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CHAPTER 6 - OTHER DEVELOPMENT CODES

PART 3 ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Division 1 Preliminary

1.1 Codes for Operational Work Development

The provisions of this part comprise the following codes:-

- (1) Urban Residential Subdivision Works Design Code;
- (2) Park Residential Subdivision Works Design Code;
- (3) Rural Residential Subdivision Works Design Code;
- (4) Industrial Subdivision Works Design Code;
- (5) Commercial Subdivision Works Design Code;
- (6) Rural Subdivision Works Design Code; and
- (7) Access Easement Subdivision Works Design Code.



Division 2 Urban Residential Subdivision Works Design Code

2.1 Overall Outcome

To create urban subdivision development that:-

- (1) provides safe, convenient and attractive urban residential neighbourhoods;
- (2) ensures that *sites* are managed during construction to minimise adverse impacts to the environment and on the health and amenity of residents and premises;
- ensures that *sites* are managed during construction to minimise adverse traffic impacts to existing roads;
- (4) ensures that earthworks design and construction is suitable for the intended use of the land and that adverse impacts to the environment and on the health and amenity of residents is minimised;
- (5) have road networks that are designed and constructed to provide an optimum combination of safety, amenity, convenience, economy and environment for residents, road and street users, and the community generally;
- (6) have stormwater management systems that are designed and constructed to provide an optimum combination of safety, amenity, convenience, economy and environment for residents and the community generally;
- (7) have stormwater management systems that are designed and constructed to collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage, and at a development and environmental cost which is acceptable to the community as a whole;
- (8) provide for the convenience and safety of pedestrians and vehicular traffic during frequent or nuisance stormwater flows;
- (9) limits flooding of public and private property, both within the catchment and downstream, to ensure that flood inundation occurs on rare occasions only;
- (10) ensures a reasonable level of pedestrian and vehicular traffic safety and accessibility during storm events;
- (11) minimises pollutant inflows to the receiving waters and controls scour and depositional effects;
- (12) controls and temporarily detains within each catchment as much incident rainfall and runoff as possible to reduce the impact of urbanisation;
- (13) adequately protects people, the natural environment and the built environment from stormwater runoff flows at an acceptable level of risk;
- (14) integrates stormwater management solutions with other uses and the natural environment;
- (15) provides safe, convenient and legible networks for walking and cycling to points of attraction and beyond the development while preserving maximum visual amenity;
- (16) ensures that opportunities exist for choice in the mode of transport and to provide for costeffective and energy efficient public transport services that are accessible and convenient to the community;
- (17) ensures, where appropriate, as many existing trees are retained as possible to keep the original character of the land and provide shelter and food for endemic flora and fauna;
- (18) provides for urban residential lots that are adequately serviced with sewerage, water supply, electricity, street lighting and communications services in a timely, cost effective, coordinated and efficient manner that supports sustainable development practices, and is in accordance with the desired character of the *locality*;
- (19) ensures that the water supply and sewerage service provision complies with the relevant State Guidelines for design;
- (20) minimises the impact on residential amenity due to provision of water supply and sewerage infrastructure;
- (21) ensures all sewerage, water supply, electricity, street lighting and communications services that require relocation and/or alterations as a result of urban residential development are carried out in a timely, cost effective, coordinated and efficient manner; and
- (22) reduces the level of fire risk associated with building in areas which are assessed to have a medium to high bushfire hazard.

2.2 Compliance with the Urban Residential Subdivision Works Design Code

This code applies to all operational works relating to development or reconfiguring of urban residential land, but specifically excludes applications for access easements to a road, subdivision by lease and boundary relocations or realignments.



The application of the various specific outcomes will depend upon the size or scale of the proposed development. Some specific outcomes will not apply due to a particular design element not being part of the proposal (e.g. new road). In other instances it may be impractical to apply some specific outcomes, particularly for small infill developments.

2.3 Development Requirements

The following are the design elements relevant to urban residential subdivision works:-

- (2.3.1) Managing Impacts During Construction
- (2.3.2) Earthworks
- (2.3.3) Road Networks (excludes State-controlled roads)
- (2.3.4) Stormwater Management
- (2.3.5) Pedestrian and Cyclist Facilities
- (2.3.6) Public Transport
- (2.3.7) Public Open Space
- (2.3.8) Utilities
 - (2.3.8a) Water Supply
 - (2.3.8b) Sewerage
 - (2.3.8c) Recycled Water
 - (2.3.8d) Electricity
 - (2.3.8e) Street Lighting
 - (2.3.8f) Telecommunications
 - (2.3.8g) Alterations and Relocations
 - (2.3.8h) As Constructed Information
- (2.3.9) Bushfire Hazard

Specific Outcomes for Assessable Development	Probable Solutions
2.3.1 Managing Impacts During Construction	
SO 1 All development <i>sites</i> minimise, as far as possible, any adverse impact to the natural environment caused by erosion, siltation, incineration of cleared vegetation and rubbish.	PS1 The development works incorporate temporary stormwater runoff, erosion and sediment controls and trash traps designed in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.2.0 and 4.11.4, and Subdivisions Section Technical Note No. 6. The measures are adjusted on-site to maximise their effectiveness. Stormwater runoff, erosion and sediment controls are constructed prior to commencement of any clearing works wherever
	possible. All environmentally significant areas to be retained with the development are clearly delineated and fenced prior to development works commencing.
SO 2 All development works are carried out at times which minimise noise impacts to residents.	PS 2 All development works are carried out within the following times, unless otherwise approved in writing by <i>Council's</i> engineer:-
	(1) Monday to Friday (other than public holidays) between 7am and 6pm on the same day; and
	(2) Saturday (other than public holidays) between 7 am and 12 noon on the same day.
	No work is carried out on Sundays and public holidays.
•	Variations to the above working hours may be approved if <i>Council's</i> engineer considers that the work is unlikely to cause significant inconvenience or disruption to the public, or the work is unlikely to cause annoyance or inconvenience to occupants of adjacent properties.
SO 3 All development works are managed to minimise dust and siltation nuisance to residents.	PS 3 During construction, dust suppression measures (such as watering of the <i>site</i>) are implemented to protect nearby premises from dust pollution.
SO 4 All development works avoid the redirection of stormwater	PS 4 Temporary construction works do not pond or concentrate stormwater runoff in adjoining properties.
runoff where potential impacts to residents may occur.	Temporary construction works do not create nuisance or annoyance to adjoining premises as a result of altering the stormwater runoff pattern exiting the <i>site</i> .
SO 5 Construction traffic does not adversely impact on the amenity of existing residents.	PS 5 Construction traffic to and from the <i>site</i> uses the highest classification streets or roads where a choice of access routes is available.
	Where significant volumes of material are approved to enter or leave the site, a haul route is approved by Council.
	All materials associated with the development that are dropped, deposited or spilled on streets giving access to the <i>site</i> are removed and the streets are cleaned as soon as practicable after the event. Any damaged areas are repaired and reinstated to their previous condition.
	Where works are carried out on existing roads, a traffic control plan is prepared in accordance with the Manual of Uniform Traffic Control Devices. All traffic control measures are properly erected and maintained during the works.
	Any access road to the <i>site</i> that has been affected by any material dropped, deposited or spilled on the road as a result of the construction processes associated with the <i>site</i> is cleaned and restored to its original condition.
SO 6 Construction traffic is controlled to ensure all traffic	PS 6 All traffic movements to and from the <i>site</i> frontage are carried out in a safe manner. Traffic controls are used
movements to and from the site are safe.	where <i>site</i> access is approved directly onto a Major Road.
SO 7 All clearing works are carefully undertaken to ensure the clearing is limited to the area of the approved infrastructure works, buildings areas and other areas approved in the development permit.	PS 7 Areas of significant vegetation, proposed park and open space areas and other areas of vegetation or individual trees designated to be retained with the development are temporarily fenced and flagged.

PineRiversPlan

CHAPTER 6, PART 3, DIVISION 2 - URBAN RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

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CHAP	Specific Outcomes for Assessable Development	Probable Solutions
TER 6, PART	SO 8 All cleared vegetation is disposed of in a manner which minimises, as far as practicable, nuisance and annoyance to existing premises.	PS 8 Where cleared vegetation is chipped or pit burned on <i>site</i> , the location of these works is not less than 100m from any dwelling or commercial premises. All vegetation with a diameter below 400mm is chipped and stored on <i>site</i> in an approved location generally on <i>park</i> or public land. Vegetation with a diameter above 400mm is pit burned on <i>site</i> if a suitable location is available. The pit burn is generally carried out as one continuous operation.
3 - A		Chipping and/or pit burning is only undertaken when weather conditions are favourable.
SSE		Burn pit locations are approved in writing by Council's engineer and shown on the "as constructed" drawings.
NSS		Cleared vegetation is not disposed of by above ground burning.
IENT C	SO 9 All noxious weeds and other materials which are detrimental to the intended use of the land are removed and	PS 9 All groundsel, noxious weeds, stumps, fallen trees, rubbish, car bodies, scrap metal and the like are removed and disposed of in a manner which minimises environmental impact.
RITERI	disposed of in a manner which minimises environmental impacts.	Stumps, fallen trees, undergrowth, buildings, <i>structures</i> , foundations and the like in existing and proposed park and open space areas are removed where directed by <i>Council's</i> representative.
A FOR	2.3.2 Earthworks	
OPERATIO	SO 10 Earthworks design takes into account the slope of the ground, short and long-term slope stability, soft or compressible foundation soils, reactive soils, low density or potentially collapsing soils existing fills and soil contamination that may exist on site	PS 10 Investigation, planning and design including documentation is carried out in accordance with Australian Standard AS3798.All cut and fill batters are provided with appropriate scour, erosion protection and runoff control measures including catch
NAL	sons, existing his and son contamination that may exist on she.	drains at the top of batters and lined batter drains as necessary. All fill betters steeper than $1/(/)$ in 6 (H) on residential late are fully turfed to provent secur and erosion
NO	SO 11 Filling is not placed on existing or proposed park upless	PS 11 Filling is not placed on existing or proposed park unless specifically approved in writing by Council's engineer
Si Si	specifically approved in writing by <i>Council's</i> engineer.	
	SO 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.
Effe	SO 13 The <i>site</i> is properly prepared for earthworks.	PS 13 The <i>site</i> is prepared in accordance with Australian Standard AS3798.
ective f	SO 14 Fill construction is carried out in a manner which ensures that the works meet the design requirements.	PS 14 The fill construction is carried out in accordance with Australian Standard AS3798.
rom 1	SO 15 Unsuitable materials are not used in structural fill.	PS 15 Materials used for structural fill conform with Australian Standard AS3798.
.5 Decemb	SO 16 Earthworks and trench backfill is properly compacted to suit the desired use of the <i>site</i> .	PS 16 The earthworks and trench backfill is compacted to the minimum relative compaction given in Table 5.1 of Australian Standard AS3798. The minimum frequency of field density tests is not less than that specified in Table 8.1 of Australian Standard AS3798.
er 2		Any open drains, earth dams and wells on the <i>site</i> are drained, cleaned and filled as specified above.
006	SO 17 Steep rock slopes and batters are stable and low maintenance.	PS 17 Steep rock slopes and batters are inspected and certified for long-term stability by a suitably qualified and experienced geotechnical engineer. Stabilisation measures are provided, as necessary, to ensure long-term stability and low maintenance.



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Specific Outcomes for Assessable Development			Probable Solutions		
SO 21 The road design and construction has clear physical distinctions between each type of street. The distinctions are	Design Issue	Access Place (1)	Access Street ⁽¹⁾	Collector Street	Trunk Collector Street
o be based on function, legibility, convenience, traffic volumes, vehicle speeds, public safety and amenity.	Traffic Catchment (maximum)	20 lots	50 lots (2)	300 lots (2)(3)	900 lots (2)
O 22 The road design and construction accommodates the solution of the primary functions:-	Design Speed (maximum)	40km/h	40km/h	40km/h	60km/h
I) access to residences;	Carriageway Lanes	2 (4)	2	3	2
2) car parking for visitors;	Carriageway Width	6m	6m	7.5m	9m
 social and activity space; stormulator drainage paths 	Verge Width (minimum)	3.5m ⁽⁵⁾⁽⁶⁾	3.5m ⁽⁵⁾⁽⁶⁾	3.5m (5)(6)	5.0m ⁽⁶⁾
(minor and major storms);	Reserve Width (minimum)	15m	15m	18m	24m ⁽⁷⁾
5) public transport on Collector Streets;6) utility services location; and	Footpaths/Cyclepaths	not required ⁽⁸⁾	where >40 lots served	one side ⁽⁸⁾	both sides (8)
setting and approach (streetscape and landscape) for adjoining residences.	Parking	0.5 space per lot ⁽⁹⁾	0.5 space per lot ⁽⁹⁾	0.5 space per lot ⁽⁹⁾	0.5 space per lot ⁽⁹⁾
O 23 The road design and construction accommodates deguate verge and carriageway width for the primary functions	Grade (minimum - maximum)	0.4% - 16% (10)	0.4% - 16% (10)	0.4% - 12% (11)	0.4% - 12% (11)
	 Based on To you p Absolute maximum Single lane with Co Greater width requine Greater width requine Greater width requine Footpath or cyclep A car park is require 20% absolute maximum 16% absolute maximum The detailed design of F Design:- 	a 350 lots. Duncil approval, maximu ired to verge with water i ired where cyclepaths pr ired at intersections. aths may be required in a red within 25m of every m imum grade may be perr imum grade may be perr Residential Streets confor Road Design Issue	ing residential lot. main (refer to Standard Dra rovided. accordance with network de esidential lot. mitted under special circums mitted under special circums prms with Council's Plannin	wing 8-10011). esign. stances. stances. ng Scheme Policy PSP2 Planning Scheme P Infrastructure De	P8 Civil Infrastructure Policy PSP28 Civil Isign Reference
•	Traffic Volume			Part 1 Sect 2.2.0	
	Parking			Part 1 Se	ect 2
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fic Outcomes for Assessable Development			Probable Solutions			
	Provision for Passing			Part 1 Sec	t 2.5.0	
	Carriageway Width			Part 1 Sect 2.6.0		
	Street Classification Verge			Part 1 Sect 2.7.0		
				Part 1 Sec	t 2.8.0	
	Street Reserve Width			Part 1 Sec	t 2.9.0	
	Geometric Design			Part 1 Sec	t 2.10.0	
	Intersections			Part 1 Sect 2.1	1.0 & 6.16.0	
	Manoeuvring Areas			Part 1 Sec	t 2.12.0	
	Speed Control Devices			Part 1 Sec	t 2.13.0	
	Roundabouts			Part 1 D	G 01	
	Landscape Construction o	n Road Reserves, Par	ks and Drainage Reserves	Part 1 D	G 03	
	Local Area Traffic Manage	ment		Part 1 D	G 05	
	Signs and Road Marking			Part 1 Sect 6.7.0		
	Footpaths			Part 1 Sect 6.4.0		
	Bikeways			Part 1 Sect 6.5.0		
	Service Conduits			Part 1 Sect 6.8.0		
	Subsoil Drainage	Subsoil Drainage			Part 1 Sect 6.9.0	
	Safety Barriers			Part 1 Sect 6.10.0		
	Guide Posts			Part 1 Sect 6.11.0		
	Bridge and Culvert Widths			Part 1 Sec	t 6.12.0	
	Street and Pathway Lighting			Part 1 Sect 6.13.0		
	Park Barriers			Part 1 Sect 6.14.0		
	Retaining Walls			Part 1 Sect 6.15.0		
	The Major Roads conform	to the following:-		-		
	Design Issue	Sub-Arterial	Arterial	Major Arterial	Freeway	
	Traffic Volume (typical)	12,000vpd	30,000vpd	as required	as required	
	Design Speed (minimum)	80km/h	100km/h	100km/h	100km/h	
	Carriageway Lanes	2	4	4 or more	4 or more	
•	Carriageway Width	10m(kerbed) (1)	2 x 8.5m (kerbed) ⁽¹⁾	as required by design	as required by design	
	Verge Width (minimum)	7.5m	8.5m	as required by design	as required by design	

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ic Outcomes for Assessable Development			Pro	bable Solutions		
	Reserve Width (minimum)	25m ⁽²⁾		40m ⁽²⁾	as required by design	as required by design
	Footpaths/Cyclepaths	both sides (3	3)	both sides (3)	not required	not required
	Grade (minimum - maximum)	0.4% - 7% (4		0.4% - 6% (4)	as required by design	as required by design
	Notes:-					
	1. Does not include cyc	clelanes.				
	2. Greater width require	ed at intersection:	s.			
	3. Cyclepaths may be r	required in accord	lance with	n network design.		
	4. Steeper grades may	be permitted und	ler specia	l circumstances.		
	The detailed design of N Design:-	Major Roads cor	nforms wi	th Council's Planni	ng Scheme Policy PSP28	Civil Infrastructure
	Road Design Is	sue	Plannin	g Scheme Policy PS	P28 Civil Infrastructure D	esign Reference
	Design Philosophy			F	Part 1 Sect 3.2.0	
	Classification of Major Urb	ban Roads	Part 1 Sect 3.3.0			
	Freeways			F	Part 1 Sect 3.4.0	
	Arterial Roads Sub-Arterial Roads		Part 1 Sect 3.5.0			
			Part 1 Sect 3.6.0			
	Intersections			Part	1 Sect 3.7.0 & 6.16.0	
	Traffic Volume and Capac	city		F	Part 1 Sect 3.8.0	
	Design Speed			F	Part 1 Sect 3.9.0	
	Cross Section Elements			F	art 1 Sect 3.10.0	
	Geometric Design			F	art 1 Sect 3.11.0	
	Bus Stops			F	art 1 Sect 3.12.0	
	Pedestrian and Cyclist Fa	cilities		P	art 1 Sect 3.13.0	
	Aesthetics and Appurtena	inces		F	art 1 Sect 3.14.0	
	Services Streets			F	art 1 Sect 3.15.0	
	Roundabouts				Part 1 DG 01	
	Signs and Road Markings	3		F	Part 1 Sect 6.7.0	
· ·	Footpaths				Part 1 Sect 6.4.0	
	Bikeways				Part 1 Sect 6 5.0	
	Service Conduits				Part 1 Sect 6.8.0	

Specific Outcomes for Assessable Development	1	Probable Solutions			
	Safety Barriers	Part 1 Sect 6.10.0			
	Guide Posts	Part 1 Sect 6.11.0			
	Bridge and Culvert Widths	Part 1 Sect 6.12.0			
	Street and Pathway Lighting	Part 1 Sect 6.13.0			
	Park Barriers	Part 1 Sect 6.14.0			
	Retaining Walls	Part 1 Sect 6.15.0			
	The road cross-sections conform with Council's	standard drawings as follows:-			
	Road Classification	Standard Drawing Number			
	Access Place	8-10001 & 8-10008			
	Access Street	8-10001 & 8-10008			
	Collector Street	8-10002 & 8-10008			
	Single Sided Access Place	8-10003 & 8-10008			
	Single Sided Access Street	8-10003 & 8-10008			
	Bi-Level Access Place	8-10004 & 8-10008			
	Bi-Level Access Street	8-10004 & 8-10008			
	Bi-Level Collector Street	8-10004 & 8-10008			
	Trunk Collector Street	8-10005 & 8-10010			
	Sub-Arterial Road	8-10006 & 8-10009			
	Arterial Road	8-10007 & 8-10009			
	Utility service allocations conform with Council's standard drawings as follows:-				
	Road Classification	Standard Drawing Number			
	Access Place, Access Street, Collector Street	8-10011			
	Trunk Collector Street	8-10012			
	Sub-Arterial & Arterial	8-10013			
	Access to allotments conforms with <i>Council's</i> Pla 6.2.0.	anning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section			
	The road pavement design conforms with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, DG 06.				
	The works are constructed within tolerances given in <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, DG 02, Appendix C.				
24 The road design creates safe and convenient movement	PS 24 and PS 25 The street design is highly legit	ble through the use of threshold treatments in Access Streets and Access			
residents between their homes and the Major Road network.	Places at their intersection with Collector Streets	and other Access Streets.			
025 The road design has a high degree of legibility to road ers.					

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Specific Outcomes for Assessable Development			Probable So	lutions		
SO 26 The road design provides more than one access route (at all stages of development) for residential areas containing a significant number of residential lots.	PS 26 The residential area is served by more than one access route to the Major Road system when the number of residential lots exceeds 100 (absolute maximum allowed is 150 lots).					
SO 27 Intersections along residential streets and Major Roads	PS 27 Intersection s	pacing (centreline	e – centreline) along a th	nrough road conforms	with the following	:-
are safe and convenient.	Intersecting			Through Road		
	Road Location	Access Street Collector Stre	t & Trunk eet Collector Street	Sub-Arterial Road ⁽¹⁾	Arterial Road	Major Arterial Road
	On same side of through road	60m	100m	300m	500m	1000m
	On opposite sides of the through road	40m	60m	300m	500m	1000m
	Notes:- 1. In the case of SL cases the followin only):	ub-Arterial Roads, ng absolute minimu	existing landholdings r um spacing is used, but	nay require intersectio all turns access may no	ns at a lesser sp ot be permitted (i.	oacing. In such e. left in/left out
	Intersections on same side 100m					
	 Intersections on opposite sides: left-right stagger right-left stagger 		100m 30m			
	The detailed design of street and road intersections conforms to the following sections of Council's Planning Scheme Policy PSP28 Civil Infrastructure Design:-					
	Road Classification Planning Scheme Policy PSP28 Civil Infrastructure			astructure Desi	gn Reference	
	Residential Streets		Part 1 Sect 2.11.0 & Sect 6.16.0			
	Major Roads Part 1 Sect 3.7.0 & Sect 6.16.0					
	Roundabouts Part 1 DG 01					
SO 28 The alignment and geometry of roads that form identified bus routes allows for efficient and unimpeded movement of buses	PS 28 Bus routes ha	agement	ad width of 20m and ca	Part 1 DG 09 rriageway width of 9.5r	n. The maximum	n grade of the bus
without facilitating high traffic speeds.	The detailed design of Infrastructure Design.	bus routes and as	sociated facilities confo	rms with Council's Pla	anning Scheme F	Policy PSP28 Civil
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CHAPTER 6, PART 3, DIVISION 2 - URBAN RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development		Probable Solutions		
SO 29 The road design facilitates walking and cycling within the neighbourhood and to local activity centres.	 PS 29 All pathways have 1.2m wide (minimum) reinforced concrete paths linking up with:- (1) any existing concrete footpaths/cyclepaths within 20m of the pathway; 			
	(2) any proposed concrete footpath/cyclepath in the development within 20m of the pathway:			
	(3) the kerb and channel by way	of a kerb ramp; and		
	(4) where there is no kerb and ch	annel, the carriageway.		
	Kerb ramps are provided at all kert	and channelled intersections.		
SO 30 All new <i>Council</i> controlled roads are fully constructed to <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> standards.	PS 30 All new Council control Infrastructure Design standards.	led roads are fully constructed to Council's Planning Scheme Policy PSP28 Civil		
SO 31 All Council controlled frontage roads are constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure	PS 31 All Council controlled fr Infrastructure Design standards as	ontage roads are constructed with Council's Planning Scheme Policy PSP28 Civil follows:-		
Design standards.	Situation	Minimum Construction ⁽¹⁾		
	Frontage road unconstructed or	For Access Place and Access Street: full carriageway and verges.		
	gravel road only	For Collector Street and Trunk Collector Street: verge adjoining new lots, carriageway (including near side kerb and channel) to a minimum sealed width of 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side.		
		For Major Roads: verge adjoining new lots, carriageway (including near side kerb and channel) to a minimum sealed width of 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side.		
	Frontage road sealed ⁽²⁾ but	For Access Place and Access Street: reconstruction of full carriageway and verges.		
	Planning Scheme Policy PSP28	For Collector Street and Trunk Collector Street: reconstruction of verge adjoining new		
	Civil Infrastructure Design	width of 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage		
	standard	to the opposite side. The works match into the remaining existing works wherever possible.		
		For Major Roads: verge adjoining new lots and carriageway (including near side kerb and channel) to a minimum sealed width of 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. The works match into the remaining existing works wherever possible.		
	Frontage road ⁽²⁾ partially	For Access Place and Access Street: construction of all remaining carriageway and		
	constructed to <i>Council's</i> Planning Scheme Policy PSP28 Civil Infrastructure Design	verges. For Collector Street and Trunk Collector Street: verge adjoining new lots and carriageway (including near side kerb and channel) to join existing works. In any		
	standard	event the minimum sealed width to be constructed is 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side where necessary. The works match into the existing works.		
		For Major Roads: verge adjoining new lots and carriageway (including near side kerb and channel) to join existing works. In any event the minimum sealed width is 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side where necessary. The works match into the existing works.		
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HAP	Specific Outcomes for Assessable Development	Probable Solutions
TER		Notes:-
6, F		1. Construction includes all associated works (services, streetlighting and linemarking).
ART 3		 Testing of the existing pavement is carried out to confirm whether the existing works meet Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standard.
-AS	SO 32 Sealed and flood free road access during minor storms	PS 32 Roads or streets giving access to the development from the nearest Major Road are sealed to a minimum width
SESS	is available to the <i>site</i> from the nearest Major Road.	of 6.0 metres. These access roads or streets have minor drainage systems which conform with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Section 4.7.0.
MEN	SO 33 Existing street car parking is retained, wherever	PS 33 No solution provided.
T CRIT	streets or existing Major Roads.	
ERI/	SO 34 Vehicular access to existing lots is retained, wherever	PS 34 No solution provided.
FO	Streets or existing Major Roads.	
R	SO 35 The road network design takes into account::-	PS 35 No solution provided.
ERA	(1) streetscapes that may be created or already exist;	
TO	(2) protection of topography and vegetation;	
AL	(3) opportunities for views and vistas; and	
NO	(4) protection of natural drainage and open space systems.	
RKS	SO 36 The existing road network is upgraded, where necessary, to cater for the traffic impact from the development.	PS 36 New intersections onto existing roads are designed to accommodate traffic volumes and traffic movements ten years hence. Detailed design is in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1
Eff	xO	Existing intersections external to the <i>site</i> are upgraded as necessary to accommodate increased traffic from the development. Detailed design is in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1.
ectiv	SO 37 As constructed information, including test certificates	PS 37 As constructed information including test certificates for material quality (if required) and compaction is provided
/e fr	for material quality (if required) and compaction, is provided after	after completion of the subdivision works.
m	completion of the subdivision works.	
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CHAF	Spec	ific Outcomes for Assessable Development		Probable Sol
TER (2.3.4	Stormwater Management		
5, PART 3 - ASSESSMENT CRITERIA	SO 38 convey s SO 39 100 year encroach less than 100 year	The major drainage system has the capacity to safely stormwater flows for the 100 year ARI storm event. Overland flow paths conveying stormwater flows for the r ARI storm event (and greater) do not pass through or n upon residential lots unless the lot contains an area not 2000m ² which has not less than 750mm freeboard to the r ARI (fully developed catchment) storm flood level.	PS 38 and PS 39 The roads, drainage pa for the 100 year ARI storm event (ultimate encroach upon private lots. Overland flow paths (for any storm event) Drainage pathways are provided to accom The major drainage system has a minim upstream). Carriageways generally have kerb and ch turnouts are located to ensure the longitud Storm (100 year ARI):-	athways, drainage feat development catchme) from roads and public modate overland flows um design ARI of 100 nannel (except where t inal flow in the channel
FOR			Location	Major S
PERATIONAL WOR			Where floor levels of adjacent buildings are above road level (kerb and channeled crowned road)	 (a) Total flow contain reserve; and (b) Freeboard ≥250n adjacent building (c) Maximum depth (c) Ma
KS Effecti			 Where floor levels of adjacent buildings are below road level or < 300mm above top of kerb (kerb and channeled crowned road) (a) ≥100mm fall on verge towards kerb; (b) < 100mm fall on verge towards kerb. 	(a) 50mm above top(b) Top of kerb
ve from 15 December 2006			Roads without kerb and channel – table or swale drains used for longitudinal drainage	 (a) Total flow contain reserve; and (b) Flows do not enclanes; and (c) Freeboard ≥250n adjacent building (d) Maximum depth 300mm

Probable Solutions

PS 38 and PS 39 The roads, drainage pathways, drainage features and waterways safely convey the stormwater flows for the 100 year ARI storm event (ultimate development catchment characteristics upstream) without allowing the flows to encroach upon private lots.

Overland flow paths (for any storm event) from roads and public open space areas do not pass through residential lots. s from roads and public open space areas.

years (ultimate development catchment characteristics

table or swale drains are approved). Catchpits and kerb does not exceed the following requirements for the Major

	Major Storm - Maximum F	low Width and Depth
Location	Major Roads	Minor Roads
here floor levels of adjacent buildings e above road level (kerb and	(a) Total flow contained within road reserve; and	 (a) Total flow contained within road reserve; and
anneled crowned road)	(b) Freeboard ≥250mm to floor level of adjacent buildings; and	 (b) Freeboard ≥250mm to floor level of adjacent buildings; and
	(c) Maximum depth of flow of 300mm	(c) Maximum flow depth 300mm
here floor levels of adjacent buildings e below road level or < 300mm above o of kerb (kerb and channeled crowned ad)		
) >100mm fall on verge towards kerb	(a) 50mm above top of kerb;	(a) 50mm above top of kerb;
100mm fall on verge towards kerb.	(b) Top of kerb	(b) Top of kerb
ads without kerb and channel – table swale drains used for longitudinal	 (a) Total flow contained within road reserve; and 	 (a) Total flow contained within road reserve; and
ainage	(b) Flows do not encroach upon driving lanes; and	 (b) Flows do not encroach upon driving lanes; and
	(c) Freeboard ≥250mm to floor level of adjacent buildings; and	 (c) Freeboard ≥250mm to floor level of adjacent buildings; and
2	(d) Maximum depth of flow in drain of 300mm	(d) Maximum depth of flow in drain of 300mm

CHAPTER 6, PART 3, DIVISION 2 - URBAN RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

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c Outcomes for Assessable Development		Probable Solutions	
	Notes:		
	1. Widths are measured from char	nnel invert for kerb and channel and from kerb	face for kerb only.
	2. Refer Council's Planning Sche requirements.	eme Policy PSP28 Civil Infrastructure Design, I	Part 2, Section 4 for detailed design
	The flow velocity in all unlined or soft condition of the channel (refer QUDM	faced open drains is kept within acceptable lim // Table 8.03).	its for the type of material or lining and
	Detailed design of the major drainage <i>Design</i> , Part 2, Section 4.	e system conforms with Council's Planning Sch	neme Policy PSP28 Civil Infrastructure
	The total major flow is contained with	nin the road.	
	Residential lots have the following m	inimum development levels:	
	Location of Residential Lot	Minimum Development Level	Minimum Area at Development Level
	Adjacent Existing Natural	The greater of:	
	Watercourse	• Q100 _{ultimate} plus 750mm; or	• For lots > 2000m ² min. area is 2000m ²
		the highest recorded flood level plus 750mm.	• For lots up to 2000m ² min. area is the whole lot
	Adjacent Engineered Channels	The greater of:	
		 Q100_{ultimate} for a maintained channel plus 500mm; or 	• For lots > 2000m ² min. area is 2000m ²
		Q100 _{ultimate} for an unmaintained channel plus 250mm.	• For lots up to 2000m2 min. area is the whole lot
	Adjacent Road Drainage	The greater of:	
	+	• Q100 _{ultimate} plus 250mm; or	• For lots > 2000m2 min. area is 2000m2
		 Q100_{ultimate} plus 150mm using blocked catchpits or inlets. 	• For lots up to 2000m2 min. area is the whole lot
	Adjacent Overland Flow Paths	The greater of:	
		 Q100_{ultimate} for a maintained flow path plus 250mm; or 	• For lots > 2000m ² min. area is 2000m ²
	0	• Q100 _{ultimate} for an unmaintained flow path plus 150mm.	• For lots up to 2000m2 min. area is the whole lot
Ť	Detention basins are designed in acc	Cordance with Council's Planning Scheme Po	licy PSP28 Civil Infrastructure Design
	Part 2, Section 4.8.0.		
	Open channels are designed in accordance Part 2, Section 4.9.0.	ordance with Council's Planning Scheme Pol	icy PSP28 Civil Infrastructure Design
	>		

Specific Outcomes for Assessable Development		Probable Solu	tions		
SO 40 The minor stormwater drainage system has the capacity to convey stormwater flows from frequent storm events whilst	PS 40 The minor drainage syste catchment characteristics upstream)	m through the site has a m	inimum design AR	l of 5 years (ultimate development	
ensuring pedestrian and vehicular traffic movements are safe and convenient.	Carriageways generally have kerb Catchpits are located to ensure the minor storm:-	and channel (except where longitudinal flow in the channel	swale drains are lel does not excee	approved by <i>Council's</i> engineer). d the following requirements for the	
	Location	Min	or Storm - Maxim	um Flow Width	
		Major Ro	ads	Minor Roads	
	Design ARI (years)	10		5	
	Normal situation – kerb and channel crowned road	Parking Lane width (usually 2.5m) or	Full pavement width with zero	
	Normal situation – no kerb and chan	nel, Contained within th	ne table drain	Contained within the table drain	
	Normal situation – one way crossfall	Parking Lane width (usually 2.5m) or	To high side of road pavement but	
	Where parking lane may be replaced a through, acceleration, deceleration turn lane	d by 1m		Not applicable	
	Where road falls towards median	1m		Not applicable	
	Pedestrian crossing or bus stops	0.45m	1	0.45m	
XC	Intersection kerb returns (including entrances to shopping centres and c major developments)	1m		1m	
	Notes:- 1. Widths are measured from cha 2. Refer Council's Planning Sche	nnel invert for kerb and chann eme Policy PSP28 Civil Infras	el and from kerb fa tructure Design, Pa	ce for kerb only. rt 2, Section 4 for detailed design	
	requirements. The product of depth by average ve there is a danger of pedestrians beir	elocity in the channel (longitud	linal drainage) doe /here the value is lii	s not exceed 0.6m ² /s except where mited to 0.4m ² /s.	
	The pipelines are located on a 1.5m nominal alignment measured from the invert of kerb and channel towards the road centreline and are not located under kerb and channel.				
	Pipelines from sag points in the roa approved discharge point.	ad are taken through drainag	je reserves, pathw	ays or park and open space to an	
	Gully inlets (catchpits) allow for block	kage by reducing the theoretic	al capacity of the in	nlet as follows:-	
	Condition	Inlet Type	Percentage of T	heoretical Capacity Allowed	
	Sag Side Entry			80%	
	Grated			50%	

ic Outcomes for Assessable Development			Prob	bable Sol	utions
		Combination	n	C	apacity of kerb opening assuming grate is fully blocked
	Continuous Grade	Side Entry			80%
		Grated – Lo	ongitudinal Bars		60%
		Grated – Tra	ansverse Bars		50%
		(with or with	nout longitudinal ba	oars)	
		Combination	n		70% - 90% of capacity of kerb opening plus grate (depending upon length of backstone)
	Gully inlets and manho	oles have the f	following minimum	n freeboard	for the minor storm event:-
	Situation			Mir	imum freeboard requirements
	Gully inlet on grade		150mm below in	nvert of kerl	o and channel
	Gully inlet in sag		150mm below in	nvert of kerl	o and channel
	Field inlet		150mm below to	op of grate	or lip of inlet
	Manhole or junction st	tructure	150mm below to	op of lid	
	Iess than 1 in 100 (for storm ARI of 5 years. centrally in the easem Field inlet pits with bu properties or where an	the whole of the Interallotme ent or 1m from unding are pro- interallotmen	the allotment) to the nt drainlines are in the centreline of ovided at the lowe t drainage system	ne road. Th generally p f an adjacer rest point of n is provideo	e interallotment drainage system has a minimum design blaced in the allotment they directly serve and located it sewer. E each residential lot where the lot drains one or more d.
	Roofwater connections	s are provided	as follows:-		
	Lot Area	Minimum Pi	pe connections p	provided for	or each lot to pits or kerb and channel via approved adaptors
	Up to 450m ²			1 x 100mm	n diameter or equivalent
	> 450m ²			2 x 100mm	n diameter or equivalent
	Drowned outlets are n Stormwater drainage in easement widths are a	ot used. nfrastructure th as follows:	nrough or within pr	rivate land i	s protected by easements in favour of Council . Minimum
	Pipe	Diameter		Minimum	Easement Width (excluding access requirements)
	Stormwater Pipe up to	825mm diam	eter		3m
	Stormwater Pipe up to Sewer Pipe up to 225r	825mm diame nm diameter	eter with		4m
	Stormwater Pipe great	ter than 825mr	m diameter Ea	Easement be	bundary to be 1m clear of outside wall of pipe and clear of pits
*	Detailed design of the Design, Part 2, Section	minor drainage n 4.	e system conforms	is with Cour	ncil's Planning Scheme Policy PSP28 Civil Infrastructure
	Stormwater drainage r	eticulation and	d cross drainage c	conforms w	ith the following standard drawings:-

			\bigcirc	
Specific Outcomes for Assessable Development		Probable Soluti	ions	
	Ite	m	Star	ndard Drawing Numbers
	Road Catchpits		8-30	0001 to 8-30003, 8-30036
	Field Inlets			8-30004
	Circular Manholes		8-3006	5-8-30008, 8-30010, 8-30011
	Bedding and Backfill to Pip	es and Culverts		8-30013 & 8-30014
SO 41 Road cross drainage ensures that roads remain	Security Grates to Stormwa	ater Outlets	quirement	8-30025
trafficable during major and minor storm events without flooding		age is provided to satisfy the following re	quirenten	
or impacting upon residential properties or other premises.	Road Classification	Major Storm		Minor Storm*
	Major Road	Trafficable for flows from the 100 year A	ARI	For the 50 year ARI storm:-
		Maximum depth 200mm; and		Flows and flood levels do not encroach upon the driving lanes;
		• $D_g V_{ave} \le 0.4$		• Minimum pipe system freeboards are maintained.
	Minor Road	Trafficable for flows from the 100 year	ARI	For the 10 year ARI storm:-
		storm:-		Flows and flood levels do not
		• Maximum depth 200mm; and $D_{1}V_{1} < 0.4$		encroach upon the driving lanes;
		$D_g v_{ave} \leq 0.4$		maintained.
×C	Detailed design of culverts <i>Design,</i> Part 2, Section 4.1	 * 50 year ARI for Major Roads; 10 yes s and bridges conforms with Council's 2.2 and 4.12.3 and Austroads Waterway 	ear ARI for Planning /s Design	Minor Roads Scheme Policy PSP28 Civil Infrastructure Guidelines.
	Where there is potential for using box culverts or a brid	blockage by stream debris due to the natige structure.	ure of the	catchment the cross drainage is constructed
	Afflux from the cross drain premises.	age does not flood or reduce the requir	red Q100	freeboard to residential properties or other
SO 42 Where the catchment at a lot boundary exceeds 2,000m ² , a stormwater system is provided to protect the downstream	PS 42 Where the catchr bunds and junction pits, is	nent at a lot boundary exceeds 2,000m ² provided with a design storm ARI of 100	an under years.	ground stormwater system, including inlets,
property during major storm events.	Stormwater drainage infras	structure through or within private land is	protected	by easements in favour of <i>Council</i> .
	The detailed design conform	ns with Council's Planning Scheme Polic	y PSP28 (Civil Infrastructure Design, Part 2, Section 4.

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Effective from 15 December 2006

PineRivers
Plan

CHAF	Specific Outcomes for Assessable Development	Probable Solutions
YTER	SO 43 Stormwater management facilities ensure that drainage	PS 43 Stormwater runoff from the <i>site</i> is conveyed to a point of lawful discharge without causing nuisance or annoyance
6, P	discharge from the <i>site</i> does not cause nuisance or annoyance to	to any person, property or premises.
'ART	מוז אביסטו, אוטאפוני טו אופוווופבט.	Wherever possible pollutant loads are not made worse on downstream properties.
μ̈́		Wherever practicable runoff rates are not made worse on downstream properties.
ASSESSN		A watercourse as defined in the <i>Water Act 2000</i> is accepted as a lawful point of discharge providing the drainage discharge from the site does not increase downstream flood levels during the 100 year ARI storm by more than 20mm and any flooding of downstream allotments which are not able to be further subdivided is not increased.
NENT C		Where drainage is to be carried through private lots easements are provided over the drainage (open or piped) in favour of Council . Easement dimensions comply with the Queensland Urban Drainage Manual, Section 3.00.
RITE	SO 44 The stormwater quality management system minimises	PS 44 All developments in excess of 2ha in area provide stormwater quality improvement devices.
RIA FO	the environmental impact of stormwater on surface and underground receiving water quality.	The calculated pollutant concentrations from the <i>site</i> do not exceed <i>Council's</i> adopted water quality objectives (WQO) for the particular catchment, or where no WQO has been adopted then the appropriate ANZECC standards.
RO		All dry weather flow is treated to reduce pollutant loads prior to discharge to a watercourse, creek or river.
PERATION		The first flush flow from the first 15mm of rainfall over the <i>site</i> is treated to reduce pollutant loads prior to discharge to a <i>watercourse</i> , creek or river. Where approved proprietary products are used to treat first flush flows the minimum flow treated is for the 1 year ARI storm.
IAL WOI		The detailed design of stormwater quality improvement devices conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Sections 3 & 4.
RKS		Detention basins include a low flow water quality treatment facility with a minimum storage time of 24 hours and a maximum storage time of 48 hours.
		All stormwater improvement devices are constructed "off line" wherever possible (i.e. major flows do not pass through stormwater quality improvement devices).
Effect		Diversion manholes or chambers are used on reticulated drainage systems to divert stormwater flows to water quality treatment devices (except for proprietary products that have approved internal bypass systems).
tive		Approved proprietary products are installed and maintained in accordance with the manufacturers recommendations.
fron	SO 45 The stormwater quality management system minimises	PS 45 Stormwater management facilities do not encroach upon riparian areas.
n 15	the environmental impact of stormwater on natural waterway	Filling does not extend below the Q50 (ultimate) flood contour for creeks and watercourses.
De	configuration.	Filling does not extend below the Q100 (ultimate) flood contour for rivers.
cem		The number of stormwater outlets to waterways are minimised.
ber		Natural creeks and watercourses are not channelised to maximise development area.
200	SO 46 The stormwater quality management system minimises	PS 46 Stormwater management facilities do not encroach upon existing natural wetlands.
6	wetlands and vegetation.	Significant existing water bodies are retained with appropriate stormwater quality improvement devices (refer to Council's <i>Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.11.5).
	SO 47 Community benefit is maximised through the retention and enhancement of natural streams and vegetation wherever practicable	PS 47 <i>Watercourses</i> are enhanced by re-vegetation with natural species occurring in the catchment. The area must be planted with local native trees (of the local Regional Ecosystem if relevant) at 3m centres, shrubs at 2m centres and around covers at 1m centres.
•	practicable.	Existing erosion and scour in watercourses through or adjoining the site are repaired and stabilised
-288		

PS 48 Large dry detention b drainage system with capacity 100(H) towards its perimeter dr	basins are designed to to carry 3mm/hr rainfall rains.	accommodate passive recreation. The basin includes a low flow in the catchment. The basin floor is sloped at not less than $1(V)$ to
PS 49 As constructed inform	nation including test cer	tificates for material quality (if required) and compaction is provided
after completion of the subdivis	sion works.	
A		
PS 50 Footpaths are provide	ed in the following insta	nces:-
Location		Footpath Requirement
Access Place		Nil ⁽¹⁾
Access Street		One side only where the traffic catchment exceeds 40 lots, otherwise nil.
Collector Street		One side only
Trunk Collector		Both sides
Major Roads		Both sides
Adjacent pedestrian traffic gene schools, shopping centres, etc.	erators such as	To suit pedestrian movements
Along pathways		The full length of the pathway and linking to any footpath within 20m, the kerb and channel by way of a kerb ramp or to the carriageway where no kerb and channel exists.
Notes: 1. Footpaths may be require Footpaths are designed to cont	ed for network planning	considerations.
Issue	orm war the following.	Requirement
Width	1.2m minimum for Acc	cess Place, Access Street and Collector Street;
	1.5m one side and 2m	n other side for Trunk Collector, Sub Arterial and Arterial;
	1.5m minimum elsew width is 2m	where except for dual use pedestrian/cycle paths where minimum
Location	Refer relevant standar to create visual interes	rd drawing for road classification. Meandering of the path is desirable st.
Clearance to Properties	0.8m for Access Place	e, Access Street and Collector Street;
	1m for Trunk Collector	r, Sub-Arterial & Arterial.
Clearance to Kerbline	1.5m for Access Place	e, Access Street and Collector Street;
	2.5m for Trunk Collect	tor, Sub-Arterial & Arterial.
Pathway Construction	Refer Standard Drawi	ng No. 8-10036

CHAPTER 6, PART 3, DIVISION 2 - URBAN RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

2.3.5	Pedestrian and Cyclist Facilities			
SO 50	The pedestrian and bikeway design is designed to	PS 50	Footpaths are provid	ded in the followi
provide	for safe, attractive and convenient movement of cyclists		Locatio	n
Detwee	n each residential precinct and major attractions such	Access	Place	
planne	d) and railway stations.	Access	Street	
		Collecto	or Street	
		Trunk C	ollector	
		Major R	oads	
		Adjacer	it pedestrian traffic ger	nerators such as
		Schools	, snopping centres, etc	D.
		Along p	anways	
		Notes:		
		1. F	potpaths may be requi	ired for network
		Footpat	hs are designed to cor	nform with the fo
			Issue	
		Width		1.2m minimur
				1.5m one side
				1.5m minimur
				width is 2m
		Location	1	Refer relevant
				to create visua
		Clearan	ce to Properties	0.8m for Acce
			a la Kadalla a	1m for Trunk (
		Clearan	ce to Kerbline	1.5m for Acce
	•		<u> </u>	2.5m for Trun
		Pathwa	y Construction	Refer Standar

Specific Outcomes for Assessable Development

SO 48 Areas constructed as detention basins are adaptable for

passive recreation wherever practicable.

