

Playford

Document Control

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Contents

- 1. Design Responsibilities
- 2. Traffic Management
- 3. Road Geometry
- 4. Typical Road Reserve Cross Sections
- 5. Road Pavement
- 6. Footpaths, Driveways and Drainage
- 7. Public Lighting
- 8. Services

1. DESIGN RESPONSIBILITIES

Road layout and connection to existing Council roads shall be designed and constructed in accordance with the following guidelines:

- 'AUSTROADS publication Guide to road design, Part 2: Design Considerations'
- 'AUSTROADS publication Guide to road design, Part 3: Geometric design'
- 'AUSTROADS publication Guide to pavement technology, Part 2: Pavement structural design'
- 'APRG21: A guide for the design of new pavements for light traffic'
- 'AS 1289: Methods of testing soils for engineering purposes'
- AS 3798 Guidelines on earthworks for commercial and residential developments
- 'DIT's Pavement Marking Manual'
- 'DIT's Standard Specification for Excavation and Reinstatement of Road Pavements'
- 'DIT's specification for roadwork's'
- 'AS 1742 Manual of Uniform Traffic Control Devices'
- 'AS 1158 Lighting for Roads and Public Spaces'
- 'AS 2890 Parking Facilities'
- AS 1428 Design for Access and Mobility
- AS 4282 Control of the obtrusive effects of outdoor lighting
- 'DIT Manual of Legal Responsibilities and Technical Requirements for Traffic Control Devices; Part 2 Code of Technical Requirements'
- 'IPWEA Standard Details'

All newly created Torrens developments are to be serviced by a road network that is under the care and control of council. These roads are to be located within road reserves and shall comply with Council requirements. A system of roads for each development is to be endorsed by council in line with Councils adopted road reserve hierarchy prior to Development Application approval. The choice of road reserve from the hierarchy will be informed by traffic volumes. The road layout is to include local area traffic management to regulate the vehicle movements within the road network.

If the interface of a proposed road is with a Department of Transport and Infrastructure (DIT) owned road, then the developer must consult with DIT to seek their written comments and approval.

Appropriate landscape initiatives for all Road Reserves include, but are not restricted to the following:

- Street trees, refer to Council's endorsed species list
- Shrub planting (no turf unless by agreement, see section 5a), refer to Council's endorsed species list
- Use of upright kerbs in all circumstances other than pram ramps and driveways, unless otherwise arranged with Council Landscape Architect or Engineer.

WSUD principles form an integral component of road reserves, from both a functional and aesthetic perspective and should be incorporated where applicable and to council standards.

All road vertical and horizontal geometry is to be in accordance with the AUSTROADS guidelines and Councils requirements.

2. TRAFFIC MANAGEMENT

The detailed design of all footpaths, roads and open spaces and other public areas must comply with the requirements of the Disability Discrimination Act and AS1428.1

The Traffic Management Plan/ Traffic Impact Assessment is to be provided during the design process and must be approved by Council prior to Development Approval. It will include, but not limited to:

- Traffic generation
- Access/ connectivity
- Road hierarchy
- Swept Paths based on maximum vehicle size
- location and type of traffic control devices, in accordance with AS 1742 and DIT Code of Technical Requirements.
- A pathway network, as agreed with Council, to accommodate both cycling and pedestrian movements. Network should be in accordance with Councils Cycling and Walking Strategy.

Line marking is to be marked in accordance with AS 1742 and DIT Pavement Marking Manual and specifications. The line marking is to have 2 coats of paint with reflective beading and not applied earlier than 7 days after bitumen has been laid.

One on street parking space (minimum) shall be provided per allotment. For higher density developments a parking plan shall be provided. Street parking will be required in the vicinity of courtyard and villa allotments.

Provision must be made for refuse bins (2 per lot), roadside pick-up.

Street blade signs and pole are to be installed in accordance with Councils standard detail. Street name signs shall be erected at the Developer's expense within two months of completion of construction of roads. The Council will not permit the installation of street signs on street light poles.

Formal Car parks and any traffic control devices must be designed and constructed in accordance with current AS 2890.1 Off-Street Car parking, current AS 1742 Manual of Uniform Traffic Control Devices and the Notice to Council (Part 1 & 2) under the current Road Traffic Act 1961 from the Minister for Transport.

Ultimate traffic volumes for road classification and road design are to be based upon approved multipliers of existing traffic movements (measured), through traffic and an estimate of traffic generated by the proposed and future development. Estimated traffic volumes for new developments in undeveloped areas must be based upon recognised guidelines.

