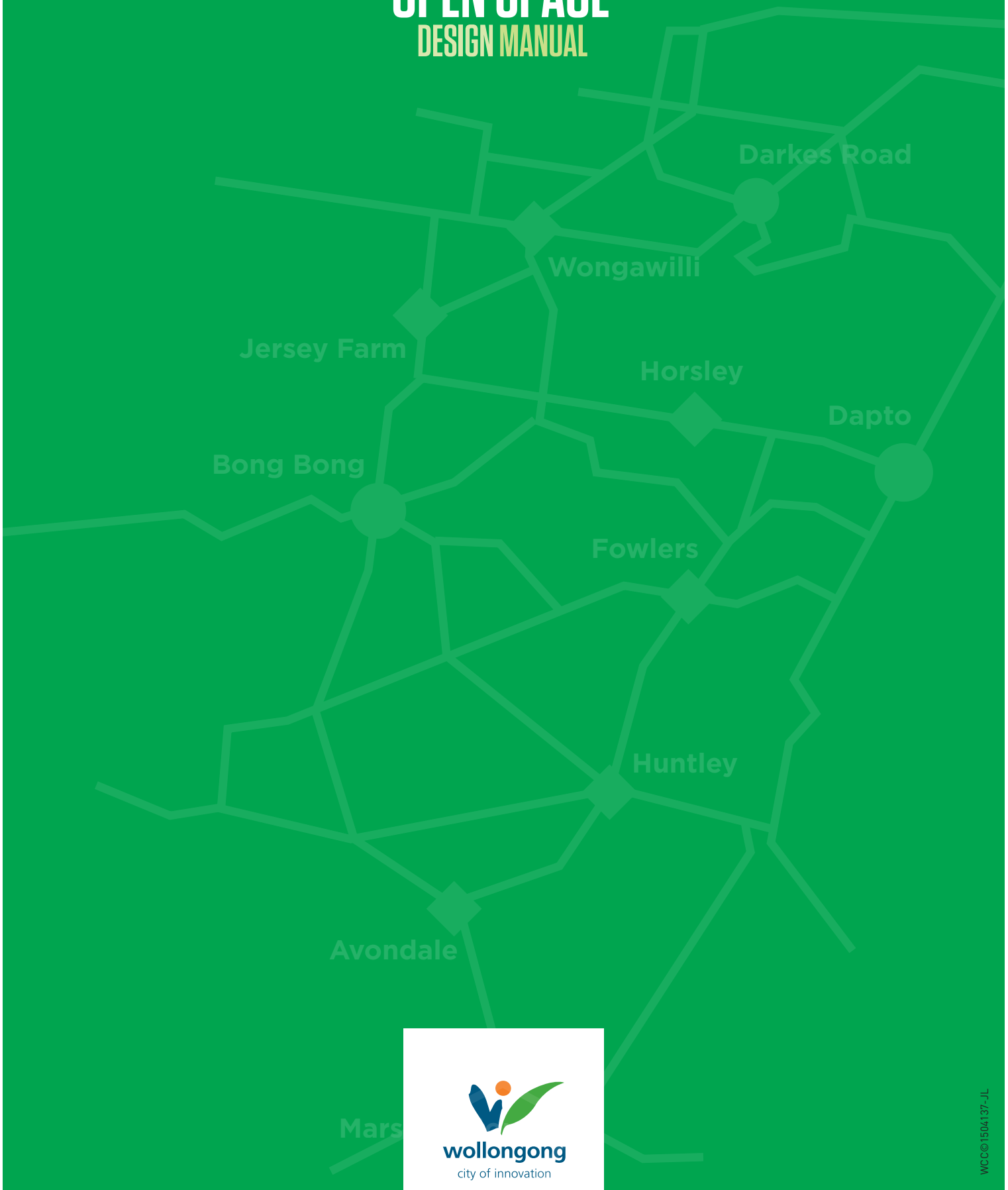
Amendments

The following table summarises the changes in the document since the last version on exhibition August 2019.

Amendment Sequenced No.	Key Topic Addressed in Amendment	Amendment Location	Author Initials	Amendment Date
1	A change to text to update name of Contribution Plan	Page 4	DP	October 2019
2	Change to text in park frontage requirements	Page 10	DP	October 2019
3	Change to text in local park frontage requirements	Page 14	DP	October 2019
4	Change to text to refine requirements in conservation areas	Page 16- 17	DP	October 2019
5	Change to note in cross sections referencing APZ constraints	Page 20-22	DP	October 2019
6	Change to text to clarify timing of street tree planting and subgrade preparation	Page 26	DP	October 2019
7	Change to Tree planting in open space to include reference to fruit trees and bush tucker	Page 27	DP	October 2019
8	Change to requirement for Sportsfields for scoreboards	Page 35	DP	October 2019
9	Change to car requirements	Page 36	DP	October 2019
10	Change to text to clarify location of bicycle racks	Page 38	DP	October 2019
11	Change to text to clarify requirement for irrigation system for Sportsfield	Page 38	DP	October 2019
12	Reference added for Sport Turf Detail	Page 39	DP	October 2019
13	Addition of text in pathway requirements to clarify pavement colours	Page 41	DP	October 2019
14	Change to reference to Development Contributions	Page 41	DP	October 2019
15	Change to image of Off Road cycling	Page 43	DP	October 2019
16	Change image of tree planting in car parking	Page 44	DP	October 2019
17	Change to description of type of mulch in mass planting beds	Page 48	DP	October 2019
18	Change to text to locations of dog parks	Page 51	DP	October 2019

NOTES

WEST DAPTO OPEN SPACE DESIGN MANUAL



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