Tootpatris are designed to con	ionn with the following.
Issue	Requirement
Width	1.2m minimum for Access Place, Access Street and Collector Street;
	1.5m one side and 2m other side for Trunk Collector, Sub Arterial and Arterial;
	1.5m minimum elsewhere except for dual use pedestrian/cycle paths where minimum width is 2m
Location	Refer relevant standard drawing for road classification. Meandering of the path is desirable to create visual interest.
Clearance to Properties	0.8m for Access Place, Access Street and Collector Street;
	1m for Trunk Collector, Sub-Arterial & Arterial.
Clearance to Kerbline	1.5m for Access Place, Access Street and Collector Street;
	2.5m for Trunk Collector, Sub-Arterial & Arterial.
Pathway Construction	Refer Standard Drawing No. 8-10036

Probable Solutions

Specific Outcomes for Assessable Development		Probable Solutions
	Grades	Along roads as per maximum grade for classification of road:
	Graues	Aiong roads - as per maximum grade for classification of road,
-	Crossfall	Patitiway reserves and open space -10% desirable maximum.
	CIUSSIAII	2.5% (1 in 20) maximum
-	Crossing Points	Refer Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section 6.4.7 & 6.4.8
-	Crossing Points for combined bicycle/footway use	Refer Standard Drawing No. 8-203
-	Chicanes are provided at the	ends of all pathways to roads (refer Standard Drawing Nos. 8-60033, 8-60034 & 8-60036).
	Bike/footway terminations at	Collector Streets or higher classification roads conform to Standard Drawing No. 8-60034.
	Bike/footway direct road cros	sings conform with Standard Drawing No. 8-60035.
	Detailed design of the footpath Section 6.4.0.	ns conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1,
	Bikeways are provided within	and adjacent the <i>site</i> as indicated in <i>Council's</i> Bikeways Plan or adopted local area plan.
	Detailed design of the bikeway Section 6.5.0.	ys conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1,
51 As constructed information is provided after completion the subdivision works.	PS 51 As constructed info	rmation is provided after completion of the subdivision works.
.6 Public Transport		
	DO 50 and DO 50. Due south	s are design to conform with the following:-
52 The road design provides for potential bus routes	PS 52 and PS 53 Bus routes	sale design to conform with the following
52 The road design provides for potential bus routes uding safe convenient stops and, where necessary, bus around areas	Design Issue	Requirement
 52 The road design provides for potential bus routes uding safe convenient stops and, where necessary, bus around areas. 52 The road design enters for the extension of existing and 	Design Issue Reserve width	Requirement 20m minimum
 52 The road design provides for potential bus routes uding safe convenient stops and, where necessary, bus around areas. 53 The road design caters for the extension of existing and re public transport routes to provide sufficient services that are public transport routes to provide sufficient services that are public transport routes to provide sufficient services that are public transport routes to provide sufficient services that are public transport routes to provide sufficient services that are public transport routes to provide sufficient services that are public transport routes to provide sufficient services that are public transport routes to provide sufficient services that are public transport provide services that are publi	Design Issue Reserve width Carriageway width	Requirement 20m minimum 9.5m minimum
 52 The road design provides for potential bus routes luding safe convenient stops and, where necessary, bus naround areas. 53 The road design caters for the extension of existing and are public transport routes to provide sufficient services that are ivenient and accessible to the community. 	Design Issue Reserve width Carriageway width Grade	Requirement 20m minimum 9.5m minimum 12% general maximum; 16% absolute maximum over short distances
 52 The road design provides for potential bus routes uding safe convenient stops and, where necessary, bus naround areas. 53 The road design caters for the extension of existing and irre public transport routes to provide sufficient services that are venient and accessible to the community. 	PS 52 and PS 53 Bus routes Design Issue Reserve width Carriageway width Grade Speed control	Requirement 20m minimum 9.5m minimum 12% general maximum; 16% absolute maximum over short distances by street alignment only
 52 The road design provides for potential bus routes luding safe convenient stops and, where necessary, bus naround areas. 53 The road design caters for the extension of existing and ire public transport routes to provide sufficient services that are ivenient and accessible to the community. 	PS 52 and PS 53 Bus routes Design Issue Reserve width Carriageway width Grade Speed control Design vehicle	Requirement 20m minimum 9.5m minimum 12% general maximum; 16% absolute maximum over short distances by street alignment only coach (tourist bus)
 D 52 The road design provides for potential bus routes sluding safe convenient stops and, where necessary, bus naround areas. D 53 The road design caters for the extension of existing and ure public transport routes to provide sufficient services that are nvenient and accessible to the community. 	PS 52 and PS 53 Bus routes Design Issue Reserve width Carriageway width Grade Speed control Design vehicle Turning	Requirement 20m minimum 9.5m minimum 12% general maximum; 16% absolute maximum over short distances by street alignment only coach (tourist bus) single movement turns only

CHAPTER 6, PART 3, DIVISION 2 - URBAN RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

for material quality (if required) and compaction is provided after

completion of the subdivision works.

"As constructed" information including test certificates for material quality (if required) and compaction is provided

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2.3.7 Public Open Space	
SO 55 Public open space has barriers to its road frontage to prevent access by unauthorised vehicles.	PS 55 The public open space is provided with log barriers designed along their road frontage in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design,</i> Part 1, Section 6.14.0 and Standard Drawing No. 8-70003.
SO 56 Public open space provides for recreational, environmental and stormwater management needs.	PS 56 No solution provided.
SO 57 Public open space that is intended to be used for local neighbourhood park includes a sufficiently level area that is suitable for non-organised recreation and passive relaxation including small children's playgrounds and appropriate landscaping.	PS 57 Public open space that is intended to be used for local neighbourhood park contains one area, constructed if necessary, not less than 15m x 15m with a slope less than 5%.
SO 58 As constructed information including test certificates for material quality (if required) is provided after completion of the subdivision works.	PS 58 As constructed information including test certificates for material quality (if required) is provided after completion of the subdivision works.
2.3.8 Utilities	
SO 59 Development only occurs in locations where there are adequate services and capacity for the desired use.	PS 59 The design of water supply infrastructure including water mains, pumping stations, pressure mains and associated works complies with the relevant Queensland Government Department's <i>Guidelines for Planning and Design of Urban Water Supply Schemes</i> , <i>Council's</i> Standard Drawings and <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 3. The design of water supply infrastructure includes all works internal and any works external required to ensure that all new and existing lots maintain adequate water supply at all times. The design of sewerage infrastructure including sewer mains, pumping stations, pressure mains and associated works complies with the relevant Queensland Government Department's <i>Guidelines for Planning and Design of Sewerage Schemes</i> , <i>Council's</i> Standard Drawings and <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 4. The design of sewerage infrastructure includes all works internal and any works external required to ensure that all new and existing lots are provided with a service at all times within the capacity of the system. The design of the electrical reticulation is in accordance with ENERGEX Specification URD <i>Underground Residential Distribution</i> .
2.3.8(a) Water Supply	
 SO 60 Where lots are intended to be provided with water supply the design and construction of the associated infrastructure and connections are provided in a safe, cost-effective, coordinated and efficient manner that supports sustainable development practices. SO 61 Water supply infrastructure is easily controlled and accessed for maintenance and repair. 	 PS 60 and PS 61 Staged construction of water supply infrastructure is designed so that each stage is self supporting at the completion of construction of that stage. Water supply infrastructure materials and construction complies with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i>, Part 3, Section 4. The minimum water main size is 100mm diameter. Water mains are provided along one side of all residential streets (minimum) to the boundaries of the development <i>site</i>. Water mains are provided on both sides of all Major Roads and divided roads. Water mains are located within service corridors shown on the following standard drawings:

PS 54

after completion of the subdivision works.

ecific Outcomes for Assessable Development	Probable Solutions Street Classification Access Place, Access Street & Collector Street Trunk Collector Street	Standard Drawing No. 8-10011			
	Street Classification Access Place, Access Street & Collector Street Trunk Collector Street	Standard Drawing No. 8-10011			
	Access Place, Access Street & Collector Street Trunk Collector Street	8-10011			
	Trunk Collector Street				
		8-10012			
	Sub Arterial & Arterial	8-10013			
	In special circumstances (e.g. infill development where existing service – refer Standard Drawing 8-0049), the services are placed on an alterna	n special circumstances (e.g. infill development where existing services are on <i>Council's</i> previous service allocations - refer Standard Drawing 8-0049), the services are placed on an alternative alignment.			
	Service connections are not made to water mains 250mm diameter and above.				
	Fire hydrants are provided at intervals (measured within the road reserve) not exceeding 80m, at high points (for air release) and at the ends of mains (use a duckfoot bend). Scours are provided at all low points, generally discharging into drainage <i>structures</i> .				
	Fittings and valves at road intersections are contained in the verge and are 500mm clear of the back of the kerb. The water supply system is designed to limit the static head to 80m maximum. Where approved by Council's engineer, pressure reducing valves are designed and installed to limit the static head to 80m maximum.				
	Water supply infrastructure is contained within roads or other public reserves. In exceptional circumstances <i>Council</i> may accept water mains through private land providing an appropriate easement, not less than 3m wide, is registered in <i>Council's</i> favour. The water main is constructed centrally within the easement. Sufficient valves are provided, generally on street corners, to limit the area of any shut-off to within the following:-				
	 40 lots or premises for 100mm and 150mm mains; and 50 lots or premises for 225mm mains. Valves in the shut-off area are limited to a maximum of six. 				
	Water supply infrastructure is designed and constructed in accordance with the following standard drawings:-				
XV	Item	Standard Drawing No.			
	Hydrant & Valve Installations	8-40002			
	Pavement Markers & Delineators	8-40003			
	Hydrant, Valve & Mains Marker Posts	8-40004			
	Thrust Block Details	8-40006			
	Air Valve Installation Details	8-40007			
	Air Valve Sizing	8-40008			
	Scour Outlets	8-40009			
	Trench Details	8-40010			
	Section Valve Pits & Interconnection Pits	8-40011			
	Pressure Reducing Valve Pits	8-40012 & 8-40013			
	Pressure Gauge Installations	8-40014			
	Offtakes from Mains	8-40015			
	Offtakes from Mains 8-40015				

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Specific Outcomes for Assessable Development

Service tappings are constructed using ductile iron p	ore-tapped	d fittings	for every lot.	For pipe diameters where re-tapped
fittings are not manufactured, conventional tapping b	oands are	used.		

Probable Solutions

Water supply conduits are provided for across road house connections for the full width of the carriageway and concrete footpaths.

Water supply conduits are provided for the full length of the accessway to rear allotments.

Kerb marker plates are provided to indicate the location of property service conduits.

Concrete thrust blocks are provided at all locations where there is unbalanced hydraulic load including all bends (horizontal and vertical), tees, angle branches, crosses, dead ends and reducers. Thrust blocks are contained within the service allocation.

Water mains are provided with the following cover:

Main Diameter	Cover		
(mm)	Verges & Accessway	Urban Road Carriageway ⁽¹⁾	State Controlled Roads
100 – 200	600	Greater of 750 or pavement thickness + 150	1200
225 – 375	750	Greater of 900 or pavement thickness + 150	1200
>375	1000	Greater of 1000 or pavement thickness + 150	1200

Notes:-

- 1. Where **Council's** Engineer approves a reduced cover the watermain is constructed of ductile iron pipe (minimum class K9).
- Water mains are not laid under stormwater pipes, sewerage mains or electricity conduits.

For water mains 300mm diameter and larger subsoil drains are provided from low points preferably draining to stormwater drainage *structures*.

Water mains maintain the following minimum clearances to existing and future services:-

- (1) horizontally where the water main runs along the adjacent service for >1m:- 800mm;
- (2) horizontally where the water main runs along the adjacent services for <1m:- 150mm;
- (3) vertically :- 150mm.

Connection to **Council's** water supply system is not provided until adequate water supply can be maintained at all times and the new mains are disinfected and watertight. Tests certificates (not older than 10 days at the time of connection) are provided to confirm the new mains have been satisfactorily disinfected prior to connection to **Council's** water supply system. The mains are pressure tested and test certificates are provided to confirm that the new mains are watertight prior to connection to **Council's** water supply system.

SO 62Water mains provides multiple flow routes for fire fighting
and water quality issues.PSO 63The water supply system for the proposed development
is planned to conform with Council's broad infrastructure plan for
withP

 PS 62
 Water mains are constructed with the maximum number of cross connections, including connections through all pathways.

 development
 PS 63
 The water supply system for the proposed development aligns with *Council's* broad infrastructure plan for the water supply zone.

the water supply zone.

CHAPTER 6, PART 3, DIVISION 2 - URBAN RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

Effective from 15 December 2006

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

CHAPTER 6, PART 3, DIVISION 2 - URBAN RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development 2.3.8(b)

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

SO 64 Where lots are intended to be provided with reticulated sewerage the design and construction of the associated infrastructure and connections are provided in a safe, costeffective, coordinated and efficient manner that supports sustainable development practices.

Staged construction of sewerage infrastructure is designed so that each stage is self supporting and properly PS 64 served at the completion of construction of that stage.

Probable Solutions

Sewerage infrastructure design complies with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 4. For normal sewer reticulation design the following parameters are used:-

Item	Design Value
Residential occupancy rate per connection	3.29 equivalent persons (EP)
Average Dry Weather Flow (ADWF)	250 litres/EP/day
Maximum Possible Flow (C ₁)	
Sewers serving < 1,000 EP	• 5 times ADWF
 Sewers serving >23,000 EP 	3 times ADWF
Infiltration Allowance (IA)	250 litres/EP/day
Maximum Design Flow (MDF)	Maximum Possible Flow + Infiltration Allowance (C ₁ + IA)

Sewerage infrastructure materials and construction complies with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 4, Section 4.

The sewerage system through the site has sufficient capacity to convey the ultimate flows from all upstream properties when they are fully developed.

Sewer pipes are sized in accordance with AS2200. The minimum flow velocity in any sewer is 0.6m/s based on ADWF. Sewers are designed to carry MDF at a depth not exceeding ³/₄ of the pipe diameter.

The minimum sewer main size is 150mm diameter.

Sewers are designed and constructed to serve the entire area of each lot.

House drains are graded (around the perimeter of the building envelope) at 1 in 40 with a minimum cover of 600mm except for control allotments where a grade of 1 in 60 with a minimum cover of 400mm is used.

Sewers are designed to extend to the boundaries of the site in order to serve all upstream areas within the catchment.

In flat areas, sewers are designed to serve properties on both sides of the sewer.

Sewers are designed to follow the land's natural fall as far as possible.

The minimum grade on sewer mains for residential lots is as follows:-

·	Probable Solutions			
	Sewer Diameter (mm)		Minimum Grade ⁽¹⁾	
	150		1 in 80 for first 6 lots, 1 in 150 the	ereafter
	225		1 in 290	
	300		1 in 420	
	375		1 in 570	
	450		1 IN 730	
	600		1 in 1000	
	675		1 in 1200	
	750		1 in 1500	
	Notes:-			
	1. Sewers are designed	ed on steeper grades where po	ssible.	
	The minimum drop throug diameters.	h a manhole is the greater of	40mm or the difference between	downstream and upstream pipe
	Steep sewers on grades e following spacing:-	exceeding 1 in 15 are provided	with concrete stops (refer Stand	dard Drawing No. 8-50008) at the
	Pipe Diameter	General Maximum	Maximum Spacing of	f Concrete Stops (m)
	(nnn)	Grade	VC Pipe	Other than VC Pipe
	150	1 in 6	2	6
	225	1 in 10	2	6
	300 or greater	1 in 15	2	6
	Sewers steeper than 1 manufacturer's recommer	n 4 are only approved by C nded maximum flow velocity is	not exceeded. No sewer has a	grade steeper than 1 in 3.
	Sewer mains are provided	I with the following cover:-		·
+ Co	Location		Minimum Cover	(mm)
	Llouge connection branch			
	House connection branch		of OFO is a law, the same of is a share a second	ala ana al an COO la alaw. futura
	House connection branch Sewer mains in lots:-	greater driveway ⁽¹⁾	of 250 below invert of kerb and o	channel or 600 below future
	House connection branch Sewer mains in lots:- • front of lot	greater driveway ⁽¹⁾ 600	of 250 below invert of kerb and o	channel or 600 below future
	House connection branch Sewer mains in lots:- • front of lot • elsewhere in the lot Sewer mains in road vero	greater driveway ⁽¹⁾ 600	of 250 below invert of kerb and o	channel or 600 below future
	House connection branch Sewer mains in lots:- • front of lot • elsewhere in the lot Sewer mains in road verg Sewer mains under road u	greater driveway ⁽¹⁾ 600 es pavements	of 250 below invert of kerb and o 900 1200	channel or 600 below future
	House connection branch Sewer mains in lots:- • front of lot • elsewhere in the lot Sewer mains in road verg Sewer mains under road p	greater driveway ⁽¹⁾ 600 es pavements	of 250 below invert of kerb and o 900 1200	channel or 600 below future
	 House connection branch Sewer mains in lots:- front of lot elsewhere in the lot Sewer mains in road verg Sewer mains under road p Notes:- 1. Determine using drives 	Greater driveway ⁽¹⁾ 600 es pavements veway access as per Standard	of 250 below invert of kerb and o 900 1200 d Drawing No. 8-10008.	channel or 600 below future

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Specific Outcomes for Ass

essable Development	Probable Solutions
	House connections are only made to sewers where the depth to invert does not exceed 3m. A shallower second main is provided for house connections where the sewer depth (to invert) exceeds 3m.
	Flexible sewer pipes are only used for sewers less than 4.5m deep.
	Sewer and/or allotment drainage lines are located on no more than 2 boundaries of a residential lot.
	Sewer mains are not located along the side boundary of lots that are less than 19m wide at any point.
	Where the finished surface slope of a residential lot exceeds 1 in 10, the sewer main depth is increased to allow for future <i>site</i> earthworks.
	Trunk sewer mains of 300mm diameter and greater are not located in residential lots.
	Existing on-site sewerage systems that are made redundant by the development, are demolished or removed from the <i>site</i> .
	Sewer manholes are provided at the following locations:-
	(1) changes in direction;
	(2) changes of grade;
	(3) intersections of sewers;
	(4) changes of sewer diameter;
	(5) changes of sewer pipe material;
	(6) ends of sewer lines, except where the line section does not exceed 30m in length and no more than 2 house connections are made to the line.
	Manhole spacing (centre to centre) does not exceed 90m for sewer lines up to 450mm diameter and 120m for greater than 450mm diameter.
	Type 1 manholes are used for sewer lines up to 375mm diameter and up to 6m sewer depth.
	Precast manholes are not used where:-
	(1) the sewer line receives pumped flows;
	(2) the sewer line is >375mm diameter;
	(3) the manhole depth exceeds 6m;
	(4) saturated ground conditions are likely; and
	(5) the manhole is located near a creek bank which is likely to be susceptible to erosion.
	The top of the manhole ring is at the following finished levels:-
	(1) 600mm above ground in unmaintained areas;
	(2) 100mm above finished surface level in maintained open space and private lots;
	(3) 25mm above finished surface level in road verges; and
	(4) flush with carriageway surface, trafficable areas and concrete paths.
	Where possible, the top of manholes are above the 20 year ARI flood level.
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Specific Outcomes for Assessable Development



Probable Solutions Bolt down manhole covers are used near creek banks, in flood prone areas (i.e. below 20 year ARI flood level) in parks and

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development		Probable Solutions
	The potential for sewage overflows from or other means approved by Council ?	om sewage pump stations is minimised using appropriately designed overflow storage s engineer.
	The number and length of pressure m	ains is minimised as far as practicable.
	Sewer pressure mains are located in r	road verges of the opposite side to water supply mains.
	Sewer pressure mains have the follow	ving cover:-
	(1) 1200mm under carriageways;	
	(2) 1000mm elsewhere.	
	Sewer pressure mains are not laid wit engineer may approve a lesser sepa main.	hin 1.5m of parallel potable water supply mains. In special circumstances <i>Council's</i> ration providing the sewer pressure main obvert is 500mm below the water supply
	Sewer pressure mains have section va	alves at not greater than 500m spacing.
	Scour valves are located at all low poi	nts in the pressure main.
	Vents are provided to all high points in	n the pressure main.
	Odour and corrosion control measures	s are provided, as necessary, to pressure mains.
	Pressure mains discharge into vented connection branches.	d discharge manholes whose immediate downstream line does not have any house
	Maintenance vehicle access is provide	ed to the sewage pump station in accordance with the following:-
	Item	Requirement
	Design Vehicles	(a) Medium Rigid Vehicle
		(b) Articulated Tanker when oxygen injection is used
	Access Track Maximum Grade	(a) 1 in 10 for gravel access;
		(b) 1 in 6 for sealed access
	Access Track Minimum Width	3.5m
	Access Track Drainage	(a) No inundation in 5 year ARI storm;
		(b) Trafficable in 10 year ARI storm
	Surfacing	(a) Minor pump station with access grade < 1 in $10 - \text{gravel surface}^{(1)}$;
		(b) Minor pump station with access grade >1 in 10 – sealed:
		(c) Major pump stations – sealed
	Pavement Design	(a) Minor pump station - as per DG 06 using 2.3 x 10 ³ ESAs:
	J. J	(b) Major pump station - as per DG 06 using 4.5×10^3 ESAs
	Pump Maintenance	(a) Level area adjacent pump well for a crane truck;
* · · ·		 (b) Vent pole, switchboard and other equipment clear of working area of crane truck.

Specific Outcomes for Assessable Development	Probable Solutions		
	Notes: 1. Where the access is adjacent to residential properties or Council's engineer considers that the amenity of nearby residents may be affected by dust the access is sealed.		
	Sewerage infrastructure is designed and constructed in accordance with the following standard drawings:-		
	ltem	Standard Drawing No.	
	Sewer Manholes	8-50002, 8-50003, 8-50004, 8-50006 & 8-50007	
	Sewer Pipelines	8-50008	
	House Connection Branches	8-50009	
	Sewage Pump Stations	8-50015, 8-50016, 8-50017, 8-50018, 8-50019, 8-50021, 8-50023, 8-50024, 8-50025, 8-50026, 8-50040, 8-50041, 8-50042, 8-50043, 8-50050, 8-50051, 8-50052, 8-50053, 8-50100, 8-50101, 8-50102, 8-50103, 8-50110, 8-50111, 8-50112, 8-50120, 8-50121, 8-50122, 8-50123, 8-50140 & 8-50141	
	Sewer Valves	8-50027	
	Sewer Rising Mains	8-50028, 8-50029	
	Connection to Council's sewerage manholes are vacuum tested and	e system is not provided until the new mains are clean and watertight. The mains and test certificates are provided to confirm that the new mains and manholes are watertight.	
SO 65 Adequate buffers are provided between sewerage ransportation and treatment facilities and dwellings to protect residential amenity and health.	PS 65 Sewage pump stations are no closer than 100m to the nearest existing or future residential lot. In special circumstances <i>Council's</i> engineer may approve a lesser buffer distance.		
SO 66 The sewerage transportation system for the proposed development is planned to conform with Council's broad nfrastructure plan for the catchment.	PS 66 The sewerage transportation system conforms with <i>Council's</i> infrastructure plan for the sewerage scheme.		
2.3.8(c) Recycled Water			
SO 67 Where Council plans to supply recycled water, developments make provision for these future recycled water supply systems.	PS 67 An appropriate service corridor is provided for future recycled water supply.		
2.3.8(d) Electricity			
SO 68 Where lots are intended to be provided with reticulated	PS 68 Underground electrical re	eticulation is provided in residential developments.	
electricity the service is underground with design and construction of the associated infrastructure and connections being provided	Crossings of existing roads are bo trenched construction.	red. In special circumstances <i>Council's</i> engineer may approve other methods including	
n a safe, cost-effective, coordinated and efficient manner that a supports sustainable development practices	Road crossing are not at acute an	gles to the road centreline.	
	Electrical crossings occur at altern	ate common lot boundaries to water service crossings.	
	Electrical crossings are within the a to enable 11kV cables to be install	rea defined as an <i>intersection</i> under State Legislation or are diagonally across intersections ed without joints.	
	Pillars are provided at all entry poi	nts to private property and located at side boundaries of the lot.	
	Pillars are located on alternate cor	nmon lot boundaries to water meters and hydrants.	

	PineRiversPlan

CHAPTER 6, PART 3, DIVISION 2 - URBAN RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

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Specific Outcomes for Assessable Development

2.3.8(e) Street Lighting – (excludes State-controlled roads)				
SO 69 All roads are provided with street lighting which is designed and constructed to provide a safe, cost-effective, coordinated and efficient system that supports sustainable development practices.	 PS 69 All works are designed and constructed to AS1158, Public Lighting Code, 1986, Austroads Guide to Traffic Engineering Practice – Part 12, Roadway Lighting, 1988 and ENERGEX standards and approval. Street lighting poles and luminaries are standard ENERGEX patterns under Rate 1 Tariff in roads and Rate 2 Tariff in other than roads. 			
	Street light poles are located on standard alignments in accordance with the following standard drawings:			
	Street Classification	Standard Drawing No.		
	Access Place, Access Street & Collector Street	8-10011		
	Trunk Collector	8-10012		
	Sub Arterial & Arterial	8-10013		
	Street lights are generally located opposite common lot boundaries movements.	s and are positioned to minimise conflicts with vehicle		
	Street lights are located to minimise the risk of damage from errant vehicles at intersections, bends and speed control devices and by oversize vehicles which must necessarily leave the carriageway to manoeuvre in turn around areas, speed control devices and some intersections.			
	Street light pole that are in vulnerable locations (e.g. small islands or roundabouts) use frangible type poles.			
	Colour consistency is maintained as far as practicable.			
	Lighting designs are prepared in accordance with the Lighting Category specified below:-			
	Road Classification	Lighting Category		
	Arterial	A2		
	Sub Arterial	A3		
	Trunk Collector	B1 ⁽¹⁾		
	Collector	B2		
	Access Street, Access Place	B2		
	Pathways between residential lots	B2		
	General pathways in open space areas	C3 ⁽²⁾		
	Commuter Links	C2 ⁽²⁾		
	Other locations	Subject to individual assessment		
	Note: 1. Use A3 where pedestrian /cyclist volumes are higher.			
	2. Lighting standard may vary to suit local conditions.			
	3. The above classification also applies to Community Title Developments.			
	4. Power supply to pathway lighting is underground.			
	5. Pathway lighting is Rate 2 Tariff.			

Probable Solutions

Specific Outcomes for Assessable Development	Probable Solutions	
	A light is provided to each end of pathways (may be street light), at every bend or change of alignment and at every obstruction or hazard (e.g. bridge, stairway, etc).	
	Pedestrian underpasses or tunnels are lit in accordance with the relevant standard.	
	Crossing points of pathways across roads or streets are lit in accordance with the relevant street standard.	
	In addition to the through street lighting above, additional special lighting is provided, as necessary, at the following locations:	
	(1) intersections;	
	(2) roundabouts;	
	(3) sharp bends;	
	(4) traffic control devices;	
	(5) pedestrian crossings;	
	(6) cul de sac turn around areas; and	
	(7) bridges.	HAP
2.3.8(f) Telecommunications		TER
SO 70 All lots are able to be provided with a telecommunications service which is designed to give a safe, cost effective, coordinated	PS 70 Application for telecommunications reticulation is made and pre-provisioning confirmation is received prior to subdivision works commencing.	6, PART
and efficient system that supports sustainable development practices.	Telecommunications reticulation (i.e. conduits and pits) is installed in accordance with Telstra standards and a provisioning confirmation is provided for the works.	13, DIV
2.3.8(g) Alterations and Relocations		ISIOI
SO 71 Any alteration or relocation in connection with or arising from the development to any service, installation, plant, equipment or other item belonging to or under the control of the telecommunications authority, electricity authorities, the Council or other person engaged in the provision of public utility services, s carried out prior to the approval of the plan of subdivision.	PS 71 No solution provided.	1 2 - URBAN RESIDE
2.3.8(h) As Constructed Information		
SO 72 "As constructed" information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 72 "As constructed" information including test certificates for material quality (if required) and compaction is provided to the relevant authority upon completion of the subdivision works	
2.3.9 Bushfire Hazard		NOIS
SO 73 All lots are provided with a safe and secure water supply for fire fighting and protection.	PS 73 All lots have adequate reticulated water supply in accordance with Council's standards.	IWORK
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Effective from 15 December 2006 .

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Division 3 Park Residential Subdivision Works Design Code

3.1 Overall Outcome

To create park residential subdivision development that:-

- (1) Provides safe, convenient and attractive park residential neighbourhoods;
- (2) Provides residential lots that have a high degree of amenity;
- (3) Ensures that *sites* are managed during construction to minimise adverse impacts to the environment and on the health and amenity of residents and premises;
- (4) Ensures that **sites** are managed during construction to minimise adverse traffic impacts to existing roads;
- (5) Ensures that earthworks design and construction is suitable for the intended use of the land and that adverse impacts to the environment and on the health and amenity of residents is minimised;
- (6) Have road networks that are designed and constructed to provide an optimum combination of safety, amenity, convenience, economy and environment for residents, road and street users, and the community generally;
- (7) Have stormwater management systems that are designed and constructed to provide an optimum combination of safety, amenity, convenience, economy and environment for residents and the community generally;
- (8) Have stormwater management systems that are designed and constructed to collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage, and at a development and environmental cost which is acceptable to the community as a whole;
- (9) Provide for the convenience and safety of pedestrians and vehicular traffic during frequent or nuisance stormwater flows;
- (10) Ensures a reasonable level of pedestrian and vehicular traffic safety and accessibility during storm events;
- (11) Minimises pollutant inflows to the receiving waters, and controls scour and depositional effects;
- (12) Adequately protects people, the natural environment and the built environment from stormwater runoff flows at an acceptable level of risk;
- (13) Integrates stormwater management solutions with other uses and the natural environment;
- (14) Provides public open space that meets user requirements for outdoor recreational and social activities and for landscaping that contributes to the identity, environmental health and safety of the community;
- (15) Ensures that tree plantings are selected and located appropriately as well as being planted and maintained to be long lasting and low maintenance;
- (16) Provides for park residential lots that are adequately serviced with water supply, electricity, street lighting and communications services in a timely, cost effective, coordinated and efficient manner that supports sustainable development practices, and is in accordance with the desired character of the *locality*;
- (17) Ensures that the water supply service provision complies with the relevant State Guidelines for design;
- (18) Ensures all water supply, electricity, street lighting and communications services that require relocation and/or alterations as a result of park residential development are carried out in a timely, cost effective, coordinated and efficient manner; and
- (19) Reduces the level of fire risk associated with building in areas which are assessed to have a medium to high bushfire hazard;

3.2 Compliance with the Park Residential Subdivision Works Design Code

This code applies to all operational works relating to development or reconfiguring of park residential land, but specifically excludes applications for access easements to a road, subdivision by lease and boundary relocations or realignments.

The application of the various specific outcomes will depend upon the size or scale of the proposed development. Some specific outcomes will not apply due to a particular design element not being part of the proposal (e.g. new road). In other instances it may be impractical to apply some specific outcomes, particularly for small infill developments.

3.3 Development Requirements

The following are the design elements relevant to Park Residential Subdivision Works:-

- (3.3.1) Managing Impacts During Construction
- (3.3.2) Earthworks
- (3.3.3) Road Networks (excludes State-controlled Roads)
- (3.3.4) Stormwater Management
- (3.3.5) Pedestrian & Cyclist Facilities
- (3.3.6) Recreation Trails
- (3.3.7) Public Transport
- (3.3.8) Public Open Space
- (3.3.9) Utilities
 - (3.3.9a) Water Supply
 - (3.3.9b) Recycled Water
 - (3.3.9c) Electricity
 - (3.3.9d) Street Lighting
 - (3.3.9e) Telecommunications
 - (3.3.9f) Alterations and Relocations
 - (3.3.9g) As Constructed Information
- (3.3.10) Bushfire Hazard

Specific Outcomes for Assessable Development	Probable Solutions
3.3.1 Managing Impacts During Construction	
SO 1 All development <i>sites</i> minimise, as far as possible, any adverse impact to the natural environment caused by erosion, siltation, incineration of cleared vegetation and rubbish.	PS 1 The development works incorporate temporary stormwater runoff, erosion and sediment controls and trash traps designed in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.2.0 and 4.11.4, and Subdivisions Section Technical Note No. 6. The measures are adjusted on-site to maximise their effectiveness.
	Stormwater runoff, erosion and sediment controls are constructed prior to commencement of any clearing works wherever possible.
	All environmentally significant areas to be retained with the development are clearly delineated and fenced prior to development works commencing.
SO 2 All development works are carried out at times which minimise noise impacts to residents.	PS 2 All development works are carried out within the following times, unless otherwise approved in writing by <i>Council's</i> engineer:-
	(1) Monday to Friday (other than public holidays) between 7am and 6pm on the same day; and
	(2) Saturday (other than public holidays) between 7 am and 12 noon on the same day.
	Variations to the above working hours may be approved if Council's engineer considers that the work is unlikely to cause significant inconvenience or disruption to the public, or the work is unlikely to cause annoyance or inconvenience to occupants of adjacent properties.
SO 3 All development works are managed to minimise dust and siltation nuisance to residents.	PS 3 During construction, dust suppression measures (such as watering of the <i>site</i>) are implemented to protect nearby premises from dust pollution.
SO 4 All development works avoid the redirection of stormwater runoff where potential impacts to residents may occur.	PS 4 Temporary construction works do not pond or concentrate stormwater runoff in adjoining properties. Temporary construction works do not create nuisance or annoyance to adjoining premises as a result of altering the stormwater runoff pattern exiting the <i>site</i> .
SO 5 Construction traffic does not adversely impact on the amenity of existing residents.	PS 5 Construction traffic to and from the <i>site</i> uses the highest classification streets or roads where a choice of access routes is available. Where significant volumes of material are approved to enter or leave the <i>site</i> , a haul route is approved by Council. All materials associated with the development that are dropped, deposited or spilled on streets giving access to the <i>site</i> are removed and the streets are cleaned as soon as practicable after the event. Any damaged areas are repaired and reinstated to their previous condition
	Where works are carried out on existing roads a traffic control plan is prepared in accordance with the Manual of Uniform Traffic Control Devices. All traffic control measures are properly erected and maintained during the works.
	Any access road to the <i>site</i> that has been affected by any material dropped, deposited or spilled on the road as a result of the construction processes associated with the <i>site</i> is cleaned and restored to its original condition.
SO 6 Construction traffic is controlled to ensure all traffic movements to and from the <i>site</i> are safe.	PS 6 All traffic movements to and from the <i>site</i> frontage are carried out in a safe manner. Traffic controls are used where <i>site</i> access is approved directly onto a Major Road.
SO 7 All clearing works are carefully undertaken to ensure the clearing is limited to the area of the approved infrastructure works, buildings areas and other areas approved in the development permit.	PS 7 Areas of significant vegetation, proposed park and open space areas and other areas of vegetation or individual trees designated to be retained with the development are temporarily fenced and flagged.

PineRiversPlan

CHAPTER 6, PART 3, DIVISION 3 - PARK RESIDENTIAL SUBDIVISION WORKS DESIGN CODE
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	PineRiversPlan

CHAP	Specific Outcomes for Assessable Development	Probable Solutions
TER 6, PART	SO 8 All cleared vegetation is disposed of in a manner which minimises, as far as practicable, nuisance and annoyance to existing premises.	PS 8 Where cleared vegetation is chipped or pit burned on <i>site</i> the location of these works is not less than 100m from any dwelling or commercial premises. All vegetation with a diameter below 400mm is chipped and stored on <i>site</i> in an approved location generally on <i>Park</i> or public land. Vegetation with a diameter above 400mm is pit burned on <i>site</i> if a suitable location is available. The pit burn is generally carried out as one continuous operation.
3 - A		Chipping and/or pit burning is only undertaken when weather conditions are favourable.
SSE		Burn pit locations are approved in writing by Council's engineer and shown on the "as constructed" drawings.
MSS		Cleared vegetation is not disposed of by above ground burning.
ENT C	SO 9 All noxious weeds and other materials which are detrimental to the intended use of the land are removed and	PS 9 All groundsel, noxious weeds, stumps, fallen trees, rubbish, car bodies, scrap metal and the like are removed and disposed of in a manner which minimises environmental impact.
RITERI.	disposed of in a manner which minimises environmental impacts.	Stumps, fallen trees, undergrowth, buildings, <i>structures</i> , foundations and the like in existing and proposed park and open space areas are removed where directed by <i>Council's</i> representative.
AFOR	3.3.2 Earthworks	
OPERAT	SO 10 Earthworks design takes into account the slope of the ground, short and long-term slope stability, soft or compressible foundation soils, reactive soils, low density or potentially collapsing	PS 10 Investigation, planning and design including documentation is carried out in accordance with Australian Standard AS3798.
IONAL	soils, existing fills and soil contamination that may exist on <i>site</i> .	drains at the top of batters and lined batter drains as necessary.
ş		All fill batters steeper than 1 (V) in 6 (H) in residential lots are fully turfed to prevent scour and erosion.
RKS	SO 11 Filling is not placed on existing or proposed <i>park</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 11 Filling is not placed on existing or proposed park unless specifically approved in writing by Council's engineer.
	SO 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer	PS 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.
Effe	SO 13 The <i>site</i> is properly prepared for earthworks.	PS 13 The <i>site</i> is prepared in accordance with Australian Standard AS3798.
ective f	SO 14 Fill construction is carried out in a manner which ensures that the works meet the design requirements.	PS 14 The fill construction is carried out in accordance with Australian Standard AS3798.
rom 1	SO 15 Unsuitable materials are not used in structural fill.	PS 15 Materials used for structural fill conform with Australian Standard AS3798.
.5 Decen	SO 16 Earthworks and trench backfill is properly compacted to suit the desired use of the <i>site</i> .	PS 16 The earthworks and trench backfill is compacted to the minimum relative compaction given in Table 5.1 of Australian Standard AS3798. The minimum frequency of
nbe		Any open drains, earth dams and wells on the <i>site</i> are drained, cleaned and filled as specified above.
r 2006	SO 17 Steep rock slopes and batters are stable and low maintenance.	PS 17 Steep rock slopes and batters are inspected and certified for long-term stability by a suitably qualified and experienced geotechnical engineer. Stabilisation measures are provided, as necessary, to ensure long-term stability and low maintenance.
	SO 18 "As constructed" information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 18 "As constructed" information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.

CHAPTER 6, PART 3, DIVISION 3 - PARK RESIDENTI

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Probable Solutions

Road Networks (excludes State-controlled roads)

SO 19 The road design and construction has a clear *structure* and component streets conform to their function in the network.

SO 20 The road design and construction has clear physical distinctions between each type of street. The distinctions are to be based on function, legibility, convenience, traffic volumes, vehicle speeds, public safety and amenity.

SO 21 The road design and construction accommodates the following primary functions:-

- (1) access to residences;
- (2) car parking for visitors;
- (3) social and activity space;
- (4) stormwater drainage paths (minor and major storms);
- (5) public transport on Collector Streets;
- (6) utility services location; and
- (7) setting and approach (streetscape and landscape) for adjoining residences.

SO 22 The road design and construction accommodates adequate verge and carriageway width for the primary functions listed in specific outcomes above.

Design Issue	Access Place (1)	Access Street ⁽¹⁾	Collector Street
Traffic Catchment (maximum)	50 lots (1)	100 lots	350 lots (2)
Street Length (maximum)	900m	1200m ⁽³⁾	1200m ⁽³⁾
Design Speed (maximum)	45km/h	60 km/h	60km/h
Carriageway Lanes	2 (4)	2	2
Carriageway Width 6m (4)		7m	8m
Verge Width (minimum)	5m	5m	5m
Road Width (minimum)	20m	20m	25m
Parking	no provision ⁽⁵⁾	no provision	no provision
Footpaths/recreational trails	as required ⁽⁶⁾	as required (6)	as required (6)
Grade (minimum - maximum) 0.4% - 16% (7)		0.4% - 16%	0.4% - 12% (8)

Notes:

1. Theoretical limit only. Maximum length controls in most cases.

PS 19 to PS 22 The Residential Streets conform to the following:-

2. May be increased by widening road reserve.

- 3. Maximum street lengths are inter-dependant. Essential criterion is maximum total travel time 180 seconds.
- 4. Single lane, 3.5m width, with Council approval only, maximum 12 lots.
- 5. Parking bays may be required at cul-de-sac heads.
- 6. As required by Council's network planning .
- 20% absolute maximum grade under special circumstances. 7.
- 8. 16% absolute maximum grade under special circumstances.