Where alternative traffic generation assumptions are used in the preparation of a Traffic Impact Study, details of alternatives must be provided to Council.

3. ROAD GEOMETRY

a. Intersections

The road network layout should provide appropriate junctions throughout the development. They are to be located sufficient distances apart to separate traffic movements, avoid traffic banking and provide reasonable intervals for drivers to make decisions. The recommended spacing's for intersections are:

- 60m if intersections are located on the same side of through street
- 40m if the intersections are located on opposite sides of the through street

The layout, geometry of intersections and sight distance restrictions are to be in accordance with 'Austroads Part 6: Intersections, Interchanges and Crossings'.

Where four-way intersections are required traffic control treatments such as roundabouts should be used.

All signalised intersections and Pedestrian/Rail Crossings must be designed in accordance with Council Requirements and DIT standards and guidelines and constructed to DIT Master Specifications. intersections are to be approved by DIT prior to construction.

All intersections are to be free draining to ensure no water ponds within the intersection. All cross grades are to be at least 1% and the longitudinal grade of the intersection is to be no less than 0.5%.

Swept Paths are to be provided at intersections using the following design vehicles, unless specific requirements dictate otherwise

Intersecting Road Type	Design Vehicle	Checking Vehicle		
Laneway/ Local Road	Single Unit Refuse Vehicle (9.4m)*	Articulated Vehicle (19m)		
Local Road/ Minor Collector	Single Unit Refuse Vehicle (9.4m)*	Articulated Vehicle (19m)		
Minor Collector/ Collector Road	Heavy Rigid Vehicle (12.5m)	Extended Vehicle (25m)		
Commercial/ Industrial	Articulated Vehicle (19m)	Extended Vehicle (25m)		

^{*} Single unit refuse vehicle is in accordance with current NAWMA Standard. Subject to change depending on NAWMA requirements

b. Stopping Distances

All roads shall be designed to ensure safe stopping sight distance based on the most severe case of the following parameters:

- Crests: twice the stopping distance measured between eye heights 1.15 metres above the carriageway.
- Driveways: 1.15 metre eye height to 0.6 metre tail-light height.
- Intersections: twice the stopping distance measured between eye heights 1.15 metres above the carriageway.

Stopping distance should be based on the estimated 85th percentile vehicle speeds. Note that it may be necessary to undertake substantial earthworks or provide traffic control devices to achieve the minimum requirements.

Corner cut-off shall be minimum 4500mm x 4500mm.

c. Road Grades

Councils minimum design crossfall grade for carriageway and footpaths shall be 2.5%. At bends and transitions a minimum of 1% is acceptable however surface must be either concrete or asphalt. Block paver surfacing is not acceptable.

Councils minimum design longitudinal grade is 0.5%. If it can be demonstrated that 0.5% cannot be achieved and would be detrimental effect on adjacent properties Council may accept the following as a negotiated outcome:

- On straight runs, where machine laid 0.4%
- Around corners at junctions 0.5%

All kerbs and gutters less than 0.5% should be water tested once laid and prior to base course being installed. At Practical Completion a water test is to be carried out over all carriageways and footpaths.

Kerbing

Councils preference is to use barrier kerb throughout (see detail SD100 and 105). As a minimum Council accept:

- Around corners barrier kerb
- Adjacent reserves barrier kerb
- Adjacent side of property barrier kerb
- Rollover/ mountable kerb may only be used where the property is fronting the road and by agreement with Council.

The transition between upright kerb and rollover kerb shall be over 3m or immediately after a kerb crossing. On rollover kerb the transition between the top of the SEP and the top of kerb shall be over 1m.

e. Local Road Widening

Where traffic control devices are required road reserve and carriageway widths may need to be widened to accommodate them. Swept paths are to be provided to demonstrate that service vehicles/ emergency services vehicles can navigate traffic control devices (See 3a)

f. Traffic Calming

Traffic calming must be incorporated into the road design to ensure that a low-speed environment is created in accordance with the road classification. The layout of the development is the primary means of limiting vehicle speeds.

All Traffic calming must not impede on the safe movement of Emergency Vehicles

Traffic calming must allow the turning movements of the vehicle classifications as stipulated in Section 3a

Traffic calming must not impede sight lines or bring pedestrians and cyclist into conflict with vehicles.

Speed bumps are not permitted.

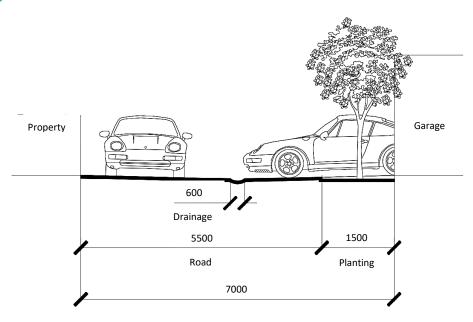
4. TYPICAL ROAD RESERVE CROSS SECTIONS

The City of Playford currently uses the following cross sections.

- Laneways
- Residential Road
- Collector Roads
- Collector Roads with Central Median/ Entry Statement

Commercial/ Industrial Road cross-sections are to be agreed prior to Development Approval.

a. Laneways



Typical Cross-Section of Urban Laneway

Rear loading laneways are to be a 7.0m wide sealed carriageway, which may extend from property boundary to property boundary.

No on street parking within laneways is permitted and parking control shall be used accordingly.

Laneways are not to be designed as a thoroughfare but should only provide access to immediately adjoining dwellings. They are to be connected between two roads in a straight line with a maximum length of 90m.

Laneways are not to be used to provide access to commercial development.

All laneways must be designed to accommodate refuse vehicles and emergency services vehicles. See Section 3a.

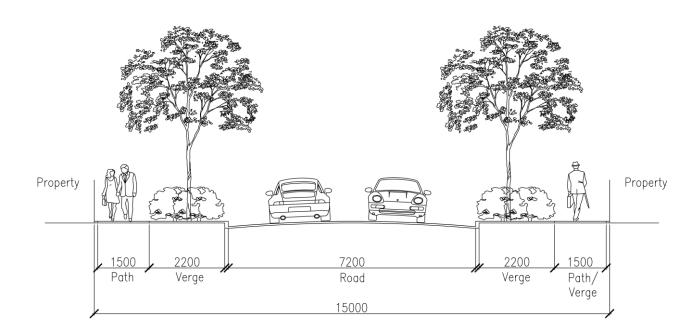
At the junction with the residential road, corner cut offs are to be provided to allow for adequate visibility for pedestrians and vehicles.

Interconnecting laneways, T-configurations and bends are not permitted.

Laneways are to be landscaped in accordance with Councils Land Division Requirements – Appendix C.

Typically laneways should be graded to centre spoon drain and then to a GIP.

b. Local Roads



Typical Cross-Section of Urban Residential Road

A minimum of one, 1.5m minimum width Footpath(s) are to be provided, located adjacent the property boundary (100mm clearance). Council is at liberty to request two footpaths.

Additional width of footpath may be required in highly trafficked areas. In higher trafficked area or where requested paths either side of the road may be provided following discussion with Council.

100mm offset to be provided between property boundary and road reserve.

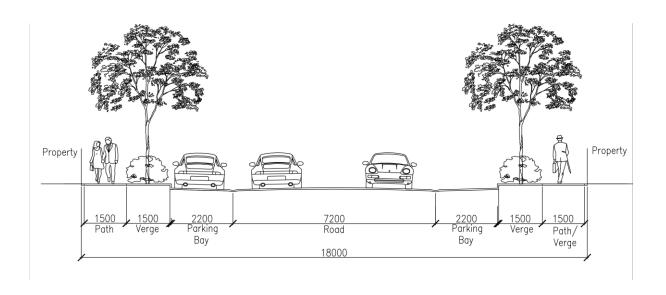
Carriageway to be typically 7.2 m wide between kerb faces to allow for on-street parking.

9.0 m turning radius (minimum) at end of cul-de-sac. Bowl shaped cul-de-sac are preferred, axe head treatments by negotiation and based on merit, 'T' treatments are not accepted.