The detailed design of Residential Streets conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Desian, viz::-

Road Design Issue	Planning Scheme Policy PSP28 Civil Infrastructure Design Reference
Traffic Volume	Part 1 Sect 5.2.4
Traffic Speed	Part 1 Sect 5.2.3
Parking	Part 1 Sect 5.2.5
Carriageway Width	Part 1 Sect 5.2.6.2
Street Classification	Part 1 Sect 5.2.9
Verge	Part 1 Sect 5.2.7
Street Reserve Width	Part 1 Sect 5.2.8

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cific Outcomes for Assessable Development		Pro	obable s	solutions			
	Geometric Design				Part 1 Sect 5.2.10.2	2	
	Intersections		Part 1 Sect 5.2.10.3				
	Manoeuvring Areas				Part 1 Sect 5.2.10.4		
	Speed Control Devices			Part 1 Sect 5.2.10.5			
	Roundabouts				Part 1 DG 01		
	Landscape Construction or Parks and Drainage Reser	n Road Reserves, ves			Part 1 DG 03		
	Local Area Traffic Manager	nent			Part 1 DG 05		
	Signs and Road Marking				Part 1 Sect 6.7.0		
	Footpaths				Part 1 Sect 6.4.0		
	Recreational Trails				Part 1 Sect 6.6.0		
	Service Conduits				Part 1 Sect 6.8.0		
	Subsoil Drainage				Part 1 Sect 6.9.0		
4	Safety Barriers		Part 1 Sect 6.10.0				
	Guide Posts			Part 1 Sect 6.11.0			
	Bridge and Culvert Widths		Part 1 Sect 6.12.0				
	Street and Pathway Lighting		Part 1 Sect 6.13.0				
	Park Barriers			Part 1 Sect 6.14.0 Part 1 Sect 6.15.0			
	Retaining Walls						
	The Major Roads conform	to the following:					
	Design Issue	Urban Sub-Arterial	Urba	n Arterial	Rural Sub-Arterial	Rural Arterial	
	Traffic Volume (typical)	12,000 vpd	30	000 vpd	12,000 vpd	30,000 vpd	
	Design Speed (minimum)	8km/h	1	00km/h	80km/h	100km/h	
	Carriageway Lanes	2		4	2	4	
	Carriageway Width	10m (kerbed) (1)	2 x 8.5	m (kerbed) (1)	7m	2 x 7m	
	Verge Width (minimum)	7.5m		8.5m	7m	7m	
	Reserve Width (minimum)	25m (2)		10m (2)	26m	40m	
	Footpaths/Cyclepaths	both sides (3)	botl	n sides (3)	as required	as required	
	Grade (minimum – maximum)	0.4% - 7% (4)	0.4	% - 6% (4)	0.4% - 8%	0.4% - 6%	
	(minimum) Footpaths/Cyclepaths Grade (minimum – maximum)	both sides ⁽³⁾ 0.4% - 7% ⁽⁴⁾	botl	h sides ⁽³⁾ % - 6% ⁽⁴⁾	as required 0.4% - 8%	as 0.4	

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

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fic Outcomes for Assessable Development	Pi	obable Solutions	
	Notes:		
	1. Does not include cyclelanes.		
	2. Greater width required at intersections.	the set of the star	
	3. Cyclepaths may be required in accordance w	vith network design.	
	The detailed design of Major Urban Roads conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, viz:-		
	Road Design Issue	Planning Scheme Policy PSP28 Civil Infrastructure Design Reference	
	Design Philosophy	Part 1 Sect 3.2.0	
	Classification of Major Urban Roads	Part 1 Sect 3.3.0	
	Freeways	Part 1 Sect 3.4.0	
	Arterial Roads	Part 1 Sect 3.5.0	
	Sub-Arterial Roads	Part 1 Sect 3.6.0	
	Intersections	Part 1 Sect 3.7.0 & 6.16.0	
	Traffic Volume and Capacity	Part 1 Sect 3.8.0	
	Design Speed	Part 1 Sect 3.9.0	
	Cross Section Elements	Part 1 Sect 3.10.0	
	Geometric Design	Part 1 Sect 3.11.0	
	Bus Stops	Part 1 Sect 3.12.0	
	Pedestrian and Cyclist Facilities	Part 1 Sect 3.13.0	
	Aesthetics and Appurtenances	Part 1 Sect 3.14.0	
	Services Streets	Part 1 Sect 3.15.0	
	Roundabouts	Part 1 DG 01	
	Signs and Road Markings	Part 1 Sect 6.7.0	
	Footpaths	Part 1 Sect 6.4.0	
	Bikeways	Part 1 Sect 6.5.0	
	Service Conduits	Part 1 Sect 6.8.0	
	Subsoil Drainage	Part 1 Sect 6.9.0	
	Safety Barriers	Part 1 Sect 6.10.0	
	Guide Posts	Part 1 Sect 6.11.0	

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Specific Outcomes for Assessable Development	Probable Solutions			
	Bridge and Culvert Widths	Part 1 Sect 6.12.0		
	Street and Pathway Lighting	Part 1 Sect 6.13.0		
	Park Barriers	Part 1 Sect 6.14.0		
	Retaining Walls	Part 1 Sect 6.15.0		
	The detailed design of Major Rural Roads conform Design, viz:-	hs with Council's Planning Scheme Policy PSP28 Civil Infrastructure		
	Road Design Issue	Planning Scheme Policy PSP28 Civil Infrastructure Design Reference		
	Design Philosophy	Part 1 Sect 5.3.2		
	Design Speed	Part 1 Sect 5.3.4		
	Traffic Volume & Capacity	Part 1 Sect 5.3.5		
	Cross Section Elements	Part 1 Sect 5.3.6		
	Geometric Design	Part 1 Sect 5.3.7		
	Intersections	Part 1 Sect 5.3.8		
	The road cross-sections conform with Council's st	andard drawings as follows:-		
	Road Classification	Standard Drawing Number		
	Access Place	8-10017 & 8-10020		
	Access Street	8-10018 & 8-10020		
	Collector Street	8-10019 & 8-10020		
	Urban Sub-Arterial Road	8-10006 & 8-10009		
	Urban Arterial Road	8-10007 & 8-10009		
	Rural Sub-Arterial	8-10023 & 8-1002		
	Rural Arterial	8-10024 & 8-1002		
	Utility service allocations conform to Council's standard drawings as follows:			
	Road Classification	Standard Drawing Number		
	Access Place, Access Street, Collector Street	8-10027		
	Urban Sub-Arterial & Arterial	8-10013		
	Rural Sub-Arterial & Arterial	8-10028		

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development	Probable Solutions					
	Road designs incorporate retention of existing significant trees where ever practicable.					
	Road designs minimise	the heights of cut a	nd fill of road formati	on to less than 2m w	here ever practicable	
	New roads are located	to minimise the heig	hts of cut and fill of r	oad formation to less	than 2m where ever	possible.
	Road designs minimise public open space area	the amount of filling as and proposed pub	and extent of filling i lic open space areas	n or adjacent existing 3.	natural gullies, water	ways , existing
	Access to allotments c 6.2.0.	onforms to Council's	s Planning Scheme	Policy PSP28 Civil II	nfrastructure Design, I	Part 1, Section
	The road pavement de DG 06.	esign conforms to Co	ouncil's Planning S	cheme Policy PSP2	3 Civil Infrastructure L	De <i>sign</i> , Part 1,
	The works are constru <i>Design</i> , Part 1, DG 02,	ucted within tolerand Appendix C.	ces given in Counc	il's Planning Schem	e Policy PSP28 Civi	I Infrastructure
SO 23 The road design creates safe, convenient movement	PS 23 and PS 24 The	e street design is high	hly legible through th	ne use of different ca	rriageway widths in A	ccess Streets,
tor residents between their nomes and the Major Road network.	Access Places and Col	lector Streets.				
SO 24 The road design has a high degree of "legibility to road users.						
SO 25 The road design provides more than one access route (at all stages of development) for residential areas containing a	PS 25 The residential area is served by more than one access route to the Major Road system when the number of a residential lots exceeds 100 (absolute maximum allowed is 150 lots).					
significant number of residential lots.						
SO 26 Intersections along residential streets are safe and convenient	and PS 26 Intersection spacing conforms with the following:					
	Interconting			Through Bood		
	Road					
	Location	Access Street &	Urban Sub-	Urban Arterial	Rural Sub-	Rural
		Collector Street	Arterial Road ()	Road	Arterial Road (1)	Arterial
	On same side of through road	100m	300m	500m	300m	500m
	On opposite sides of the through road	100m	300m	500m	300m	500m
	Notes:					
	1. In the case of Sub-Arterial Roads, existing landholdings may require intersections at a lesser spacing. In such cases					
	the rollowing absolute minimum spacing is used, but all turns access may not be permitted (i.e. left in/left out or			/left out only):-		
	Intersections on opposite sides:-					
				100m		
					20,000	
	right-left stagger				30m	

CHAPTER 6, PART 3, DIVISION 3 - PARK RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development	Probable Solutions				
	The detailed design of street and road inte Policy PSP28 Civil Infrastructure Design:		ctions conforms to the following sections of Council's Planning Scheme		
	Road Classificatio	n	Planning Scheme Policy PSP28 Civil Infrastructure Design Reference		
	Residential Streets		Part 1 Sect 2.11.0 & Sect 6.16.0		
	Major Roads		Part 1 Sect 3.7.0 & Sect 6.16.0		
	Roundabouts		Part 1 DG 01		
	Local Area Traffic Management		Part 1 DG 05		
SO 27 The alignment and geometry of roads that form identified	PS 27 Bus routes have a min	imum carriage	way width of 9.5m. The maximum grade of the bus route is 12%.		
without facilitating high traffic speeds.	The detailed design of bus route Infrastructure Design.	es and associat	ed facilities conforms with Council's Planning Scheme Policy PSP28 Civil		
SO 28 The road design facilitates recreational trail activities within the neighbourhood and to local activity centres.	PS 28 All recreational trails a <i>Infrastructure Design</i> , Part 1, Se	are designed a ection 6.6.	nd constructed in accordance with Planning Scheme Policy PSP28 Civil		
SO 29 All new <i>Council</i> controlled roads are fully constructed to <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> standards.	PS 29 All new Council controlled roads are fully constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standards.				
SO 30 All Council controlled frontage roads are constructed	H PS 30 All Council controlled frontage roads are constructed to Council's Planning Scheme Policy PSP28 Civil				
Design standards.	Situation Minimum Construction ⁽¹⁾				
	Frontage road unconstructed	ad unconstructed For Access Place and Access Street: full carriageway and verges			
	or gravel road only	For Collector of 6m plus 1 opposite side	r Street: verge adjoining new lots, carriageway to a minimum sealed width .5m wide (full depth pavement) gravel shoulder and table drainage to the e.		
	\wedge	For Major Ro of 7m plus 1 opposite side	oads: verge adjoining new lots, carriageway to a minimum sealed width .5m wide (full depth pavement) gravel shoulder and table drainage to the e.		
	Frontage road sealed ⁽²⁾ but	For Access F	Place and Access Street: reconstruction of full carriageway and verges.		
	Planning Scheme Policy PSP28 Civil Infrastructure Design standard	table drainag	aled width of 6m plus 1.5m wide (full depth pavement) gravel shoulder and ge to the opposite side. The works match into the remaining existing works ssible.		
		For Major Ro of 7m plus 1 opposite side	bads: verge adjoining new lots and carriageway to a minimum sealed width .5m wide (full depth pavement) gravel shoulder and table drainage to the e. The works match into the remaining existing works wherever possible.		

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development	Probable Solutions			
	Frontage road ⁽²⁾ partially constructed to Council's <i>Planning Scheme Policy</i> <i>PSP28 Civil Infrastructure</i> <i>Design</i> standard	For Access Place and Access Street: construction of all remaining carriageway and verges. For Collector Street: verge adjoining new lots and carriageway to join existing works. In any event the minimum sealed width to be constructed is 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side where necessary. The works match into the existing works. For Major Roads: verge adjoining new lots and carriageway to join existing works. In any event the minimum sealed width is 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side where necessary. The works match into the existing works.		
	Notes:			
	1. Construction includes all as	ssociated works (services, streetlighting and linemarking)		
	2. Testing of the existing pay Scheme Policy PSP28 Civi	rement is carried out to confirm whether the existing works meet Council's Planning I Infrastructure Design standard.		
SO 31 Sealed and flood free road access during minor storms is available to the <i>site</i> from the nearest Major Road.	PS 31 Roads or streets giving of 5.5m. These access roads of PSP28 Civil Infrastructure Desig	access to the development from the nearest Major Road are sealed to a minimum width or streets have drainage systems that conform to Council's Planning Scheme Policy <i>n</i> , Part 2, Section 4.7.0.		
SO 32 Vehicular access to existing lots is retained, wherever possible, at new road intersections with existing Collector Streets or existing Major Roads.	PS 32 No solution provided.			
SO 33 The road network design takes into account:	PS 33 Road designs incorpor	ate retention of existing significant trees where ever practicable.		
(1) streetscapes that may be created or already exist;	Road designs minimise the heigl	nts of cut and fill of road formation to less than 2m where ever practicable.		
(2) protection of topography and vegetation;	New roads are located to minimi	se the heights of cut and fill of road formation to less than 2m where ever possible.		
(3) opportunities for views and vistas; and(4) protection of natural drainage and open space systems.	Road designs minimise the amou public open space areas and pro	unt of filling and extent of filling in or adjacent existing natural gullies, <i>waterways</i> , existing posed public open space areas.		
SO 34 The existing road network is upgraded where necessary to cater for the traffic impact from the development.	PS 34 Solutions will need to features.	be determined by traffic studies and adapted to suit the particular <i>site</i> constraints and		
	New intersections onto existing hence. Detailed design is in acco	roads are designed to accommodate traffic volumes and traffic movements ten years ordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1.		
	Existing intersections external development. Detailed design <i>Design</i> , Part 1.	to the <i>site</i> are upgraded as necessary to accommodate increased traffic from the is in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure</i>		
SO 35 "As constructed" information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	PS 35 "As constructed" inform upon completion of the subdivision	ation including test certificates for material quality (if required) and compaction is provided on works.		

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development

3.3.4	Stormwater Management					
SO 36 convey	The major drainage system has the capacity to safely stormwater flows for the 100 year ARI storm event.	PS 36 The roads, drainage pathways, drainage features and <i>waterways</i> safely convey the stormwater flows for the 100 year ARI storm event (ultimate development catchment characteristics upstream).				
		The major drainage system has a minimi upstream).	um design ARI of 100 years (ultimate de	velopment catchment characteristics		
		Carriageways generally have kerb and channel (except where table or swale drains are approved). Catcl turnouts are located to ensure the longitudinal flow in the channel does not exceed the following require Major Storm (100 year ARI):-				
		Lasstian	Major Storm - Maximum	n Flow Width and Depth		
		Location	Major Roads	Minor Roads		
		Where floor levels of adjacent buildings are above road level (kerb and	(a) Total flow contained within road reserve; and	(a) Total flow contained within road reserve; and		
		channeled crowned road)	(b) Freeboard ≥250mm to floor level of adjacent buildings; and	(b) Freeboard ≥250mm to floor level of adjacent buildings; and		
			(c) Maximum depth of flow of 300mm.	(c) Maximum flow depth 300mm.		
		Where floor levels of adjacent buildings are below road level or < 300mm above top of kerb (kerb and channeled crowned road)	5			
		(a) ≥100mm fall on verge towards kerb;	(a) 50mm above top of kerb;	(a) 50mm above top of kerb;		
		(b) <100mm fall on verge towards kerb.	(b) Top of kerb.	(b) Top of kerb.		
	XV	Roads without kerb and channel – table or swale drains used for longitudinal	(a) Total flow contained within road reserve; and	(a) Total flow contained within road reserve; and		
		drainage	(b) Flows do not encroach upon driving lanes; and	(b) Flows do not encroach upon driving lanes; and		
			 (c) Freeboard ≥250mm to floor level of adjacent buildings; and 	(c) Freeboard ≥250mm to floor level of adjacent buildings; and		
			(d) Maximum depth of flow in drain of 300mm.	(d) Maximum depth of flow in drain of 300mm.		
		Notes:				
		1. Widths are measured from channel in	nvert for kerb and channel and from kerb f	ace for kerb only.		
		2. Refer Council's Planning Scheme I requirements.	Policy PSP28 Civil Infrastructure Design,	Part 2, Section 4 for detailed design		
		The product of depth by average velocity pedestrians being swept away and drowned	 in the channel does not exceed 0.6m²/s ed where the value is limited to 0.4m²/s. 	s except where there is a danger of		
		Detailed design of the major drainage syst Design, Part 2, Section 4.	tem conforms to Council's Planning Sche	me Policy PSP28 Civil Infrastructure		

Probable Solutions

num Area at Development Level 1500m² minimum area 1500m² minimum area
num Area at Development Level 1500m ² minimum area 1500m ² minimum area
1500m² minimum area
1500m² minimum area
1500m² minimum area
1500m² minimum area
² 28 Civil Infrastructure Design 228 Civil Infrastructure Design
nent catchment characteristics wed by Council's engineer). loes not exceed the following

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cific Outcomes for Assessable Development			Probable Solutions			
	Minor Storm - Maximum Flow Width			Flow Width		
	Location Design ARI (years)		Major Roads		Minor Roads	
			10		5	
	Normal situation – ke crowned road	erb and channelled	Parking Lane width (usually breakdown lane widt	2.5m) or Fu h.	Ill pavement width with zero depth at crown.	
	Normal situation – no crowned road	o kerb and channel	Contained within the table	e drain. Cor	ntained within the table drain.	
	Normal situation – or	ne way crossfall road	Parking Lane width (usually breakdown lane width	2.5m) or To h. but	high side of road pavement not above top of kerb on low side.	
	Where parking lane r through, acceleration lane	may be replaced by a n, deceleration or turn	1m		Not applicable.	
	Where road falls tow	ards median	1m		Not applicable.	
	Pedestrian crossing	or bus stops	0.45m		0.45m	
	Intersection kerb retu entrances to shoppin major developments	urns (including ng centres and other)	1m		1m	
	Notes:	,				
XC	 Widths are means and the second second	asured from channel inve s Planning Scheme Polic h by average velocity in vept away and drowned v	t for kerb and channel and fro cy PSP28 Civil Infrastructure in the channel does not exceed where the value is limited to 0.4	m kerb face for Design, Part 2, d 0.6m²/s excep 4m²/s.	kerb only. Section 4 for detailed design t where there is a danger of	
	The pipelines are loc centreline and are no	cated on a 1.5m nominal of located under kerb and	alignment measured from the channel.	invert of kerb a	and channel towards the road	
	Pipelines from sag po point. Easements fo and to allow for future	bints in the road are taken or drainage outlets in priva e maintenance access.	through drainage reserves or c ate property have sufficient are	drainage easeme ea to cover all s	ents to an approved discharge <i>tructures</i> (including footings)	
	Gully inlets (catchpits	s) allow for blockage by r	educing the theoretical capacit	ty of the inlet as	follows:-	
	Condition	Inlet Typ	pe Percen	tage of Theore	etical Capacity Allowed	
	Sag	Side Entry	80%			
	Grated		Capacity of kerb opening assuming grate is full		ng assuming grate is fully	
			blocked			

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

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Specific Outcomes for Assessable Development			Probable Sc	olutions	
	Continuous Grade	Side Entry		80%	
		Grated – Longitudinal Ba	rs	60%	
		Grated – Transverse Bars (with or without longitudin	s al bars)	50%	
		Combination		70% - 90 (depending	% of capacity of kerb opening plus grate gupon length of backstone)
	Gully inlets and manh	noles have the following mi	nimum freeboa	rd for the mi	inor storm event:
	S	Bituation		Minim	um freeboard requirements
	Gully inlet on grade			150mm	below invert of kerb and channel
	Gully inlet in sag			150mm	below invert of kerb and channel
	Field inlet			150mm	below top of grate or lip of inlet
	Manhole or junction s	structure			150mm below top of lid
	Stormwater drainage easement widths are	infrastructure through or wir as follows:-	thin private land	d is protected	d by easements in favour of Council . Minimum
	Pipe	Diameter	Minimum E	Easement V	Width (excluding access requirements)
	Stormwater Pipe up t	o 825mm diameter			3m
	Stormwater Pipe up t Sewer Pipe up to 225	o 825mm diameter with 5mm diameter			4m
	Stormwater Pipe grea diameter	ater than 825mm	Easement bo pits.	undary to be	e 1m clear of outside wall of pipe and clear of
XV	Structures at the end of headwalls 3m beyond and to one include 2-wheel drive ve			nd to one si el drive veh	ide of works. Easement is to be extended to icular access to the road.
	Detailed design of the Design, Part 2, Section	Detailed design of the minor drainage system conforms to Council's Plan Design, Part 2, Section 4.			ning Scheme Policy PSP28 Civil Infrastructure
	Storniwater drainage	Item	lage comorms		Standard Drawings
	Road Catchoits				8-30001 to 8-30003, 8-30036
	Field Inlets				8-30004
	Circular Manholes				8-30006 to 8-30008. 8-30010. 8-30011
	Bedding and Backfill	to Pipes and Culverts			8-30013 & 8-30014
	Wingwalls Headwall	s and Aprons to nine Culve	rts		8-30015 to 8 - 30018
	Wingwalls Headwalls	s. Aprons. Bases and crow	n unit hold dow	ns to Box	8-30019 to 8-30024
	Culverts				

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

pecific Outcomes for Assessable Development		Probable Solutions	
38 Road cross drainage ensures that roads remain	PS 38 Road cross drainage is pro	vided to satisfy the following requirements:-	
n residential properties or other premises.	Road Classification	Major Storm	Minor Storm*
F F F	Major Road	Trafficable for flows from the 100 year	For the 50 year ARI storm:-
		ARI storm:-	Flows and flood levels do not
		• Maximum depth 200mm; and $P_{\rm M} < 0.4$	lanes:
		$D_g v_{ave} \ge 0.4$	Minimum pipe system freeboards are maintained
	Minor Road	Trafficable for flows from the 100 year	For the 10 year ARI storm:-
		ARI storm:-	• Flows and flood levels do not
		 Maximum depth 200mm; and D_aV_{aux} ≤ 0.4 	encroach upon the driving lanes;
		g ave	Minimum pipe system freeboards are maintained.
	* 50 ye	ear ARI for Major Roads; 10 year ARI for Minc	r Roads
	Roads remain trafficable during maje Planning Scheme Policy PSP28 Civit Design Guidelines.	or storm events. Detailed design of culverts Infrastructure Design, Part 2, Section 4.12.2	and bridges conforms with Council's and 4.12.3 and Austroads Waterways
	Where there is potential for blockage	by stream debris due to the nature of the catch	ment the cross drainage is constructed
	Afflux from the cross drainage does premises	not flood or reduce the required Q100 freeb	oard to residential properties or other
X	Where the Minor Road provides acce	ss for less than 15 allotments then, in exception	onal circumstances where a structure
	is for the 2 year ARI storm with the s major storm of 6 hours.	ents cannot be reasonably required, the absol tructure designed as a floodway with a maxing the second	nute minimum minor storm design flow mum duration of inundation during the
	All floodways where the depth of flo flood markers provided.	w at any point on the carriageway exceeds 2	200mm have appropriate signage and
39 Stormwater management facilities ensure that drainage charge from the <i>site</i> does not cause nuisance or annoyance to	PS 39 Stormwater runoff from the to any person, property or premises.	site is conveyed to a point of lawful discharge v	vithout causing nuisance or annoyance
person, property or premises.	Runoff rates and pollutant loads are Act 2000 is accepted as a lawful po downstream flood levels during the 1 be further subdivided is not increased	not made worse by runoff from the site . A int of discharge providing the drainage disch 00 year ARI storm and any flooding of downsid.	watercourse as defined in the Water harge from the site does not increase tream allotments which are not able to
40 The stormwater quality management system minimises	PS 40 All developments in excess	of 5 ha provide stormwater quality improvement	ent devices.
environmental impact of stormwater on surface and lerground receiving water quality.	The calculated pollutant concentration the particular catchment, or where no	ns from the <i>site</i> do not exceed <i>Council's</i> adop o WQO has been adopted then the appropriate	ted water quality objectives (WQO) for e ANZECC standards.
	All dry weather flow is treated to redu	ice pollutant loads prior to discharge to a wate	ercourse, creek or river.
	·		

Specific Outcomes for Assessable Development	Probable Solutions			
	The first flush flow from the first 15mm of rainfall over the <i>site</i> is treated to reduce pollutant loads prior to discharge to a <i>watercourse</i> , creek or river.			
	The detailed design of stormwater quality improvement devices conforms to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Sections 3 & 4.			
	Approved proprietary products are installed and mainta	ained in accordance with the manufacturer's recommendations.		
SO 41 The stormwater quality management system minimises	PS 41 Stormwater management facilities do not encroach upon riparian areas.			
the environmental impact of stormwater on natural waterway	Filling does not extend below the Q50 (ultimate) flood contour for creeks and watercourses.			
configuration.	Filling does not extend below the Q100 (ultimate) flood contour for rivers.			
	The number of stormwater outlets to waterways are m	inimised.		
	Natural creeks and watercourses are not channelised	to maximise development area.		
SO 42 The stormwater quality management system minimises	PS 42 Stormwater management facilities do not enc	croach upon existing natural wetlands.		
the environmental impact of stormwater on existing natural wetlands and vegetation.	Significant existing water bodies are retained with app Planning Scheme Policy PSP28 Civil Infrastructure De	ropriate stormwater quality improvement devices (refer Council's <i>sign</i> , Part 2, Section 4.11.5).		
SO 43 Community benefit is maximised through the retention	PS 43 Watercourses are enhanced by re-vegetation	n with natural species occurring in the catchment. The area must		
and enhancement of natural streams and vegetation wherever	be planted with local native trees (of the local Regiona around covers at 1m centres	al Ecosystem if relevant) at 3m centres, shrubs at 2m centres and		
	Existing erosion and scour in watercourses through o	r adjoining the site are repaired and stabilised		
SO 44 Areas constructed as detention basins within public	PS 44 Large dry detention basins are designed to accommodate passive recreation. The basin includes a low flow			
lands are adaptable for passive recreation wherever practicable.	drainage system with the capacity to carry 3mm/hr rainfall in the catchment. The basin floor is sloped at not less than 1(V)			
	to 100(H) towards its perimeter drains.			
SO 45 "As constructed" information including test certificates	PS 45 "As constructed" information including test cer	tificates for material quality (if required) and compaction is provided		
completion of the subdivision works.				
3.3.5 Pedestrian and Cyclist Facilities				
SO 46 The pedestrian and bikeway design provides for safe, attractive and convenient movement of pedestrian and cyclists	PS 46 Footpaths are provided in the following instances:-			
between each residential precinct and major attractions such	Location	Footpath Requirement		
as schools, shops, sporting facilities, bus routes (existing and planned) and railway stations.	Access Place, Access Street & Collector Street	To suit pedestrian movements		
	Major Urban Roads	Both sides		
	Major Rural Roads	To suit pedestrian movements		
	Adjacent pedestrian traffic generators such as schools, shopping centres, etc.	To suit pedestrian movements		
	Along pathways	The full length of the pathway and linking to any footpath within		
		20m, the kerb and channel by way of a kerb ramp or to the carriageway where no kerb and channel exists.		

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Specific Outcomes for Assessable Development	Probable Solutions				
	Footpaths are designed to conform with the following:-				
	Issue	Requirement			
	Width	1.2m minimum for low usage; 1.5m minimum elsewhere except for dual use pedestrian/ cycle paths where minimum width is 2.0m			
	Location	Refer relevant standard drawing for road classification. Meandering of the path is desirable to create visual interest.			
	Clearance to Properties 0.8m for Collector Street; 1m for Sub-Arterial and Arterial				
	Clearance to Kerbline	1.5m for Access Place, Access Street and Collector Street;			
	Cradaa	2.5m Sub-Arterial and Arterial.			
	Graues	Along todus - as per maximum grade for classification of todu,			
	Crossfall	2.5% (1 in 40) minimum:			
		5% (1 in 20) maximum.			
	Crossing Points	Refer <i>Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, Section 6.4.7 & 6.4.8			
	Chicanes are provided at the	ne ends of all pathways to roads (refer Standard Drawing Nos. 8-60033, 8-60034 & 8-60036).			
	Bike/footway terminations at Collector Streets or higher classification roads conform to Standard Drawing No. 8-60034.				
	Bike/footway direct road crossings conform to Standard Drawing No. 8-60045.				
	Detailed design of the footp Section 6.4.0.	baths conforms to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1,			
	Bikeways are provided within and adjacent the <i>site</i> as indicated in <i>Council's</i> Bikeways Plan or adopted local area plan. Detailed design of the bikeways conforms with <i>Council's</i> Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section 6.5.0.				
SO 47 "As constructed" information is provided upon completion	PS 47 "As constructed" i	information is provided upon completion of the subdivision works.			
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Specific Outcomes for Assessable Development		Probable Solutions		
.3.6 Recreational Trails				
O 48 The recreational trail design provides for safe, attractive	PS 48 Recreational trails	are provided in accordance with Council's Recreational Trails Plan.		
nd convenient movement of pedestrians and horse riders on	Trails are designed to conform to the following:			
Sircular routes or links to recreational areas and attractions such as tourist facilities (natural and built), schools, shops and sporting acilities.	Issue	Requirement		
	Trail type:-			
	1. Network Trails	1. Formed and surfaced with 50mm minimum compacted gravel pavement		
	2. Informal Trails	2. Formed and grassed.		
	Grades	Desirable maximum: 20 %		
		Absolute Maximum: 25%		
	Formation width Minimum width: 2m			
	Crossfall	sfall 1(V) in 30(H) minimum; 1(V) in 10(H) maximum.		
	Clearances	Horizontal: 3m; Vertical: 3m		
	Drainage	Drainage works sufficient to provide reasonable all-weather usability and to minimise potential for erosion damage.		
	Typically low flow pipes (375mm diam. min), rock fords or bridges at larger crossings Longitudinal earth or rock lined table drains as necessary.			
	Post and rail fencing is located at the ends of off road trails to minimise access by motor vehicles.			
	Recreational trail direct road	crossings conform to Standard Drawing No. 8-60045.		
O 49 As constructed information is provided upon completion the subdivision works.	PS 49 As constructed information is provided upon completion of the subdivision works.			
3.7 Public Transport				
D 50 The road design provides for potential bus routes	PS 50 and PS 51 Bus route	es are design to conform with the following:		
rnaround areas.	ls	ssue Requirement		
0 51 The road design caters for the extension of existing and ure public transport routes to provide sufficient services that are	Carriageway width	8.0m minimum		
nvenient and accessible to the community.	Grade	12% general maximum;		
		16% absolute maximum over short distances		
	Speed control	by street alignment only		
	Design Vehicle	Coach (tourist bus)		
	Turning	Single movement turns only		
	Fully indented bus bays are provided for Sub-Arterial and Arterial Roads with detailed design conforming with <i>Plannin Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, Section 3.12.2.			
	The road design provides for	r extension of existing and future public transport routes.		

CHAPTER 6, PART 3, DIVISION 3	
3 - PARK RESIDENTIAL SUBDIVISION	
WORKS DESIGN CODE	

Specific Outcomes for Assessable Development	nt Probable Solutions				
SO 52 As constructed information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	PS 52 As constructed information including test certificates for material quality (if required) and compaction is provide upon completion of the subdivision works.				
3.3.8 Public Open Space					
SO 53 Public open space has barriers to its road frontage to prevent access by unauthorised vehicles.	to PS 53 The public open space is provided with log barrier fence (or similar) along the road frontage in acc Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section 6.14.0 and Standard 8-70003.				
SO 54 Public open space that is intended to be used for local neighbourhood park includes sufficiently a level area that is suitable for non-organised recreation and passive relaxation.	PS 54 Public open space that is intended to be used for local neighbourhood park contains one area, constructed necessary, not less than 15m x 15m with a slope less than 5%.				
SO 55 As constructed information including test certificates for material quality (if required) is provided upon completion of the subdivision works.					
3.3.9 Utilities					
SO 56 Development only occurs in locations where there are adequate services and capacity for the desired use.	are PS 56 The design of water supply infrastructure including water mains, pumping stations, pressure mains and associat works complies with the relevant Queensland Government Department's <i>Guidelines for Planning and Design of Urb Water Supply Schemes, Council's</i> Standard Drawings and <i>Council's Planning Scheme Policy PSP28 Civil Infrastructue Design</i> , Part 3. The design of water supply infrastructure includes all Works Internal and any Works External required ensure that all new and existing lots maintain adequate water supply at all times. The design of the electrical reticulation is in accordance with ENERGEX Specification URD <i>Underground Residen</i>				
3.3.9(a) Water Supply					
 SO 57 Where lots are intended to be provided with water supply, the design and construction of the associated infrastructure and connections are provided in a safe, cost-effective, coordinated and efficient manner that supports sustainable development practices. SO 58 Water supply infrastructure is easily controlled and accessed for maintenance and repair. 	PS 57 and PS 58 Staged construction of water supply infrastructure is designed so that each stage is self supporting at the completion of construction of that stage. Water supply infrastructure materials and construction complies with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 3, Section 4. The minimum water main size is 100mm diameter. Water mains are provided along one side of all residential streets (minimum) to the boundaries of the development <i>site</i> . Water mains are provided on both sides of all Major Roads and divided roads. Water mains are located within service corridors shown on the following standard drawings:- Street Classification				
	Access Place Access Street and Collector Street	9 10027			
	Urbon Sub Arterial and Arterial	0-10027			
* *	Rural Sub Arterial and Arterial	8-10013			

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Specific Outcomes for Assessable Development	Probable S	olutions			
	In special circumstances (e.g. infill development where existing services are on <i>Council's</i> previous service allocations – refer Standard Drawing 8-0049), the services are placed on an alternative alignment.				
	Service connections are not made to water mains 250mm diameter and above.				
	Fire hydrants are provided at intervals (measured within the road reserve) not exceeding 80m, at high points (for air release) and at the ends of mains (use a duckfoot bend).				
	Scours are provided at all low points, generally discharging into drainage structures.				
	Fittings and valves at road intersections are contained in the verge and are 500mm clear of the back of the kerb. The water supply system is designed to limit the static head to 80m maximum. Where approved by Council's engine pressure reducing valves are designed and installed to limit the static head to 80m maximum.				
	Water supply infrastructure is contained within roads or other public reserves. In exceptional circumstanc may accept water mains through private land providing an appropriate easement, not less than 3m wide, is reconcilis favour. The water main is constructed centrally within the easement.				
	Sufficient valves are provided, generally on street corners, to li	mit the area of any shut-off to within the following:-			
	(1) 40 lots or premises for 100mm and 150mm mains; and				
	(2) 50 lots or premises for 225mm mains.				
	Valves in the shut-off area are limited to a maximum of six.				
	Water supply infrastructure is designed and constructed in acc	ordance with the following standard drawings:-			
	Item	Standard Drawing No.			
	Hydrant and Valve Installations	8-40002			
	Pavement Markers and Delineators	8-40003			
	Hydrant, Valve and Mains Marker Posts	8-40004			
	Thrust Block Details	8-40006			
	Air Valve Installation Details	8-40007			
	Air Valve Sizing	8-40008			
	Scour Outlets	8-40009			
	Trench Details	8-40010			
	Section Valve Pits and Interconnection Pits	8-40011			
	Pressure Reducing Valve Pits	8-40012 & 8-40013			
	Pressure Gauge Installations	8-40014			
	Offtakes from Mains	8-40015			
	Property Service Conduits	8-40016			

	Service tappin manufactured	gs are constructed usin conventional tapping ba	g ductile iron pre-tapped fittings. For pipe diameters w ands are used.	here re-tapped fittings are not		
	Water supply conduits are provided for the full length of the accessway to rear allotments.					
	Kerb marker p	lates are provided to in	dicate the location of property service conduits.			
	Concrete thrus and vertical), allocation.	st blocks are provided at tees, angle branches, o	all locations where there is unbalanced hydraulic load crosses, dead ends and reducers. Thrust blocks are	including all bends (horizontal contained within the service		
	Water mains a	are provided with the fol	lowing cover:-			
	Main		Cover			
	Diameter (mm)	Verges & Accessway	Council-controlled Road Carriageway ⁽¹⁾	State-controlled Roads		
	100 – 200	600	Greater of 750 or pavement thickness + 150	1200		
	225 – 375	750	Greater of 900 or pavement thickness + 150	1200		
	>375	1000	Greater of 1000 or pavement thickness + 150	1200		
 SO 59 Water mains should provide multiple flow routes for fire fighting and water quality issues. SO 60 The water supply system for the proposed development is planned to conform to <i>Council's</i> broad infrastructure plan for the water supply zone. 	 Where C Class K9 Water mains a For water mains a For water mains a drainage struct Water mains n (1) horizonta (2) horizonta (3) vertically Connection to and the new r satisfactorily of tested and tess PS 59 Wate pathways. PS 60 The water supply z 	Council's Engineer app b). are not laid under storm ins 300mm diameter and ctures. maintain the following maintain the following maintain the following maintain the following maintain the water ma ally where the water ma ally where the water ma ally where the water supply mains are disinfected and disinfected within 10 dat the certificates are provide or mains are constructed water supply system for cone.	roves a reduced cover the watermain is constructed water pipes or electricity conduits. I larger, subsoil drains are provided from low points pre- inimum clearances to existing and future services: in runs along the adjacent service for > 1m:- 800mm; in runs along the adjacent services for < 1m:- 150mm y system is not provided until adequate water supply of nd watertight. Tests certificates are provided to confi ys of the connection to Council's water supply systen ed to confirm that the new mains are watertight. d with the maximum number of cross connections, incl r the proposed development aligns with Council's brains	of ductile iron pipe (minimum ferably draining to stormwater ; can be maintained at all times rm the new mains have been tem. The mains are pressure luding connections through all oad infrastructure plan for the		
	•					

Probable Solutions

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

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CHAPTER 6, PART 3, DIVISION 3 - PARK RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

Probable S	olutions		
PS61 An appropriate service corridor is provided for future	recycled water supply.		
PS 62 Electrical reticulation is provided in residential develop Underground crossings of existing roads are bored. In speci- methods including trenched construction. Road crossing are not at acute angles to the road centreline. Electrical crossings are within the area defined as an <i>inters</i> intersections to enable 11kV cables to be installed without joint	pments. ial circumstances <i>Council's</i> engineer may approve other section under State Legislation or are diagonally across is.		
is)			
PS 63 All works are designed and constructed to AS1158 Engineering Practice – Part 12, Roadway Lighting, 1988 and E Street lighting poles and luminaries are standard ENERGEX pa than roads.	, Public Lighting Code, 1986, Austroads Guide to Traffic ENERGEX standards and approval. atterns under Rate 1 Tariff in roads and Rate 2 Tariff in other lance with the following standard drawings:-		
Street Classification	Standard Drawing No.		
Access Place, Access Street & Collector Street	8-10027		
Urban Sub Arterial & Arterial	8-10013		
Rural Sub Arterial & Arterial	8-10028		
Street lights are generally located opposite common lot bound movements. Street lights are located to minimise the risk of damage from devices and by oversize vehicles which must necessarily leave control devices and some intersections.	aries and are positioned to minimise conflicts with vehicle errant vehicles at intersections, bends and speed control the carriageway to manoeuvre in turn around areas, speed		
Street light pole that are in vulnerable locations (e.g. small isla	nds or roundabouts) use frangible type poles.		
Colour consistency is maintained as far as practicable.			
Lighting designs are prepared in accordance with the Lighting Category specified below:			
Road Classification	Lighting Category		
Urban Arterial	A2		
Urban Sub Arterial	A3		
	1		
Rural Sub Arterial & Arterial	Nil ⁽¹⁾		
	PS61 An appropriate service corridor is provided for future PS 62 Electrical reticulation is provided in residential develor Underground crossings of existing roads are bored. In specimethods including trenched construction. Road crossing are not at acute angles to the road centreline. Electrical crossings are within the area defined as an <i>inters</i> intersections to enable 11kV cables to be installed without joint fs) PS 63 All works are designed and constructed to AS1158 Engineering Practice – Part 12, Roadway Lighting, 1988 and E Street lighting poles and luminaries are standard ENERGEX pathan roads. Street light poles are located on standard alignments in accord Street Classification Access Place, Access Street & Collector Street Urban Sub Arterial & Arterial Rural Sub Arterial & Arterial Street lights are generally located opposite common lot bound movements. Street light pole that are in vulnerable locations (e.g. small isla Colour consistency is maintained as far as practicable. Lighting designs are prepared in accordance with the Lighting Road Classification Urban Sub Arterial Road Classification Intersections (e.g. small isla Colour consistency is maintained as far as practicable. Lighting designs are prepared in accordance with the Lighting House Arterial Intersections Intersections		

Specific Outcomes for Assessable Development	Probable Sc	olutions
	Access Street, Access Place	B2 ⁽²⁾
	Pathways between residential lots	Nil
	General pathways in open space areas	Nil
	Other locations	Subject to individual assessment
	Note: 1. Special lighting at traffic hazards (intersections, rounda crossings, ends of cul de sacs and bridges) may be require	abouts, sharp bends, traffic control devices, pedestrian ed if electricity reticulation is available.
	2. Lighting at traffic hazards (intersections, roundabouts, sr ends of cul de sacs & bridges) and at every fifth (5th) pole	narp bends, traffic control devices, pedestrian crossings, (not including intersections).
	3. The above classification also applies to community titled o	levelopments.
	Pedestrian underpasses or tunnels are lit in accordance with the	e relevant standard.
3.3.9(e) Telecommunications		
SO 64 All lots are able to be provided with a telecommunications service which is designed to give a safe, cost effective, coordinated and efficient system that supports sustainable development practices.	PS 64 Application for telecommunications reticulation is ma subdivision works commencing. Telecommunications reticulation (i.e. conduits & pits) is installed confirmation is provided for the works	de and pre-provisioning confirmation is received prior to d in accordance with Telstra standards and a provisioning
3 3 9/f) Alterations and Polocations	commutation is provided for the works.	
SO 65 Any alteration or relocation in connection with or arising from the development to any service, installation, plant, equipment or other item belonging to or under the control of the telecommunications authority, electricity authorities, the Council or other person engaged in the provision of public utility services, is carried out at no cost to Council prior to the approval of the plan of subdivision.	PS 65 Any alteration or relocation in connection with or arisin equipment or other item belonging to or under the control of the <i>Council</i> or other person engaged in the provision of public utility to the approval of the plan of subdivision.	ng from the development to any service, installation, plant, e telecommunications authority, electricity authorities, the y services has been carried out at no cost to Council prior
3.3.9(g) As Constructed Information		
SO 66 "As constructed" information including test certificates for material quality (if required) and compaction are provided upon completion of the subdivision works.	PS 66 "As constructed" information including test certificates to the relevant authority upon completion of the subdivision wor	for material quality (if required) and compaction is provided ks
3.3.10 Bushfire Hazard		
SO 67 All lots are provided with a safe and secure water supply for fire fighting and protection.	PS 67 All lots have adequate reticulated water supply in acco	ordance with <i>Council's</i> standards.

Division 4 Rural Residential Subdivision Works Design Code

4.1 Overall Outcome

To create rural residential subdivision development that:

- (1) provides safe, convenient and attractive rural residential neighbourhoods;
- (2) provides residential lots that have a high degree of amenity;
- (3) ensures that *sites* are managed during construction to minimise adverse impacts to the environment and on the health and amenity of residents and premises;
- (4) ensures that *sites* are managed during construction to minimise adverse traffic impacts to existing roads;
- (5) ensures that earthworks design and construction is suitable for the intended use of the land and that adverse impacts to the environment and on the health and amenity of residents is minimised;
- (6) have road networks that are designed and constructed to provide an optimum combination of safety, amenity, convenience, economy and environment for residents, road and street users, and the community generally;
- (7) have stormwater management systems that are designed and constructed to provide an optimum combination of safety, amenity, convenience, economy and environment for residents and the community generally;
- (8) have stormwater management systems that are designed and constructed to collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage, and at a development and environmental cost which is acceptable to the community as a whole.
- (9) provide for the convenience and safety of pedestrians and vehicular traffic during frequent or nuisance stormwater flows;
- (10) ensures a reasonable level of pedestrian and vehicular traffic safety and accessibility during storm events;
- (11) minimises pollutant inflows to the receiving waters and controls scour and depositional effects;
- (12) adequately protects people, the natural environment and the built environment from stormwater runoff flows at an acceptable level of risk;
- (13) integrates stormwater management solutions with other uses and the natural environment;
- (14) provides public open space that meets user requirements for outdoor recreational and social activities and for landscaping that contributes to the identity, environmental health and safety of the community;
- (15) ensures, where appropriate, as many existing trees are retained as possible to keep the original character of the land and provide shelter and food for endemic flora and fauna.
- (16) ensures that tree plantings are selected and located appropriately as well as being planted and maintained to be long lasting and low maintenance;
- (17) provides for rural residential lots that are adequately serviced with electricity, street lighting and communications services in a timely, cost effective, coordinated and efficient manner that supports sustainable development practices, and is in accordance with the desired character of the *locality*;
- (18) ensures all electricity, street lighting and communications services that require relocation and/ or alterations as a result of rural residential development are carried out in a timely, cost effective, coordinated and efficient manner; and
- (19) reduces the level of fire risk associated with building in areas which are assessed to have a medium to high bushfire hazard.

Compliance with the Rural Residential Subdivision Works Design Code

This code applies to all operational works relating to development or reconfiguring of rural residential land, but specifically excludes applications for access easements to a road, subdivision by lease and boundary relocations or realignments.

The application of the various specific outcomes will depend upon the size or scale of the proposed development. Some specific outcomes will not apply due to a particular design element not being part of the proposal (e.g. new road). In other instances it may be impractical to apply some specific outcomes, particularly for small infill developments.

4.2

4.3 Development Requirements

The following are the design elements relevant to rural residential subdivision works:-

- (4.3.1) Managing Impacts During Construction
- (4.3.2) Earthworks
- (4.3.3) Road Networks (excludes State-controlled Roads)
- (4.3.4) Stormwater Management
- (4.3.5) Pedestrian & Cyclist Facilities
- (4.3.6) Recreational Trails
- (4.3.7) Public Transport
- (4.3.8) Public Open Space
- (4.3.9) Utilities
 - (4.3.9a) Electricity
 - (4.3.9b) Street Lighting
 - (4.3.9c) Telecommunications
 - (4.3.9d) Alterations and Relocations
 - (4.3.9e) As Constructed Information

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CHAP	Specific Outcomes for Assessable Development	Probable Solutions
TER 6	4.3.1 Managing Impacts During Construction	
5, PART 3 - AS	SO 1 All development <i>sites</i> minimise, as far as possible, any adverse impact to the natural environment caused by erosion, siltation, incineration of cleared vegetation and rubbish.	PS 1 The development works incorporate temporary stormwater runoff, erosion and sediment controls and trash traps designed in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.2.0 and 4.11.4, and Subdivisions Section Technical Note No. 6. The measures are adjusted on-site to maximise their effectiveness.
SESSM		Stormwater runoff, erosion and sediment controls are constructed prior to commencement of any clearing works wherever possible.
ENT CR		All environmentally significant areas to be retained with the development are clearly delineated and fenced prior to development works commencing.
RITERIA	SO 2 All development works are carried out at times which minimise noise impacts to residents.	PS 2 All development works are carried out within the following times, unless otherwise approved in writing by <i>Council's</i> engineer:-
FO		(1) Monday to Friday (other than public holidays) between 7am and 6pm on the same day; and
õ		(2) Saturday (other than public holidays) between 7am and 12 noon on the same day.
ER/		No work is carried out on Sundays and public holidays.
NTIONAL W		Variations to the above working hours may be approved if Council's engineer considers that the work is unlikely to cause significant inconvenience or disruption to the public, or the work is unlikely to cause annoyance or inconvenience to occupants of adjacent properties.
IORKS	SO 3 All development works are managed to minimise dust and siltation nuisance to residents.	PS 3 During construction, dust suppression measures (such as watering of the <i>site</i>) are implemented to protect nearby premises from dust pollution.
	SO 4 All development works avoid the redirection of	PS 4 Temporary construction works do not pond or concentrate stormwater runoff in adjoining properties.
	stormwater runoff where potential impacts to residents may occur.	Temporary construction works do not create nuisance or annoyance to adjoining premises as a result of altering the stormwater runoff pattern exiting the <i>site</i> .
Effect	SO 5 Construction traffic does not adversely impact on the amenity of existing residents.	PS 5 Construction traffic to and from the <i>site</i> uses the highest classification streets or roads where a choice of access routes is available.
ive		Where significant volumes of material are approved to enter or leave the site a haul route is approved by Council.
from 15 D		All materials associated with the development that are dropped, deposited or spilled on streets giving access to the <i>site</i> are removed and the streets are cleaned as soon as practicable after the event. Any damaged areas are repaired and reinstated to their previous condition.
ecembo		Where works are carried out on existing roads a traffic control plan is prepared in accordance with the Manual of Uniform Traffic Control Devices. All traffic control measures are properly erected and maintained during the works.
er 2006		Any access road to the <i>site</i> that has been affected by any material dropped, deposited or spilled on the road as a result of the construction processes associated with the <i>site</i> is cleaned and restored to its original condition.
0	SO 6 Construction traffic is controlled to ensure all traffic movements to and from the <i>site</i> are safe.	PS 6 All traffic movements to and from the <i>site</i> frontage are carried out in a safe manner. Traffic controls are used where <i>site</i> access is approved directly onto a Major Road.
	SO 7 All clearing works are carefully undertaken to ensure the	PS 7 Areas of significant vegetation, proposed park and open space areas and other areas of vegetation or individual
	clearing is limited to the area of the approved infrastructure works, buildings areas and other areas approved in the development	trees designated to be retained with the development are temporarily fenced and flagged.
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CHAP	Specific Outcomes for Assessable Development	Probable Solutions
TER 6, PART	SO 8 All cleared vegetation is disposed of in a manner which minimises, as far as practicable, nuisance and annoyance to existing premises.	PS 8 Where cleared vegetation is chipped or pit burned on <i>site</i> the location of these works is not less than 100m from any dwelling or commercial premises. All vegetation with a diameter below 400mm is chipped and stored on <i>site</i> in an approved location generally on <i>park</i> or public land. Vegetation with a diameter above 400mm is pit burned on <i>site</i> if a suitable location is available. The pit burn is generally carried out as one continuous operation.
3 - A		Chipping and/or pit burning is only undertaken when weather conditions are favourable.
SSE		Burn pit locations are approved in writing by Council's engineer and shown on the "as constructed" drawings.
SSME		Cleared vegetation is not disposed of by above ground burning unless the proposed burn <i>site</i> is at least 250m from the nearest dwelling or workplace building.
NT CRIT	SO 9 All noxious weeds and other materials which are detrimental to the intended use of the land are removed and	PS 9 All groundsel, noxious weeds, stumps, fallen trees, rubbish, car bodies, scrap metal and the like are removed and disposed of in a manner which minimises environmental impact.
ERIA FO	disposed of in a manner which minimises environmental impacts.	Stumps, fallen trees, undergrowth, buildings, <i>structures</i> , foundations and the like in existing and proposed park and open space areas are removed where directed by <i>Council's</i> representative.
DR OI	4.3.2 Earthworks	
PERATION	SO 10 Earthworks design takes into account the slope of the ground, short and long-term slope stability, soft or compressible foundation soils, reactive soils, low density or potentially collapsing	 PS 10 Investigation, planning and design including documentation is carried out in accordance with Australian Standard AS3798. All cut and fill batters are provided with appropriate scour, erosion protection and runoff control measures including catch
ALW	soils, existing fills and soil contamination that may exist on <i>site</i> .	drains at the top of batters and lined batter drains as necessary.
ORI		All fill batters steeper than 1 (V) in 6 (H) in residential lots are fully turfed to prevent scour and erosion.
S	SO 11 Filling is not placed on existing or proposed <i>Park</i> unless specifically approved in writing by <i>Council's</i> engineer	PS 11 Filling is not placed on existing or proposed <i>park</i> unless specifically approved in writing by <i>Council's</i> engineer.
CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS Effective from 15 December 2006 6-329 CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS Effective from 15 December 2006 6-329	SO 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.
ffecti	SO 13 The <i>site</i> is properly prepared for earthworks.	PS 13 The <i>site</i> is prepared in accordance with Australian Standard AS3798.
ve from	SO 14 Fill construction is carried out in a manner which ensures that the works meet the design requirements.	PS 14 The fill construction is carried out in accordance with Australian Standard AS3798.
15	SO 15 Unsuitable materials are not used in structural fill.	PS 15 Materials used for structural fill conform with Australian Standard AS3798.
December 2	SO 16 Earthworks and trench backfill is properly compacted to suit the desired use of the <i>site</i> .	PS 16 The earthworks and trench backfill is compacted to the minimum relative compaction given in Table 5.1 of Australian Standard AS3798. The minimum frequency of field density tests is not less than that specified in Table 8.1 of Australian Standard AS3798.
2006		Any open drains, earth dams and wells on the <i>site</i> are drained, cleaned and filled as specified above.
	SO 17 Steep rock slopes and batters are stable and low maintenance.	PS 17 Steep rock slopes and batters are inspected and certified for long-term stability by a suitably qualified and experienced geotechnical engineer. Stabilisation measures are provided, as necessary, to ensure long-term stability and low maintenance.
6	SO 18 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 18 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.
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Specific Outcomes for Assessable Development		Probab	le Solutions		
4.3.3 Road Networks (excludes State-controlled roads)					
SO 19 The road design and construction has a clear structure	PS 19 to PS 22. The Residential St	reets conform to the f	following:		
and component streets conform to their function in the network.	Design Issue	Access Place	Access Street ⁽¹⁾	Collector Street	
SO 20 The road design and construction has clear physical	Traffic Catchment (maximum)	50 lots (1)	100 lots	350 lots (2)	
distinctions between each type of street. The distinctions are	Street Length (maximum)	900m	1200m ⁽³⁾	1200m ⁽³⁾	
to be based on function, legibility, convenience, traffic volumes, vehicle speeds, public safety and amenity	Design Speed (maximum)	45km/h	60km/h	60km/h	
SO 21 The read design and construction accommodates the	Carriageway Lanes	2 (4)	2	2	
following primary functions:-	Carriageway Width	6m ⁽⁴⁾	7m	8m	
(1) access routes to residences:	Verge Width (minimum)	5m	5m	5m	
 (1) access routes to residences, (2) car parking for visitore; 	Road Width (minimum)	20m	20m	25m	
(2) cal parking for visitors,	Parking	no provision	⁵⁾ no provision	no provision	
(3) social and activity space,	Footpath/recreational trails	as required (as required ⁽⁶⁾	as required ⁽⁶⁾	
(4) stormwater drainage paths (minor and major storms);	Grade (minimum - maximum)	0.4% - 16% (0 0.4% - 16%	0.4% - 12% (8)	
(5) public transport on Collector Streets;	Notes:				
(6) utility services location; and	1. Theoretical limit only. Maximur	m length controls in m	nost cases.		
(7) setting and approach (streetscape and landscape) for	2. May be increased by widening	road reserve.			
adjoining residences.	3. Maximum street lengths are int	er-dependant. Essen	tial criterion is maximum total travel time	e 180 seconds.	
SO 22 The road design and construction accommodates	4. Single lane, 3.5 metres width, v	with Council approva	l only, maximum 12 lots.		
listed in specific outcomes above	5. Parking bays may be required a	at cul-de-sac heads.			
	6. As required by Council's netwo	ork planning .			
	7. 20% absolute maximum grade	under special circum	stances.		
	8. 16% absolute maximum grade	under special circum	stances.		
	The detailed design of Residential S	Streets conforms with	Council's Planning Scheme Policy PS	SP28 Civil Infrastructure	
	Design viz:				
	Road Design Issu	IE	Planning Scheme Policy PSP28	Civil Infrastructure	
			Design Reference	ce	
	Traffic Volume		Part 1 Sect 5.2.4	4	
	Traffic Speed		Part 1 Sect 5.2.3	3	
	Parking		Part 1 Sect 5.2.5	5	
	Carriageway Width		Part 1 Sect 5.2.6.2		
	Street Classification		Part 1 Sect 5.2.9	9	
	Verge		Part 1 Sect 5.2.7	7	
• •	Street Reserve Width		Part 1 Sect 5.2.8	3	
	Geometric Design		Part 1 Sect 5.2.10).2	
	Intersections		Part 1 Sect 5.2.10).3	

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS 4.3.3 SO 19 The road desig and component streets SO 20 The road desi vehicle speeds, public sa SO 21 The road desi following primary functio (2) car parking for visit (3) (4) (5) public transport on

CHAPTER 6, PART 3, DIVISION 4 - RURAL RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

pecific Outcomes for Assessable Development	Probable Solutions				
	Manoeuvring Areas			Part 1 Sect 5.2.10.4	
	Speed Control Devices			Part 1 Sect 5.2.10.5	
	Roundabouts			Part 1 DG 01	
	Landscape Construction on I and Drainage Reserves	Road Reserves, Parks		Part 1 DG 03	
	Local Area Traffic Manageme	ent		Part 1 DG 05	
	Signs and Road Marking			Part 1 Sect 6.7.0	
	Footpaths			Part 1 Sect 6.4.0	
	Recreational Trails			Part 1 Sect 6.6.0	
	Service Conduits			Part 1 Sect 6.8.0	
	Subsoil Drainage			Part 1 Sect 6.9.0	
	Safety Barriers			Part 1 Sect 6.10.0	
	Guide Posts			Part 1 Sect 6.11.0	
	Bridge and Culvert Widths			Part 1 Sect 6.12.0	
	Street and Pathway Lighting			Part 1 Sect 6.13.0	
	Park Barriers			Part 1 Sect 6.14.0	
	Retaining Walls			Part 1 Sect 6.15.0	
	The Major Roads conform to	the following:-			
	Design Issue	Urban Sub-Arterial	Urban Arterial	Rural Sub-Arterial	Rural Arterial
	Traffic Volume (typical)	12,000 vpd	30,000 vpd	12,000 vpd	30,000 vpd
	Design Speed (minimum)	80km/h	100km/h	80km/h	100km/h
	Carriageway Lanes	2	4	2	4
	Carriageway Width	10m (kerbed) (1)	2 x 8.5m (kerbed) (1)	7m	2 x 7m
	Verge Width (minimum)	7.5m	8.5m	7m	7m
	Reserve Width (minimum)	25m (2)	40m (2)	26m	40m
	Footpaths/Cyclepaths	both sides (3)	both sides (3)	as required	as required
	Grade (minimum – maximum)	0.4% - 7% (4)	0.4% - 6% (4)	0.4% - 8%	0.4% - 6%
		1	1	1	

fic Outcomes for Assassable Development		Probable Solutions
c Outcomes for Assessable Development		Probable Solutions
	Notes:	
	1. Does not include cyclelanes.	
	2. Greater width required at intersections.	a with matural design
	3. Cyclepatris may be required in accordance	
	4. Steeper grades may be permitted under s	pecial circumstances.
	The detailed design of Major Urban Roads con	forms with Council's Planning Scheme Policy PSP28 Civil Infrastructure
	Design, viz:-	
	Road Design Issue	Planning Scheme Policy PSP28 Civil Infrastructure Design Reference
	Design Philosophy	Part 1 Sect 3.2.0
	Classification of Major Urban Roads	Part 1 Sect 3.3.0
	Freeways	Part 1 Sect 3.4.0
	Arterial Roads	Part 1 Sect 3.5.0
	Sub-Arterial Roads	Part 1 Sect 3.6.0
	Intersections	Part 1 Sect 3.7.0 & 6.16.0
	Traffic Volume and Capacity	Part 1 Sect 3.8.0
	Design Speed	Part 1 Sect 3.9.0
	Cross Section Elements	Part 1 Sect 3.10.0
	Geometric Design	Part 1 Sect 3.11.0
	Bus Stops	Part 1 Sect 3.12.0
	Pedestrian and Cyclist Facilities	Part 1 Sect 3.13.0
+	Aesthetics and Appurtenances	Part 1 Sect 3.14.0
	Services Streets	Part 1 Sect 3.15.0
	Roundabouts	Part 1 DG 01
	Signs and Road Markings	Part 1 Sect 6.7.0
	Footpaths	Part 1 Sect 6.4.0
	Bikeways	Part 1 Sect 6.5.0
	Service Conduits	Part 1 Sect 6.8.0
	Subsoil Drainage	Part 1 Sect 6.9.0
	Safety Barriers	Part 1 Sect 6.10.0
	Guide Posts	Part 1 Sect 6.11.0
	Bridge and Culvert Widths	Part 1 Sect 6 12 0

Specific Outcomes for Assessable Development		Probable Solutions
	Street and Pathway Lighting	Part 1 Sect 6.13.0
	Park Barriers	Part 1 Sect 6.14.0
	Retaining Walls	Part 1 Sect 6.15.0
	The detailed design of Major Rural Roads co Design, viz:-	onforms with Council's Planning Scheme Policy PSP28 Civil Infrastructo
	Road Design Issue	Planning Scheme Policy PSP28 Civil Infrastructure Design Reference
	Design Philosophy	Part 1 Sect 5.3.2
	Design Speed	Part 1 Sect 5.3.4
	Traffic Volume and Capacity	Part 1 Sect 5.3.5
	Cross Section Elements	Part 1 Sect 5.3.6
	Geometric Design	Part 1 Sect 5.3.7
	Intersections	Part 1 Sect 5.3.8
	The road cross-sections conform with Counc	il's standard drawings as follows:-
	Road Classification	Standard Drawing Number
	Access Place	8-10017 & 8-10020
	Access Street	8-10018 & 8-10020
	Collector Street	8-10019 & 8-10020
	Urban Sub-Arterial Road	8-10006 & 8-10009
	Urban Arterial Road	8-10007 & 8-10009
	Rural Sub-Arterial	8-10023 & 8-1002
	Rural Arterial	8-10024 & 8-1002
	Utility service allocations conform to Council	's standard drawings as follows:-
	Road Classification	Standard Drawing Number
	Access Place, Access Street, Collector Street	t 8-10027
	Urban Sub-Arterial & Arterial	8-10013
	Rural Sub-Arterial & Arterial	8-10028
	Road designs incorporate retention of existing	g significant trees where ever practicable.
	Road designs minimise the heights of cut and	fill of road formation to less than 2m where ever practicable.
	New roads are located to minimise the height	ts of cut and fill of road formation to less than 2m where ever possible.
+	Road designs minimise the amount of filling a public open space areas and proposed public	nd extent of filling in or adjacent existing natural gullies, waterways , existin c open space areas.
	Access to allotments conforms to <i>Council's</i> 6.2.0.	Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section



Specific Outcomes for Assessable Development	DO OF The resident	iel erec is control b	Probable Sol	utions	r Dood eveters where	the number of
(at all stages of development) for residential areas containing a significant number of residential lots	residential lots exceeds 100 (absolute maximum allowed is 150 lots).					the number of
SO 26 Intersections along residential streets are safe and convenient.	PS 26 Intersection spacing conforms with the following:-					
	Intersecting			Through Road		
	Road Location	Access Street & Collector Street	Urban Sub- Arterial Road ⁽¹⁾	Urban Arterial Road	Rural Sub- Arterial Road ⁽¹⁾	Rural Arterial Road
	On same side of through road	100m	300m	500m	300m	500m
	On opposite sides of the through road	100m	300m	500m	300m	500m
	Notes: 1. In the case of Su the following abs	b-Arterial Roads, exis olute minimum spaciı	sting landholdings ma ng is used, but all turr	y require intersectior is access may not be	ns at a lesser spacing. e permitted (i.e. left in/	In such cases /left out only):-
	Intersections on same side				100m	
	Intersections on oppos	site sides:-				
	left-right stagger			100m		
	• right-left stagger				30m	
	The detailed design of street and road intersections conforms to the following sections of Council's Planning Scheme Policy PSP28 Civil Infrastructure Design:-					
	Road Cl	assification	Planning S	Scheme Policy PS Refe	P28 Civil Infrastruct erence	ture Design
	Residential Streets			Part 1 Sect 2.7	11.0 & Sect 6.16.0	
	Major Roads			Part 1 Sect 3.	7.0 & Sect 6.16.0	
	Roundabouts			Part 1 DG 01		
	Local Area Traffic Man	agement		Part 1 DG 05		
SO 27 The alignment and geometry of roads that form identified	PS 27 Bus routes h	ave a minimum carria	ageway width of 9.5m	. The maximum gra	de of the bus route is	12%.
us routes allows for efficient and unimpeded movement of buses ithout facilitating high traffic speeds.	The detailed design of Infrastructure Design.	bus routes and asso	ciated facilities confo	rms with Council's F	Planning Scheme Polic	cy PSP28 Civil
SO 28 The road design facilitates recreational trail activities within the neighbourhood and to local activity centres.	PS 28 All recreation Infrastructure Design,	nal trails are designe Part 1 Section 6.6.	d and constructed in	accordance with Pl	anning Scheme Polic	y PSP28 Civil
 All new Council controlled roads are fully constructed Council's Planning Scheme Policy PSP28 Civil Infrastructure sign standards. 	PS 29 All new Council controlled roads are fully constructed to Council's Planning Scheme Policy PSP28 C Infrastructure Design standards.				y PSP28 Civil	
	,					

Specific Outcomes for Assessable Development		Probable Solutions	
SO 30 All Council controlled frontage roads are constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure	PS 30 All Council controlled frontage roads are constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standards as follows:-		
Design standards.	Situation	Minimum Construction ⁽¹⁾	
	Frontage road unconstructed or gravel road only	 For Access Place and Access Street: full carriageway and verges. For Collector Street: verge adjoining new lots, carriageway to a minimum sealed width of 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. For Major Roads: verge adjoining new lots, carriageway to a minimum sealed width of 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. 	
Fr cc Si In Fr Cc Si In N I. 2.	Frontage road sealed ⁽²⁾ but not constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standard	For Access Place and Access Street: reconstruction of full carriageway and verges. For Collector Street: reconstruction of verge adjoining new lots and carriageway to a minimum sealed width of 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. The works match into the remaining existing works wherever possible.	
		For Major Roads: verge adjoining new lots and carriageway to a minimum sealed width of 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. The works match into the remaining existing works wherever possible.	
	Frontage road ⁽²⁾ partially constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standard	For Access Place and Access Street: construction of all remaining carriageway and verges. For Collector Street: verge adjoining new lots and carriageway to join existing works. In any event the minimum sealed width to be constructed is 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side where necessary. The works match into the existing works.	
		For Major Roads: verge adjoining new lots and carriageway to join existing works. In any event the minimum sealed width is 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side where necessary. The works match into the existing works.	
	Notes: 1. Construction includes all associate 2. Testing of the existing paveming Scheme Policy PSP28 Civil Inf	ciated works (services, streetlighting and linemarking). nent is carried out to confirm whether the existing works meet Council's Planning frastructure Design standards.	
SO 31 Sealed and flood free road access during minor storms is available to the <i>site</i> from the nearest Major Road.	PS 31 Roads or streets giving ac of 5.5m. These access roads or stree <i>Civil Infrastructure Design</i> , Part 2, S	access to the development from the nearest Major Road are sealed to a minimum width bets have drainage systems that conform to Council's Planning Scheme Policy PSP28 Section 4.7.0.	

er practicable.
n where ever possible.
gullies, waterways , existing
rticular site constraints and
raffic movements ten vears
Infrastructure Design, Part 1.
increased traffic from the
8 Civil Infrastructure Design,
) and compaction is provided
stormwater flows for the 100
nt catchment characteristics
proved) Catchnits and kerb
ig criteria for the major storm
th and Depth
Minor Roads
I flow contained within road rve; and
board ≥250mm to floor level
ljacent buildings; and
imum flow depth 300mm
m above top of kerb;
of kerb

CHAPTER 6, PART 3, DIVISION 4 - RURAL RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

PS 32 Road designs incorporate retention of existing significant trees where ever practicable.
Road designs minimise the heights of cut and fill of road formation to less than 2m where ever practicable.
New roads are located to minimise the heights of cut and fill of road formation to less than 2m where ever p
Road designs minimise the amount of filling and extent of filling in or adjacent existing natural gullies, <i>water</i> public open space areas and proposed public open space areas.
PS 33 Solutions will need to be determined by traffic studies and adapted to suit the particular <i>site</i> co features.
New intersections onto existing roads are designed to accommodate traffic volumes and traffic movement hence. Detailed design is in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure D
Existing intersections external to the <i>site</i> are upgraded as necessary to accommodate increased tradevelopment. Detailed design is in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastru</i> Part 1.
PS 34 "As constructed" information including test certificates for material quality (if required) and compacti upon completion of the subdivision works.

Probable Solutions

SO 35 The major drainage system has the capacity to safely convey stormwater flows for the 100 year ARI storm event.

Specific Outcomes for Assessable Development

protection of natural drainage and open space systems.

protection of topography and vegetation;

opportunities for views and vistas; and

Stormwater Management

PS 35 The roads, drainage pathways, drainage features and waterways safely convey the 00 year ARI storm event (ultimate development catchment characteristics upstream).

The major drainage system has a minimum design ARI of 100 years (ultimate development cs upstream).

Carriageways generally have kerb and channel (except where table or swale drains are app erb turnouts are located to ensure the longitudinal flow in the channel does not exceed the followin m (100 year ARI):-

	Major Storm - Maximum I	Flow Width and Depth
Location	Major Roads	Minor Roads
Where floor levels of adjacent buildings are above road level (kerb	(a) Total flow contained within road reserve; and	(a) Total flow contained within road reserve; and
and channeled crowned road)	(b) Freeboard ≥250mm to floor level of adjacent buildings; and	 (b) Freeboard ≥250mm to floor level of adjacent buildings; and
	(c) Maximum depth of flow of 300mm	(c) Maximum flow depth 300mm
Where floor levels of adjacent buildings are below road level or < 300mm above top of kerb (kerb and channeled crowned road)		
 (a) ≥100mm fall on verge towards kerb; 	(a) 50mm above top of kerb;	(a) 50mm above top of kerb;
(b) < 100mm fall on verge towards kerb.	(b) Top of kerb	(b) Top of kerb

cific Outcomes for Assessable Development		Probable Solutions			
	Roads without kerb and channel – table or swale drains used for	(a) Total flow contained within road reserve; and	(a) Total flow contained within road reserve; and		
	longitudinal drainage	(b) Flows do not encroach upon driving lanes; and	(b) Flows do not encroach upon driving lanes; and		
		(c) Freeboard ≥250mm to floor level of adjacent buildings; and	(c) Freeboard ≥250mm to floor level of adjacent buildings; and		
		(d) Maximum depth of flow in drain of 300mm	(d) Maximum depth of flow in drain of 300mm		
	Notes:				
	1. Widths are measured from channel	1. Widths are measured from channel invert for kerb and channel and from kerb face for kerb only.			
	2. Refer Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Section 4 for detailed de requirements.				
	The product of depth by average velocity in the channel does not exceed 0.6m ² /s except where there is a pedestrians being swept away and drowned where the value is limited to 0.4m ² /s.				
	Detailed design of the major drainage sy Design, Part 2, Section 4.	stem conforms to Council's Planning Sche	me Policy PSP28 Civil Infrastructure		
	Residential lots have the following minim	Residential lots have the following minimum development levels:			
	Location of Residential Lot	Minimum Development Level	Minimum Area at Development Level		
	Adjacent Existing Natural Watercourse	The greater of:	1500m ² minimum area		
		Q100 _{ultimate} plus 750mm; or			
		the highest recorded flood level plus 750mm.			
	Adjacent Engineered Channels	The greater of:	1500m ² minimum area		
+ 6		Q100 _{uttimate} plus 500mm for a maintained channel; or			
		Q100 _{uttimate} plus 250mm for an unmaintained channel.			
	Road Drainage	The greater of:	1500m ² minimum area		
		Q100 _{ultimate} plus 250mm; or			
		Q100 _{ultimate} plus 150mm using blocked catchpits or inlets.			
	Overland Flow Paths	The greater of:	1500m ² minimum area		
		Q100 _{ultimate} plus 250mm for a maintained flow path; or			
		• Q100 _{uttimate} plus 150mm for an unmaintained flow path.			

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development		Probable Solutions		
	Detention basins are designed in accordar Part 2, Section 4.8.0.	nce with Council's Planning Scheme Polic	y PSP28 Civil Infrastructure Design,	
	Open channels are designed in accordance Part 2, Section 4.9.0.	ce with Council's Planning Scheme Polic	y PSP28 Civil Infrastructure Design,	
SO 36 The minor stormwater drainage system has the capacity to convey stormwater flows from frequent storm events whilst	PS 36 The minor drainage system has a upstream).	minimum design ARI of 5 years (ultimate de	velopment catchment characteristics	
ensuring pedestrian and vehicular traffic movements are safe and convenient.	Carriageways generally have kerb and channel (except where swale drains are approved by Council's engineer). Catchpits and kerb turnouts are located to ensure the longitudinal flow in the channel does not exceed the following criteria for the minor storm:			
		Minor Storm - Maxin	num Flow Width	
	Location	Major Roads	Minor Roads	
	Design ARI (years)	10	5	
	Normal situation – kerb and channeled crowned road	Parking Lane width (usually 2.5m) or breakdown lane width.	Full pavement width with zero depth at crown.	
	Normal situation – no kerb and channel, crowned road	Contained within the table drain.	Contained within the table drain.	
	Normal situation – one way crossfall road	Parking Lane width (usually 2.5m) or breakdown lane width.	To high side of road pavement but not above top of kerb on low side.	
	Where parking lane may be replaced by a through, acceleration, deceleration or turn lane	1m	Not applicable.	
	Where road falls towards median	1m	Not applicable.	
	Pedestrian crossing or bus stops	0.45m	0.45m	
	Intersection kerb returns (including entrances to shopping centres and other major developments)	1m	1m	
	Notes: 1. Widths are measured from channel ir	nvert for kerb and channel and from kerb fa	ace for kerb only.	
	2. Refer to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Section 4 for detailed design requirements.			
	The product of depth by average velocity in the channel does not exceed 0.6m ² /s except where there is a danger of pedestrians being swept away and drowned where the value is limited to 0.4m ² /s.			
	The pipelines are located on a 1.5m nominal alignment measured from the invert of kerb and channel towards the road centreline and are not located under kerb and channel.			
	Pipelines from sag points in the road are taken through drainage reserves or drainage easements to an approved discharge point. Easements for drainage outlets in private property have sufficient area to cover all <i>structures</i> (including footings) and to allow for future maintenance access.			
	Gully inlets (catchpits) allow for blockage b	by reducing the theoretical capacity of the i	nlet as follows:-	

Specific Outcomes for Assessable Development		Probable Solutions			
	Condition	Inlet Type		Percentage of Theoretical Capacity Allowed	
	Sag	Side Entry		80%	
		Grated		50%	
		Combination		Capacity of kerb opening assuming grate is fully blocked	
	Continuous Grade	Side Entry		80%	
		Grated – Longitudinal Bars		60%	
		Grated – Transverse Bars (with or without longitudinal I	bars)	50%	
		Combination		70% - 90% of capacity of kerb opening plus grate (depending upon length of backstone)	
	Gully inlets and manh	noles have the following minimum	m freeboard	for the minor storm event:-	
		Situation		Minimum freeboard requirements	
	Gully inlet on grade	Gully inlet on grade		150mm below invert of kerb and channel	
	Gully inlet in sag	Gully inlet in sag		150mm below invert of kerb and channel	
	Field Inlet	Field Inlet		150mm below top of grate or lip of inlet	
	Manhole or junction structure		150mm below top of lid		
	Stormwater drainage easement widths are	Stormwater drainage infrastructure through or within private land is protected by easements in favour of Council . Minimum easement widths are as follows:-			
	Piŗ	be Diameter	Mi	nimum Easement Width (excluding access requirements)	
	Stormwater pipe up to 825mm diameter		3m		
	Stormwater pipe up to 825mm diameter with Sewer pipe up to 225mm diameter			4m	
	Stormwater pipe grea	Stormwater pipe greater than 825mm diameter Easement boundary wall of pipe	Easement boundary to be 1m clear of outside wall of pipe and clear of pits.		
	Structures at the end	tructures at the end of headwalls 3m b extende		eyond and to one side of works. Easement is to be d to include 2-wheel drive vehicular access to the road.	
	Detailed design of the minor drainage system conforms to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Section 4.				
	Stormwater drainage reticulation and cross drainage conforms to the following standard drawings:-				
•		Item		Standard Drawings Numbers	
	Road Catchpits		8-30001 to 8-30003, 8-30036		
	Field Inlets		8-30004		
	Circular Manholes		8-30006 to 8-30008, 8-30010, 8-30011		
	Bedding and Backfill to Pipes and Culverts			8-30013 & 8-30014	
Specific Outcomes for Assessable Development	Probable Solutions				
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	Wingwalls, Headwalls and Aprons to pipe Culverts		8-30015 to 8 - 30018		
	Wingwalls, Headwalls, downs to Box Culverts	Aprons, Bases and crown unit hold	8-30019 to 8-30024		
SO 37 Road cross drainage ensures that roads remain	PS 37 Road cross of	Irainage is provided to satisfy the following requirer	nents:-		
trafficable during major storm events without flooding or impacting upon residential properties or other premises.	Road Classification	Major Storm	Minor Storm*		
	Major Road	Trafficable for flows from the 100 year ARI storm:- (a) Maximum depth 200mm; and	For the 50 year ARI storm:- (a) Flows and flood levels do not encroach upon the driving lanes;		
		(b) $D_g V_{ave} \le 0.4$	(b) Minimum pipe system freeboards are maintained.		
	Minor Road	Trafficable for flows from the 100 year ARI	For the 10 year ARI storm:-		
		storm:- (c) Maximum depth 200mm; and	(a) Flows and flood levels do not encroach upon the driving lanes;		
		(c) $D_g V_{ave} \leq 0.4$	(b) Minimum pipe system freeboards are maintained.		
		* 50 vear ARI for Maior Roads: 10 vear AR	l for Minor Roads		
	Planning Scheme Politi Design Guidelines. Where there is potentia using box culverts or a Afflux from the cross of premises. Where the Minor Road conforming with the at is for the 2 year ARI st Major Storm of 6 hours All floodways where the markeen provided	<i>cy PSP28 Civil Infrastructure Design</i> , Part 2, Section al for blockage by stream debris due to the nature of bridge <i>structure</i> . drainage does not flood or reduce the required Q provides access for less than 15 allotments then, i pove requirements cannot be reasonably required, form with the <i>structure</i> designed as a floodway with s. e depth of flow at any point on the carriageway exce	the catchment the cross drainage is constructed 100 freeboard to residential properties or other n exceptional circumstances where a <i>structure</i> the absolute minimum minor storm design flow th a maximum duration of inundation during the eds 200mm have appropriate signage and flood		
SO 38 Stormwater management facilities ensure that drainage	PS 38 Stormwater r	unoff from the <i>site</i> is conveyed to a point of lawful di	scharge without causing nuisance or annoyance		
discharge from the <i>site</i> does not cause nuisance or annoyance to	to any person, property	y or premises.			
any person, property or premises.	Runoff rates and pollut	ant loads are not made worse by runoff from the s i	ite.		
	A watercourse as de discharge from the sit downstream allotments	fined in the <i>Water Act 2000</i> is accepted as a law te does not increase downstream flood levels durin s which are not able to be further subdivided is not	wful point of discharge providing the drainage ng the 100 year ARI storm and any flooding of increased.		

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CHAF	Specific Outcomes for Assessable Development	Pro	bable Solutions	
TER 6, PAR	SO 39 The stormwater quality management system minimises the environmental impact of stormwater on surface and underground receiving water quality.	PS 39 All developments in excess of 5ha provide s The calculated pollutant concentrations from the <i>site</i> of the particular catchment or, where no WQO has been	stormwater quality improvement devices. do not exceed Council's adopted water quality objectives (WQO) for adopted, then the appropriate ANZECC standards.	
f 3 - Asses		All dry weather flow is treated to reduce pollutant load The first flush flow from the first 15mm of rainfall ove <i>watercourse</i> , creek or river.	Is prior to discharge to a watercourse , creek or river. r the site is treated to reduce pollutant loads prior to discharge to a	
SMENT		The detailed design of stormwater quality improvement <i>Civil Infrastructure Design</i> , Part 2, Sections 3 & 4.	ent devices conforms to Council's Planning Scheme Policy PSP28	
R		Approved proprietary products are installed and maintained in accordance with the manufacturer's recommendations.		
TER	SO 40 The stormwater quality management system minimises	PS 40 Stormwater management facilities do not er	ncroach upon riparian areas.	
Ā	configuration	Filling does not extend below the Q50 (ultimate) flood	contour for creeks and watercourses.	
ÔR	coniguration	Filling does not extend below the Q100 (ultimate) floo	d contour for rivers.	
OPERA		The number of stormwater outlets to waterways are	minimised.	
		Natural creeks and watercourses are not channelise	d to maximise development area.	
	SO 41 The stormwater quality management system minimises	PS 41 Stormwater management facilities do not encroach upon existing natural wetlands.		
VAL WO	the environmental impact of stormwater on existing natural wetlands and vegetation.	Significant existing water bodies are retained with app Planning Scheme Policy PSP28 Civil Infrastructure D	ropriate stormwater quality improvement devices (refer to Council's esign, Part 2, Section 4.11.5).	
ORKS	SO 42 Community benefit is maximised through the retention and enhancement of natural streams and vegetation wherever practicable	 PS 42 Watercourses are enhanced by re-vegetation with natural species occurring in the catchment. The area must be planted with local native trees (of the local Regional Ecosystem if relevant) at 3m centres, shrubs at 2m centres and ground covers at 1m centres. Existing erosion and scour in watercourses through or adjoining the site are repaired and stabilised. 		
Effecti	SO 43 Areas constructed as detention basins within public lands are adaptable for passive recreation wherever practicable.	PS 43 Large dry detention basins are designed to drainage system with the capacity to carry 3mm/hr rai to 100(H) towards its perimeter drains.	o accommodate passive recreation. The basin includes a low flow nfall in the catchment. The basin floor is sloped at not less than 1(V)	
ve from 1	SO 44 "As constructed" information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	PS 44 "As constructed" information including test of upon completion of the subdivision works.	ertificates for material quality (if required) and compaction is provided	
5 Dec	4.3.5 Pedestrian and Cyclist Facilities			
emb	SO 45 The pedestrian and bikeway paths are designed	PS 45 Footpaths are provided in the following insta	ances:-	
er 2	pedestrian and cyclists between each residential precinct and	Location	Footpath Requirement	
006	major attractions such as schools, shops, sporting facilities, bus	Access Place, Access Street & Collector Street	To suit pedestrian movements	
	routes (existing and planned) and railway stations.	Major Rural Roads	To suit pedestrian movements	
		Adjacent pedestrian traffic generators such as schools, shopping centres, etc.	To suit pedestrian movements	
6-3		Along pathways	The full length of the pathway and linking to any footpath within 20m, the kerb and channel by way of a kerb ramp or to the carriageway where no kerb and channel exists.	
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Specific Outcomes for Assessable Development	Probable Solutions	
	Footpaths are designed to c	conform with the following:-
	Issue	Requirement
	Width	1.2m minimum for low usage; 1.5m minimum elsewhere except for dual use pedestrian/ cvcle paths where minimum width is 2m
	Location	Refer relevant standard drawing for road classification. Meandering of the path is desirable to create visual interest
	Clearance to Properties	0.8m for Collector Street
	Clearance to Kerbline	1m for Sub-Arterial and Arterial 1.5m for Access Place, Access Street & Collector Street
	Grades	2.5m Sub-Arterial and Arterial Along roads - as per maximum grade for classification of road
	Ciddoo	Pathway reserves and open space – 10% desirable maximum
	Crossfall	2.5% (1 in 40) minimum
		5% (1 in 20) maximum
	Crossing Points	Refer to Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section 6.4.7 & 6.4.8
	Chicanes or vehicle barriers	are provided at the ends of all pathways to roads.
	Detailed design of the foot Part 1. Section 6.4.0.	paths conforms to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design,
O 46 "As constructed" information is provided upon completion f the subdivision works	PS 46 "As constructed" in	nformation is provided upon completion of the subdivision works.
.3.6 Recreational Trails		
0.47 Recreational trails are designed to provide for safe	PS 47 Recreational trails	are provided in accordance with Council's Recreational Trails Plan
tractive and convenient movement of pedestrians and horse	Trails are designed to confo	rm to the following:-
lers on circular routes or links to recreational areas and	Issue	Requirement
tractions such as tourist facilities (natural and built), schools,	Trail Type:-	
ops and sporting facilities.	1. Network Trails	1. Formed and surfaced with 50 mm minimum compacted gravel pavement
	2. Informal Trails	2. Formed and grassed.
	Grades	Absolute Maximum 25%
	Exermation width	Absolute Maximum. 23%
	Crossfall	1(V) in $30(H)$ minimum; $1(V)$ in $10(H)$ maximum.
	Clearances	Horizontal: 3m; Vertical: 3m
	Drainage	Drainage works sufficient to provide reasonable all-weather useability and to minimise potential for erosion damage.
		Typically low flow pipes (375mm diam. min), rock fords or bridges at larger crossings. Longitudinal earth or rock lined table drains as necessary.
		Longituumai eartin oi rock iineu table urains as necessary.

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Effective from 15 December 2006

CHAPTER 6, PART 3, DIVISION 4 - RURAL RESIDENTIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development	Probable Solutions		
	Post and rail fencing is located at the ends of off road trails to minimise access by motor vehicles.		
	Recreational trail direct road crossin	ngs conform to Standard Drawing No. 8-60045.	
SO 48 As constructed information is provided upon completion of the subdivision works.	PS 48 As constructed information	n is provided upon completion of the subdivision works.	
4.3.7 Public Transport			
SO 49 The road design provides for potential bus routes	PS 49 and PS 50 Bus routes are design to conform with the following:		
including safe convenient stops and, where necessary, bus	Issue	Requirement	
turnaround areas.	Carriageway Width	8.0m minimum	
future public transport routes to provide sufficient services that are	Grade	12% general maximum 16% absolute maximum over short distances	
	Speed Control	Generally by street alignment only	
	Design Vehicle	Coach (tourist bus)	
	Turning	Single movement turns only	
	Fully indented bus bays are provided for Sub-Arterial and Arterial Roads with detailed design conforming with <i>Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, Section 3.12.2.		
	The road design provides for extens	sion of existing and future public transport routes.	
SO 51 "As constructed" information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	s PS 51 "As constructed" information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.		
4.3.8 Public Open Space			
SO 52 Public open space has barriers to its road frontage to prevent access by unauthorised vehicles.	 PS 52 The public open space is provided with log barrier fence (or similar) along the road frontage in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section 6.14.0 and Standard Drawing No. 8-70003. 		
SO 53 Public open space that is intended to be used for local neighbourhood park includes sufficiently level areas that are suitable for non-organised recreation and passive relaxation.	al PS 53 Public open space that is intended to be used for local neighbourhood park contains one area, constructed if necessary, not less than 15m x 15m with a slope less than 5%.		
SO 54 "As constructed" information including test certificates for material quality (if required) is provided upon completion of the subdivision works.	 PS 54 "As constructed" information including test certificates for material quality (if required) is provided upon completion of the subdivision works. 		
4.3.9 Utilities			
SO 55 Development only occurs in locations where there are adequate services and capacity for the desired use.	PS 55 The design of the electri <i>Residential Distribution</i> .	cal reticulation is in accordance with ENERGEX Specification URD Underground	

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Specific Outcomes for Assessable Development	Probable Se	olutions	
4.3.9(a) Electricity			
SO 56 Where lots are intended to be provided with reticulated	PS 56 Electrical reticulation is provided in residential develo	pments.	
electricity the service is underground with design and construction of the associated infrastructure and connections being provided	Underground crossings of existing roads are bored. In speci	al circumstances Council's engineer may approve other	
in a safe, cost-effective, coordinated and efficient manner that	methods including trenched construction.		
supports sustainable development practices.	Road crossing are not at acute angles to the road centreline.	sostion under State Logislation or are diagonally across	
	intersections to enable 11kV cables to be installed without joint	s.	
4.3.9(b) Street Lighting – (excludes State-controlled road	ds)		
SO 57 All roads are provided with street lighting which is designed and constructed to provide a safe, cost-effective,	PS 57 All works are designed and constructed to AS1158 Engineering Practice – Part 12, Roadway Lighting, 1988 and E	, Public Lighting Code, 1986, Austroads Guide to Traffic NERGEX standards and approval.	
coordinated and efficient system that supports sustainable development practices.	Street lighting poles and luminaries are standard ENERGEX pathan roads.	tterns under Rate 1 Tariff in roads and Rate 2 Tariff in other	
	Street light poles are located on standard alignments in accord	ance with the following Standard Drawings:-	
	Street Classification	Standard Drawing No.	
	Access Place, Access Street and Collector Street	8-10027	
	Urban Sub Arterial and Arterial	8-10013	
	Rural Sub Arterial and Arterial	8-10028	
	Street lights are generally located opposite common lot boundaries and are positioned to minimise conflicts with vehicle movements.		
XC	Street lights are located to minimise the risk of damage from devices and by oversize vehicles which must necessarily leave control devices and some intersections.	errant vehicles at intersections, bends and speed control the carriageway to manoeuvre in turn around areas, speed	
	Street light poles that are in vulnerable locations (e.g. small islands or roundabouts) use frangible type poles.		
+	Lighting designs are prepared in accordance with the Lighting Category specified below:-		
	Road Classification	Lighting Category	
	Urban Arterial	A2	
	Urban Sub Arterial	A3	
	Rural Sub Arterial and Arterial	Nil ⁽¹⁾	
	Collector	B2 ⁽²⁾	
	Access Street, Access Place	B2 ⁽²⁾	
	Pathways between residential lots	Nil	
• •	General pathways in open space areas	Nil	
	Other locations	Subject to individual assessment	

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Specific Outcomes for Assessable Development	Probable Solutions
	 Note: Special lighting at traffic hazards (intersections, roundabouts, sharp bends, traffic control devices, pedestrian crossings, ends of cul de sacs and bridges) may be required if electricity reticulation is available. Lighting at traffic hazards (intersections, roundabouts, sharp bends, traffic control devices, pedestrian crossings, ends of cul de sacs and bridges) and at every (5th) pole (not including intersections) The above classification also applies to community titled developments.
4.3.9(c) Telecommunications	
SO 58 All lots are able to be provided with a telecommunications service which is designed to give a safe, cost effective, coordinated and efficient system that supports sustainable development practices.	PS 58 Application for telecommunications reticulation is made and pre-provisioning confirmation is received prior to subdivision works commencing. Telecommunications reticulation (i.e. conduits and pits) is installed in accordance with Telstra standards and a provisioning confirmation is provided for the works.
4.3.9(d) Alterations and Relocations	
SO 59 Any alteration or relocation in connection with or arising from the development to any service, installation, plant, equipment or other item belonging to or under the control of the telecommunications authority, electricity authorities, the <i>Council</i> or other person engaged in the provision of public utility services is carried out prior to the approval of the plan of subdivision.	PS 59 No solution provided.
4.3.9(e) As Constructed Information	
SO 60 "As constructed" information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	PS 60 "As constructed" information including test certificates for material quality (if required) and compaction is provided to the relevant authority upon completion of the subdivision works.

Division 5 Industrial Subdivision Works Design Code

5.1 Overall Outcome

To create industrial subdivision development that:-

- (1) Provides safe, functional, convenient and attractive industrial areas;
- (2) Ensures that *sites* are managed during construction to minimise adverse impacts to the environment and on the health and amenity of residents and premises;
- (3) Ensures that *sites* are managed during construction to minimise adverse traffic impacts to existing roads;
- (4) Ensure that earthworks design and construction is suitable for the intended use of the land and that adverse impacts to the environment and on the health and amenity of residents is minimised;
- (5) To design and construct road networks which provide an optimum combination of Safety, Amenity, Convenience, Economy and Environment for residents, road and street users, and the community generally;
- (6) To design and construct stormwater management systems which provide an optimum combination of Safety, Amenity, Convenience, Economy and Environment for residents and the community generally;
- (7) To collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage, and at a development and environmental cost which is acceptable to the community as a whole;
- (8) Provides for the convenience and safety for pedestrians and vehicular traffic during frequent or nuisance stormwater flows;
- (9) Limits flooding of public and private property, both within the catchment and downstream, to ensure that flood inundation occurs on rare occasions only;
- (10) Ensures a reasonable level of pedestrian and vehicular traffic safety and accessibility;
- (11) To minimise pollutant inflows to the receiving waters, and controls scour and depositional effects;
- (12) Controls and temporarily detains within each catchment as much incident rainfall and runoff as possible and reduces the impact of urbanisation;
- (13) Adequately protects people, the natural environment and the built environment at an acceptable level of risk;
- (14) Integrates stormwater management solutions with other uses and the natural environment;
- (15) Provides safe, convenient and legible networks for walking and cycling to points of attraction and beyond the development while preserving maximum visual amenity;
- (16) Ensures that opportunities exist for choice in the mode of transport and provides for costeffective and energy efficient public transport services that are accessible and convenient to the community;
- (17) Provides public open space that meets user requirements for outdoor recreational and social activities and for landscaping that contributes to the identity, environmental health and safety of the community;
- (18) Ensures, where appropriate, as many existing trees are retained as possible to keep the original character of the land and provide shelter and food for endemic flora and fauna;
- (19) Ensures that tree plantings are selected and located appropriately as well as being planted and maintained to be long lasting and low maintenance;
- (20) Provides for industrial lots that are adequately serviced with sewerage, water supply, electricity, street lighting and communications services in a timely, cost effective, coordinated and efficient manner that supports sustainable development practices, and is in accordance with the desired character of the *locality*;
- (21) Ensures that the water supply and sewerage service provision complies with the relevant state guidelines for design;
- (22) Minimises the impact on amenity due to provision of water supply and sewerage infrastructure;
- (23) Ensures that all sewerage, water supply, electricity, street lighting and communications services that require relocation and/or alterations as a result of industrial development are carried out in a timely, cost effective, coordinated and efficient manner;
- (24) Provides the design requirements for all types of industrial lots within the *Shire*; and
- (25) to provide designers with the relevant specific outcomes and, where possible, probable solutions to achieve the design overall outcomes associated with the various elements of subdivision works design.



5.2 Compliance with the Industrial Subdivision Works Design Code

This code applies to all operational works relating to development or reconfiguring of industrial land in the Service Industry and General Industry **zones**, but specifically excludes applications for access easements to a road, subdivision by lease and boundary relocations or realignments.