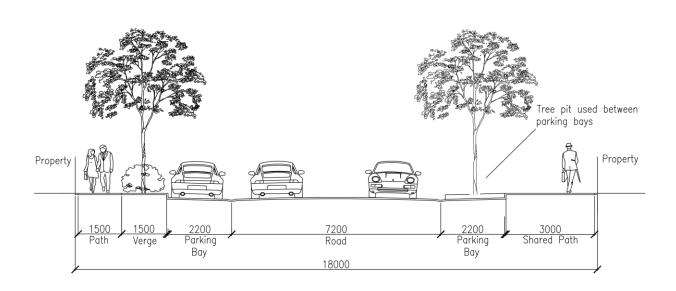
Verges are typically to be a minimum 1m wide. Depending on Hierarchy of road wider verges will be required by Council

Verges are to be landscaped in consultation with Council and Councils Land Division Requirements – Appendix C

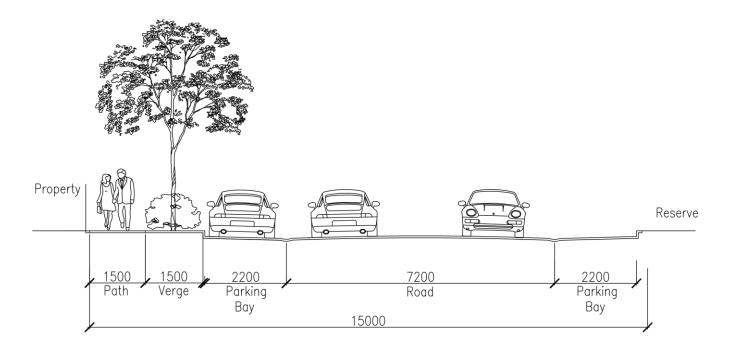
c. Minor Collector Road



Typical Cross-Section of Minor Collector Road



Typical Cross-Section of Minor Collector Road with Shared Path



Typical Cross-Section of Minor Collector Road adjacent Reserve

Typically, carriageway width to be 7.2m with two 2.2m (minimum) parking lanes either side.

Cycle lanes may be required within carriageway. Minimum width of cycle lane should be no less than 1.5m

Parking bay should be graded away from kerb to spoon drain adjacent carriageway. All kerb in parking bay is to be barrier kerb. Ends of parking bays are to flare at end at 45°

Typically footpaths will be required on either side of the road. Minimum width will be 1.5m and set 100mm from property boundary.

Where a shared Path is required on one side of road, minimum width of path shall be 3.0m.

Street scape shall be in accordance with Appendix C-Landscape Requirements and negotiated with Council.

Street trees within carriageway may be used to delineate parking bays, subject to negotiation with Council.

Tree pit is to extend full depth of Parking Bay

Barrier kerbs are to be used around tree pit

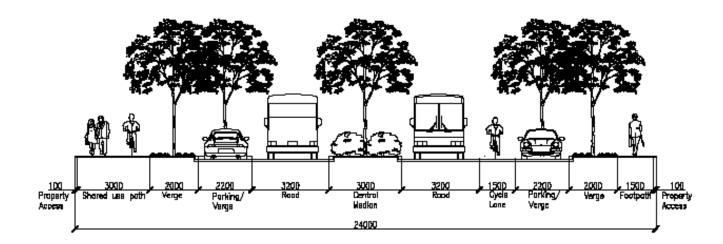
Root barriers are to be used within tree pits

Tree pits are to be flared at end at 45 onext to parking bay

Verges are to be landscaped in consultation with Council and Councils Appendix C - Landscape Requirements

Provision needs to be made for bin storage adjacent kerb (2 bins)

d. Collector roads with central median/ Entry Boulevard



Typical Section through Collector Road with Central Median/ Entry Boulevard

Within road a clear carriageway of 3.2m either side is required with parking bays. Depending on hierarchy of road

Where Cycle lanes are required within carriageway cycle lane to be a minimum width of 1.5m

Parking bay should typically be graded away from kerb to spoon drain adjacent carriageway. If agreed with Council drainage may be directed to tree pits using Council detail for drainage in tree pits. Ends of parking bays are to flare at end at 45°

There shall be no access for lots onto a collector road within 60 m of an intersection with another minor or major collector road. No direct residential property access shall be permitted onto any major collector road.

Footpaths will be required on either side of the road. Shared Path may be required on one or both sides of road, minimum 3.0m wide

Pedestrian crossover points are to be provided at appropriate location and spacing through the median. Crossovers should accommodate shared use where applicable.

Street trees within carriageway may be used to delineate parking bays. Subject to negotiation with Council.

Tree pit is to extend out full width of Parking Bay.

Barrier kerbs are to be used around tree pit unless agreed drainage is to be used into pit

Tree pits are to be flared at end at 45° next to parking bay

Root barriers are to be used within tree pits

Street scape shall be in accordance with Councils Appendix C – Landscape Requirements

5. ROAD PAVEMENT

Road pavements are to be designed in accordance with AUSTROADS guidelines, and to the satisfaction of Council. The pavement design will be determined by CBR testing of the subgrade material, consideration of environmental effects and traffic loading. All testing is to be carried out through a NATA registered laboratory.