The application of the various specific outcomes will depend upon the size or scale of the proposed development. Some specific outcomes will not apply due to a particular design element not being part of the proposal (e.g. new road). In other instances it may be impractical to apply some specific outcomes, particularly for small infill developments.

5.3 Development Requirements

The development requirements of this code relate to the following elements:-

- (5.3.1) Managing Impacts During Construction
- (5.3.2) Earthworks
- (5.3.3) Road Networks (excludes State-controlled Roads)
- (5.3.4) Stormwater Management
- (5.3.5) Pedestrian & Cyclist Facilities
- (5.3.6) Public Transport
- (5.3.7) Public Open Space
- (5.3.8) Utilities
 - (5.3.8a) Water Supply
 - (5.3.8b) Sewerage
 - (5.3.8c) Recycled Water
 - (5.3.8d) Electricity
 - (5.3.8e) Street Lighting
 - (5.3.8f) Telecommunications
 - (5.3.8g) Alterations and Relocations
 - (5.3.8h) As Constructed Information

Specific Outcomes for Assessable Development	Probable Solutions
5.3.1 Managing Impacts During Construction	
SO 1 All development <i>sites</i> minimise, as far as possible, any adverse impact to the natural environment caused by erosion, siltation, incineration of cleared vegetation and rubbish.	PS 1 The development works incorporate temporary stormwater runoff, erosion and sediment controls and trash traps designed in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.2.0 and 4.11.4, and Subdivisions Section Technical Note No. 6. The measures are adjusted on-site to maximise their effectiveness.
	Stormwater runoff, erosion and sediment controls are constructed prior to commencement of any clearing works wherever possible. All environmentally significant areas to be retained with the development are clearly delineated and fenced prior to
	development works commencing.
SO 2 All development works are carried out at times which minimise noise impacts to residents.	PS 2 All development works are carried out within the following times, unless otherwise approved in writing by Council's engineer:-
	(1) Monday to Friday (other than public holidays) between 7am and 6pm on the same day; and
	(2) Saturday (other than public holidays) between 7am and 12 noon on the same day.
	No work is carried out on Sundays and public holidays.
	Variations to the above working hours may be approved if Council's engineer considers that the work is unlikely to cause significant inconvenience or disruption to the public, or the work is unlikely to cause annoyance or inconvenience to occupants of adjacent properties.
SO 3 All development works are managed to minimise dust and siltation nuisance to residents and other premises.	PS 3 During construction, dust suppression measures (such as watering of the <i>site</i>) are implemented to protect nearby premises from dust pollution.
SO 4 All development works avoid the redirection of	PS 4 Temporary construction works do not pond or concentrate stormwater runoff in adjoining properties.
stormwater runoff where potential impacts to residents and other premises may occur.	Temporary construction works do not create nuisance or annoyance to adjoining premises as a result of altering the stormwater runoff pattern exiting the <i>site</i> .
SO 5 Construction traffic does not adversely impact on the amenity of existing residents.	PS 5 Construction traffic to and from the <i>site</i> uses the highest classification streets or roads where a choice of access routes is available.
	Where significant volumes of material are approved to enter or leave the site, a haul route is approved by Council.
	All materials associated with the development that are dropped, deposited or spilled on streets giving access to the <i>site</i> are removed and the streets are cleaned as soon as practicable after the event. Any damaged areas are repaired and reinstated to their previous condition.
	Where works are carried out on existing roads a traffic control plan is prepared in accordance with the Manual of Uniform Traffic Control Devices. All traffic control measures are properly erected and maintained during the works.
	Any access road to the <i>site</i> that has been affected by any material dropped, deposited or spilled on the road as a result of the construction processes associated with the <i>site</i> is cleaned and restored to its original condition.
SO 6 Construction traffic is controlled to ensure all traffic movements to and from the <i>site</i> are safe.	PS 6 All traffic movements to and from the <i>site</i> frontage are carried out in a safe manner. Traffic controls are used where <i>site</i> access is approved directly onto a Major Road.
SO 7 All clearing works are carefully undertaken to ensure the clearing is limited to the area of the approved infrastructure works, buildings areas and other areas approved in the development permit.	PS 7 Areas of significant vegetation, proposed park and open space areas and other areas of vegetation or individual trees designated to be retained with the development are temporarily fenced and flagged.

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CHAPTER 6, PART 3, DIVISION 5 - INDUSTRIAL SUBDIVISION WORKS DESIGN CODE

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CHAF	Specific Outcomes for Assessable Development	Probable Solutions
TER 6, PART 3	SO 8 All cleared vegetation is disposed of in a manner which minimises, as far as practicable, nuisance and annoyance to existing premises.	PS 8 Where cleared vegetation is chipped or pit burned on <i>site</i> the location of these works is not less than 100m from any dwelling or commercial premises. All vegetation with a diameter below 400mm is chipped and stored on <i>site</i> in an approved location generally on <i>park</i> or public land. Vegetation with a diameter above 400mm is pit burned on <i>site</i> if a suitable location is available. The pit burn is generally carried out as one continuous operation.
- A		Chipping and/or pit burning is only undertaken when weather conditions are favourable.
SSE		Burn pit locations are approved in writing by Council's engineer and shown on the "as constructed" drawings.
VSS		Cleared vegetation is not disposed of by above ground burning.
nent ci	SO 9 All noxious weeds and other materials which are detrimental to the intended use of the land are removed and	PS 9 All groundsel, noxious weeds, stumps, fallen trees, rubbish, car bodies, scrap metal and the like are removed and disposed of in a manner which minimises environmental impact.
RITERI <i>I</i>	disposed of in a manner which minimises environmental impacts.	Stumps, fallen trees, undergrowth, buildings, <i>structures</i> , foundations and the like in existing and proposed <i>park</i> and open space areas are removed where directed by <i>Council's</i> representative.
FOR	5.3.2 Earthworks	
OPER/	SO 10 Earthworks design takes into account the slope of the ground, short and long-term slope stability, soft or compressible	PS 10 Investigation, planning and design including documentation is carried out in accordance with Australian Standard AS3798.
ATIONA	foundation soils, reactive soils, low density or potentially collapsing soils, existing fills and soil contamination that may exist on <i>site</i> .	All cut and fill batters are provided with appropriate scour, erosion protection and runoff control measures including catch drains at the top of batters and lined batter drains as necessary.
۲ ۲		All fill batters steeper than 1 (V) in 6 (H) in industrial lots are fully turfed to prevent scour and erosion.
ORKS	SO 11 Filling is not placed on existing or proposed <i>park</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 11 Filling is not placed on existing or proposed <i>park</i> unless specifically approved in writing by <i>Council's</i> engineer.
	SO 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.
Eff	SO 13 The <i>site</i> is properly prepared for earthworks.	PS 13 The <i>site</i> is prepared in accordance with Australian Standard AS3798.
ective f	SO 14 Fill construction is carried out in a manner which ensures that the works meet the design requirements.	PS 14 The fill construction is carried out in accordance with Australian Standard AS3798.
rom 1	SO 15 Unsuitable materials are not used in structural fill.	PS 15 Materials used for structural fill conform with Australian Standard AS3798.
15 Decembe	SO 16 Earthworks and trench backfill is properly compacted to suit the desired use of the <i>site</i> .	PS 16 The earthworks and trench backfill is compacted to the minimum relative compaction given in Table 5.1 of Australian Standard AS3798. The minimum frequency of field density tests is not less than that specified in Table 8.1 of Australian Standard AS3798.
er 20		Any open drains, earth dams and wells on the <i>site</i> are drained, cleaned and filled as specified above.
906	SO 17 Steep rock slopes and batters are stable and low maintenance.	PS 17 Steep rock slopes and batters are inspected and certified for long-term stability by a suitably qualified and experienced geotechnical engineer. Stabilisation measures are provided, as necessary, to ensure long-term stability and low maintenance.
	SO 18 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 18 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.
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Specific Outcomes for Assessable Development Probable Solutions Road Networks (excludes State-controlled roads) 5.3.3 **SO 19** The road design and construction has a clear structure PS 19 to PS 22 The Industrial Roads conform to the following:and component streets conform to their function in the network. **Design Issue** Access Road **Collector Road** SO 20 The road design and construction has clear physical Maximum. Traffic Catchment 8 ha 30 ha distinctions between each type of street based on function, Minimum. Design Speed 40km/h 60km/h legibility, convenience, traffic volumes, vehicle speeds, public safety and amenity. **Total Carriageway Width** 12m 14m Minimum. Verge Width 4m 4m SO 21 The road design and construction accommodates the following primary functions:-Minimum. Reserve Width 20m 24m Maximum. Grade 6% (desirable) 6.0% (desirable) (1) access to lots; 10% (absolute) 8% (absolute) (2) on street car parking; Min. Grade 0.4% 0.4% (3) stormwater drainage paths (minor and major storms); The detailed design of Industrial Roads conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure (4) public transport on Collector Roads and Major Roads; Desian. viz: (5) utility services location; and Planning Scheme Policy PSP28 Civil Infrastructure Road Design Issue (6) setting and approach (streetscape and landscape). **Design** Reference SO 22 The road design and construction accommodates Design Speed Part 1 Sect 4.5.0 adequate verge and carriageway width for the primary functions Traffic Volume and Capacity Part 1 Sect 4.6.0 listed in specific outcomes above. Part 1 Sect 4.7.0 Parking Carriageway Design Part 1 Sect 4.8.0 Part 1 Sect 4.9.0 Verge Road Reserve Part 1 Sect 4.10.0 Geometric Design Part 1 Sect 4,11.0 Intersections Part 1 Sect 4.12.0 & 6.16.0 Manoeuvring Areas Part 1 Sect 4.13.0 Roundabouts Part 1 DG 01 Landscape Construction on Road Reserves. Part 1 DG 03 Parks and Drainage Reserves Signs and Road Marking Part 1 Sect 6.7.0 Footpaths Part 1 Sect 6.4.0 **Bikeways** Part 1 Sect 6.5.0 Service Conduits Part 1 Sect 6.8.0 Subsoil Drainage Part 1 Sect 6.9.0 Safety Barriers Part 1 Sect 6.10.0 Part 1 Sect 6.11.0 Guide Posts

CHAPTER 6, PART 3, DIVISION 5 - INDUSTRIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development	Probable Solutions			
	Bridge and Culvert Widths		Pa	art 1 Sect 6.12.0
	Street and Pathway Lighting		Pa	art 1 Sect 6.13.0
	Park Barriers		Pa	art 1 Sect 6.14.0
	Retaining Walls		Pa	art 1 Sect 6.15.0
	Major Roads conform to the following:-			
	Design Issue	Sub-Art	terial	Arterial
	Traffic Volume (typical)	12,000	vpd	30,000 vpd
	Design Speed (minimum)	80km	1/h	100km/h
	Carriageway Lanes	2		4
	Carriageway Width	10m (ker	bed) ⁽¹⁾	2 x 8.5 m (kerbed) ⁽¹⁾
	Verge Width (minimum)	7.5r	n	8.5m
	Reserve Width (minimum)	25m	(2)	40m (2)
	Footpaths/Cyclepaths	Both sid	les ⁽³⁾	Both sides (3)
	Maximum Grade	7%	,	6%
	Minimum Grade	0.4%	%	0.4%
	Notes:			
	Notes:			
	Notes: 1. Does not include cycle lanes.			
	Notes:1. Does not include cycle lanes.2. Greater width required at intersections.		-	
	 Notes: Does not include cycle lanes. Greater width required at intersections. Cyclepaths may be required in accordance. 	ce with network des	sign.	
XC	 Notes: Does not include cycle lanes. Greater width required at intersections. Cyclepaths may be required in accordant The detailed design of Major Roads conforms 	ice with network des s with Council's Pla	sign. anning Scheme Polic	cy PSP28 Civil Infrastructure D
	 Notes: Does not include cycle lanes. Greater width required at intersections. Cyclepaths may be required in accordant. The detailed design of Major Roads conforms viz: 	rce with network des s with Council's Pla	sign. anning Scheme Polic Planning S c	cy PSP28 Civil Infrastructure D
	Notes: Does not include cycle lanes. Greater width required at intersections. Cyclepaths may be required in accordant The detailed design of Major Roads conforms viz: Road Design Issue	nce with network des s with Council's Pla	sign. anning Scheme Polic Planning Sc Infrastruc	cy PSP28 Civil Infrastructure D Cheme Policy PSP28 Civil Cture Design Reference
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordant. The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy	ce with network des s with Council's Pla	sign. anning Scheme Polic Planning Sc Infrastruc	cy PSP28 Civil Infrastructure D Cheme Policy PSP28 Civil Cture Design Reference Part 1 Sect 3.2.0
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordance. The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy Classification of Major Urban Roads	ce with network des s with Council's Pla	sign. anning Scheme Polic Planning So Infrastruc F	cy PSP28 Civil Infrastructure D cheme Policy PSP28 Civil cture Design Reference Part 1 Sect 3.2.0 Part 1 Sect 3.3.0
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordant. The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy Classification of Major Urban Roads Freeways	rce with network des s with Council's Pla	sign. anning Scheme Polic Planning So Infrastruc F	by PSP28 Civil Infrastructure D Cheme Policy PSP28 Civil Cture Design Reference Part 1 Sect 3.2.0 Part 1 Sect 3.3.0 Part 1 Sect 3.4.0
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordant. The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy Classification of Major Urban Roads Freeways Arterial Roads	ce with network des s with Council's Pla	sign. anning Scheme Polic Planning So Infrastruc F	cy PSP28 Civil Infrastructure D cheme Policy PSP28 Civil cture Design Reference Part 1 Sect 3.2.0 Part 1 Sect 3.3.0 Part 1 Sect 3.4.0 Part 1 Sect 3.5.0
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordant. The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy Classification of Major Urban Roads Freeways Arterial Roads Sub-Arterial Roads	ce with network des s with Council's Pla	sign. anning Scheme Polic Planning So Infrastruc F	cy PSP28 Civil Infrastructure D cheme Policy PSP28 Civil cture Design Reference Part 1 Sect 3.2.0 Part 1 Sect 3.3.0 Part 1 Sect 3.4.0 Part 1 Sect 3.5.0 Part 1 Sect 3.6.0
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordant. The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy Classification of Major Urban Roads Freeways Arterial Roads Sub-Arterial Roads Intersections	ce with network des s with Council's Pla	sign. anning Scheme Polic Planning Sc Infrastruc F F F F F F F F F F F	cy PSP28 Civil Infrastructure D Cheme Policy PSP28 Civil Cture Design Reference Part 1 Sect 3.2.0 Part 1 Sect 3.3.0 Part 1 Sect 3.4.0 Part 1 Sect 3.5.0 Part 1 Sect 3.6.0 1 Sect 3.7.0 & 6.16.0
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordant. The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy Classification of Major Urban Roads Freeways Arterial Roads Sub-Arterial Roads Intersections Traffic Volume and Capacity	ce with network des s with Council's Pla	sign. anning Scheme Polic Planning So Infrastruc F F F F F F F F F F F F F F F F F F F	cy PSP28 Civil Infrastructure D cheme Policy PSP28 Civil cture Design Reference Part 1 Sect 3.2.0 Part 1 Sect 3.3.0 Part 1 Sect 3.4.0 Part 1 Sect 3.5.0 Part 1 Sect 3.6.0 1 Sect 3.7.0 & 6.16.0 Part 1 Sect 3.8.0
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordant The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy Classification of Major Urban Roads Freeways Arterial Roads Sub-Arterial Roads Intersections Traffic Volume and Capacity Design Speed	rce with network des s with Council's Pla	sign. anning Scheme Polic Planning Sc Infrastruc F F F F F F F F F F F F F F F F F F F	cy PSP28 Civil Infrastructure D cheme Policy PSP28 Civil cture Design Reference Part 1 Sect 3.2.0 Part 1 Sect 3.3.0 Part 1 Sect 3.4.0 Part 1 Sect 3.5.0 Part 1 Sect 3.5.0 Part 1 Sect 3.6.0 1 Sect 3.7.0 & 6.16.0 Part 1 Sect 3.8.0 Part 1 Sect 3.9.0
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclepaths may be required in accordant. The detailed design of Major Roads conforms viz: Road Design Issue Design Philosophy Classification of Major Urban Roads Freeways Arterial Roads Sub-Arterial Roads Intersections Traffic Volume and Capacity Design Speed Cross Section Elements	ce with network des s with Council's Pla	sign. anning Scheme Polic Planning Sc Infrastruc F F F F Part F F F F F F	cy PSP28 Civil Infrastructure D cheme Policy PSP28 Civil cture Design Reference Part 1 Sect 3.2.0 Part 1 Sect 3.3.0 Part 1 Sect 3.4.0 Part 1 Sect 3.5.0 Part 1 Sect 3.5.0 Part 1 Sect 3.6.0 1 Sect 3.7.0 & 6.16.0 Part 1 Sect 3.8.0 Part 1 Sect 3.9.0 Part 1 Sect 3.10.0

Specific Outcomes for Assessable Development	Probable Sc	plutions	
	Bus Stops	Part 1 Sect 3.12.0	
	Pedestrian and Cyclist Facilities	Part 1 Sect 3.13.0	
	Aesthetics and Appurtenances	Part 1 Sect 3.14.0	
	Services Streets	Part 1 Sect 3.15.0	
	Roundabouts	Part 1 DG 01	
	Signs and Road Markings	Part 1 Sect 6.7.0	
	Footpaths	Part 1 Sect 6.4.0	
	Bikeways	Part 1 Sect 6.5.0	
	Service Conduits	Part 1 Sect 6.8.0	
	Subsoil Drainage	Part 1 Sect 6.9.0	
	Safety Barriers	Part 1 Sect 6.10.0	
	Guide Posts	Part 1 Sect 6.11.0	
	Bridge and Culvert Widths	Part 1 Sect 6.12.0	
	Street and Pathway Lighting	Part 1 Sect 6.13.0	
	Park Barriers	Part 1 Sect 6.14.0	
	Retaining Walls	Part 1 Sect 6.15.0	
	The road cross-sections conform with Council's standard draw	vings as follows:	
	Road Classification	Standard Drawing Number	
	Access Road	8-10014	
	Collector Road	8-10015	
	Sub-Arterial Road	8-10006 & 8-10009	
	Arterial Road	8-10007 & 8-10009	
	Utility service allocations conform with Council's standard draw	vings as follows:-	
	Road Classification	Standard Drawing Number	
	Access Road and Collector Road	8-10016	
	Sub-Arterial and Arterial	8-10013	
	Access to allotments conforms with Council's Planning Scheme 6.2.0. The road pavement design conforms with Council's Planning	e Policy PSP28 Civil Infrastructure Design, Part 1, Section Scheme Policy PSP28 Civil Infrastructure Design, Part 1,	
	DG 06. The works are constructed within tolerances given in <i>Council's Planning Scheme Policy PSP28 Civil Infrastru</i> <i>Design</i> , Part 1, DG 02, Appendix C.		

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development		Prot	bable Solutions			
SO 23 The road design provides more than one access route (at all stages of development) for industrial areas containing a significant number of lots.	PS 23 The industrial area is served by more than one access route to the Major Road system when the number of industrial lots exceeds 100 (absolute maximum allowed is 150 lots).					
SO 24 Intersections along Industrial Roads and Major Roads	PS 24 Intersection spacing	(centreline – centreline) along a through road c	onforms with the following	g:-	
	Intersecting		Throug	gh Road		
	Road Location	Access Road	Collector Road	Sub-Arterial Road	Arterial Road	
	On same side of through road	60m	100m	300m	500m	
	On opposite side of through road, left – right stagger	60m	150m	300m	50om	
	On opposite side of through road, right – left stagger	40m	60m	300m	500m	
	1. In the case of Sub-Arteria the following absolute min	I Roads, existing landh nimum spacing is used	ooldings may require inte , but all turns access ma	rsection at a lesser space y not be permitted (i.e. le 100 m	ing. In such cases ft in/left out only):	
	Intersections on same side			100 m		
	Intersections on opposite sides:-					
	left – right stagger 100m					
	right – left stagger The detailed design of street a Reliev BSD28 Civil Infrastructure	right – left stagger 30m The detailed design of street and road intersections conforms with the following sections of <i>Council's Planning Scheme</i>				
	Policy PSP28 Civil Infrastructure Design: Road Classification Planning Scheme Policy PSP28 Civil Infrastructure Design				ture Design	
	Industrial Roads		Part 1 Sec	t 4 12 0 & Sect 6 16 0		
	Maior Roads		Part 1 Sec	t 3.7.0 & Sect 6.16.0		
	Roundabouts Part 1 DG 01					
O 25 The road design facilitates walking and cycling within	PS 25 All pathways have 1 2m wide (minimum) reinforced concrete paths linking up with:					
he area and to local facilities and public transport routes and	(1) any existing concrete foot	paths/cyclepaths withir	1 20m of the pathway;	0		
tops.	(2) any proposed concrete for	otpath/cyclepath in the	development within 20m	n of the pathway;		
	(3) the kerb and channel by way of a kerb ramp; and					
	(4) where there is no kerb and channel, the carriageway.					
	Kerb ramps are provided at all kerb and channelled intersections.					
50 26 All new Council controlled roads are fully constructed of Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standards.	PS 26 All new Council cor Infrastructure Design standards	ntrolled roads are fully s.	constructed to Counc	il's Planning Scheme F	Policy PSP28 Civi	

PineRiversPlan

Specific Outcomes for Assessable Development		Probable Solutions
SO 27 All Council controlled frontage roads are constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure	PS 27 All Council controlled Infrastructure Design standards	frontage roads are fully constructed to Council's Planning Scheme Policy PSP28 Civil as follows:-
Design standards.	Situation	Minimum Construction ⁽¹⁾
	Where the existing frontage road is unconstructed or a gravel road only:	For Access Roads the full carriageway and verges are provided (including all associated works); For Collector Roads the verge adjoining the new lots, carriageway (including near side kerb and channel) to a minimum sealed width of 9.5m plus 1.2m wide (full depth pavement) gravel shoulder and table drainage to the opposite side is provided (including
		all associated works). For Major Roads the verge adjoining the new lots, carriageway (including near side kerb and channel) to a minimum sealed width of 9.5m plus 2m wide (full depth pavement) gravel shoulder and table drainage to the opposite side is provided (including all associated works).
	Where the existing frontage road is sealed but not constructed to	For Access Roads the full carriageway and verges is reconstructed (including all associated works):
	Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standard ⁽²⁾ :	For Collector Roads the verge adjoining the new lots, carriageway (including near side kerb and channel) to a minimum sealed width of 9.5m plus 1.2m wide (full depth pavement) gravel shoulder and table drainage to the opposite side is reconstructed (including all associated works). The works match into the remaining works wherever possible.
×C		For Major Roads the verge adjoining the new lots, carriageway (including near side kerb and channel) to a minimum sealed width of 9.5m plus 2m wide (full depth pavement) gravel shoulder and table drainage to the opposite side is reconstructed (including all associated works). The works match into the remaining works wherever possible.
	Where the existing frontage road is partially constructed to	For Access Roads construction of the full carriageway and verges is completed (including all associated works):
road is p Council ² Policy PS Design s	Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standard ⁽²⁾ :	For Collector Roads the verge adjoining the new lots, carriageway (including near side kerb and channel) to a minimum sealed width of 9.5m plus 1.2m wide (full depth pavement) gravel shoulder and table drainage to the opposite side is reconstructed (including all associated works). The works match into the remaining works wherever possible.
	0	for Major Roads the verge adjoining the new lots, carriageway (including near side kerb and channel) to a minimum sealed width of 9.5m plus 2m wide (full depth pavement) gravel shoulder and table drainage to the opposite side is reconstructed (including all associated works). The works match into the remaining works wherever possible.
	Notes:	ssociated works (services, streetlighting and linemarking)
	2. Testing of the existing pay Scheme Policy PSP28 Civi	vement is carried out to confirm whether the existing works meet Council's Planning I Infrastructure Design standard.

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PS 28

PS 29

Part 1.

Design, Part 1.

Specific Outcomes for Assessable Development

SO 28 Sealed and flood free road access during minor storms

SO 29 The existing road network is upgraded where necessary

is available to the site from the nearest Major Road.

to cater for the traffic impact from the development.

Stormwater Management

completion of the subdivision works.

encroach upon industrial lots.

PS 31 and PS 32 The roads, drainage pathways, drainage features and waterways safely convey the stormwater flows for the 100 year ARI storm event (ultimate development catchment characteristics upstream) without allowing the flows to encroach upon private lots.

Probable Solutions

These access roads or streets have minor drainage systems which conform with Council's Planning Scheme Policy

years hence. Detailed design is in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design.

Existing intersections external to the site are upgraded as necessary to accommodate increased traffic from the development. Detailed design is in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure

PS 30 As constructed information including test certificates for material quality (if required) and compaction is provided

Roads giving access to the development from the nearest Major Road are sealed to a minimum width of 7m.

New intersections onto existing roads are designed to accommodate traffic volumes and traffic movements ten

Overland flow paths (for any storm event) from roads and public open space areas do not pass through industrial lots. Drainage pathways are provided to accommodate overland flows from roads and public open space areas.

The major drainage system has a minimum design ARI of 100 years (ultimate development catchment characteristics upstream).

All carriageways have kerb and channel.

after completion of the subdivision works.

PSP28 Civil Infrastructure Design, Part 2, Section 4.7.0.

Catchpits are located to ensure the longitudinal flow in the channel does not exceed the following requirements for the major storm (100 year ARI):-

Location	Major Storm - Maximum Flow Width and Depth			
Location	Major Roads	Minor Roads		
Where floor levels of adjacent buildings are above road level (kerb	(a) Total flow contained within road reserve; and	(a) Total flow contained within road reserve; and		
and channelled crowned road)	(b) Freeboard ≥250mm to floor level of adjacent buildings; and	(b) Freeboard ≥250mm to floor level of adjacent buildings; and		
	(c) Maximum depth of flow of 300mm	(c) Maximum flow depth 300mm		
Where floor levels of adjacent buildings are below road level or < 300mm above top of kerb (kerb and channelled crowned road)				
(a) ≥100mm fall on verge towards kerb;	(a) 50mm above top of kerb;	(a) 50mm above top of kerb;		
(b) < 100mm fall on verge towards kerb.	(b) Top of kerb	(b) Top of kerb		

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

5.3.4

SO 31

pecific Outcomes for Assessable Development	Probable Solutions		
	Roads without kerb and channel – table or swale drains used for	(a) Total flow contained within road reserve; and	(a) Total flow contained within road reserve; and
	longitudinal drainage	(b) Flows do not encroach upon driving lanes; and	(b) Flows do not encroach upon driving lanes; and
		(c) Freeboard ≥250mm to floor level of adjacent buildings; and	(c) Freeboard ≥250mm to floor level of adjacent buildings; and
		(d) Maximum depth of flow in drain of 300mm	(d) Maximum depth of flow in drain of 300mm
	Notes:		
	1. Widths are measured from channel	invert for kerb and channel and from kerb	face for kerb only.
	2. Refer to Council's Planning Schem requirements.	e Policy PSP28 Civil Infrastructure Design	, Part 2, Section 4 for detailed design
	Detailed design of the major drainage sys Design, Part 2, Section 4.	tem conforms with Council's Planning Sch	eme Policy PSP28 Civil Infrastructure
	The total major flow is contained within th	ne road.	
	Industrial lots have the following minimur	n development levels:-	
	Location	Minimum Development Level	Minimum Area at Developmen Level
	Adjacent Existing Natural Watercourse	The greater of:- (a) Q100 plus 750mm; or	(a) For lots > 4000m ² min. area is 4000m ²
		 (b) the highest recorded flood level plus 750mm. 	(b) For lots up to 4000m ² min. area is the whole lot
	Adjacent Engineered Channels	The greater of:-	(a) For lots > 4000m ² min. area i
		(a) Q100 _{ultimate} for a maintained channel plus 500mm; or	4000m ² (b) For lots up to 4000m ² min. are
		(b) Q100 _{ultimate} for an unmaintained channel plus 250mm.	is the whole lot
	Adjacent Road Drainage	The greater of: (a) Q100 plus 250mm or	(a) For lots > 4000m ² min. area is 4000m ²
		 (b) Q100_{ultimate} plus 150mm using blocked catchpits or inlets. 	(b) For lots up to 4000m ² min. area is the whole lot
	Adjacent Overland Flow Paths	The greater of: (a) 0100 for a maintained flow	(a) For lots > 4000m ² min. area is 4000m ²
		path plus 250mm; or	(b) For lots up to 4000m ² min.
		path plus 150mm.	

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

SO 33 The minor stormwater drainage system has the cato convey stormwater flows from frequent storm events ensuring pedestrian and vehicular traffic movements are satisfied.
convenient.
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Specific Outcomes for Assessable Development	Probable Solutions			
	Detention basins are designed in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure Desig Part 2, Section 4.8.0.			
	Open channels are designed in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure Des Part 2, Section 4.9.0.			
O 33 The minor stormwater drainage system has the capacity convey stormwater flows from frequent storm events whilst	PS 33 The minor drainage system th catchment characteristics upstream).	rough the <i>site</i> has a minimum design AF	RI of 5 years (ultimate development	
nsuring pedestrian and vehicular traffic movements are safe and	All carriageways have kerb and channel			
	Catchpits are located to ensure the flow in	n the channel does not exceed the following	g requirements for the minor storm:-	
		Maximum Flo	ow Width	
	Location	Major Roads	Minor Roads	
	Design ARI (years)	10	5	
	Normal situation – kerb and channelled crowned road	Parking lane width (usually 2.5m) or breakdown lane width	Full pavement width with zero depth at crown	
	Normal situation – no kerb and channel, crowned road	Contained within the table drain	Contained within the table drain	
	Normal situation – one way crossfall road	Parking lane width (usually 2.5m) or breakdown lane width	To high side of road pavement but not above top of kerb on low side	
	Where parking lane may be replaced by a through, acceleration, deceleration or turn lane	1m	Not applicable	
	Where road falls towards median	1m	Not applicable	
	Pedestrian crossing or bus stops	0.45m	0.45m	
	Intersection kerb returns (including entrances to shopping centres and other major developments)	1m	1m	
	Notes: 1. Widths are measured from channel invert for kerb and channel and from kerb face for kerb only. 2. Pofer to Council's Planning Scheme Policy PSP28 Civil Infractructure Design Part 2. Section 4 for detailed			
	design requirements.			
	The product of depth by average velocity in the channel (longitudinal drainage) does not exceed 0.6m ² /s except where there is a danger of pedestrians being swept away and drowned where the value is limited to 0.4m ² /s.			
The pipelines are located on a 1.5m nominal alignme centreline and are not located under kerb and channe		ninal alignment measured from the invert o and channel.	f kerb and channel towards the road	
	Pipelines from sag points in the road an approved discharge point.	e taken through drainage reserves, pathv	ways or park and open space to an	

Gully inlets (catchpits) allow for blockage by reducing the theoretical capacity of the inlet as follows:-

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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

fic Outcomes for Assessable Development	Probable Solutions		
	Condition	Inlet Type	Percentage of Theoretical Capacity Allowe
	Sag	Side Entry	80%
		Grated	50%
		Combination	Capacity of kerb opening assuming grate is blocked
	Continuous Grade	Side Entry	80%
		Grated – Longitudinal Bars	60%
		Grated – Transverse Bars (with or without longitudinal b	ars) 50%
		Combination	70% - 90% of capacity of kerb opening plus grate (depending upon length of backstone)
	Gully inlets and manho	oles have the following minimum	r freeboard for the minor storm event:-
		Situation	Minimum freeboard requirements
	Gully inlet on grade		150mm below invert of kerb and channel
	Gully inlet in sag		150mm below invert of korb and abannel
	Guily met in sag		
	Field inlet		150mm below top of grate or lip of inlet
	Field inlet Manhole or junction <i>st</i> Roof and allotment (Q underground drainage	r ucture UDM level IV) drainage is provi system.	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of lid ded. The <i>site</i> pipe drainage system is connected to the <i>Cour</i>
	Field inlet Field inlet Manhole or junction st Roof and allotment (Q underground drainage The roof and allotment Drowned outlets are no Stormwater drainage in easement widths are a	ructure UDM level IV) drainage is provi system. t drainage system has a minimu ot used. nfrastructure through or within pr	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Cour m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini
	Field inlet Manhole or junction st Roof and allotment (Q underground drainage The roof and allotment Drowned outlets are no Stormwater drainage ir easement widths are a Pipe Diameter	ructure UDM level IV) drainage is provie system. t drainage system has a minimu ot used. nfrastructure through or within pr is follows:	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Count m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini Minimum Easement Width (excluding access requirement
	Field inlet Manhole or junction st Roof and allotment (Q underground drainage The roof and allotment Drowned outlets are no Stormwater drainage in easement widths are a Pipe Diameter Stormwater pipe up to	ructure UDM level IV) drainage is provis system. t drainage system has a minimu ot used. nfrastructure through or within pr as follows: 825mm diameter	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Cour m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini Minimum Easement Width (excluding access requirements) 3m
	Field inlet Field inlet Manhole or junction st Roof and allotment (Q underground drainage The roof and allotment Drowned outlets are no Stormwater drainage ir easement widths are a Pipe Diameter Stormwater pipe up to Stormwater pipe up to pipe up to 225mm diar	Tucture UDM level IV) drainage is provise system. It drainage system has a minimu ot used. Infrastructure through or within pr is follows: 825mm diameter 9825mm diameter with sewer meter	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Cour m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini Minimum Easement Width (excluding access requirements) 3m 4m
	Field inlet Manhole or junction st Roof and allotment (Quunderground drainage The roof and allotment Drowned outlets are no Stormwater drainage ir easement widths are a Pipe Diameter Stormwater pipe up to Stormwater pipe up to pipe up to 225mm diar Stormwater pipe great	ructure UDM level IV) drainage is provie system. t drainage system has a minimu ot used. nfrastructure through or within pr as follows: 825mm diameter 0 825mm diameter 0 825mm diameter er than 825mm diameter	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Count m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini Minimum Easement Width (excluding access requirement 3m 4m Easement boundary to be 1m clear of outside wall of pipe and clear of pits.
	Field inlet Manhole or junction st Roof and allotment (Quunderground drainage The roof and allotment Drowned outlets are no Stormwater drainage in easement widths are a Pipe Diameter Stormwater pipe up to Stormwater pipe up to Stormwater pipe up to Detailed design of the n Detailed design of the n Detailed design of the n	ructure UDM level IV) drainage is provis system. t drainage system has a minimu ot used. offrastructure through or within pr as follows: 825mm diameter 825mm diameter 825mm diameter er than 825mm diameter minor drainage system conforms of 4.	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Cour m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini Minimum Easement Width (excluding access requirement 3m 4m Easement boundary to be 1m clear of outside wall of pipe and clear of pits. swith Council's Planning Scheme Policy PSP28 Civil Infrastrue
	Field inlet Manhole or junction st Roof and allotment (Q underground drainage The roof and allotment Drowned outlets are no Stormwater drainage ir easement widths are a Pipe Diameter Stormwater pipe up to Stormwater pipe up to Stormwater pipe up to pipe up to 225mm diar Stormwater pipe great Detailed design of the no Design, Part 2, Section Stormwater drainage r	ructure UDM level IV) drainage is provis system. t drainage system has a minimu ot used. infrastructure through or within pr is follows: 825mm diameter 825mm diameter 825mm diameter er than 825mm diameter er than 825mm diameter in 4.	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Cour m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini Minimum Easement Width (excluding access requiremed 3m 4m Easement boundary to be 1m clear of outside wall of pipe and clear of pits. s with Council's Planning Scheme Policy PSP28 Civil Infrastrue conforms with the following standard drawings:-
	Field inlet Manhole or junction st Roof and allotment (Quunderground drainage The roof and allotment Drowned outlets are no Stormwater drainage in easement widths are a Pipe Diameter Stormwater pipe up to Stormwater pipe up to Stormwater pipe up to Detailed design of the no Detailed design of the no Detailed design of the no Stormwater drainage no	ructure UDM level IV) drainage is provis system. t drainage system has a minimu ot used. nfrastructure through or within pr is follows: 825mm diameter 825mm diameter 825mm diameter er than 825mm diameter minor drainage system conforms of 4. eticulation and cross drainage of Item	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Cour m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini Minimum Easement Width (excluding access requirement 3m 4m Easement boundary to be 1m clear of outside wall of pipe and clear of pits. s with Council's Planning Scheme Policy PSP28 Civil Infrastrue conforms with the following standard drawings:- Standard Drawing Numbers
	Field inlet Manhole or junction <i>st</i> Roof and allotment (Q underground drainage The roof and allotment Drowned outlets are m Stormwater drainage ir easement widths are a Pipe Diameter Stormwater pipe up to Stormwater pipe up to Stormwater pipe up to Stormwater pipe up to Detailed design of the m Detailed design of the m	ructure UDM level IV) drainage is provis system. t drainage system has a minimu ot used. nfrastructure through or within pr as follows: 825mm diameter 825mm diameter 825mm diameter 9 825mm diameter er than 825mm diameter er than 825mm diameter minor drainage system conforms of 4. eticulation and cross drainage of Item	150mm below invert of kerb and channel 150mm below top of grate or lip of inlet 150mm below top of lid ded. The site pipe drainage system is connected to the Cour m design storm ARI of 5 years. ivate land is protected by easements in favour of Council. Mini Minimum Easement Width (excluding access requiremed 3m 4m Easement boundary to be 1m clear of outside wall of pipe and clear of pits. s with Council's Planning Scheme Policy PSP28 Civil Infrastrue conforms with the following standard drawings:- Standard Drawing Numbers 8-30001 to 8-30003, 8-30036

Specific Outcomes for Assessable Development				
	Circular Manholes 8 Bedding and Backfill to Pipes and Culverts		8-3006-8-30008, 8-30010, 8-30011	
			8-30013 & 8-30014	
	Security Grates to Stormwater Outlets		8-30025	
SO 34 Road cross drainage ensures that roads remain	PS 34 Road cross drainage is provided to satisfy the following requirements:-			
or impacting upon industrial properties or other premises.	Road Classification	Major Storm	Minor Storm ⁽¹⁾	
	Major Road	Trafficable for flows from the 100 ARI storm:- (a) Maximum depth 200mm; and	 by year For the 50 year ARI storm:- (a) Flows and flood levels do not encroach upon the driving lanes; (b) Minimum pine suptom 	
		(b) $D_g V_{ave} \leq 0.4$	freeboards are maintained.	
	Minor Road	Trafficable for flows from the 100 ARI storm:- (a) Maximum depth 200mm; and (b) $D_gV_{ave} \le 0.4$	 by ear For the 10 year ARI storm:- (a) Flows and flood levels do not encroach upon the driving lanes; (b) Minimum pipe system freeboards are maintained 	
	 Roads remain trafficable during major sto Council's Planning Scheme Policy PSP. Waterways Design Guidelines. Where there is potential for blockage by st using box culverts or a bridge structure. Afflux from the cross drainage does not premises. 	rm (100 year ARI) events. Detailed 28 Civil Infrastructure Design, Part tream debris due to the nature of the flood or reduce the required Q10	d design of culverts and bridges conforms wi rt 2, Section 4.12.2 and 4.12.3 and Austroac ne catchment the cross drainage is constructe 00 freeboard to industrial properties or othe	
SO 35 Stormwater management facilities ensure that drainage discharge from the <i>site</i> does not cause nuisance or annoyance to any person, property or premises.	PS 35 Stormwater runoff from the <i>site</i> is to any person, property or premises. Wherever possible pollutant loads are not	is conveyed to a point of lawful disc t made worse on downstream prop	charge without causing nuisance or annoyand perties.	
	wherever practicable runoff rates are not A <i>watercourse</i> as defined in the <i>Water</i> discharge from the <i>site</i> does not increase any flooding of downstream allotments w Where drainage is to be carried through	r Act 2000 is accepted as a lawfu downstream flood levels during the hich are not able to be further subc private lots easements are provide	perrues. ful point of discharge providing the drainag le 100 year ARI storm by more than 20mm ar divided is not increased. ed over the drainage (open or piped) in favor	
	of Council). Easement dimensions com	bly with the Queensland Urban Dra	ainage Manual, Section 3.00.	

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Specific Outcomes for Assessable Development	Probable Solutions		
SO 36 The stormwater quality management system minimises	PS 36 All developments in excess of 2ha provide stormwater quality improvement devices.		
the environmental impact of stormwater on surface and underground receiving water quality.	The calculated pollutant concentrations from the <i>site</i> do not exceed <i>Council's</i> adopted water quality objectives (WQO) for the particular catchment, or where no WQO has been adopted then the appropriate ANZECC standards.		
	All dry weather flow is treated to reduce pollutant loads prior to discharge to a watercourse, creek or river.		
	The first flush flow from the first 15mm of rainfall over the <i>site</i> is treated to reduce pollutant loads prior to discharge to a <i>watercourse</i> , creek or river. Where approved proprietary products are used to treat first flush flows the minimum flow treated is for the 3 month ARI storm.		
	The detailed design of stormwater quality improvement devices conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Sections 3 & 4.		
	Detention basins include a low flow water quality treatment facility with a minimum storage time of 24 hours and a maximum storage time of 48 hours.		
	All stormwater improvement devices are constructed "off line" wherever possible (i.e. major flows do not pass through stormwater quality improvement devices).		
	Diversion manholes or chambers are used on reticulated drainage systems to divert stormwater flows to water quality treatment devices (except for proprietary products that have approved internal bypass systems).		
4	Approved proprietary products are installed and maintained in accordance with the manufacturers recommendations.		
SO 37 The stormwater quality management system minimises	PS 37 Stormwater management facilities do not encroach upon riparian areas.		
the environmental impact of stormwater on natural waterway	Filling does not extend below the Q50 (ultimate) flood contour for creeks and watercourses.		
configuration.	Filling does not extend below the Q100 (ultimate) flood contour for rivers.		
	The number of stormwater outlets to waterways are minimised.		
	Natural creeks and watercourses are not channelised to maximise development area.		
SO 38 The stormwater quality management system minimises	PS 38 Stormwater management facilities do not encroach upon existing natural wetlands.		
the environmental impact of stormwater on existing natural wetlands and vegetation.	Significant existing water bodies are retained with appropriate stormwater quality improvement devices (refer to Council's <i>Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.11.5).		
SO 39 Community benefit is maximised through the retention and enhancement of natural streams and vegetation wherever practicable.	PS 39 <i>Watercourses</i> are enhanced by re-vegetation with natural species occurring in the catchment. The area must be planted with local native trees (of the local Regional Ecosystem if relevant) at 3m centres, shrubs at 2m centres and ground covers at 1m centres.		
	Existing erosion and scour in watercourses through or adjoining the site are repaired and stabilised.		
SO 40 Areas constructed as detention basins are adaptable for passive recreation wherever practicable.	PS 40 Large dry detention basins are designed to accommodate passive recreation. The basin includes a low flow drainage system with capacity to carry 3mm/hr rainfall in the catchment. The basin floor is sloped at not less than 1(V) to 100(H) towards its perimeter drains		
SO 41 "As constructed" information including test certificates for material quality (if required) and compaction is provided after	PS 41 "As constructed" information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.		
completion of the subdivision works.			

5.3.5 Pedestrian and Cyclist Facilities				
SO 42 The pedestrian and bikeway design provides for safe, attractive and convenient movement of cyclists between each	PS 42 Footpaths are provided in the following instances:			
industrial precinct and major attractions such as schools, shops,	Location	Footpath Requirement		
sporting facilities, bus routes (existing and planned) and railway	Access Road	One side only		
stations.	Collector Road	Both sides		
	Major Roads	Both sides		
	Adjacent pedestrian traffic	To suit pedestrian movements		
	generators			
	Along pathways	The full length of the pathway and linking to any footpath within 20m, the kerb and channel by way of a kerb ramp or to the carriageway where no kerb and channel exists.		
	Notes:			
	1. Footpaths may be required for	network planning considerations.		
	Footpaths are designed to conform with the following:-			
	Issue	Requirement		
	Width	1.2m minimum for Access Road and Collector Road;		
		1.5m one side and 2m other side for Sub Arterial and Arterial;		
		1.5m minimum elsewhere except for dual use pedestrian/cycle paths where minimum width is 2m		

Location

Grades

Crossfall

Crossing Points

bicycle/footway use

Crossing Points for combined

Clearance to properties

Clearance to kerbline

Pathway Construction

Refer to relevant standard drawing for road classification.

Along roads - as per maximum grade for classification of road;

Pathway reserves and open space – 10% desirable maximum.

Refer to Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section

0.8m for Access Road and Collector Road; 1m for Trunk Collector, Sub-Arterial and Arterial.

1.25m for Access Road and Collector Road; 2.5m for Trunk Collector, Sub-Arterial and Arterial.

Refer to Standard Drawing No. 8-10036

refer to Standard Drawing No. 8-203

2.5% (1 in 40) minimum; 5% (1 in 20) maximum.