According to the classification of the road as stated in Section 3 above, the road designer shall as part of the design provide the expected Equivalent Standard Axles (ESA's) according to

- Lots served,
- buses.
- refuse trucks.
- emergency vehicles
- Construction traffic

Road type and subsequent design should therefore be classified as shown below. The design parameters are sourced from Austroads, Infrastructure Guidelines SA, COP Land Division Requirements

				DESA<10^5		DESA 10^5 or greater	
Road Type	Design Period Yrs	%HV	Ann. Growth (R%)	NHVAG	ESA/HVAG	NHVAG	ESA/HVAG
Local Access with no buses	25	3.50%	1	2.1	0.27	2.5	0.8
Local Access with buses	25	4.00%	1	2.06	0.44	2.5	0.8
Local Access in Industrial	40	8.00%	1	2.28	0.51	2.5	0.8
Collector with no buses	30	5%	1.5	2.22	0.59	2.5	0.8
Collector with buses	30	5%	1.5	2.15	0.65	2.5	0.8
Collector Industrial	40	8.00%	1.5	NA	NA	2.5	0.8
Arterial/Sub- arterial	30	6%	1.5	NA	NA	2.5	0.8

All bus routes are to have deep lift AC treatment. Arterial, sub-arterial and collector roads are to have deep lift AC treatments which is consistent with Councils asset renewal and capital works program for roads of this category.

The excavation and filling of land must be undertaken in accordance with specifications approved by Council. Those specifications shall comply with AS3798-1990 – "Guidelines for Earth Works B Commercial and Residential Development". Geotechnical documentation is to be provided to Council demonstrating that filling complies with the requirements of AS2879-1998-Residential Services Footing Code All pavement design is to allow for construction traffic associated with the development and future works/ stages.

Footpaths are to be constructed on the verges adjacent the property boundary in accordance with streetscape layouts shown in Section 3

The subgrade and granular layers are to achieve compaction in accordance with Australian Standards. Each layer is to achieve the required compaction prior to the laying of the next layer. As the compaction tests may take time to undertake, council can undertake a proof roll as a visual inspection that each layer has achieved the required compaction.

a. Road Pavement Types

The City of Playford has 4 types of Road Pavements

- Granular asphalt pavement
- Deep lift asphalt pavement
- Block pavers
- Concrete pavement

Granular Asphalt Pavement

Unless otherwise agreed with Council the sub-base and base course shall be compacted in layers no greater than 200mm thick to the following compaction:

- Sub Grade to be compacted to achieve 98% standard compaction to AS 1289
- Sub Base to be compacted to achieve 95% maximum modified to AS 1289
- Base Course to be compacted to achieve 98% maximum modified to AS 1289

Trenches to be compacted in 200mm thick layers to achieve 95% maximum modified to AS 1289

Minimum thickness of granular base layers is to be 300mm

All materials for the Sub Base and Base course are to be in accordance with DIT Specification 215

All minor collector roads, residential roads and access roads are to be surfaced with a minimum AC10 asphaltic concrete. All major collector roads, intersections and roundabouts are to be surfaced with a minimum AC14 Asphaltic Concrete.

The granular materials are to be sourced from quarries. Recycled quarry material is not to be used unless agreed with Council. If agreed it may only be used in the sub base layer.

Irrigated Verges

All roads where the verge is irrigated shall have measures that prevent moisture migration to the granular material and subgrade. These methods shall be clearly marked on IFC drawing as well as included in the specification. The use of irrigation and the protection of the road base is to be approved by Council prior to construction.

Deep Lift Asphalt Pavement

Typical Deep lift asphalt pavements are to be constructed in accordance with:

- 'AUSTROADS publication Guide to pavement technology, Part 2: Pavement structural design'
- 'APRG21: A guide for the design of new pavements for light traffic'
- DIT Specification 215

Deep Lift Pavements should be used

- Industrial Area
- Arterial/ Sub Arterial
- All bus routes
- Major Collector Roads
- Junctions with Arterial/ Sub Arterial roads
- Haulage routes

Consideration of compaction requirements shall be given to deep lift layers. Unless agreed with Council or subject to a bus route, Deep Lift pavements shall not be used in residential areas due to the vibration during construction.