6.4.7 and 6.4.8

Specific Outcomes for Assessable Developmen

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development	Probable Solutions		
	Chicanes are provided at the ends of all pathways to	p roads (refer Standard Drawing Nos. 8-60033, 8-60034 & 8-60036).	
	Bike/footway terminations at Collector Roads or higher classification roads conform with Standard Drawing No. 8-60034.		
	Bike/footway direct road crossings conform with Star	ndard Drawing No. 8-60035.	
	Detailed design of the footpaths conforms with Counc Section 6.4.0.	cil's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1,	
	Bikeways are provided within and adjacent the <i>site</i> as indicated in <i>Council's</i> Bikeways Plan or adopted local area plan Detailed design of the bikeways conforms with <i>Council's</i> Planning Scheme Policy PSP28 Civil Infrastructure Design, Par Section 6.5.0.		
SO 43 As constructed information is provided after completion of the subdivision works.	PS 43 As constructed information is provided afte	er completion of the subdivision works.	
5.3.6 Public Transport			
SO 44 The road design provides for potential bus routes	PS 44 Bus routes are designed to conform with the	ne following:-	
turnaround areas.	Issue	Requirement	
	Reserve width	20m minimum	
	Carriageway width	11m minimum	
	Grade	12% general maximum;	
		16% absolute maximum over short distances	
	Speed control	by street alignment only	
	Design vehicle	Coach (tourist bus)	
	Turning	Single movement turns only	
	Bus stops are provided at 400m maximum spacing and integrated with the street and pedestrian network. Fully indented bus bays are provided on Sub-Arterial and Arterial Roads with detailed design conforming with <i>Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, Section 3.12.2.		
SO 45 The road design caters for the extension of existing and future public transport routes to provide sufficient services that are convenient and accessible to the community.	PS 45 The road design provides for extension of existing and future public transport routes.		
SO 46 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 46 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.		
5.3.7 Public Open Space			
SO 47 Public open space has barriers to its road frontage to prevent access by unauthorised vehicles.	to PS 47 The public open space is provided with log barriers designed along their road frontage in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section 6.14.0 and Standard Drawing No. 8-70003.		
SO 48 Public open space that is intended to be used for local neighbourhood park includes a sufficiently level area that is suitable for non-organised recreation and passive relaxation including small children's playgrounds and appropriate landscaping.			

Effective from 15 December 2006

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development	Probable Solutions		
SO 49 As constructed information including test certificates for naterial quality (if required) is provided after completion of the subdivision works.	PS 49 As constructed information including test certificates for material quality (if required) is provided after completion of the subdivision works.		
.3.8 Utilities			
SO 50 Development only occurs in locations where there are adequate services and capacity for the desired use.	PS 50 The design of water supply infrastructure including water mains, pumping stations, pressure mains and associated works complies with the relevant Queensland Government Department's <i>Guidelines for Planning and Design of Urban Water Supply Schemes</i> , <i>Council's</i> Standard Drawings and <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 3. The design of water supply infrastructure includes all works internal and any works external required to ensure that all new and existing lots maintain adequate water supply at all times.		
	The design of sewerage infrastructure including sewer mains, pumping stations, pressure mains and associated works complies with the relevant Queensland Government Department's <i>Guidelines for Planning and Design of Sewerage Schemes</i> , <i>Council's</i> standard drawings and <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 4. The design of sewerage infrastructure includes all works internal and any works external required to ensure that all new and existing lots are provided with a service at all times within the capacity of the system.		
	The design of the electrical reticulation is in accordance with <i>Distribution</i> .	ENERGEX Specification URD Underground Residential	
.3.8(a) Water Supply			
O 51 Where lots are intended to be provided with water supply be design and construction of the associated infrastructure and onnections is provided in a safe, cost-effective, coordinated nd efficient manner that supports sustainable development ractices.	PS 51 Staged construction of water supply infrastructure is designed so that each stage is self supporting at the completion of construction of that stage. Water supply infrastructure materials and construction complies with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 3, Section 4.		
O 52 Water supply infrastructure is easily controlled and ccessed for maintenance and repair.	 PS 52 Water mains are provided along one side of all industrial streets (minimum) to the boundaries of the development site. Water mains are provided on both sides of all Major Roads and divided roads. 		
	Water mains are located within service corridors shown on the following standard drawings:-		
	Street Classification	Standard Drawing No.	
	Access Road and Collector Road	8-10016	
	In special circumstances (e.g. infill development where existing services are on <i>Council's</i> previous service allocations – refer to Standard Drawing 8-0049), the services are placed on an alternative alignment. Service connections are not made to water mains 250mm diameter and above.		
	Fire hydrants are provided at intervals (measured within the road reserve) not exceeding 80m, at high points (for air release) and at the ends of mains (use a duckfoot bend).		
• •	Scours are provided at all low points, generally discharging into drainage structures.		
	Fittings and valves at road intersections are contained in the verge and are 500mm clear of the back of the kerb. The water supply system is designed to limit the static head to 80m maximum. Where approved by Council's engineer, pressure reducing valves are designed and installed to limit the static head to 80m maximum.		

pecific Outcomes for Assessable Development	Probable S	Solutions	
	Water supply infrastructure is contained within roads or othe may accept water mains through private land providing an ap Council's favour. The water main is constructed centrally wit	er public reserves. In exceptional circumstances Council propriate easement, not less than 3m wide, is registered in hin the easement.	
	 Sufficient valves are provided, generally on street corners, to limit the area of any shut-off to within the following:- 40 lots or premises for 100mm and 150mm mains; and 50 lots or premises for 225mm mains. Valves in the shut-off area are limited to a maximum of six. 		
	Water supply infrastructure is designed and constructed in accordance with the following standard drawings:-		
	Item	Standard Drawing No.	
	Hydrant and Valve Installations	8-40002	
	Pavement Markers and Delineators	8-40003	
	Hydrant, Valve and Mains Marker Posts	8-40004	
	Thrust Block Details	8-40006	
	Air Valve Installation Details	8-40007	
	Air Valve Sizing	8-40008	
	Scour Outlets	8-40009	
	Trench Details	8-40010	
	Section Valve Pits and Interconnection Pits	8-40011	
	Pressure Reducing Valve Pits	8-40012 & 8-40013	
	Pressure Gauge Installations	8-40014	
	Offtakes from Mains	8-40015	
	Property Service Conduits	8-40016	
	Service tappings are constructed using ductile iron pre-tapped fittings are not manufactured, conventional tapping bands are	d fittings for every lot. For pipe diameters where re-tapped used.	
	Water supply conduits are provided for across road house confootpaths.	nnections for the full width of the carriageway and concrete	
	Water supply conduits are provided for the full length of the ac	ccessway to rear allotments.	
	Kerb marker plates are provided to indicate the location of pro	operty service conduits.	
	Concrete thrust blocks are provided at all locations where there and vertical), tees, angle branches, crosses, dead ends and allocation.	e is unbalanced hydraulic load including all bends (horizontal reducers. Thrust blocks are contained within the service	
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CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Effective from 15 December 2006

Specific Outcomes for Assessable Development	Probable Solutions				
	Water mains are provided with the following cover:-				
	Main		Cover		
	Diameter (mm)	Verges & Accessway	Urban Road Carriageway ⁽¹⁾	State controlled Roads	
	100 – 200	600	Greater of 750 or pavement thickness + 150	1200	
	225 – 375	750	Greater of 900 or pavement thickness + 150	1200	
	>375	1000	Greater of 1000 or pavement thickness + 150	1200	
	Notes:				
	1. Where Council's Engli Class K9).	neer approves a reduced cove	er, the water main is constructed of du	ıctile iron pipe (minimun	
	Water mains are not laid und	ler stormwater pipes, sewerag	e mains or electricity conduits.		
	For water mains 300mm diar drainage structures.	are provided from low points preferab	ly draining to stormwate		
	Water mains maintain the following minimum clearances to existing and future services:				
	(1) horizontally where the w	vater main runs along the adja	cent service for > 1m:- 800mm;		
	(2) horizontally where the w	cent services for < 1m:- 150mm;			
	(3) vertically:- 150mm.				
XC	Connection to Council's water supply system is not provided until adequate water and the new mains are disinfected and watertight. Tests certificates (not older the are provided to confirm the new mains have been satisfactorily disinfected prior to			e maintained at all time t the time of connection Council's water suppl	
	system. The mains are press to connection to Council's w	sure tested and test certificates vater supply system.	are provided to confirm that the new r	nains are watertight pric	
SO 53 Water mains provides multiple flow routes for fire fighting and water quality issues.	PS 53 Water mains are co pathways.	onstructed with the maximum r	number of cross connections, including	g connections through a	
SO 54 The water supply system for the proposed development is planned to conform with Council's broad infrastructure plan for the water supply zone.	PS 54 The water supply s water supply zone.	system for the proposed devel	opment aligns with Council's broad in	nfrastructure plan for the	
5.3.8(b) Sewerage					
SO 55 Where lots are intended to be provided with reticulated sewerage the design and construction of the associated	PS 55 Staged constructio served at the completion of c	n of sewerage infrastructure i construction of that stage.	s designed so that each stage is self	supporting and properl	
infrastructure and connections is provided in a safe, cost-effective, coordinated and efficient manner that supports sustainable development practices.	Sewerage infrastructure desig	gn complies with Council's Pla	nning Scheme Policy PSP28 Civil Infra	<i>structure Design</i> , Part 4.	

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CHAPTER 6, PART 3, DIVISION 5 - INDUSTRIAL SUBDIVISION WORKS DESIGN CODE

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ecific Outcomes for Assessable Development		Probable Solutions	
	For normal sewer reticulation design the following parameters are used:-		
	Item	Design Value	
	Demand	15 equivalent tenements per hectare.	
	Occupancy rate per tenement	3.29 equivalent persons (EP)	
	Average Dry Weather Flow (ADWF)	250 litres/EP/day	
	Maximum Possible Flow (C ₁)		
	(a) sewers serving < 1,000 EP	(a) 5 times ADWF	
	(b) sewers serving >23,000 EP	(b) 3 times ADWF	
	Infiltration Allowance (IA)	250 litres/EP/day	
	Maximum Design Flow (MDF)	Maximum Possible Flow + Infiltration Allowance (C ₁ + IA)	
	Sewerage infrastructure materials and construint Infrastructure Design, Part 4, Section 4.	uction complies with Council's Planning Scheme Policy PSP28 Civil	
	The sewerage system through the <i>site</i> has sur when they are fully developed.	ficient capacity to convey the ultimate flows from all upstream properties	
	Sewer pipes are sized in accordance with AS2200. The minimum flow velocity in any sewer is 0.6m/s based on ADWF. Sewers are designed to carry MDF at a depth not exceeding ³ / ₄ of the pipe diameter.		
	Sewer pipes are sized in accordance with AS2 Sewers are designed to carry MDF at a depth r	ot exceeding ³ / ₄ of the pipe diameter.	
	Sewer pipes are sized in accordance with AS2 Sewers are designed to carry MDF at a depth r The minimum sewer main size is 150mm diame	ot exceeding ³ / ₄ of the pipe diameter.	
	Sewer pipes are sized in accordance with AS2 Sewers are designed to carry MDF at a depth r The minimum sewer main size is 150mm diame Sewers are designed and constructed to serve	the entire area of each lot.	
	Sewer pipes are sized in accordance with AS2 Sewers are designed to carry MDF at a depth r The minimum sewer main size is 150mm diame Sewers are designed and constructed to serve House drains are graded (around the perimeter for control allotments where a grade of 1 in 60	 and environmentation now velocity in any sever is 0.6m/s based of ADWF. at exceeding ¾ of the pipe diameter. beter. at the entire area of each lot. bethe building envelope) at 1 in 40 with a minimum cover of 600mm except with a minimum cover of 400mm is used. 	
×C	Sewer pipes are sized in accordance with AS2 Sewers are designed to carry MDF at a depth r The minimum sewer main size is 150mm diame Sewers are designed and constructed to serve House drains are graded (around the perimeter for control allotments where a grade of 1 in 60 Sewers are designed to extend to the boundari	the entire area of each lot. of the building envelope) at 1 in 40 with a minimum cover of 600mm except with a minimum cover of 400mm is used. es of the <i>site</i> in order to serve all upstream areas within the catchment.	
	Sewer pipes are sized in accordance with AS2 Sewers are designed to carry MDF at a depth r The minimum sewer main size is 150mm diame Sewers are designed and constructed to serve House drains are graded (around the perimeter for control allotments where a grade of 1 in 60 Sewers are designed to extend to the boundari In flat areas, sewers are designed to serve prop	 200. The minimum now velocity in any sever is 0.6m/s based of ADWF. at exceeding ³/₄ of the pipe diameter. beter. beter. beter area of each lot. bot the building envelope) at 1 in 40 with a minimum cover of 600mm except with a minimum cover of 400mm is used. beter area of the <i>site</i> in order to serve all upstream areas within the catchment. beter bot sides of the sewer. 	
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ecific Outcomes for Assessable Development			Probable Solutions		
	Notes:				
	1. Sewers are designed on steeper grades where possible.				
	The minimum drop through a manhole is the greater of 40mm or the difference between downstream and upstream p diameters.			downstream and upstream pipe	
	Steep sewers on grades exceeding 1 in 15 are protection the following spacing:-		provided with concrete stops (refer to Standard Drawing No. 8-50008) at		
	Pipe Diameter	General	Maximum Spacing of Concrete Stops (m)		
	(mm)	Grade	VC Pipe	Other than VC Pipe	
	150	1 in 6	2	6	
	225	1 in 10	2	6	
	300 or greater	1 in 15	2	6	
	Sewers steeper tha manufacturer's reco Sewer mains are pro	an 1 in 4 are only approved mmended maximum flow vel pvided with the following cove	d by <i>Council's</i> engineer in special cir ocity is not exceeded. No sewer has a g er:	rcumstances and providing the grade steeper than 1 in 3.	
		Location	Minimu	m Cover (mm)	
	House connection b	ranches in lots	600		
	Sewer mains in lots: (a) front of lot	.05	(a) greater of 250 below 600 below future driv	invert of kerb and channel or eway ⁽¹⁾	
	(b) elsewhere in the	lot	(b) 600		
	Sewer mains in road verges		900	900	
	Sewer mains under road pavements 1200				
	Notes: 1. Determine using driveway access as per Standard Drawing No. 8-10008.				
	The minimum clearance between the sewer and adjacent services/pipes is 300mm. Where <i>Council's</i> engineer has approved a reduced clearance for a sewer crossing another service, the crossing sewer is constructed using a full length (5.5m) of Class 12 DICL pipe.				
	House connections a	are only made to sewers whe connections where the sewer	ere the depth to invert does not exceed a depth (to invert) exceeds 3m.	Bm. A shallower second main is	
	provided for fielded				
	Vitrified clay pipes (0	Class 4) are only used for seven	wers in industrial areas.		
+	Vitrified clay pipes (0 Sewer and/or roof an	Class 4) are only used for se nd allotment drainage lines a	wers in industrial areas. re located on no more than 2 boundarie	s of a lot.	

cific Outcomes for Assessable Development	Probable Solutions
	Where the finished surface slope of a lot exceeds 1 in 10, the sewer main depth is increased to allow for future site
	earthworks.
	Sewer mains are located along the front or rear boundary of the lot in order to maximise access to the infrastructure.
	Trunk sewer mains of 300mm diameter and greater are not located in lots.
	Existing on-site sewerage systems that are made redundant by the development are demolished or removed from the
	site.
	Sewer mannoles are provided at the following locations:-
	(1) changes in direction;
	(2) interpretions of courses
	(3) Intersections of sewers,
	(4) changes of sewer bina meterial: and
	(5) changes of sewer pipe material, and (6) and a f sewer lines, except where the line section does not exceed 30m in length and no more than 3 house
	connections are made to the line.
	Manhole spacing (centre to centre) does not exceed 90m for sewer lines up to 450mm diameter and 120m for greater than 450mm diameter.
	Type 1 manholes are used for sewer lines up to 375mm diameter and up to 6m sewer depth.
	Precast manholes are not used where:-
	(1) the sewer line receives pumped flows;
	(2) the sewer line is > 375mm diameter;
	(3) the manhole depth exceeds 6m;
	(4) saturated ground conditions are likely; or
	(5) the manhole is located near a creek bank which is likely to be susceptible to erosion.
	The top of the manhole ring is at the following finished levels:-
	(1) 600mm above ground in unmaintained areas;
	(2) 100mm above finished surface level in maintained open space and private lots;
	(3) 25mm above finished surface level in road verges; and
	(4) flush with carriageway surface, trafficable areas and concrete paths.
	Where possible, the top of manholes are above the 20 year ARI flood level.
	Bolt down manhole covers are used near creek banks, in flood prone areas (i.e. below 20 year ARI flood level) in parks and reserves and public open space.
	Control manholes at pump stations are within 10m distance of the station except where approved otherwise by <i>Council's</i> engineer.
	Wherever practicable, sewer lines are located within lots on a 1.5m alignment from the front boundary. In special circumstances only, the following alternative alignments within the lots are used:
	(1) 1.5m rear lot boundary; and
	(2) 1m from the side lot boundary

CHAPTER 6, PART 3, DIVISION 5 - INDUSTRIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development	Probable Solutions
	In special circumstances Council's engineer may approve alternative sewer alignments outside the building envelope.
	Sewer lines do not cross lot boundaries at acute angles.
	Where inter-allotment drainage is provided, the sewer line is located between the drainage line and the lot boundary. The house connection branch extends 1m beyond the drainage line.
	All parks and reserves are provided with a sewerage connection unless approved otherwise by Council's engineer.
	Manholes are located 1m upstream of lot boundaries except where the total fall across the lot along the sewer line exceeds 2m. Where the total fall across the lot along the sewer line exceeds 2m, the manhole is located 1m downstream of the lot boundary.
	Manholes do not straddle lot boundaries.
	The angle between incoming sewer lines and outlet sewer lines is 60° or greater.
	A maximum of three (3) inlet sewers or house connection inlets are made to any manhole.
	House connections are made to manholes where ever practicable.
	House connection branches (other than to manholes) are located between 1m and 1.2m upstream of lot boundaries at the lowest part of the lot.
	House connection branch inverts are not deeper than 1m. In special circumstances Council's engineer may approve a greater depth (up to 1.5m) to control the whole lot.
	The maximum length of house connection branch from a sewer in an adjoining lot is 5m. with the branch extending a minimum of 1m into the lot being served.
	The top of the sewage pump station is 100mm above the 20 year ARI flood level.
	The bottom of the switchboard for the sewage pump station is 300mm above the 100 year ARI flood level.
	The sewage pump station is contained within a secure fenced compound.
	The sewage pump station is provided with appropriate ventilation.
	The sewage pump station is provided with a water service including a reduced pressure zone valve.
+ 6	Appropriate measures are provided to prevent sewage from becoming septic where the detention time exceeds six (6) hours.
	Sewage pumps are the non-clogging submersible type pump.
	Flow meters are provided on the discharge line from the pump station.
	Telemetry is provided to the sewage pump station.
	Flow meters and telemetry equipment is housed in weatherproof enclosures.
	The potential for sewage overflows from sewage pump stations is minimised using appropriately designed overflow storage or other means approved by <i>Council's</i> engineer.
	The number and length of pressure mains is minimised as far as practicable.
	Sewer pressure mains are located in road verges of the opposite side to water supply mains.
	Sewer pressure mains have the following cover:
	(1) 1200mm under carriageways;
	(2) 1000mm elsewhere.

Effective from 15 December 2006

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development	Probable Solutions		
	Sewer pressure mains are not laid with engineer may approve a lesser separa main.	in 1.5m of parallel potable water supply mains. In special circumstances <i>Council's</i> ation providing the sewer pressure main obvert is 500mm below the water supply	
	Sewer pressure mains have section valves at not greater than 500m spacing.		
	Scour valves are located at all low poir	nts in the pressure main.	
	Vents are provided to all high points in the pressure main.		
	Odour and corrosion control measures	s are provided, as necessary, to pressure mains.	
	Pressure mains discharge into vented discharge manholes whose immediate downstream line does not have any hou connection branches.		
	Maintenance vehicle access is provide	ed to the sewage pump station in accordance with the following:-	
	Item	Requirement	
	Design Vehicles	(a) Medium Rigid Vehicle	
	P	(b) Articulated Tanker when oxygen injection is used	
	Access Track Maximum Grade	(a) 1 in 10 for gravel access;	
		(b) 1 in 6 for sealed access	
	Access Track Minimum Width	3.5m	
	Access Track Drainage	(a) No inundation in 5 year ARI storm;	
		(b) Trafficable in 10 year ARI storm	
	Surfacing	(a) Minor pump station with access grade < 1 in 10 – gravel surface ⁽¹⁾ ;	
		(b) Minor pump station with access grade >1 in 10 – sealed;	
	Development Device	(c) Major pump stations – sealed.	
	Pavement Design	(a) Minor pump station - as per DG 06 using 2.3 x 10° ESAs;	
	Pump Maintenance	(b) Major pump station - as per DG 06 using 4.5 x 10° ESAs	
	r unp maintenance	(a) Level area adjacent pump well for a crane truck, (b) Vent pole, switchboard and other equipment clear of working area of crane	
		truck.	
	Notes:-		
	1. Where the access is adjacent to	residential properties or Council's engineer considers that the amenity of nearby	
	residents may be affected by dus	t, the access is sealed.	
	Sewerage infrastructure is designed and constructed in accordance with the following standard drawings:		
	Item	Standard Drawing No.	
	Sewer Mannoles	8-50002, 8-50003, 8-50004, 8-50006 & 8-50007	
	Sewer Pipelines	8-50008	
	House Connection Branches	8-50009	
	Sewage Pump Stations	8-50015, 8-50016, 8-50017, 8-50018, 8-50019, 8-50021, 8-50023, 8-50024, 8-50025, 8-50026, 8-50040, 8-50041, 8-50042, 8-50043, 8-50050, 8-50051	
		8-50052, 8-50053, 8-50100, 8-50101, 8-50102, 8-50103, 8-50110, 8-50111, 8-	
	50112, 8-50113, 8-50120, 8-50121, 8-50122, 8-50123, 8-50140 & 8-50141		

Specific Outcomes for Assessable Development		Probable Solutions	s	
	Sewer Valves		8-50027	
	Sewer Rising Mains	8	-50028, 8-50029	
	Connection to <i>Council's</i> sewerage and manholes are vacuum tested a watertight.	system is not provided until the r nd test certificates are provided to	new mains are clean and watertight. The mains o confirm that the new mains and manholes are	
SO 56 Adequate buffers are provided between sewerage transportation and treatment facilities and dwellings to protect residential amenity and health.	PS 56 Sewage pump stations are no closer than 100m to the nearest existing or future residential lot. In special circumstances <i>Council's</i> engineer may approve a lesser buffer distance.			
SO 57 The sewerage transportation system for the proposed development is planned to conform with Council's broad infrastructure plan for the catchment.	PS 57 The sewerage transportation	n system conforms with Council's	infrastructure plan for the sewerage scheme.	
5.3.8(c) Recycled Water				
SO 58 Where <i>Council</i> plans to supply recycled water,	PS 58 An appropriate service corr	idor is provided for future recycled	water supply.	
supply systems.				
5.3.8(d) Electricity				
SO 59 Where lots are intended to be provided with reticulated electricity the service is underground with design and construction of the associated infrastructure and connections being provided in a safe, cost-effective, coordinated and efficient manner that supports sustainable development practices.	PS 59 Underground electrical reticulation is provided in industrial developments. Crossings of existing roads are bored. In special circumstances, <i>Council's</i> engineer may approve other methods including trenched construction. Road crossing are not at acute angles to the road centreline.			
	Electrical crossings are within the area defined as an <i>intersection</i> under State Legislation or are diagonally across intersections to enable 11kV cables to be installed without joints.			
	Pillars are provided at all entry points	to private property and located at	side boundaries of the lot.	
	Pillars are located on alternate comn	ion lot boundaries to water meters	and hydrants.	
5.3.8(e) Street Lighting – (excludes State-controlled road	ds)			
SO 60 All roads are provided with street lighting which is designed and constructed to provide a safe, cost-effective,	PS 60 All works are designed and constructed to AS1158, Public Lighting Code, 1986, Austroads Guide to Traffic Engineering Practice – Part 12, Roadway Lighting, 1988 and ENERGEX standards and approval.			
coordinated and efficient system that supports sustainable development practices.	Street lighting poles and luminaries are standard ENERGEX patterns under Rate 1 Tariff in roads and Rate 2 Tariff in other than roads.			
	Street light poles are located on standard alignments in accordance with the following standard drawings:-			
	Access Road and Collector Road		8-10016	
	Sub Arterial and Arterial		8-10013	
	Street lights are generally located opposite common lot boundaries and are positioned to minimise conflicts with vehi movements.		d are positioned to minimise conflicts with vehicle	
	·			

PineRiversPlan

CHAPTER 6, PART 3, DIVISION 5 - INDUSTRIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development	Probable Solutions		
	Street lights are located to minimise the risk of damage from errant vehicles at intersections, bends and speed control devices and by oversize vehicles which must necessarily leave the carriageway to manoeuvre in turn around areas, speed control devices and some intersections.		
	Street light poles that are in vulnerable locations (e.g. small islands or roundabouts) use frangible type poles.		
	Colour consistency is maintained as far as practicable.		
	Lighting designs are prepared in accordance with the Lighting Category specified below:		
	Road Classification	Lighting Category	
	Arterial	A2	
	Sub Arterial	A3	
	Collector Road	B2 ⁽¹⁾	
-	Access Road	B2	
	Pathways between lots	B2	
	General pathways in open space areas	C3 ⁽²⁾	
	Commuter Links	C2 ⁽²⁾	
	Other locations	Subject to individual assessment	
	 Lighting standard may vary to suit local conduct The above classification also applies to commutation Power supply to pathway lighting is undergroun Pathway lighting is Rate 2 Tariff. A light is provided to each end of pathways (may be obstruction or hazard (e.g. bridge, stairway, etc). Pedestrian underpasses or tunnels are lit in accordant Crossing points of pathways across roads or streets 	nity title developments. d. e street light), at every bend or change of alignment and at every nce with the relevant standard. are lit in accordance with the relevant street standard.	
	 In addition to the "through" street lighting above, ad locations:- (1) intersections; (2) roundabouts; (3) sharp bends; (4) traffic control devices; 	ditional special lighting is provided, as necessary, at the following	
	(5) pedestrian crossings:		
	 (6) cul de sac turn around areas; and (7) bridges 		

	PineRiversPlan		

Specific Outcomes for Assessable Development	Probable Solutions		
5.3.8(f) Telecommunications			
SO 61 All lots are able to be provided with a telecommunications service which is designed to give a safe, cost effective, coordinated and efficient system that supports sustainable development practices.	PS 61 Application for telecommunications reticulation is made and pre-provisioning confirmation is received prior to subdivision works commencing. Telecommunications reticulation (i.e. conduits and pits) is installed in accordance with Telstra standards and a provisioning confirmation is provided for the works.		
5.3.8(g) Alterations and Relocations			
SO 62 Any alteration or relocation in connection with or arising from the development to any service, installation, plant, equipment or other item belonging to or under the control of the telecommunications authority, electricity authorities, the <i>Council</i> or other person engaged in the provision of public utility services, is carried out prior to the approval of the plan of subdivision.	PS 62 No solution provided.		
5.3.8(h) As Constructed Information			
SO 63 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 63 As constructed information including test certificates for material quality (if required) and compaction is provided to the relevant authority upon completion of the subdivision works		
HISCRINC			

Effective from 15 December 2006

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Division 6 Commercial Subdivision Works Design Code

6.1 Overall Outcome

To create commercial subdivision development that:-

- (1) Provides safe, functional, convenient and attractive commercial areas;
- (2) Ensures that **sites** are managed during construction to minimise adverse impacts to the environment and on the health and amenity of residents and premises;
- (3) Ensures that *sites* are managed during construction to minimise adverse traffic impacts to existing roads;
- (4) Ensures that earthworks design and construction is suitable for the intended use of the land and that adverse impacts to the environment and on the health and amenity of residents is minimised;
- (5) To design and construct road networks which provide an optimum combination of Safety, Amenity, Convenience, Economy and Environment for residents, road and street users, and the community generally;
- (6) To design and construct stormwater management systems which provide an optimum combination of Safety, Amenity, Convenience, Economy and Environment for residents and the community generally;
- (7) To collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage, and at a development and environmental cost which is acceptable to the community as a whole;
- (8) Provides for the convenience and safety for pedestrians and vehicular traffic during frequent or nuisance stormwater flows;
- (9) Limits flooding of public and private property, both within the catchment and downstream, to ensure that flood inundation occurs on rare occasions only;
- (10) Ensures a reasonable level of pedestrian and vehicular traffic safety and accessibility;
- (11) Minimises pollutant inflows to the receiving waters, and controls scour and depositional effects;
- (12) Controls and temporarily detain within each catchment as much incident rainfall and runoff as possible and to reduce the impact of urbanisation;
- (13) Adequately protects people, the natural environment and the built environment at an acceptable level of risk;
- (14) Integrates stormwater management solutions with other uses and the natural environment;
- (15) Provides safe, convenient and legible networks for walking and cycling to points of attraction and beyond the development while preserving maximum visual amenity;
- (16) Ensures that opportunities exist for choice in the mode of transport and provides for costeffective and energy efficient public transport services that are accessible and convenient to the community;
- (17) Provides public open space that meets user requirements for outdoor recreational and social activities and for landscaping that contributes to the identity, environmental health and safety of the community;
- (18) Ensures, where appropriate, as many existing trees are retained as possible to keep the original character of the land and provide shelter and food for endemic flora and fauna;
- (19) Provides for commercial lots that are adequately serviced with sewerage, water supply, electricity, street lighting and communications services in a timely, cost effective, coordinated and efficient manner that supports sustainable development practices, and is in accordance with the desired character of the *locality*;
- (20) Ensures that the water supply and sewerage service provision complies with the relevant state guidelines for design;
- (21) Minimises the impact on amenity due to provision of water supply and sewerage infrastructure;
- (22) Ensures that all sewerage, water supply, electricity, street lighting and communications services that require relocation and/or alterations as a result of commercial development are carried out in a timely, cost effective, coordinated and efficient manner;
- (23) Provides the design requirements for all types of commercial lots within the Shire; and
- (24) Provides designers with the relevant specific outcomes and where possible, probable solutions to achieve the design overall outcomes associated with the various elements of subdivision works design.



6.2 Compliance with the Commercial Subdivision Works Design Code

This code applies to all operational works relating to development or reconfiguring of commercial land, but specifically excludes applications for access easements to a road, subdivision by lease and boundary relocations or realignments.

The application of the various specific outcomes will depend upon the size or scale of the proposed development. Some specific outcomes will not apply due to a particular design element not being part of the proposal (e.g. new road). In other instances it may be impractical to apply some specific outcomes, particularly for small infill developments.

6.3 Development Requirements

The following are the design Elements relevant to commercial subdivision:

- (6.3.1) Managing Impacts During Construction
- (6.3.2) Earthworks
- (6.3.3) Road Networks (excludes State-controlled Roads)
- (6.3.4) Stormwater Management
- (6.3.5) Pedestrian & Cyclist Facilities
- (6.3.6) Public Transport
- (6.3.7) Public Open Space
- (6.3.8) Utilities
 - (6.3.8a) Water Supply
 - (6.3.8b) Sewerage
 - (6.3.8c) Recycled Water
 - (6.3.8d) Electricity
 - (6.3.8e) Street Lighting
 - (6.3.8f) Telecommunications
 - (6.3.8g) Alterations and Relocations
 - (6.3.8h) As Constructed Information
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CHAP	Specific Outcomes for Assessable Development	Probable Solutions
TER 6	6.3.1 Managing Impacts During Construction	
5, PART 3 - AS	SO 1 All development <i>sites</i> minimise as far as possible any adverse impact to the natural environment caused by erosion, siltation, incineration of cleared vegetation and rubbish.	PS 1 The development works incorporate temporary stormwater runoff, erosion and sediment controls and trash traps designed in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.2.0 and 4.11.4, and Subdivisions Section Technical Note No. 6. The measures are adjusted on-site to maximise their effectiveness.
SESSME		Stormwater runoff, erosion and sediment controls are constructed prior to commencement of any clearing works wherever possible.
		All environmentally significant areas to be retained with the development are clearly delineated and fenced prior to development works commencing.
RITERIA	SO 2 All development works are carried out at times which minimise noise impacts to residents and other premises.	PS 2 All development works are carried out within the following times, unless otherwise approved in writing by <i>Council's</i> engineer:
FOR		(1) Monday to Friday (other than public holidays) between 7am and 6pm on the same day; and
OPI		(2) Saturday (other than public holidays) between 7am and 12noon on the same day.
RAI		No work is carried out on Sundays and public holidays.
TIONAL W		Variations to the above working hours may be approved if Council's engineer considers that the work is unlikely to cause significant inconvenience or disruption to the public, or the work is unlikely to cause annoyance or inconvenience to occupants of adjacent properties.
/ORKS	SO 3 All development works are managed to minimise dust and siltation nuisance to residents and other premises.	PS 3 During construction, dust suppression measures (such as watering of the <i>site</i>) are implemented to protect nearby premises from dust pollution.
	SO 4 All development works avoid the redirection of	PS 4 Temporary construction works do not pond or concentrate stormwater runoff in adjoining properties.
	premises may occur.	Temporary construction works do not create nuisance or annoyance to adjoining premises as a result of altering the stormwater runoff pattern exiting the <i>site</i> .
Effect	SO 5 Construction traffic does not adversely impact on the amenity of existing residents and other premises.	PS 5 Construction traffic to and from the <i>site</i> uses the highest classification streets or roads where a choice of access routes is available.
ive f		Where significant volumes of material are approved to enter or leave the site, a haul route is approved by Council.
rom 15 D		All materials associated with the development that are dropped, deposited or spilled on streets giving access to the <i>site</i> are removed and the streets are cleaned as soon as practicable after the event. Any damaged areas are repaired and reinstated to their previous condition.
ecembe		Where works are carried out on existing roads a traffic control plan is prepared in accordance with the Manual of Uniform Traffic Control Devices. All traffic control measures are properly erected and maintained during the works.
er 2006		Any access road to the <i>site</i> that has been affected by any material dropped, deposited or spilled on the road as a result of the construction processes associated with the <i>site</i> is cleaned and restored to its original condition.
	SO 6 Construction traffic are controlled to ensure all traffic movements to and from the <i>site</i> are safe.	PS 6 All traffic movements to and from the <i>site</i> frontage are carried out in a safe manner. Traffic controls are used where <i>site</i> access is approved directly onto a Major Road.
	SO 7 All clearing works are carefully undertaken to ensure the clearing is limited to the area of the approved infrastructure works, buildings areas and other areas approved in the development	PS 7 Areas of significant vegetation, proposed park and open space areas and other areas of vegetation or individual trees designated to be retained with the development are temporarily fenced and flagged.
6-377	permit.	

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CH AF	Specific Outcomes for Assessable Development	Probable Solutions
TER 6, PART 3 -	SO 8 All cleared vegetation is disposed of in a manner which minimises, as far as practicable, nuisance and annoyance to existing premises.	PS 8 Where cleared vegetation is chipped or pit burned on <i>site</i> the location of these works is not less than 100m from any dwelling or commercial premises. All vegetation with a diameter below 400mm is chipped and stored on <i>site</i> in an approved location generally on <i>park</i> or public land. Vegetation with a diameter above 400mm is pit burned on <i>site</i> if a suitable location is available. The pit burn is generally carried out as one continuous operation.
Ä		Chipping and/or pit burning is only undertaken when weather conditions are favourable.
SSE		Burn pit locations are approved in writing by Council's engineer and shown on the "as constructed" drawings.
VSS		Cleared vegetation is not disposed of by above ground burning.
MENT C	SO 9 All noxious weeds and other materials which are detrimental to the intended use of the land are removed and	PS 9 All groundsel, noxious weeds, stumps, fallen trees, rubbish, car bodies, scrap metal and the like are removed and disposed of in a manner which minimises environmental impact.
	disposed of in a manner which minimises environmental impacts.	Stumps, fallen trees, undergrowth, buildings, <i>structures</i> , foundations and the like in existing and proposed <i>park</i> and open space areas are removed where directed by <i>Council's</i> representative.
ē	6.3.2 Earthworks	
OR OPERATIONAL	SO 10 Earthworks design takes into account the slope of the ground, short and long-term slope stability, soft or compressible foundation soils, reactive soils, low density or potentially collapsing soils, existing fills and soil contamination that may exist on <i>site</i> .	 PS 10 Investigation, planning and design including documentation is carried out in accordance with Australian Standard AS3798. All cut and fill batters are provided with appropriate scour, erosion protection and runoff control measures including catch drains at the top of batters and lined batter drains as necessary. All fill batters steeper than 1 (V) in 6 (H) in commercial lots are fully turfed to prevent scour and erosion.
IORKS	SO 11 Filling is not placed on existing or proposed <i>park</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 11 Filling is not placed on existing or proposed <i>park</i> unless specifically approved in writing by <i>Council's</i> engineer.
	SO 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.
E#	SO 13 The <i>site</i> is properly prepared for earthworks.	PS 13 The <i>site</i> is prepared in accordance with Australian Standard AS3798.
ective fi	SO 14 Fill construction is carried out in a manner which ensures that the works meet the design requirements.	PS 14 The fill construction is carried out in accordance with Australian Standard AS3798.
) M	SO 15 Unsuitable materials are not used in structural fill.	PS 15 Materials used for structural fill conform with Australian Standard AS3798.
15 December	SO 16 Earthworks and trench backfill is properly compacted to suit the desired use of the <i>site</i> .	PS 16 The earthworks and trench backfill is compacted to the minimum relative compaction given in Table 5.1 of Australian Standard AS3798. The minimum frequency of field density tests is not less than that specified in Table 8.1 of Australian Standard AS3798. Any open drains, earth dams and wells on the <i>site</i> are drained, cleaned and filled as specified above.
2006	SO 17 Steep rock slopes and batters are stable and low maintenance.	PS 17 Steep rock slopes and batters are inspected and certified for long-term stability by a suitably qualified and experienced geotechnical engineer. Stabilisation measures are provided, as necessary, to ensure long-term stability and low maintenance.
	SO 18 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 18 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.

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6.3.3	Road Networks (excludes State-controlled Roads)	
SO 19	The road design and construction has a clear structure	P
and com	ponent streets conform to their function in the network.	
SO 20 distinctio	The road design and construction has clear physical ons between each type of street based on function.	M Fr
legibility,	convenience, traffic volumes, vehicle speeds, public	De
60 24	The read decise and construction is integrated with the	M
SU 21	an and accommodate the following primary functions:	M
		(ir
(1) acc	ess to lots;	M
(2) on s	street car parking;	M
(3) stor	mwater drainage paths (minor and major storms);	(a
(4) pub	lic transport on Collector Roads and Major Roads;	(b
(5) utilit	y services location; and	(C
(6) sett	ing and approach (streetscape and landscape).	
		(d
		M
		Fo
		M

Specific Outcomes for Assessable Development

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

- (2) on street car parking;
- (3) stormwater drainage paths (minor and m
- public transport on Collector Roads and I (4)
- (5) utility services location; and
- (6) setting and approach (streetscape and la

PS 19 to PS 21 The Commercial Roads conform to the following:-						
Design Issue	Collector Road	Trunk Collector Road	Major Road			
Maximum Traffic Volume for Direct	3500 vpd	9000 vpd	May not suitable (1)			
Frontage Access						
Design Speed	40km/h (max.)	60km/h (max.)	60km/h			
Minimum verge Width	4.275m ⁽²⁾⁽³⁾	5.5m ⁽³⁾	7.5m			
Minimum Parking Lane Width	4.2m ⁽⁴⁾	4.2m ⁽⁴⁾	4.2m (4)			
(includes provision for cycles)						
Minimum Through Lane Width	3.5 m	3.5 m	3.5m			
Minimum Median Widths:-						
(a) providing for sheltered turn lane	(a) 6m	(a) 6m	(a) 6m			
(b) providing for pedestrian refuge	(b) 2.5m	(b) 2.5m	(b) 2.5m			
(c) providing for traffic signals or lighting poles	(c) 2m	(c) 2m	(c) 2m			
(d) providing for small signs	(d) 1.5m	(d) 1.5m	(d) 1.5m			
Minimum Road Reserve Width	15.4m plus verge and median requirements	15.4m plus verge and median requirements	15.4m plus verge and median requirements			
Footpaths/Cyclepaths	1.5m wide (both sides) ⁽⁵⁾	1.5m wide (both sides) (5)	2m wide (both sides)			
Maximum Grade	12%	12%	6.0%			
Minimum Grade	0.4%	0.4%	0.4%			
Nataa		•	•			

Probable Solutions

Notes:

- Subject to appropriate design for Major Developments. For traffic volumes exceeding 12,000 vpd, service roads are 1. provided. For minor infill developments frontage, access may be permitted where there is no reasonable alternative available.
- Collector Street contain water mains in both sides and therefore require a minimum verge width of 4.275m. 2.
- 3. Greater width is required at bus bays.
- Allows for parking and cycling. 4.
- Greater widths will be required for cycle paths refer to **Council's** Bikeways Plan. 5.

The roads accommodate appropriate corridors for all public utilities in accordance with Council's standards.

The road design is integrated with the site design.

The detailed design of Commercial Roads conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, viz:

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ecific Outcomes for Assessable Development	P	robable Solutions	
	Road Design Issue	Planning Scheme Policy PSP2 Reference – Collector &	8 Civil Infrastructure Desig Trunk Collector Roads
	Geometric Design	Part 1 Sec	ct 2.10.0
	Intersections	Part 1 Sect 2.2	11.0 & 6.16.0
	Manoeuvring Areas	Part 1 Sec	ct 2.12.0
	Roundabouts	Part 1 [DG 01
	Landscape Construction on Road Reserves, Parks and Drainage Reserves	Part 1 [DG 03
	Signs and Road Marking	Part 1 Se	ct 6.7.0
	Footpaths	Part 1 Se	ct 6.4.0
	Bikeways	Part 1 Se	ct 6.5.0
	Service Conduits	Part 1 Se	ct 6.8.0
	Subsoil Drainage	Part 1 Se	ct 6.9.0
	Safety Barriers	Part 1 Sec	ct 6.10.0
	Guide Posts	Part 1 Sect 6.11.0	
	Bridge and Culvert Widths Part 1 Sect 6.1		ct 6.12.0
	Street and Pathway Lighting Part 1 Sect 6.13		ct 6.13.0
	Park Barriers	Part 1 Sec	ct 6.14.0
	Retaining Walls	Part 1 Sec	ct 6.15.0
	Major Roads conform to the following:		
	Issue	Sub-Arterial	Arterial
	Traffic Volume (typical)	12,000 vpd	30,000 vpd
	Design Speed (minimum)	80km/h	100km/h
	Carriageway Lanes	2	4
	Carriageway Width	10m (kerbed) ⁽¹⁾	2 x 8.5 m (kerbed) ⁽¹⁾
	Verge Width (minimum.)	7.5m	8.5 m
	Reserve Width (minimum)	25m ⁽²⁾	40m ⁽²⁾
	Footpaths/Cyclepaths	Both sides (3)	Both sides ⁽³⁾
	Maximum Grade	7%	6%
	Minimum Grade	0.4%	0.4%
	Notes: 1. Does not include cycle lanes. 2. Greater width required at intersections. 3. Cyclenaths may be required in accordance with network design		

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ecific Outcomes for Assessable Development		Probable Solutions
	The detailed design of Major Roads conforms viz:	with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design
	Road Design Issue	Planning Scheme Policy PSP28 Civil Infrastructure Design Reference
	Design Philosophy	Part 1 Sect 3.2.0
	Classification of Major Urban Roads	Part 1 Sect 3.3.0
	Freeways	Part 1 Sect 3.4.0
	Arterial Roads	Part 1 Sect 3.5.0
	Sub-Arterial Roads	Part 1 Sect 3.6.0
	Intersections	Part 1 Sect 3.7.0 & 6.16.0
	Traffic Volume and Capacity	Part 1 Sect 3.8.0
	Design Speed	Part 1 Sect 3.9.0
	Cross Section Elements	Part 1 Sect 3.10.0
	Geometric Design	Part 1 Sect 3.11.0
	Bus Stops	Part 1 Sect 3.12.0
	Pedestrian and Cyclist Facilities	Part 1 Sect 3.13.0
	Aesthetics and Appurtenances	Part 1 Sect 3.14.0
	Services Streets	Part 1 Sect 3.15.0
	Roundabouts	Part 1 DG 01
X	Signs and Road Markings	Part 1 Sect 6.7.0
	Footpaths	Part 1 Sect 6.4.0
	Bikeways	Part 1 Sect 6.5.0
	Service Conduits	Part 1 Sect 6.8.0
	Subsoil Drainage	Part 1 Sect 6.9.0
	Safety Barriers	Part 1 Sect 6.10.0
	Guide Posts	Part 1 Sect 6.11.0
	Bridge and Culvert Widths	Part 1 Sect 6.12.0
	Street and Pathway Lighting	Part 1 Sect 6.13.0
	Park Barriers	Part 1 Sect 6.14.0
	Retaining Walls	Part 1 Sect 6.15.0

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Specific Outcomes for Assessable Development		P	robable Sc	olutions			
	The road cross-sections conform	with Council's	standard drav	vings as follo	WS:-		VERS
	Road Classification			Standard D	Prawing Number		
	Collector Street	8-10014 & 8- medians as re	0008 modifie	d to suit add	itional elements (parking la	anes, bus bays and	
	Trunk Collector Street	8-10015 & 8- medians as re	0010 modifie	d to suit add	itional elements (parking la	anes, bus bays and	
	Sub-Arterial Road	8-10006 & 8- lanes, bus ba	10009 modifi ys and media	ed to suit ad	lditional elements (service ed)	e streets or parking	
	Arterial Road	8-10007 & 8- lanes, bus ba	10009 modifi ys and media	ed to suit ad	lditional elements (service	e streets or parking	
	Utility service allocations conform	with Council's	standard drav	vings as follo	ows:		
	Road Classif	fication			Standard Drawing Nu	mber	
	Collector Street				8-10011		
	Trunk Collector Street				8-10012		
	Sub-Arterial & Arterial				8-10013		CHA
22 Intersections along Commercial Roads and Major Roads safe and convenient.	DG 06. The works are constructed within Design, Part 1, DG 02, Appendix PS 22 Intersection spacing (cer Intersecting	n tolerances giv C. ntreline – centre	en in <i>Counc</i> line) along a	through road	g Scheme Policy PSP28 I conforms with the followin	Civil Infrastructure	RT 3, DIVISION 6
	Road Acces	ss Street &	Trunk C	ollector	Sub-Arterial Road	Arterial Road	6
+	Location Colle	ctor Street	Str	et	(1)		MM
	On same side of through road	60m	100)m	300m	500m	ERCIA
	On opposite side of through road	40m	60	m	300m	500m	
	Notes:						INIC
	1. In the case of Sub-Arterial Retter the following absolute minim	oads, existing la um spacing is u	ndholdings m sed, but all tu	ay require in rns access r	itersection at a lesser spac may not be permitted (ie le	cing. In such cases	N NOIS
	Intersections on same side		100m			ORI	
	Intersections on opposite sides:					KSD	
	left – right stagger			100m		ESI	
	• right – left stagger				30m		SN C
	>						ODE

Specific Outcomes for Assessable Development			Probable Solutions
	The detailed design of street and r Policy PSP28 Civil Infrastructure D	oad intersecti Design:-	ions conforms with the following sections of <i>Council's Planning Scheme</i>
	Road Classification		Planning Scheme Policy PSP28 Civil Infrastructure Design Reference
	Residential Streets		Part 1 Sect 2.11.0 & Sect 6.16.0
	Major Roads		Part 1 Sect 3.7.0 & Sect 6.16.0
	Roundabouts		Part 1 DG 01
	Local Area Traffic Management		Part 1 DG 05
) 23 The road design facilitates walking and cycling within	PS 23 All pathways have 1.2m	wide (minimu	m) reinforced concrete paths linking up with:-
e area and to local facilities and public transport routes and	(1) any existing concrete footpath	n/cyclepath wi	ithin 20m of the pathway;
ops.	(2) any proposed concrete footpa	ath/cyclepath i	in the development within 20m of the pathway;
	(3) the kerb and channel by way	of a kerb ram	p; and
	(4) where there is no kerb and ch	annel, the ca	rriageway.
	Kerb ramps are provided at all kerl	b and channe	elled intersections.
O 24 All new Council controlled roads are fully constructed Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standards.	PS 24 All new Council controlled roads are fully constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standards.		
O 25 All Council controlled frontage roads are constructed	PS 25 All Council controlled frontage roads are fully constructed to Council's Planning Scheme Policy PSP28 Civil		
esign standards.	Situation		Minimum Construction ⁽¹⁾
	Where the existing frontage road	For Access	Roads: the full carriageway and verges are provided.
	is unconstructed or a gravel road only:-	For Collectorside kerb an lanes each shoulder an	or Roads: the verge adjoining the new lots, carriageway (including near ad channel) to a minimum width containing near side parking lane, through way, median (as required) plus 1.2m wide (full depth pavement) grave id table drainage to the opposite side.
		For Major R kerb and ch streets (as r (full depth p	Roads: the verge adjoining the new lots, carriageway (including near side hannel) to a minimum width containing near side parking lane, service required), through lanes each way, median (as required) plus 1.2m wide avement) gravel shoulder and table drainage to the opposite side.
	Where the existing frontage road	For Access	Roads: the full carriageway and verges are provided.
	is sealed but not constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standard ⁽²⁾ :	For Collectorside kerb an lanes each shoulder an	or Roads: the verge adjoining the new lots, carriageway (including nean ad channel) to a minimum width containing near side parking lane, through way, median (as required) plus 1.2m wide (full depth pavement) grave and table drainage to the opposite side.
		For Major R kerb and ch streets (as r	Roads: the verge adjoining the new lots, carriageway (including near side nannel) to a minimum width containing near side parking lane, service required), through lanes each way, median (as required) plus 1.2m wide

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Specific Outcomes for Assessable Development	nent Probable Solutions			
	Where the existing frontage road is partially constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standard ⁽²⁾ :	For Access Roads: construction of the full carriageway and verges is completed. For Collector Roads and Trunk Collector Streets: complete the verge adjoining the new lots, carriageway (including near side kerb and channel) to a minimum width containing near side parking lane, through lanes each way, median (as required) plus 1.2m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. The works match into the existing works. For Major Roads: complete the verge adjoining the new lots, carriageway (including near side kerb and channel) to a minimum width containing near side parking lane, service streets (as required), through lanes each way, median (as required) plus 1.2m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. The works match into the existing works.		
	Notes: 1. Construction includes all asso 2. Testing of the existing pavel Scheme Policy PSP28 Civil I	pociated works (services, streetlighting and linemarking). ment is carried out to confirm whether the existing works meet Council's Planning infrastructure Design standard.		
SO 26 Sealed and flood free road access during minor storms is available to the site from the nearest Major Road. PS 26 Roads giving access to the development from the nearest Major Road are sealed to a minimum width of 7r These access roads or streets have minor drainage systems (10 year ARI design storm) which conform with Council Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Section 4.7.0.				
SO 27 The existing road network is upgraded where necessary to cater for the traffic impact from the development.	PS 27 New intersections onto a 10 years hence. Detailed design <i>Design</i> , Part 1. Existing intersections external to development. Detailed design is <i>Design</i> Part 1.	existing roads are designed to accommodate traffic volumes and traffic movements is in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure</i> the <i>site</i> are upgraded as necessary to accommodate increased traffic from the in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure</i>	6, PART 3, DIVISIO	
SO 28 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 28 As constructed informatic after completion of the subdivision	on including test certificates for material quality (if required) and compaction is provided works.	0N 6 - COM	
6.3.4 Stormwater Management			MER	
 SO 29 The major drainage system has the capacity to safely convey stormwater flows for the 100 year ARI storm event. SO 30 Overland flow paths conveying stormwater flows for the 100 year ARI storm event (and greater) do not pass through or encroach upon commercial lots. 	PS 29 and PS 30 The roads, drain for the 100 year ARI storm event (to encroach upon private lots. Overland flow paths (for any storm Drainage pathways are provided to	hage pathways, drainage features and <i>waterways</i> safely convey the stormwater flows (ultimate development catchment characteristics upstream) without allowing the flows event) from roads and public open space areas do not pass through commercial lots.	CIAL SUBDIVISIO	
	The major drainage system has a upstream). All carriageways have kerb and ch	minimum design ARI of 100 years (ultimate development catchment characteristics annel.	N WORKS D	
	Catchpits are located to ensure th major storm (100 year ARI):-	e longitudinal flow in the channel does not exceed the following requirements for the	ESIGN C	
			CODE	

Specific Outcomes for Assessable Development	Probable Solutions				
	Location	Location Major Storm - Maximum			
		Major Roads	Minor Roads		
	Where floor levels of adjacent buildings are above road level (kerb and channelled crowned road)	 (a) Total flow contained within road reserve; and (b) Freeboard ≥250mm to floor level of adjacent buildings; and (c) Maximum depth of flow of 300mm 	 (a) Total flow contained within road reserve; and (b) Freeboard ≥250mm to floor level of adjacent buildings; and (c) Maximum flow depth 300mm 		
	Where floor levels of adjacent buildings are below road level or < 300mm above top of kerb (kerb and channelled crowned road) (a) ≥100mm fall on verge towards kerb;	(a) 50mm above top of kerb;	(a) 50mm above top of kerb;		
	(b) <100mm fall on verge towards kerb.	(b) Top of kerb	(b) Top of kerb		
	Roads without kerb and channel – table or swale drains used for longitudinal	(a) Total flow contained within road reserve; and	(a) Total flow contained within road reserve; and		
	drainage	(b) Flows do not encroach upon driving lanes; and	(b) Flows do not encroach upon driving lanes; and		
		(c) Freeboard ≥250mm to floor level of adjacent buildings; and	(c) Freeboard ≥250mm to floor level of adjacent buildings; and		
		(d) Maximum depth of flow in drain of 300mm	(d) Maximum depth of flow in drain of 300mm		
	 Notes: Widths are measured from channel Refer to Council's Planning Schell requirements. Detailed design of the major drainage sy Design, Part 2, Section 4. 	I invert for kerb and channel and from kerl me Policy PSP28 Civil Infrastructure Desig stem conforms with Council's Planning Sc	o face for kerb only. n, Part 2, Section 4 for detailed design heme Policy PSP28 Civil Infrastructure		
	The total major flow is contained within	he road.			
	Commercial lots have the following mini	mum development levels:-			
	Location	Minimum Development Level	Minimum Area at Development Level		
	Adjacent Existing NaturalThe gWatercourse(a) Q	reater of:- 100 _{ultimate} plus 750mm; or (a) For lots > 2000m ² minimum area is 2000m ²		
	(b) th	e highest recorded flood level plus 0mm.	b) For lots up to 2000m² minimum area is the whole lot		

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Specific Outcomes for Assessable Development		Probable Solutions			
	Adjacent Engineered Channels	The greater of:-			
		(a) Q100 _{ultimate} for a maintained channel plus 500mm; or	 (a) For lots > 2000m² minimum area is 2000m² 		
		(b) Q100 _{ultimate} for an unmaintained channel plus 250mm.	(b) For lots up to 4000m ² minimum area is the whole lot		
	Road Drainage	The greater of:-			
		(a) Q100 _{ultimate} plus 250mm; or	(a) For lots > 2000m ² minimum area		
		(b) Q100 _{utimate} plus 150mm using blocked	is 2000m ²		
		catchpits or inlets.	(b) For lots up to 4000m ² minimum area is the whole lot		
	Overland Flow Paths	The greater of:-			
		(a) Q100 _{ultimate} for a maintained flow path plus 250mm; or	 (a) For lots > 2000m² minimum area is 2000m² 		
		(b) Q100 _{uttimate} for an unmaintained flow path plus 150mm.	(b) For lots up to 4000m ² minimum area is the whole lot		
	Detention basins are designed in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design Part 2, Section 4.8.0.				
	Open channels are designed in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design Part 2, Section 4.9.0.				
) 31 The minor stormwater drainage system has the capacity convey stormwater flows from frequent storm events whilst	PS 31 The minor drainage system through the <i>site</i> has a minimum design ARI of 10 years (ultimate development catchment characteristics upstream).				
nsuring pedestrian and vehicular traffic movements are safe and	All carriageways have kerb and channel.				
onvenient.	Catchpits are located to ensure the flow in the channel does not exceed the following requirements for the minor storm:-				
	Minor Storm - Maximum Flow Width				
		Major Roads	Minor Roads		
	Design ARI (years)	10	10		
	Normal situation – kerb and char crowned road	nnelled Parking Lane width (usually 2.5m) c breakdown lane width.	r Full pavement width with zero depth at crown.		
	Normal situation – no kerb and channel, crowned road	Contained within the table drain.	Contained within the table drain.		
	Normal situation – one way cross road	sfall Parking Lane width (usually 2.5m) c breakdown lane width.	To high side of road pavement but not above top of kerb on low side.		
	Where parking lane may be replaced by a through, accelerati deceleration or turn lane	ion,	Not applicable		
	Where road falls towards median	ז 1m	Not applicable		
	Pedestrian crossing or bus stops	6 0.45m	0.45m		
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Specific Outcomes for Assessable Development	Probable Solutions				
	Notes:				
	1. Widths are measured from channel invert for kerb and channel and from kerb face for kerb only.			hannel and from kerb face for kerb only.	
	2. Refer Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Section 4 for detailed desirequirements.				
	The product of depth b	y average velocity i	n the channel (long	gitudinal drainage) does not exceed 0.6m ² /s except where	
	there is a danger of peo	destrians being swe	ot away and drown	ed where the value is limited to 0.4m ² /s.	
	The pipelines are located on a 1.5m nominal alignment measured from the invert of kerb and channel towards the road centreline and are not located under kerb and channel.				
	Pipelines from sag points in the road are taken through drainage reserves, pathways or park and open space to an approved discharge point.				
	Gully inlets (catchpits) a	allow for blockage b	y reducing the theo	pretical capacity of the inlet as follows:-	
	Condition	Inlet -	Гуре	Percentage of Theoretical Capacity Allowed	
	Sag	Side E	Entry	80%	
		Gra	ed	50%	
		Combi	nation	Capacity of kerb opening assuming grate is fully blocked	
	Continuous Grade	Side I	Entry	80%	
		Grated – Long	itudinal Bars	60%	
		Grated – Trar (with or without lo	sverse Bars ongitudinal bars)	50%	
		Combin	nation	70% - 90% of capacity of kerb opening plus grate (depending upon length of backstone)	
	Gully inlets and manholes have the following minimum freeboard for the minor storm event:-				
	Situation			Minimum freeboard requirements	
	Gully inlet on grade			150mm below invert of kerb and channel	
	Gully inlet in sag			150mm below invert of kerb and channel	
	Field inlet			150mm below top of grate or lip of inlet	
	Manhole or junction structure			150mm below top of lid	
	Roof and allotment (QUDM level V) drainage is provided. The <i>site</i> pipe drainage system is connected to the <i>Council's</i> underground drainage system.				
	The roof and allotment drainage system has a minimum design storm ARI of 10 years.				
	Drowned outlets are not used.				
	Stormwater drainage infrastructure through or within private land is protected by easements in favour of <i>Council</i> . Minimum easement widths are as follows:-				
	Pipe D)iameter	Minimun	n Easement Width (excluding access requirements)	
	Stormwater pipe up to 825mm diameter			3m	

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Specific Outcomes for Assessable Development		P	robable Solutions	5	
	Stormwater pipe up to Sewer pipe up to 225n	825mm diameter with		4m	
	Stormwater pipe great	er than 825mm diameter	Easement boundar	y to be 1m clear of outside wall of pipe and clear of pits.	
	Detailed design of the minor drainage system conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Section 4. Stormwater drainage reticulation and cross drainage conforms with the following standard drawings:-				
	Item			Standard Drawing Numbers	
	Road Catchpits			8-30001 to 8-30003, 8-30036	
	Field Inlets			8-30004	
	Circular Manholes			8-3006-8-30008, 8-30010, 8-30011	
	Bedding and Backfill to	Pipes and Culverts		8-30013 & 8-30014	
	Security Grates to Stor	rmwater Outlets		8-30025	
32 Road cross drainage ensures that roads remain	PS 32 Road cross of	Irainage is provided to satis	fy the following requir	ements:-	
fficable during major and minor storm events without flooding impacting upon commercial properties or other premises.	Road Classification	Major	Storm	Minor Storm ¹	
	Major Road	Trafficable for flows from storm:	the 100 year ARI	For the 50 year ARI storm:	
		(a) Maximum depth 200r	nm; and	 (a) Flows and flood levels do not encroach upon the driving lanes; 	
		(b) $D_g V_{ave} \le 0.4$		 (b) Minimum pipe system freeboards are maintained. 	
	Minor Road	Trafficable for flows from storm:	the 100 year ARI	For the 10 year ARI storm:	
		(a) Maximum depth 200r	nm; and	 (a) Flows and flood levels do not encroach upon the driving lanes; 	
		(b) $D_g V_{ave} \le 0.4$		(b) Minimum pipe system freeboards are maintained.	
	Notes:				
	1. 50 year ARI for N	lajor Roads; 10 year ARI fo	r Minor Roads		
	Roads remain trafficab Council's Planning So Waterways Design Gu	le during major storm (100 <u>)</u> cheme Policy PSP28 Civil I uidelines.	vear ARI) events. Deta nfrastructure Design,	ailed design of culverts and bridges conforms with Part 2, Section 4.12.2 and 4.12.3 and Austroads	
	Where there is potential for blockage by stream debris due to the nature of the catchment the cross drainage is constructed using box culverts or a bridge <i>structure</i> .				
	Afflux from the cross drainage does not flood or reduce the required Q100 freeboard to commercial properties or other premises.				

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HAF	Specific Outcomes for Assessable Development	Probable Solutions
TER	SO 33 Stormwater management facilities ensure that drainage	PS 33 Stormwater runoff from the <i>site</i> is conveyed to a point of lawful discharge without causing nuisance or annoyance
6, P	discharge from the <i>site</i> does not cause nuisance or annoyance to	to any person, property or premises.
ÅR	any person, property or premises.	Wherever possible pollutant loads are not made worse on downstream properties.
Ψ		Wherever practicable runoff rates are not made worse on downstream properties.
ASSESSN		A watercourse as defined in the <i>Water Act 2000</i> is accepted as a lawful point of discharge providing the drainage discharge from the site does not increase downstream flood levels during the 100 year ARI storm by more than 20mm and any flooding of downstream allotments which are not able to be further subdivided is not increased.
NENT C		Where drainage is to be carried through private lots easements are provided over the drainage (open or piped) in favour of Council . Easement dimensions comply with the Queensland Urban Drainage Manual, Section 3.00.
RTE	SO 34 The stormwater quality management system minimises	PS 34 All developments in excess of 2ha provide stormwater quality improvement devices.
ERIA FO	the environmental impact of stormwater on surface and underground receiving water quality.	The calculated pollutant concentrations from the <i>site</i> do not exceed <i>Council's</i> adopted water quality objectives (WQO) for the particular catchment or, where no WQO has been adopted, then the appropriate ANZECC standards.
RO		All dry weather flow is treated to reduce pollutant loads prior to discharge to a watercourse, creek or river.
PERATION		The first flush flow from the first 15mm of rainfall over the <i>site</i> is treated to reduce pollutant loads prior to discharge to a <i>watercourse</i> , creek or river. Where approved proprietary products are used to treat first flush flows the minimum flow treated is for the 3 month ARI storm.
IAL WO		The detailed design of stormwater quality improvement devices conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 2, Sections 3 & 4.
RKS		Detention basins include a low flow water quality treatment facility with a minimum storage time of 24 hours and a maximum storage time of 48 hours.
		All stormwater improvement devices are constructed "off line" wherever possible (i.e. major flows do not pass through stormwater quality improvement devices).
Effect		Diversion manholes or chambers are used on reticulated drainage systems to divert stormwater flows to water quality treatment devices (except for proprietary products that have approved internal bypass systems).
tive		Approved proprietary products are installed and maintained in accordance with the manufacturers recommendations.
fron	SO 35 The stormwater quality management system minimises	PS 35 Stormwater management facilities do not encroach upon riparian areas.
n 15	the environmental impact of stormwater on natural waterway	Filling does not extend below the Q50 (ultimate) flood contour for creeks and watercourses.
De	configuration.	Filling does not extend below the Q100 (ultimate) flood contour for rivers.
cem		The number of stormwater outlets to waterways are minimised.
ber		Natural creeks and watercourses are not channelised to maximise development area.
200	SO 36 The stormwater quality management system minimises	PS 36 Stormwater management facilities do not encroach upon existing natural wetlands.
6	wetlands and vegetation.	Significant existing water bodies are retained with appropriate stormwater quality improvement devices (refer Council's <i>Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.11.5).
	SO 37 Community benefit is maximised through the retention and enhancement of natural streams and vegetation wherever practicable.	PS 37 <i>Watercourses</i> are enhanced by re-vegetation with natural species occurring in the catchment. The area must be planted with local native trees (of the local Regional Ecosystem if relevant) at 3m centres, shrubs at 2m centres and ground covers at 1m centres.
<u>ه</u>		Existing erosion and scour in watercourses through or adjoining the site are repaired and stabilised.
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Specific Outcomes for Assessable Development			Probable Solutions	
SO 38 Areas constructed as detention basins are adaptable for passive recreation wherever practicable.	PS 38 Large dry detention bas drainage system with capacity to 100(H) towards its perimeter drain	ins are de carry 3mm	esigned to accommodate passive recreation. The basin includes a low flow //hr rainfall in the catchment. The basin floor is sloped at not less than 1(V) to	
SO 39 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 39 As constructed informat after completion of the subdivision	on includi n works.	ng test certificates for material quality (if required) and compaction is provided	
6.3.5 Pedestrian and Cyclist Facilities				
SO 40 The pedestrian and bikeway design provides for safe,	PS 40 Footpaths are provided	in the follo	owing instances:	
commercial precinct and major attractions such as schools,	Location		Footpath Requirement	
shops, sporting facilities, bus routes (existing and planned) and	Access Place		Nil ⁽¹⁾	
railway stations.	Access Street		One side only where the catchment exceeds 40 lots, otherwise nil.	
	Collector Street		Both sides	
	Major Roads		Both sides	
	Adjacent pedestrian traffic genera	itors	To suit pedestrian movements	
	Along pathways		The full length of the pathway and linking to any footpath within 20m, the kerb and channel by way of a kerb ramp or to the carriageway where no kerb and channel exists.	
	Notes:			
	1. Footpaths may be required	for netwo	rk planning considerations.	
	Footpaths are designed to confor	m with the	following:	
	Issue		Requirement	
	Width	(a) 1.2	m minimum for Access Street and Collector Street;	
		(b) 1.5	im one side & 2m other side for Sub Arterial and Arterial;	
		(c) 1.5 mi	im minimum elsewhere except for dual use pedestrian/cycle paths where nimum width is 2m	
	Location	Refer r	elevant standard drawing for road classification.	
	Clearance to Properties	0.8m fc	r Access Place, Access Street and Collector Street;	
		1m for	Trunk Collector Street, Sub-Arterial & Arterial.	
	Clearance to Kerbline	1.5m for Access Place, Access Street and Collector Street;		
		2.5m for Trunk Collector Street, Sub-Arterial & Arterial.		
	Pathway Construction	n Refer Standard Drawing No. 8-10036		
	Grades	Along r	oads - as per maximum grade for classification of road;	
		Pathwa	y reserves & open space – 10% desirable maximum.	
	Crossfall	2.5% (1	in 40) minimum;	
		5% (11	n 20) maximum.	

Specific Outcomes for Assessable Development	-	Probable Solutions		
	Crossing Points	Refer to <i>Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, Section 6.4.7 & 6.4.8		
	Crossing Points for combined bicycle/footway use	Refer to Standard Drawing No. 8-203		
	Chicanes are provided at the end 60036).	ds of all pathways to roads (refer to Standard Drawing Nos. 8-60033, 8-60034 & 8-		
	Bike/footway terminations at Collector Roads or higher classification roads conform with Standard Drawing No. 60034.			
	Bike/footway direct road crossings	conform with Standard Drawing No. 8-60035.		
	Detailed design of the footpaths of Part 1, Section 6.4.0.	conforms with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design,		
	Bikeways are provided within and Detailed design of the bikeways of Part 1, Section 6.5.0.	adjacent the <i>site</i> as indicated in <i>Council's</i> Bikeways Plan or adopted local area plan. conforms with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> ,		
SO 41 As constructed information is provided after completion of the subdivision works.	PS 41 As constructed informati	on is provided after completion of the subdivision works.		
6.3.6 Public Transport				
SO 42 The road design provides for potential bus routes	routes PS 42 Bus routes are designed to conform with the following:-			
including safe convenient stops and, where necessary, bus	Issue Requirement			
	Reserve Width	20m minimum		
	Carriageway Width	11m minimum		
	Grade	12% general maximum;		
		16% absolute maximum over short distances		
	Speed Control	by street alignment only		
	Design Vehicle	Coach (tourist bus)		
	Turning	Single movement turns only		
	Bus stops are provided at 400m maximum spacing and integrated with the street and pedestrian network. Fully indented bus bays are provided on Collector, Trunk Collector, Sub-Arterial and Arterial Roads with detailed design conforming with <i>Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, Section 3.12.2. Bus stops on Collector Roads generally provide a level area not less than 2m wide between the kerb and the footpath. For higher passenger demand bus stops on Collector Roads a bus shelter is provided on a level concrete slab (not less than 3m in width) between the kerb and the footpath.			
SO 43 The road design caters for the extension of existing and	PS 43 The road design provide	s for extension of existing and future public transport routes.		
future public transport routes to provide sufficient services that are convenient and accessible to the community.				
SO 44 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 44 As constructed information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.			

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CHAPTER 6, PART 3, DIVISION 6 - COMMERCIAL SUBDIVISION WORKS DESIGN CODE

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

CHAPTER 6, PART 3, DIVISION 6 - COMMERCIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development	Probable Solutions
6.3.7 Public Open Space	
SO 45 Public open space has barriers to its road frontage to prevent damage by unauthorised vehicles.	PS 45 The public open space is provided with log barriers designed along their road frontage in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 1, Section 6.14.0 and Standard Drawing No. 8-70003.
SO 46 Public open space provides for recreational, environmental and stormwater management needs.	PS 46 No solution provided. Solutions will need to be adapted to suit the particular <i>site</i> constraints and features.
SO 47 Public open space that is intended to be used for local neighbourhood park includes a sufficiently level area that is suitable for non-organised recreation and passive relaxation including small children's playgrounds and appropriate landscaping.	PS 47 Public open space that is intended to be used for local neighbourhood park contains one area, constructed if necessary, not less than 15m x 15m with a slope less than 5%.
SO 48 As constructed information including test certificates for material quality (if required) is provided after completion of the subdivision works.	PS 48 As constructed information including test certificates for material quality (if required) is provided after completion of the subdivision works.
6.3.8 Utilities	
SO 49 Development only occurs in locations where there are adequate services and capacity for the desired use.	 PS 49 The design of water supply infrastructure including water mains, pumping stations, pressure mains and associated works complies with the relevant Queensland Government Department's <i>Guidelines for Planning and Design of Urban Water Supply Schemes</i>, <i>Council's</i> Standard Drawings and <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i>, Part 3. The design of water supply infrastructure includes all works internal and any works external required to ensure that all new and existing lots maintain adequate water supply at all times. The design of sewerage infrastructure including sewer mains, pumping stations, pressure mains and associated works complies with the relevant Queensland Government Department's <i>Guidelines for Planning and Design of Sewerage Schemes</i>, <i>Council's</i> Standard Drawings and <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i>, Part 4. The design of sewerage infrastructure includes all works internal and any works external required to ensure that all new and existing the relevant Queensland Government Department's <i>Guidelines for Planning and Design of Sewerage Schemes</i>, <i>Council's</i> Standard Drawings and <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i>, Part 4. The design of sewerage infrastructure includes all works internal and any works external required to ensure that all new and existing lots are provided with a service at all times within the capacity of the system.
	The design of the electrical reticulation is in accordance with ENERGEX Specification URD Underground Residential Distribution.
6.3.8(a) Water Supply	
SO 50 Where lots are intended to be provided with water supply the design and construction of the associated infrastructure and connections is provided in a safe, cost-effective, coordinated and efficient manner that supports sustainable development practices.	 PS 50 Staged construction of water supply infrastructure is designed so that each stage is self supporting at the completion of construction of that stage. Water supply infrastructure materials and construction complies with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i>, Part 3, Section 4. The minimum water main size is 100mm diameter.
SO 51 Water supply infrastructure is easily controlled and accessed for maintenance and repair.	PS 51 Water mains are provided along both sides of all commercial streets to the boundaries of the development <i>site</i> . Water mains are provided on both sides of all Major Roads and divided roads.

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ecific Outcomes for Assessable Development	Probab	le Solutions		
	Water mains are located within service corridors shown of	on the following Standard Drawings:		
	Street Classification	Standard Drawing No.		
	Access Road & Collector Road	8-10016		
	Sub Arterial & Arterial	8-10013		
	In special circumstances (e.g. infill development where e – refer to Standard Drawing 8-0049), the services are pla	existing services are on <i>Council's</i> previous service allocations aced on an alternative alignment.		
	Service connections are not made to water mains 250mm diameter and above.			
	Fire hydrants are provided at intervals (measured within release) and at the ends of mains (use a duckfoot bend).	n the road reserve) not exceeding 80m, at high points (for air		
	Scours are provided at all low points, generally discharging into drainage structures.			
	Fittings and valves at road intersections are contained in	the verge and are 500mm clear of the back of the kerb.		
	The water supply system is designed to limit the static he pressure reducing valves are designed and installed to lim	ead to 80m maximum. Where approved by <i>Council's</i> engineer, mit the static head to 80m maximum.		
	Water supply infrastructure is contained within roads or other public reserves. In exceptional circumstances Council may accept water mains through private land providing an appropriate easement, not less than 3m wide, is registered in Council's favour. The water main is constructed centrally within the easement.			
	Sufficient valves are provided, generally on street corners, to limit the area of any shut-off to within the following:			
	40 lots or premises for 100mm and 150mm mains; and			
	50 lots or premises for 225mm mains.			
	Valves in the shut-off area are limited to a maximum of 6.			
	Water supply infrastructure is designed and constructed in accordance with the following standard drawings:-			
	Item	Standard Drawing No.		
	Hydrant and Valve Installations	8-40002		
	Pavement Markers & Delineators	8-40003		
		0 10000		
+ 60	Hydrant, Valve and Mains Marker Posts	8-40004		
	Hydrant, Valve and Mains Marker Posts Thrust Block Details	8-40004 8-40006		
	Hydrant, Valve and Mains Marker Posts Thrust Block Details Air Valve Installation Details	8-40004 8-40006 8-40007		
je j	Hydrant, Valve and Mains Marker Posts Thrust Block Details Air Valve Installation Details Air Valve Sizing	8-40004 8-40006 8-40007 8-40008		
	Hydrant, Valve and Mains Marker Posts Thrust Block Details Air Valve Installation Details Air Valve Sizing Scour Outlets	8-40004 8-40006 8-40007 8-40008 8-40009		
	Hydrant, Valve and Mains Marker Posts Thrust Block Details Air Valve Installation Details Air Valve Sizing Scour Outlets Trench Details	8-40004 8-40006 8-40007 8-40008 8-40009 8-40010		
	Hydrant, Valve and Mains Marker Posts Thrust Block Details Air Valve Installation Details Air Valve Sizing Scour Outlets Trench Details Section Valve Pits and Interconnection Pits	8-40004 8-40006 8-40007 8-40008 8-40009 8-40010 8-40011		
	Hydrant, Valve and Mains Marker Posts Thrust Block Details Air Valve Installation Details Air Valve Sizing Scour Outlets Trench Details Section Valve Pits and Interconnection Pits Pressure Reducing Valve Pits	8-40004 8-40006 8-40007 8-40008 8-40009 8-40010 8-40011 8-40011 8-40013		
	Hydrant, Valve and Mains Marker Posts Thrust Block Details Air Valve Installation Details Air Valve Sizing Scour Outlets Trench Details Section Valve Pits and Interconnection Pits Pressure Reducing Valve Pits Pressure Gauge Installations	8-40004 8-40006 8-40007 8-40008 8-40009 8-40010 8-40011 8-40012 & 8-40013 8-40014		
	Hydrant, Valve and Mains Marker Posts Thrust Block Details Air Valve Installation Details Air Valve Sizing Scour Outlets Trench Details Section Valve Pits and Interconnection Pits Pressure Reducing Valve Pits Pressure Gauge Installations Offtakes from Mains	8-40004 8-40006 8-40007 8-40008 8-40009 8-40010 8-40011 8-40012 & 8-40013 8-40014 8-40015		

Specific Outcomes for Assessable Development	Probable Solutions			
	Service tappings are constructed using ductile iron pre-tapped fittings for every lot. For pipe diameters where re-tapped fittings are not manufactured conventional tapping bands are used.			
	Water supply conduits are provided for across road house connections for the full width of the carriageway and concre footpaths.			
	Water supply conduits are provided for the full length of the accessway to rear allotments.			
	Kerb marker plates are provided to indicate the location of property service conduits.			
	Concrete thrust blocks are provided at all locations where there is unbalanced hydraulic load including all bends (horizont and vertical), tees, angle branches, crosses, dead ends and reducers. Thrust blocks are contained within the service allocation.			
	Water mains are pr	rovided with the following co	over:	
	Main		Cover	<u></u>
	(mm)	Verges & Accessway	Commercial Road Carriageway ⁽¹⁾	State-controlled Roads
	100 – 200	600	Greater of 750 or pavement thickness + 150	1200
	225 – 375	750	Greater of 900 or pavement thickness + 150	1200
	>375	1000	Greater of 1000 or pavement thickness + 150	1200
SO 52 Water mains provides multiple flow routes for fire fighting	 Where Counc Class K9). Water mains are not For water mains 30 drainage structure Water mains maint (1) horizontally wit (2) horizontally wit (3) vertically:- 150 Connection to Council and the new mains are provided to con- system. The mains to connection to Council 	il's Engineer approves a re- bit laid under stormwater pip 00mm diameter and larger su es. ain the following minimum of here the water main runs al- here the water main runs al- here the water supply system is are disinfected and water offirm the new mains have be are pressure tested and test puncil's water supply system is an constructed with the	educed cover, the water main is constructed of duct bes, sewerage mains or electricity conduits. ubsoil drains are provided from low points preferably clearances to existing and future services:- ong the adjacent service for > 1m:- 800mm; ong the adjacent services for < 1m:- 150mm; is not provided until adequate water supply can be tight. Tests certificates (not older than 10 days at t een satisfactorily disinfected prior to connection to C st certificates are provided to confirm that the new ma m.	ile iron pipe (minimum draining to stormwater maintained at all times he time of connection) Council's water supply ains are watertight prior
and water quality issues. SO 53 The water supply system for the proposed development is planned to conform with Council's broad infrastructure plan for the water supply zone.	PS 52 Water ma pathways. PS 53 The water water supply zone.	r supply system for the prop	posed development aligns with <i>Council's</i> broad infi	rastructure plan for the
	>			

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CHAPTER 6, PART 3, DIVISION 6 - COMMERCIAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development

Probable Solutions

6.3.8(b) Sewerage

SO 54 Where lots are intended to be provided with reticulated sewerage the design and construction of the associated infrastructure and connections is provided in a safe, cost-effective, coordinated and efficient manner that supports sustainable development practices.

PS 54 Staged construction of sewerage infrastructure is designed so that each stage is self supporting and properly served at the completion of construction of that stage.

Sewerage infrastructure design complies with *Council's Planning Scheme Policy PSP28 Civil Infrastructure Design*, Part 4. For normal sewer reticulation design the following parameters are used:-

Item	Design Value
Demand	15 equivalent tenements per hectare.
Occupancy rate per tenement	3.29 equivalent persons (EP)
Average Dry Weather Flow (ADWF)	250 litres/EP/day
Maximum Possible Flow (C ₁)	
(a) Sewers serving < 1,000 EP	(a) 5 times ADWF
(b) Sewers serving >23,000 EP	(b) 3 times ADWF
Infiltration Allowance (IA)	250 litres/EP/day
Maximum design flow (MDF)	Maximum Possible Flow + Infiltration Allowance (C, + IA)

Sewerage infrastructure materials and construction complies with **Council's** Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 4, Section 4.

The sewerage system through the *site* has sufficient capacity to convey the ultimate flows from all upstream properties when they are fully developed.

Sewer pipes are sized in accordance with AS2200. The minimum flow velocity in any sewer is 0.6m/s based on ADWF. Sewers are designed to carry MDF at a depth not exceeding $\frac{3}{4}$ of the pipe diameter.

The minimum sewer main size is 150mm diameter.

Sewers are designed and constructed to serve the entire area of each lot.

House drains are graded (around the perimeter of the building envelope) at 1 in 40 with a minimum cover of 600mm except for control allotments where a grade of 1 in 60 with a minimum cover of 400mm is used.

Sewers are designed to extend to the boundaries of the *site* in order to serve all upstream areas within the catchment.

In flat areas, sewers are designed to serve properties on both sides of the sewer.

Sewers are designed to follow the land's natural fall as far as possible.

The minimum grade on sewer mains for lots is as follows:

Sewer Diameter (mm)	Minimum Grade ⁽¹⁾
150	1 in 80 for first 6 lots, 1 in 150 thereafter
225	1 in 290
300	1 in 420
375	1 in 570
450	1 in 730

Probable Solutions Sewers are designed on steeper grades where possible. The minimum drop through a manhole is the greater of 40mm or the difference between downstream and upstream pipe

Steep sewers on grades exceeding 1 in 15 are provided with concrete stops (refer to Standard Drawing No. 8-50008) at the following spacing:-

Pipe Diameter	General Maximum	Maximum Spacing o	of Concrete Stops (m)
(mm)	Grade	VC Pipe	Other than VC Pipe
150	1 in 6	2	6
225	1 in 10	2	6
300 or greater	1 in 15	2	6

Sewers steeper than 1 in 4 are only approved by Council's engineer in special circumstances and providing the manufacturer's recommended maximum flow velocity is not exceeded. No sewer has a grade steeper than 1 in 3.

Sewer mains are provided with the following cover:

525

600

675

750

Location	Minimum Cover (mm)
House connection branches in lots	600
Sewer mains in lots:	
(a) front of lot	(a) greater of 250 below invert of kerb and channel or 600 below future driveway ⁽¹⁾
(b) elsewhere in the lot	(b) 600
Sewer mains in road verges	900
Sewer mains under road pavements	1200
Neter	

Notes:

Notes:

diameters.

1.

Determine using driveway access as per Standard Drawing No. 8-10008. 1.

The minimum clearance between the sewer and adjacent services/pipes is 300mm. Where Council's engineer has approved a reduced clearance for a sewer crossing, another service the crossing sewer is constructed using a full length (5.5m) of Class 12 DICL pipe.

House connections are only made to sewers where the depth to invert does not exceed 3m. A shallower second main is provided for house connections where the sewer depth (to invert) exceeds 3m.

1 in 900

1 in 1000

1 in 1200

1 in 1500

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oint. to allow for future site
the infrastructure.
d or removed from the
no more than 2 house
and 120m for greater
RI flood level) in parks
otherwise by Council's

PineRiversPlar

CHAPTER 6,

PART 3, DIVISION 6 - COMMERCIAL SUBDIVISION WORKS DESIGN CODE

Sewer and/or roof and allotment drainage lines are located on no more than 2 boundaries of a lot.
Sewer mains are not located along the side boundary of lots that are less than 19m wide at any point.
Where the finished surface slope of a lot exceeds 1 in 10 the sewer main depth is increased to allow for earthworks.
Sewer mains are located along the front or rear boundary of the lot in order to maximise access to the infrast
Trunk sewer mains of 300mm diameter and greater are not located in lots.
Existing on-site sewerage systems that are made redundant by the development are demolished or remo site.
Sewer manholes are provided at the following locations:-
(1) changes in direction;
(2) changes of grade;
(3) intersections of sewers;
(4) changes of sewer diameter;
(5) changes of sewer pipe material;
(6) ends of sewer lines, except where the line section does not exceed 30m in length and no more t connections are made to the line.
Manhole spacing (centre to centre) does not exceed 90m for sewer lines up to 450mm diameter and 120m than 450mm diameter.
Type 1 manholes are used for sewer lines up to 375mm diameter and up to 6m sewer depth.
Precast manholes are not used where:-
(1) the sewer line receives pumped flows;
(2) the sewer line is > 375mm diameter;
(3) the manhole depth exceeds 6m;
(4) saturated ground conditions are likely; or
(5) the manhole is located near a creek bank which is likely to be susceptible to erosion.
The top of the manhole ring is at the following finished levels:-
(1) 600mm above ground in unmaintained areas;
(2) 100mm above finished surface level in maintained open space and private lots;
(3) 25mm above finished surface level in road verges; and
(4) flush with carriageway surface, trafficable areas and concrete paths.
Where possible, the top of manholes are above the 20 year ARI flood level.
Bolt down manhole covers are used near creek banks, in flood prone areas (i.e. below 20 year ARI flood le and reserves and public open space.
Control manholes at pump stations are within 10m distance of the station except where approved otherwise

Probable Solutions

Approved flexible pipes are only used for sewers less than 6m deep.

engineer.

Specific Outcomes for Assessable Development

Whe circu (1) (2) In sp Sew Whe hous All pi Manl exce of the Manl The A ma Hous the lo Hous great The minin	rever practicable, sewer lines are located within lots on a 1.5m alignment from the front boundary. In special unstances only, the following alternative alignments within the lots are used: 1.5m rear lot boundary; and 1m from the side lot boundary. becial circumstances, <i>Council's</i> engineer may approve alternative sewer alignments outside the building envelope. er lines do not cross lot boundaries at acute angles. ere inter-allotment drainage is provided the sewer line is located between the drainage line and the lot boundary. The se connection branch extends 1m beyond the drainage line. arks and reserves are provided with a sewerage connection unless approved otherwise by <i>Council's</i> engineer. holes are located 1m upstream of lot boundaries except where the total fall across the lot along the sewer line eds 2m. Where the total fall across the lot along the sewer line exceeds 2m, the manhole is located 1m downstream e lot boundary. holes do not straddle lot boundaries. angle between incoming sewer lines and outlet sewer lines is 60° or greater. aximum of three (3) inlet sewers or house connection inlets are made to any manhole. se connection sare made to manholes where ever practicable. se connection branches (other than to manholes) are located between 1m and 1.2m upstream of lot boundaries at owest part of the lot. se connection branch inverts are not deeper than 1m. In special circumstances <i>Council's</i> engineer may approve a ter depth (up to 1.5m) to control the whole lot. maximum length of house connection branch from a sewer in an adjoining lot is 5m, with the branch extending a
(1) (2) In sp Sew Whe hous All p Mani exce of the Mani The A ma Hous the lo Hous great The minir The	1.5m rear lot boundary; and 1m from the side lot boundary. becial circumstances, <i>Council's</i> engineer may approve alternative sewer alignments outside the building envelope. er lines do not cross lot boundaries at acute angles. ere inter-allotment drainage is provided the sewer line is located between the drainage line and the lot boundary. The see connection branch extends 1m beyond the drainage line. arks and reserves are provided with a sewerage connection unless approved otherwise by <i>Council's</i> engineer. holes are located 1m upstream of lot boundaries except where the total fall across the lot along the sewer line eeds 2m. Where the total fall across the lot along the sewer line exceeds 2m, the manhole is located 1m downstream e lot boundary. holes do not straddle lot boundaries. angle between incoming sewer lines and outlet sewer lines is 60° or greater. aximum of three (3) inlet sewers or house connection inlets are made to any manhole. se connections are made to manholes where ever practicable. se connection branches (other than to manholes) are located between 1m and 1.2m upstream of lot boundaries at owest part of the lot. se connection branch inverts are not deeper than 1m. In special circumstances <i>Council's</i> engineer may approve a iter depth (up to 1.5m) to control the whole lot. maximum lendth of house connection branch from a sewer in an adioining lot is 5m, with the branch extending a
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The minin The t	maximum length of house connection branch from a sewer in an adjoining lot is 5m, with the branch extending a
The	mum of 1m into the lot being served.
	top of the sewage pump station is 100mm above the 20 year ARI flood level.
The	bottom of the switchboard for the sewage pump station is 300mm above the 100 year ARI flood level.
The	sewage pump station is contained within a secure fenced compound.
The	sewage pump station is provided with appropriate ventilation.
The	sewage pump station is provided with a water service including a reduced pressure zone valve.
Appr hour	ropriate measures are provided to prevent sewage from becoming septic where the detention time exceeds six (6) s.
Sew	rage pumps are the non-clogging submersible type pump.
Flow	weters are provided on the discharge line from the pump station.
Teler	metry is provided to the sewage pump station.
Flow	v meters and telemetry equipment is housed in weatherproof enclosures.
The stora	potential for sewage overflows from sewage pump stations is minimised using appropriately designed overflow age or other means approved by <i>Council's</i> engineer.
The	number and length of pressure mains is minimised as far as practicable.

PineRiversPlan

CHAPTER 6, PART 3, DIVISION 6 - COMMERCIAL SUBDIVISION WORKS DESIGN CODE

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Specific Outcomes for Assessable Development

Probable Solutions

Sewer pressure mains are located in road verges of the opposite side to water supply mains.

Sewer pressure mains have the following cover:-

(1) 1200mm under carriageways;

(2) 1000mm elsewhere.

Sewer pressure mains are not laid within 1.5m of parallel potable water supply mains. In special circumstances **Council's** engineer may approve a lesser separation providing the sewer pressure main obvert is 500mm below the water supply main.

Sewer pressure mains have section valves at not greater than 500m spacing.

Scour valves are located at all low points in the pressure main.

Vents are provided to all high points in the pressure main.

Odour and corrosion control measures are provided, as necessary, to pressure mains.

Pressure mains discharge into vented discharge manholes whose immediate downstream line does not have any house connection branches.

Maintenance vehicle access is provided to the sewage pump station in accordance with the following:-

Item	Requirement
Design Vehicles	(a) Medium rigid vehicle
	(b) Articulated Tanker when oxygen injection is used
Access Track Maximum Grade	(a) 1 in 10 for gravel access;
	(b) 1 in 6 for sealed access
Access Track Minimum Width	3.5m
Access Track Drainage	(a) No inundation in 5 year ARI storm;
	(b) Trafficable in 10 year ARI storm
Surfacing	 Minor pump station with access grade < 1 in 10 – gravel surface⁽¹⁾;
	 (b) Minor pump station with access grade >1 in 10 – sealed;
	(c) Major pump stations – sealed.
Pavement Design	(a) Minor pump station - as per DG 06 using 2.3 x 10 ³ ESAs;
	(b) Major pump station - as per DG 06 using 4.5 x 10 ³ ESAs
Pump Maintenance	(a) Level area adjacent pump well for a crane truck;
	(b) Vent pole, switchboard and other equipment clear of working area of crane truck.