The granular materials are to be sourced from quarries. Recycled quarry material is not to be used unless agreed with Council. If agreed it may only be used in the sub base layer.

Block Pavers

Unless otherwise agreed with Council the sub-base and basecourse shall be compacted in layers no greater than 200mm thick to the following compaction:

- Sub Grade to be compacted to achieve 98% standard compaction to AS 1289
- Sub Base to be compacted to achieve 95% maximum modified to AS 1289
- Base Course to be compacted to achieve 98% maximum modified to AS 1289

Trenches to be compacted in 200mm thick layers to achieve 95% maximum modified to AS 1289

All materials for the Sub Base and Base course are to be in accordance with DIT Specification 215

Concrete Block Pavers shall be 80mm thick, Grade N45 with a minimum abrasion resistance of 1.2m at 28 days and interlocking in design. Pavers to be laid on to the compacted road base and embedded on to a minimum 30mm thick compacted bedding sand. Bedding sand shall comply with Part 215 of DTEI specification, sand type A (PM 64). Sand to be free of contaminates likely to cause efflorescence.

The granular materials are to be sourced from quarries. Recycled quarry material is not to be used unless agreed with Council. If agreed, it may only be used in the Sub Base layer.

Concrete Pavement

Typical concrete pavements are to be constructed in accordance with 'AUSTROADS publication – Guide to pavement technology, Part 2: Pavement structural design'

A full jointing layout is to be submitted as a part of the design

The granular materials are to be sourced from quarries. Recycled quarry material is not to be used unless agreed with Council. If agreed, it may only be used in the Sub Base layer.

Any stormwater works undertaken within existing watercourses are to be in accordance with the guidelines set by the Department of Environment and Water (DEW) for water affecting activity

Bus bays

Indented bus bays should be concrete and in accordance with DIT standard details.

6. FOOTPATHS. DRIVEWAYS AND DRAINGE

Footpaths are to be in accordance with the typical streetscape sections shown in Section 3. The falls and grades on footpaths are to be in accordance with AS 1428.1 – Design for access and mobility and Councils Standards

For typical footpath details see drawings SD205, 210, 215, 220

Minimum footpath widths are to be typically 1.5m.

Shared paths to have a minimum width of 3m

The cross-fall slope is to be maximum 2.5%.

Maximum and minimum grades are to match that of the road pavement.

a. Footpath types

The City of Playford has uses concrete footpath/ shared path (exposed aggregate or broom finished)

Brushed Concrete footpaths

Subgrade to be compacted to 98%

Base course to be 100mm PM2 compacted to 96% MDD

Minimum slab thickness to be:

Residential –
125mm using grade 25MPa concrete. Slab to be reinforced with SL72 mesh.

• Commercial/ industrial – 150mm using grade 32MPa concrete. Slab to be reinforced with SL82 mesh

Mesh to be placed centrally with a minimum 50mm cover to the edges.

Expansion joists are to be to be provided at every third evenly spaced tooled joint and doweled.

Where sewer access points are in a footpath path a single saw cut is to be made from IP to back of footpath.

Where service pits are located in a footpath, they are to be located perpendicular to the path with a tool joint either side running perpendicular across the footpath.

Exposed Aggregate footpaths

Subgrade, base course and slab design shall be as brushed concrete footpaths.

Council requires the following to be carried out prior to installing washed aggregate footpaths

- A test panel is to be presented for Council inspection prior to footpaths being installed. Footpaths are not to proceed unless Council is satisfied with the quality of the panel,
- Where a footpath is to be laid abutting an existing footpath the contractor is to ensure that the colour matches into the existing footpath
- If the completed footpath does not meet the standards approved in the test panel Council is entitled to reject it.

b. Driveways

For typical driveway details see drawings SD225, 235, 240, 245

Minimum width of driveway to be 3m minimum for a single driveway with a minimum crossover width of 3.6m.

Maximum width of a driveway (double) shall be 6.0m. The crossover width shall not exceed 6.6m

Maximum crossfall across footpath to be 2.5%. Maximum grade from footpath to kerb shall be 10%

Base to be 100mm PM2 quarry rubble compacted to 96% MMDD on a compacted subbase. All driveways shall be sealed with an approved durable material such as concrete, bricks or asphalt.

Minimum slab thickness

- For residential 125mm thick, 25MPa Concrete slab reinforced with SL72 mesh placed centrally with a minimum 50mm cover at ends.
- For commercial 150mm thick, 32MPa Concrete slab reinforced with SL82 mesh placed centrally with a minimum 50mm cover at ends.

Driveway to be located a minimum distance of 1000mm from an SEP and other services.

Rubble entranceways are to be used in rural areas only and are to consist of 100mm compacted rubble on a compacted subbase.

c. Pram Ramps

For typical pram details see drawings see SD200

Pram ramps are to be provided at all junctions in pairs directly opposite each other.

Where crossing a median or at a roundabout a refuge is to be provided no less than 1m wide with handrails.

Subgrade to be compacted 98%. Base to be 100mm PM2 quarry rubble compacted to 96% MMDD on a compacted subgrade.

Slab to be 150mm thick 32MPa Concrete slab reinforced with SL82 mesh placed centrally. Pram ramp is to be cast integrally.

Tactile surface indicators shall be installed to AS1428.4 over full width of ramp. Yellow plastic cast insitu Tactile surface indicators are to be used.

Kerb ramps wings are to be set typically at 45°. Wings may be steepened if needed and a handrail provided in locations where access from the side is not possible.

d. Drainage

The property owner is responsible for the maintenance and upkeep of drainage from their property (lot) to the roadside under section 221 of the Development Act.

Drainage from a lot into the water table should be via a chequer plate drain or 90mm diameter pipe under the footpath.

Drainage to water table shall terminate at an approved galvanised steel kerb adaptor in accordance with Council's standard detail.

Maximum discharge rate from any kerb side stormwater outlet shall be 15 l/s

An access driveway must be constructed to provide a minimum 150 mm high barrier to the flow of water from the kerb invert to the property boundary.

7. PUBLIC LIGHTING

The design should provide lighting in frequently used public spaces in order to allow for safe passage of vehicles and pedestrians alike and around public facilities such as toilets, telephones, bus stops, seating, litter bins and carparks. The network also conveys public utilities to service allotments for which the service have regulated authority operate with the road reserve space.

All lighting is to be LED

All public lighting is to comply with lighting code AS 1158 and comply with Information on SA Power Networks Public Lighting Tariffs. Councils standard tariff is TFI LED Tariff

The proposed lighting is to use approved SAPN standard poles and fittings.

The developer shall submit the lighting design and SAPN 'Public Lighting – Ownership and Approval Process' form NICC-402 for approval by the council.

The lighting levels for Laneways, Minor Collector and Residential Roads is to be in accordance with AS 1158 'Lighting for roads and public space' part 3.1 Pedestrian area (Category P). The lighting level is to satisfy the conditions set out for subcategory PR5.

The lighting levels for Collector Roads/ Sub-Arterial and at junctions with Collector Roads/ Sub-Arterial Roads is to be in accordance with AS 1158 'Lighting for roads and public space' part 1.1 Vehicular traffic (Category V). The lighting level is to satisfy the conditions set out for sub-category V5.

The light poles are to be situated minimum 1.0 m from back of kerb as the footpath. Common service trench (including Telstra pits etc) will be minimum 1.0 m from the back of kerb.

Where existing footpaths are located behind back of kerb, light poles will be situated minimum 1.5 m from back of kerb. Common service trench (including Telstra pits etc.) will be minimum 1m from back of kerb.

Lighting in public reserves should be discussed with Council on a case-by-case basis and provided if requested.

As a part of the lighting design the engineer is to supply a plan showing the coverage of lighting and isolux levels generated.

8. SERVICES

Services provided to the allotments within the development will be approved by the relevant authority, including but not limited to:

- Electrical distribution to be approved by SAPN
- Communications to be approved by Telstra
- Potable water and sewer to be approved by SA Water
- Third pipe systems to be modelled and approved by SA Water. A separate meter is required for each allotment.
- Broadband pit and pipe where applicable

New services should be laid within a common service trench.

Electrical cabinets etc. shall not be in public open space but should be located within individual house lots, fronting the road with appropriate easements in place.

Tree root barriers should be installed a minimum 750mm radius of newly planted trees (measured from the trunk of the tree) from new services or to the extents of the established tree canopies. New services should not be installed within a minimum 750mm radius of newly planted trees. New services should not be installed in the root protection zone of recognised significant trees.

New services that are laid in an existing road for a service authority by a third-party contractor are to be in accordance with councils trenching policy. New electrical services being installed within verges should be located underground and to the kerb edge of the verge.