Notes:

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1. Where the access is adjacent to residential properties or **Council's** engineer considers that the amenity of nearby residents may be affected by dust, the access is sealed.

Effective from 15 December 2006

Specific Outcomes for Assessable Development	Probable Solutions		
	Sewerage infrastructure is designed and constructed in accordance with the following standard drawings:-		
	ltem S	Standard Drawing No.	
	Sewer Manholes 8-50002, 8-5	0003, 8-50004, 8-50006 & 8-50007	
	Sewer Pipelines 8-50008 House Connection Branches 8-50009 Sewage Pump Stations 8-50015, 8-50016, 8-50017, 8-50018, 8-50021, 8-50023, 8 8-50025, 8-50026, 8-50040, 8-50041, 8-50042, 8-50043, 8-50050, 8 8-50052, 8-50053, 8-50100, 8-50101, 8-50102, 8-50103, 8-50110, 8 Sewer Valves 8-50112, 8-50113, 8-50120, 8-50121, 8-50123, 8-50140 & 8 Sewer Rising Mains 8-50028, 8-50029		
	Connection to Council's sewerage system is not provided until the and manholes are vacuum tested and test certificates are provided watertight.	new mains are clean and watertight. The mains to confirm that the new mains and manholes are	
GO 55 Adequate buffers are provided between sewerage ransportation and treatment facilities and dwellings to protect esidential amenity and health.	PS 55 Sewage Pump Stations are no closer than 100m to the nearest existing or future residential lot. In special circumstances <i>Council's</i> engineer may approve a lesser buffer distance.		
C 56 The sewerage transportation system for the proposed evelopment is planned to conform with Council's broad infrastructure plan for the catchment.	PS 56 The sewerage transportation system conforms with Council's infrastructure plan for the sewerage scheme.		
.3.8(c) Recycled Water			
SO 57 Where Council plans to supply recycled water, levelopments make provision for these future recycled water supply systems.	PS 57 An appropriate service corridor is provided for future recycle	d water supply.	
3.3.8(d) Electricity			
O 58 Where lots are intended to be provided with reticulated	PS 58 Underground electrical reticulation is provided in commercia	I developments.	
ectricity the service is underground with design and construction f the associated infrastructure and connections being provided	Crossings of existing roads are bored. In special circumstances, ncluding trenched construction.	Council's engineer may approve other methods	
a sate, cost-effective, coordinated and efficient manner that inports sustainable development practices	Road crossing are not at acute angles to the road centreline.		
	Electrical crossings occur at alternate common lot boundaries to wate	er service crossings.	
	Electrical crossings are within the area defined as an <i>intersection</i> ntersections to enable 11kV cables to be installed without joints.	under State Legislation or are diagonally across	
	Pillars are provided at all entry points to private property and located	at side boundaries of the lot.	
	Pillars are located on alternate common lot boundaries to water mete	rs and hydrants.	
	Pillars are located on alternate common lot boundaries to water mete	rs and hydrants.	

3.8(e) Street Lighting – (excludes State-controlled roads)		
SO 59 All roads are provided with street lighting which is designed and constructed to provide a safe, cost-effective, coordinated and efficient system that supports sustainable development practices.	PS 59 All works are designed and constructed Engineering Practice – Part 12, Roadway Lighting, Street lighting poles and luminaries are standard other than roads. Street light poles are located on standard alignment	to AS1158, Public Lighting Code, 1986, Austroads Guide to Traffic 1988 and ENERGEX standards and approval. ENERGEX patterns under Rate 1 Tariff in roads and Rate 2 Tariff in hts in accordance with the following standard drawings:-
	Street Classification	Standard Drawing No.
	Access Road & Collector Road	8-10016
	Sub Arterial & Arterial	8-10013
	Street lights are generally located opposite commo movements. Street lights are located to minimise the risk of da devices and by oversize vehicles which must new speed control devices and some intersections.	on lot boundaries and are positioned to minimise conflicts with vehicle mage from errant vehicles at intersections, bends and speed control cessarily leave the carriageway to manoeuvre in turn around areas,
	Street light poles that are in vulnerable locations (e.g. small islands or roundabouts) use frangible type poles.	
	Colour consistency is maintained as far as practicable.	
	Lighting designs are prepared in accordance with t	he lighting category specified below:-
	Road Classification	
		R2
	Sub Alterial	A3
		B2''
	Access Road	BZ
	Pathways between lots	B2
	General pathways in open space areas	
	Commuter Links	C2 ⁽²⁾
	Other locations	Subject to individual assessment
	 A higher category may be appropriate where a as retailing or entertainment. Lighting standard may vary to suit local condit The above classification also applies to comm Power supply to pathway lighting is undergrout Pathway lighting is Rate 2 Tariff. 	a Collector Road is a through road or where there are land uses such ions. unity title developments. Ind.
	A light is provided to each end of pathways (may obstruction or hazard (e.g. bridge, stairway, etc).	be street light), at every bend or change of alignment and at every
· · · · ·		

Probable Solutions

Effective from 15 December 2006

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Specific Outcomes for Assessable Development

Crossing points of pathways across roads or streets are lit in accordance with the relevant street standard.
In addition to the "through" street lighting above, additional special lighting is provided, as necessary, at the following locations:
(1) Intersections;
(2) Roundabouts;
(3) Sharp bends;
(4) Traffic control devices;
(5) Pedestrian crossings;
(6) Cul de sac turn around areas; and
(7) Bridges.
PS 60 Application for telecommunications reticulation is made and pre-provisioning confirmation is received prior to subdivision works commencing.
Telecommunications reticulation (i.e. conduits and pits) is installed in accordance with Telstra standards and a provisioning confirmation is provided for the works.
One 50mm nominal diameter telecommunications conduit is provided on each side on the road in addition to those provided for or by Telstra.
PS 61 Any alteration or relocation in connection with or arising from the development to any service, installation, plant, equipment or other item belonging to or under the control of the telecommunications authority, electricity authorities, the <i>Council</i> or other person engaged in the provision of public utility services, has been carried out at no cost to <i>Council</i> prior to the approval of the plan of subdivision.
PS 62 "As constructed" information including test certificates for material quality (if required) and compaction is provided to the relevant authority upon completion of the subdivision works
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Probable Solutions

6.3.8(f) SO 60

practices.

6.3.8(g)

of subdivision.

Specific Outcomes for Assessable Development

All lots are able to be provided with a telecommunications

service which is designed to give a safe, cost effective, coordinated

and efficient system that supports sustainable development

SO 61 Any alteration or relocation in connection with or

arising from the development to any service, installation, plant,

equipment or other item belonging to or under the control of the

telecommunications authority, electricity authorities, the Council

or other person engaged in the provision of public utility services, is carried out at no cost to Council prior to the approval of the plan

SO 62 "As constructed" information including test certificates

for material quality (if required) and compaction is provided after

Telecommunications

Alterations and Relocations

6.3.8(h) As Constructed Information

completion of the subdivision works.



Division 7 Rural Subdivision Works Design Code

7.1 Overall Outcome

To create rural subdivision development that:-

- (1) Provides safe, convenient and attractive rural areas;
- (2) Provides lots that meet user requirements;
- (3) Ensures that *sites* are managed during construction to minimise adverse impacts to the environment and on the health and amenity of residents and premises;
- Ensures that *sites* are managed during construction to minimise adverse traffic impacts to existing roads;
- (5) Ensures that earthworks design and construction is suitable for the intended use of the land and that adverse impacts to the environment and on the health and amenity of residents is minimised;
- (6) Have road networks that are designed and constructed to provide an optimum combination of safety, amenity, convenience, economy and environment for residents, road and street users, and the community generally;
- (7) Have stormwater management systems that are designed and constructed to provide an optimum combination of safety, amenity, convenience, economy and environment for residents and the community generally;
- (8) Have stormwater management systems that are designed and constructed to collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage, and at a development and environmental cost which is acceptable to the community as a whole;
- (9) Provides for the convenience and safety of pedestrians and vehicular traffic during frequent or nuisance stormwater flows;
- (10) Ensures a reasonable level of pedestrian and vehicular traffic safety and accessibility during storm events;
- (11) Minimises pollutant inflows to the receiving waters and controls scour and depositional effects;
- (12) Adequately protects people, the natural environment and the built environment from stormwater runoff flows at an acceptable level of risk;
- (13) Integrates stormwater management solutions with other uses and the natural environment;
- (14) Provides public open space that meets user requirements for outdoor recreational and social activities and for landscaping that contributes to the identity, environmental health and safety of the community;
- (15) Ensures, where appropriate, as many existing trees are retained as possible to keep the original character of the land and provide shelter and food for endemic flora and fauna;
- (16) Provides for rural lots that are adequately serviced with electricity, street lighting (if required) and communications services in a timely, cost effective, coordinated and efficient manner that supports sustainable development practices, and is in accordance with the desired character of the *locality*;
- (17) Ensures all electricity, street lighting and communication services that require relocation and/ or alterations as a result of rural development are carried out in a timely, cost effective, coordinated and efficient manner; and
- (18) Reduces the level of fire risk associated with building in areas which are assessed to have a medium to high bushfire hazard.

7.2 Compliance with the Rural Subdivision Works Design Code

This code applies to all operational works relating to development or reconfiguring of rural land, but specifically excludes applications for access easements to a road, subdivision by lease and boundary relocations or realignments.

The application of the various specific outcomes will depend upon the size or scale of the proposed development. Some specific outcomes will not apply due to a particular design element not being part of the proposal (e.g. new road). In other instances it may be impractical to apply some specific outcomes, particularly for small infill developments.

7.3 Development Requirements

- The following are the design elements relevant to rural subdivision works:-
- (7.3.1) Managing Impacts During Construction
- (7.3.2) Earthworks
- (7.3.3) Road Networks (excludes State-controlled Roads)
- (7.3.4) Stormwater Management



- (7.3.5) Recreational Trails
- (7.3.6) Public Transport
- (7.3.7) Public Open Space
- (7.3.8) Utilities
 - (7.3.8a) Electricity
 - (7.3.8b) Street Lighting
 - (7.3.8c) Telecommunications
 - (7.3.8d) Alterations and Relocations
 - (7.3.8e) As Constructed Information

Specific Outcomes for Assessable Development	Probable Solutions
7.3.1 Managing Impacts During Construction	
SO 1 All development <i>sites</i> minimise, as far as possible, any adverse impact to the natural environment caused by erosion, siltation, incineration of cleared vegetation and rubbish.	PS 1 The development works incorporate temporary stormwater runoff, erosion and sediment controls and trash traps designed in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.2.0 and 4.11.4, and Subdivisions Section Technical Note No. 6. The measures are adjusted on-site to maximise their effectiveness.
	Stormwater runoff, erosion and sediment controls are constructed prior to commencement of any clearing works wherever possible.
	All environmentally significant areas to be retained with the development are clearly delineated and fenced prior to development works commencing.
SO 2 All development works are carried out at times which minimise noise impacts to residents.	PS 2 All development works are carried out within the following times, unless otherwise approved in writing by <i>Council's</i> engineer:
	(1) Monday to Friday (other than public holidays) between 7am and 6pm on the same day; and
	(2) Saturday (other than public holidays) between 7am and 12noon on the same day.
	No work is carried out on Sundays and public holidays.
	Variations to the above working hours may be approved if Council's engineer considers that the work is unlikely to cause significant inconvenience or disruption to the public, or the work is unlikely to cause annoyance or inconvenience to occupants of adjacent properties.
SO 3 All development works are managed to minimise dust and siltation nuisance to residents.	PS 3 During construction, dust suppression measures (such as watering of the <i>site</i>) are implemented to protect nearby premises from dust pollution.
SO 4 All development works avoid the redirection of	PS 4 Temporary construction works do not pond or concentrate stormwater runoff in adjoining properties.
stormwater runoff where potential impacts to residents or premises may occur.	Temporary construction works do not create nuisance or annoyance to adjoining premises as a result of altering the stormwater runoff pattern exiting the <i>site</i> .
SO 5 Construction traffic does not adversely impact on the amenity of existing residents.	PS 5 Construction traffic to and from the <i>site</i> uses the highest classification streets or roads where a choice of access routes is available.
	Where significant volumes of material are approved to enter or leave the <i>site</i> , a haul route is approved by Council. All materials associated with the development that are dropped, deposited or spilled on streets giving access to the <i>site</i> are removed and the streets are cleaned as soon as practicable after the event. Any damaged areas are repaired and reinstated to their previous condition.
	Where works are carried out on existing roads a traffic control plan is prepared in accordance with the Manual of Uniform Traffic Control Devices. All traffic control measures are properly erected and maintained during the works.
	Any access road to the <i>site</i> that has been affected by any material dropped, deposited or spilled on the road as a result of the construction processes associated with the <i>site</i> is cleaned and restored to its original condition.
SO 6 Construction traffic is controlled to ensure all traffic movements to and from the <i>site</i> are safe.	PS 6 All traffic movements to and from the <i>site</i> frontage are carried out in a safe manner. Traffic controls are used where <i>site</i> access is approved directly onto a Major Road.
SO 7 All clearing works are carefully undertaken to ensure the clearing is limited to the area of the approved infrastructure works, buildings areas and other areas approved in the development permit.	PS 7 Areas of significant vegetation, proposed park and open space areas and other areas of vegetation or individual trees designated to be retained with the development are temporarily fenced and flagged.

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PineRiversPlan

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		PineRiversPlan

CHAF	Specific Outcomes for Assessable Development	Probable Solutions			
TER 6, PART	SO 8 All cleared vegetation is disposed of in a manner which minimises, as far as practicable, nuisance and annoyance to existing premises.	PS 8 Where cleared vegetation is chipped or pit burned on <i>site</i> the location of these works is not less than 100m from any dwelling or commercial premises. All vegetation with a diameter below 400mm is chipped and stored on <i>site</i> in an approved location generally <i>park</i> on public land. Vegetation with a diameter above 400mm is pit burned on <i>site</i> if a suitable location is available. The pit burn is generally carried out as one continuous operation.			
3 - Α		Chipping and/or pit burning is only undertaken when weather conditions are favourable.			
SSE		Burn pit locations are approved in writing by Council's engineer and shown on the "as constructed" drawings.			
SSMEN		Cleared vegetation is not disposed of by above ground burning unless the proposed burn <i>site</i> is at least 250m from the nearest dwelling or workplace building.			
NT CRIT	SO 9 All noxious weeds and other materials which are detrimental to the intended use of the land are removed and	PS 9 All groundsel and noxious weeds are removed and disposed of in a manner which minimises environmental impact.			
ERIA F	disposed of in a manner which minimises environmental impacts.	Dilapidated buildings, <i>structures</i> , foundations, rubbish, car bodies, scrap metal and the like in existing and proposed park and open space areas are removed where directed by <i>Council's</i> representative.			
OR O	7.3.2 Earthworks				
PERATIONAL	SO 10 Earthworks design takes into account the slope of the ground, short and long-term slope stability, soft or compressible foundation soils, reactive soils, low density or potentially collapsing soils, existing fills and soil contamination that may exist on <i>site</i> .	PS 10 Investigation, planning and design including documentation is carried out in accordance with Australian Standard AS3798. All cut and fill batters are provided with appropriate scour, erosion protection and runoff control measures including catch drains at the top of batters and lined batter drains as necessary.			
NO		All fill batters steeper than 1 (V) in 6 (H) in lots are fully turfed to prevent scour and erosion.			
RKS	SO 11 Filling is not placed on existing or proposed <i>park</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 11 Filling is not placed on existing or proposed <i>park</i> unless specifically approved in writing by <i>Council's</i> engineer.			
m	SO 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.	PS 12 Filling is not placed below the 100 year ARI floodline for rivers and 50 year ARI floodline for creeks and other <i>watercourses</i> unless specifically approved in writing by <i>Council's</i> engineer.			
ffecti	SO 13 The <i>site</i> is properly prepared for earthworks.	PS 13 The <i>site</i> is prepared in accordance with Australian Standard AS3798.			
ve fron	SO 14 Fill construction is carried out in a manner which ensures that the works meet the design requirements.	PS 14 The fill construction is carried out in accordance with Australian Standard AS3798.			
ח 15 I	SO 15 Unsuitable materials are not used in structural fill.	PS 15 Materials used for structural fill conform with Australian Standard AS3798.			
December 2	SO 16 Earthworks and trench backfill is properly compacted to suit the desired use of the <i>site</i> .	PS 16 The earthworks and trench backfill is compacted to the minimum relative compaction given in Table 5.1 of Australian Standard AS3798. The minimum frequency of field density tests is not less than that specified in Table 8.1 of Australian Standard AS3798.			
006	SO 17 Steep reak slapes and batters are stable and low	Any open drains, earth dams and wells on the <i>site</i> are drained, cleaned and filled as specified above.			
	maintenance.	experienced geotechnical engineer. Stabilisation measures are provided, as necessary, to ensure long-term stability and low maintenance.			
6-	SO 18 "As constructed" information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.	PS 18 "As constructed" information including test certificates for material quality (if required) and compaction is provided after completion of the subdivision works.			
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Specific Outcomes for Assessable Development	P	robable Solutions		
7.3.3 Road Networks (excludes State-controlled Roads)				
SO 19 The road design and construction has a clear structure and component streets conform to their function in the network.	PS 19 to PS 22 The Rural Roads conform to the	following:		
SO 20 The road design and construction has clear physical	Issue	Rural Access Road	Rural Collector Road	
distinctions between each type of street. The distinctions are to be based on function, legibility, convenience, traffic volumes.	Traffic Catchment (maximum)	15 lots	100 lots	
vehicle speeds, public safety and amenity.	Cerriegewey Lence	60km/h	60km/h	
SO 21 The road design and construction accommodates the	Carriageway Width	3.5m	6m	
onowing primary functions	Formation Width (minimum)	8.5m	9m	
1) Access to properties and premises;	Reserve Width (minimum)	20m	20m	
2) Social and activity space;	Grade (minimum - maximum)	0.4% - 10% ⁽²⁾	0.4% - 10% (2)	
 (3) Utility services location; and (4) Setting and approach (streetscape and landscape) for adjoining residences. 	es location; and approach (streetscape and landscape) for idences. Notes: 1. In rugged topography or constrained situations, a lower design speed may be approved with the a design speed not less than 20km/h below those given in the table.			
adequate verge and carriageway width for the primary functions listed in specific outcomes above.	Control of the second sec			
	Traffic Volume & Capacity	P:	art 1 Sect 5.3.5	
	Design Speed	Pa	art 1 Sect 5.3.4	
	Drainage Method	Pa	rt 1 Sect 5.3.6.2	
	Carriageway and Shoulder Width	Pa	rt 1 Sect 5.3.6.3	
*. Co	Medians, Islands and Auxiliary Lanes	Pa	Part 1 Sect 5.3.6.4	
	Crossfalls	Pa	Part 1 Sect 5.3.6.5	
	Batter Slopes and Clearance from Earthworks	Part	Part 1 Sect 5.3.6.6 - 7	
	Reserve Width	Part 1 Sect 5.3.6.11		
	Geometric Design	Part 1 Sect 5.3.7		
	Intersections	Part 1 Sect 5.3.8		
	Roundabouts	Part 1 DG 01		
	Landscape Construction on Road Reserves, Parks and Drainage Reserves		Part 1 DG 03	
	Signs and Road Marking	Pa	art 1 Sect 6.7.0	
	Footpaths	Pa	Part 1 Sect 6.4.0	
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		Duckshin Oslutions		
Specific Outcomes for Assessable Development	Probable Solutions			
	Recreational Trails	nal Trails Part		
	Service Conduits	Pa	rt 1 Sect 6.8.0	
	Subsoil Drainage	Part 1 Sect 6.9.0		
	Safety Barriers	Part 1 Sect 6.10.0		
	Guide Posts	Par	t 1 Sect 6.11.0	
	Bridge and Culvert Widths	Part 1 Sect 6.12.0		
	Street and Pathway Lighting	Part 1 Sect 6.13.0		
	Park Barriers	Par	t 1 Sect 6.14.0	
	Retaining Walls	Par	t 1 Sect 6.15.0	
	The Major Roads conform to the following:			
	Issue	Sub-Arterial	Arterial	
	Traffic Volume (typical)	12,000 vpd	30,000 vpd	
	Design Speed (minimum) ⁽¹⁾	80km/h	100km/h	
	Carriageway Lanes	2	4	
	Reserve Width (minimum)	26m	40m	
	Maximum Grade	8% (2)	6% ⁽²⁾	
	d In worked to be supply of constrained situa			
	 In rugged topography, or constrained state Design Speed not less than 20 km/h belo Grades over 10% must be used with cau downhill speeds. The detailed design of Major Rural Roads con Design, viz; 	ations, a lower design speed may be w those given in the table. tion due to problems related to slov forms with Council's Planning Sch	e approved with the absolute minimun v climbing speeds and potentially high neme Policy PSP28 Civil Infrastructure	
	 In rugged topography, or constrained state Design Speed not less than 20 km/h belo Grades over 10% must be used with cau downhill speeds. The detailed design of Major Rural Roads con Design, viz: Road Design Issue	ations, a lower design speed may be w those given in the table. tion due to problems related to slow forms with Council's Planning Sch Planning Infrastri	e approved with the absolute minimun v climbing speeds and potentially high neme Policy PSP28 Civil Infrastructure Scheme Policy PSP28 Civil ucture Design Reference	
	 In rugged topography, or constrained state Design Speed not less than 20 km/h belo Grades over 10% must be used with cau downhill speeds. The detailed design of Major Rural Roads con Design, viz: Road Design Issue Design Speed	ations, a lower design speed may be w those given in the table. tion due to problems related to slow forms with Council's Planning Sch Planning Infrastr	e approved with the absolute minimun v climbing speeds and potentially high neme Policy PSP28 Civil Infrastructure Scheme Policy PSP28 Civil ucture Design Reference Part 1 Sect 5.3.4	
	In Tugged topography, or constrained state Design Speed not less than 20 km/h belo Grades over 10% must be used with cau downhill speeds. The detailed design of Major Rural Roads con Design, viz: Road Design Issue Design Speed Traffic Volume and Capacity	ations, a lower design speed may be w those given in the table. tion due to problems related to slow forms with Council's Planning Sch Planning Infrastr	e approved with the absolute minimum v climbing speeds and potentially high neme Policy PSP28 Civil Infrastructure Scheme Policy PSP28 Civil ucture Design Reference Part 1 Sect 5.3.4 Part 1 Sect 5.3.5	
	A in Rugged topography, or constrained state Design Speed not less than 20 km/h belo Grades over 10% must be used with cau downhill speeds. The detailed design of Major Rural Roads con Design, viz: Road Design Issue Design Speed Traffic Volume and Capacity Cross Section Elements	ations, a lower design speed may be w those given in the table. tion due to problems related to slov forms with Council's Planning Sch Planning Infrastr	e approved with the absolute minimum v climbing speeds and potentially high meme Policy PSP28 Civil Infrastructure Scheme Policy PSP28 Civil ucture Design Reference Part 1 Sect 5.3.4 Part 1 Sect 5.3.5 Part 1 Sect 5.3.6	
	In Tugged topography, or constrained stud Design Speed not less than 20 km/h belo Grades over 10% must be used with cau downhill speeds. The detailed design of Major Rural Roads con Design, viz: Road Design Issue Design Speed Traffic Volume and Capacity Cross Section Elements Geometric Design	ations, a lower design speed may be w those given in the table. tion due to problems related to slov forms with Council's Planning Sch Planning Infrastr	e approved with the absolute minimum v climbing speeds and potentially high neme Policy PSP28 Civil Infrastructure Scheme Policy PSP28 Civil ucture Design Reference Part 1 Sect 5.3.4 Part 1 Sect 5.3.5 Part 1 Sect 5.3.6 Part 1 Sect 5.3.7	

Specific Outcomes for Assessable Development	Probable Solutions				
	The road cross-sections conform with Council's standard drawings as follows:-				
	Road Classification Standard Drawing Number				
	Access Road	8-10021 & 8-10025			
	Collector Road	8-10022 & 8-10025			
	Rural Sub-Arterial	8-10023 & 8-10026			
	Rural Arterial	8-10024 & 8-10026			
	Utility service allocations conform to Council's standard drawing	ngs as follows:-			
	Road Classification	Standard Drawing Number			
	Access Road, Collector Road	8-10028			
	Rural Sub-Arterial and Arterial	8-10028			
	Road designs incorporate retention of existing significant trees,	where ever practicable.			
	Road designs minimise the heights of cut and fill of road format	tion to less than 2m where ever practicable.			
	New roads are located to minimise the heights of cut and fill of	road formation to less than 2m, where ever possible.			
	Road designs minimise the amount of filling and extent of filling in or adjacent existing natural gullies, <i>waterways</i> , existing public open space areas and proposed public open space areas.				
	Access to allotments conforms to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, Section 6.2.0.				
	The road pavement design conforms to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, DG 06. The works are constructed within tolerances given in Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1, DG 02, Appendix C				
23 The road design creates safe, convenient movement for	PS 23 The combination of road length and grade for new Ru	ral roads conforms with the following chart:			
dents between their homes and the Major Road network.	Maximum Length o	of Road Grades			
	2000 1980 900 5100 5100 1200 Acceptable Road Grade 500 500 500 500 500 500 500 500 500 50	NOT SUITABLE ⁽²⁾			
	and Length	subject to special approvat ⁽³⁾			
	Road	Grade			
	Figure	1			

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

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cific Outcomes for Assessable Development			Probable Solu	tions	
	Notes:				
	1. It is recognised that special circumstances may arise where it may be acceptable to allow grades and/or lengths of grade. Special circumstances may include:				
	 (a) Where comparatively short lengths of grade lead to significant reductions in environmental impact and/or costs; (b) Where absolute numbers of heavy vehicles are low; and (c) On local roads where the cost of achieving the higher standard cannot be justified in terms of the traffic volumes using the road. 2. Existing roads may fall into this area, in which case special design is required. On Collector Roads and Major Roads where grades greater than 10% are combined with significant changes in horizontal alignment (particularly where the maximum speed difference between successive horizontal geometric elements exceeds 				
24 Intersections along streets are safe and convenient.	PS 24 Intersection sp	acing (centreline –	centreline) along a thro	bugh road conforms with the follow	ving:
J. J	Intersecting		, ,	Chrough Road	
	Road	Access Road	Collector Road	Rural Sub- Arterial Road ⁽¹⁾	Rural Arterial
	Location				Road
	On same side of	100m	100m	300m	500m
	through road				
	On opposite sides of the through road	100m	100m	300m	500m
×C	Inrough road On opposite sides of the through road Notes: 1. In the case of Sub-the following absolution	100m Arterial Roads, exist ute minimum spacin	100m ting landholdings may in ng is used but all turns	300m require intersections at a lesser spa access may not be permitted (i.e.	500m acing. In such cases left in/left out only):-
	through road On opposite sides of the through road Notes: 1. In the case of Sub-A the following absolution Intersections on same site	100m Arterial Roads, exist ute minimum spacin de	100m ting landholdings may i ng is used but all turns	300m require intersections at a lesser spa access may not be permitted (i.e. 100m	500m acing. In such cases left in/left out only):-
	Inrough road On opposite sides of the through road Notes: 1. In the case of Sub- the following absolute Intersections on same site Intersections on opposite	100m Arterial Roads, exist ute minimum spacin de e sides:-	100m ting landholdings may in ng is used but all turns	300m require intersections at a lesser spa access may not be permitted (i.e. 100m	500m acing. In such cases left in/left out only):-
	through road On opposite sides of the through road Notes: 1. In the case of Sub-/ the following absolu Intersections on same si Intersections on opposite (1) left-right stagger	100m Arterial Roads, exist ute minimum spacin de e sides:-	100m ting landholdings may in ng is used but all turns	300m require intersections at a lesser spa access may not be permitted (i.e. 100m 100m	500m acing. In such cases left in/left out only):-
	through roadOn opposite sides of the through roadNotes:1. In the case of Sub- the following absolutionIntersections on same siIntersections on opposite(1) left-right stagger(2) right-left stagger	100m Arterial Roads, exist ute minimum spacin de e sides:-	100m ting landholdings may in ng is used but all turns	300m require intersections at a lesser spa access may not be permitted (i.e. 100m 100m 30m	500m acing. In such cases left in/left out only):-
	through road On opposite sides of the through road Notes: 1. In the case of Sub- the following absolution (Intersections on same site) Intersections on opposite (1) left-right stagger (2) right-left stagger The detailed design of security PSP28 Civil Infrase	100m Arterial Roads, exist ute minimum spacin de e sides:- street and road inter structure Design:-	100m ting landholdings may in ing is used but all turns rsections conforms to	300m require intersections at a lesser spa access may not be permitted (i.e. 100m 100m 30m the following sections of Council	500m acing. In such cases left in/left out only):- ' s Planning Scheme
	through road On opposite sides of the through road Notes: 1. In the case of Sub- the following absolute intersections on same site Intersections on same site Intersections on opposite (1) left-right stagger (2) right-left stagger The detailed design of site Policy PSP28 Civil Infrast Road	100m Arterial Roads, exist ute minimum spacin de e sides:- street and road inter structure Design:- d Classification	100m ting landholdings may in ing is used but all turns rsections conforms to	300m require intersections at a lesser spa access may not be permitted (i.e. 100m 100m 30m the following sections of Council Planning Scheme Policy I Infrastructure Design R	500m acing. In such cases left in/left out only):- ''s Planning Scheme PSP28 Civil teference
	through road On opposite sides of the through road Notes: 1. In the case of Sub- the following absolut Intersections on same si Intersections on opposite (1) left-right stagger (2) right-left stagger The detailed design of s Policy PSP28 Civil Infras Road Rural Roads	100m Arterial Roads, exist ute minimum spacin de e sides:- estructure and road inter structure Design:- d Classification	100m ting landholdings may in ing is used but all turns rsections conforms to	300m require intersections at a lesser spa access may not be permitted (i.e. 100m 100m 30m the following sections of Council Planning Scheme Policy I Infrastructure Design R Part 1 Sect 5.3.8 & Sec	500m acing. In such cases left in/left out only):- 's Planning Scheme PSP28 Civil ceference ct 6.16.0
	through road On opposite sides of the through road Notes: 1. In the case of Sub- the following absolution Intersections on same site Intersections on same site Intersections on opposite (1) left-right stagger (2) right-left stagger The detailed design of site Policy PSP28 Civil Infrast Roads Major Roads	100m Arterial Roads, exist ute minimum spacin de e sides:- street and road inter structure Design:- d Classification	100m ting landholdings may ing is used but all turns rsections conforms to	300m require intersections at a lesser spa- access may not be permitted (i.e. 100m 100m 30m the following sections of Council Planning Scheme Policy I Infrastructure Design R Part 1 Sect 5.3.8 & Sec Part 1 Sect 5.3.8 & Sec	500m acing. In such cases left in/left out only):- "s Planning Scheme PSP28 Civil teference ct 6.16.0 ct 6.16.0
	through road On opposite sides of the through road Notes: 1. In the case of Sub- the following absolution (Intersections on same site) Intersections on opposite (1) left-right stagger (2) right-left stagger The detailed design of site Policy PSP28 Civil Infrast Roads Major Roads Roundabouts	100m Arterial Roads, exist ute minimum spacin de e sides:- street and road inte structure Design:- d Classification	100m ting landholdings may ing is used but all turns rsections conforms to	300m require intersections at a lesser spa access may not be permitted (i.e. 100m 100m 30m the following sections of Council Planning Scheme Policy I Infrastructure Design R Part 1 Sect 5.3.8 & Sec Part 1 DG 01	500m acing. In such cases left in/left out only):- 's Planning Scheme PSP28 Civil teference et 6.16.0 et 6.16.0

Specific Outcomes for Assessable Development	Probable Solutions			
SO 25 All new Council controlled roads are fully constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standards.	PS 25 All new Council controlled roads are fully constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standards.			
SO 26 All Council controlled frontage roads are constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure	PS 26 All Council controlled frontage roads are constructed to Council's Planning Scheme Policy PSP28 Civil Infrastructure Design standards as follows:-			
<i>Design</i> standards.	Situation	Minimum Construction ⁽¹⁾		
	Frontage road unconstructed or gravel road only	For Access Place and Access Street: full carriageway and verges. For Collector Street: verge adjoining new lots, carriageway to a minimum sealed width of 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side.		
		For Major Roads: verge adjoining new lots, carriageway to a minimum sealed width of 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side.		
	Frontage road sealed ⁽²⁾ but not constructed to Council's <i>Planning Scheme Policy</i> <i>PSP28 Civil Infrastructure</i> <i>Design</i> standard Frontage road ⁽²⁾ partially constructed to Council's <i>Planning Scheme Policy</i> <i>PSP28 Civil Infrastructure</i> <i>Design</i> standard	For Access Place and Access Street: reconstruction of full carriageway and verges. For Collector Street: reconstruction of verge adjoining new lots and carriageway to a minimum sealed width of 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. The works match into the remaining existing works wherever possible.		
		For Major Roads: verge adjoining new lots and carriageway to a minimum sealed width of 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side. The works match into the remaining existing works wherever possible.		
		For Access Place and Access Street: construction of all remaining carriageway and verges. For Collector Street: verge adjoining new lots and carriageway to join existing works. In any event the minimum sealed width to be constructed is 6m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side where necessary. The works match into the existing works.		
		For Major Roads: verge adjoining new lots and carriageway to join existing works. In any event the minimum sealed width is 7m plus 1.5m wide (full depth pavement) gravel shoulder and table drainage to the opposite side where necessary. The works match into the existing works.		
	Notes: 1. Construction includes all associated works (services, streetlighting and linemarking) 2. Testing of the existing payement is carried out to confirm whether the existing works meet Council's Planning			
·	Scheme Policy PSP28 Civil Infrastructure Design standard.			
SO 27 Safe, constructed and flood free road access (during minor storms) is available to the <i>site</i> from the nearest Major Road.	PS 27 Roads or streets giving access to the development from the nearest Major Road are safe and constructed to a minimum pavement gravel width of 5.5m. These access roads or streets have minor drainage systems (5 year ARI) and cross drainage (5 year ARI) that conform to <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> , Part 2, Section 4.7.0.			

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Specific Outcomes for Assessable Development	Probable Solutions				
SO 28 The road network design takes into account:	PS 28 Road designs incorporate retention of existing significant trees where ever practicable.				
(1) Streetscapes that may be created or already exist;	Road designs minimise the heights of cut and fill of road formation to less than 2m wherever practicable.				
(2) Protection of topography and vegetation;	New roads are located to minimise the heights of cut and fill of road formation to less than 2m wherever possible.				
(3) Opportunities for views and vistas; and(4) Protection of natural drainage and open space systems.	Road designs minimise the amount of filling and extent of filling in or adjacent existing natural gullies, <i>waterways</i> , existing public open space areas and proposed public open space areas.				
SO 29 The existing road network is upgraded where necessary to cater for the traffic impact from the development.	PS 29 Solutions will need to be determine features.	d by traffic studies and adapted to suit	the particular <i>site</i> constraints and		
	New intersections onto existing roads are designed to accommodate traffic volumes and traffic movements ten years hence. Detailed design is in accordance with Council's Planning Scheme Policy PSP28 Civil Infrastructure Design, Part 1.				
	Existing intersections external to the <i>site</i> are upgraded as necessary to accommodate increased traffic from the development. Detailed design is in accordance with <i>Council's Planning Scheme Policy PSP28 Civil Infrastructure Design</i> . Part 1.				
SO 30 As constructed information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	PS 30 As constructed information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.				
7.3.4 Stormwater Management					
SO 31 The major drainage system has the capacity to safely convey stormwater flows for the 100 year ARI storm event.	PS 31 The roads, drainage pathways, drai 100 year ARI storm event (ultimate development)	nage features and <i>waterways</i> safely c ent catchment characteristics upstream)	onvey the stormwater flows for the .		
	The major drainage system has a minimum design ARI of 100 years (ultimate development catchment characteristics upstream). Carriageways generally have table or swale drains. Drains and turnouts are located to ensure the longitudinal flow in the channel does not exceed the following criteria for the major storm-				
	Location Major Storm - Maximum Flow Width and		Flow Width and Depth		
		Major Roads	Minor Roads		
	Roads without kerb and channel – table or swale drains used for longitudinal drainage	(a) Total flow contained within road reserve; and	(a) Total flow contained within road reserve; and		
		 (b) Flows do not encroach upon driving lanes; and 	 (b) Flows do not encroach upon driving lanes; and 		
		(c) Freeboard ≥250mm to floor level of adjacent buildings; and	 (c) Freeboard ≥250mm to floor level of adjacent buildings; and 		
		(d) Maximum depth of flow in drain of 300mm	(d) Maximum depth of flow in drain of 300mm		

CHAPTER 6, PART 3, DIVISION 7 - RURAL SUBDIVISION WORKS DESIGN CODE
ific Outcomes for Assessable Development		Probable Solutions	
	Kerb and channelled crowned road - floor levels of adjacent buildings are road level	 where above (a) Total flow contained within road reserve; and (b) Freeboard ≥250mm to floor level of adjacent buildings; and 	 (a) Total flow contained within road reserve; and (b) Freeboard ≥250mm to floor level of adjacent buildings;
		(c) Maximum depth of flow of	and
	Kerb and channelled crowned road - floor levels of adjacent buildings are road level or < 300mm above top of ke	where below erb	
	(a) ≥100mm fall on verge towards ker	b; (a) 50mm above top of kerb;	(a) 50mm above top of kerb;
	(b) < 100mm fall on verge towards ke	rb. (b) Top of kerb	(b) Top of kerb
	Notes:		
	1. Widths are measured from chan	nel invert for kerb and channel and from kerb :	face for kerb only.
	2. Refer to Council's Planning So design requirements.	cheme Policy PSP28 Civil Infrastructure Des	ign, Part 2, Section 4 for detailed
	The flow velocity in all unlined or soft fa condition of the channel (refer to QUD	aced open drains is kept within acceptable limi M Table 8.03).	ts for the type of material or lining and
	The product of depth by average veloc where there is a danger of pedestrians	city in the concrete channel (longitudinal drain s being swept away and drowned where the v	age) does not exceed 0.6m²/s except alue is limited to 0.4m²/s.
	Detailed design of the major drainage Design, Part 2, Section 4.	system conforms to Council's Planning Sche	eme Policy PSP28 Civil Infrastructure
	Rural lots have one area satisfying the following minimum development levels:-		
	Location of Rural Lot	Minimum Development Level	Minimum Area at Development Level
	Adjacent Existing Natural	The greater of:-	1500m ² min. area
	Watercourse	(a) Q100 _{ultimate} plus 750mm; or	
		(b) the highest recorded flood level plus 750mm.	
	Adjacent Engineered Channels	The greater of:-	1500m ² min. area
		(a) Q100 _{ultimate} plus 500mm for a maintained channel; or	
		(b) Q100 _{ultimate} plus 250mm for an unmaintained channel.	
	Road Drainage	The greater of:-	1500m ² min. area
		(a) Q100 _{ultimate} plus 250mm; or	
		(b) Q100 _{ultimate} plus 150mm using blocked catchpits or inlets.	
O			

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS

Effective from 15 December 2006

pecific Outcomes for Assessable Development		Probable Solutions	
	Overland Flow Paths	 The greater of:- (a) Q100_{ultimate} plus 250mm for a maintained flow path; or (b) Q100_{ultimate} plus 150mm for an unmaintained flow path. 	1500m² min. area
	Open channels are desi	gned in accordance with Council's Planning Sche	me Policy PSP28 Civil Infrastructure Design,
 32 The minor stormwater drainage system has the capacity convey stormwater flows from frequent storm events whilst isuring pedestrian and vehicular traffic movements are safe and invenient. 23 Poad cross drainage ensures that roads remain 	Part 2, Section 4.9.0. PS 32 The minor drainage system has a minimum design ARI of 5 years (ultimate development catchment characteristics upstream). Carriageways generally have table or swale drains and turnouts located to ensure the longitudinal flow is fully contained within the channel for the minor storm. Table drain outlets contain energy dissipaters and flow spreaders to control erosion and scour. Table drain outlets are located such that they do not direct flows towards certified building areas or existing structures or site works that could be adversely affected by overland flows.		
SO 33 Road cross drainage ensures that roads remain trafficable during major storm events without flooding or impacting upon building areas or other premises.			
	Major Road Minor Road Notes: 1. 50 year ARI for Mai	Trafficable for flows from the 100 year ARI storm:- (a) Maximum depth 200mm; and (b) $D_g V_{ave} \le 0.4$ Trafficable for flows from the 100 year ARI storm:- (a) Maximum depth 200mm; and (b) $D_g V_{ave} \le 0.4$	 For the 50 year ARI storm:- (a) Flows and flood levels do not encroach upon the driving lanes; (b) Minimum pipe system freeboards are maintained. For the 10 year ARI storm:- (a) Flows and flood levels do not encroach upon the driving lanes; (b) Minimum pipe system freeboards are maintained.
	Roads remain trafficable Planning Scheme Policy Design Guidelines. Where there is potential fusing box culverts or a b Afflux from the cross drapremises. Where the Minor Road p conforming with the abov is for the 2 year ARI stor major storm of 6 hours. All floodways, where the flood markers provided.	during major storm events. Detailed design of cull <i>PSP28 Civil Infrastructure Design</i> , Part 2, Section for blockage by stream debris due to the nature of the ridge <i>structure</i> . ainage does not flood or reduce the required Q100 rovides access for less than 15 allotments then, in we requirements cannot be reasonably required, the rm with the <i>structure</i> designed as a floodway with a depth of flow at any point on the carriageway excert	Iverts and bridges conforms with <i>Council's</i> 4.12.2 and 4.12.3 and Austroads <i>Waterways</i> he catchment the cross drainage is constructed D freeboard to existing building areas or other exceptional circumstances where a <i>structure</i> he absolute minimum minor storm design flow a maximum duration of inundation during the ceeds 200mm, have appropriate signage and

Specific Outcomes for Assessable Development		Probable Solutions
SO 34 Stormwater management facilities ensure that drainage discharge from the <i>site</i> does not cause nuisance or annoyance to any person, property or premises.	PS 34 Stormwater runoff from to any person, property or pren	m the <i>site</i> is conveyed to a point of lawful discharge without causing nuisance or annoyance nises.
	Runoff rates and pollutant loads are not made worse by runoff from the site.	
	A watercourse as defined in discharge from the site does no any flooding of downstream allo	the <i>Water Act 2000</i> is accepted as a lawful point of discharge providing the drainage of increase downstream flood levels by more than 20mm during the 100 year ARI storm and otments which are not able to be further subdivided is not increased.
SO 35 The stormwater quality management system minimises	PS 35 All significant gullies a	are revegetated, as necessary, to reinstate natural drainage lines.
the environmental impact of stormwater on surface and underground receiving water quality.	All existing or potential gully and slope erosion areas are stabilised to minimise, as far as practicable, the discharge of sediment laden runoff from the <i>site</i> .	
	Vegetated swale drains and ch	eck dams are used to reduce pollutant loads from roads.
	The detailed design of stormwa <i>Civil Infrastructure Design</i> , Par	ater quality improvement devices conforms to Council's Planning Scheme Policy PSP28 t 2, Sections 3 & 4.
	Approved proprietary products	are installed and maintained in accordance with the manufacturer's recommendations.
SO 36 The stormwater quality management system minimises	PS 36 Stormwater management facilities do not encroach upon riparian areas.	
configuration.	Filling does not extend below the Q50 (ultimate) flood contour for creeks and <i>watercourses</i> .	
oomigu aaon.	Filling does not extend below the Q100 (ultimate) flood contour for rivers.	
	The number of stormwater out	ets to <i>waterways</i> are minimised.
SO 37 The stormwater quality management system minimizes	Natural creeks and <i>watercourses</i> are not channelised to maximise development area.	
the environmental impact of stormwater on existing natural	ses roor stormwater management facilities do not encroach upon existing natural wetlands.	
wetlands and vegetation	Planning Scheme Policy PSP2	8 Civil Infrastructure Design, Part 2, Section 4.11.5).
SO 38 Community benefit is maximised through the retention	on PS 38 <i>Watercourses</i> are enhanced by re-vegetation with natural species occurring in the catchment. The area r	
and enhancement of natural streams and vegetation wherever	be planted with local native tre	es (of the local Regional Ecosystem if relevant) at 3m centres, shrubs at 2m centres and
practicable.	ground covers at 1m centres.	veteractives through or adjoining the site are repaired and stabilized
SO 39 As constructed information including test certificates	PS 39 As constructed inform	ation including test certificates for material quality (if required) and compaction is provided
for material quality (if required) and compaction is provided upon completion of the subdivision works.	upon completion of the subdivision works.	
7.3.5 Recreational Trails		
SO 40 The recreational trail design provides for safe, attractive and convenient movement of pedestrians and horse riders on circular routes or links to recreational areas and attractions such as tourist facilities (natural and built), schools, shops and sporting facilities.	PS 40 Recreational trails are	e provided in accordance with Council's Recreational Trails Plan.
	Trails are designed to conform to the following:-	
	Issue	Requirement
	Trail type	
	1. Network Trails	1. Formed and surfaced with 50 mm minimum compacted gravel pavement
	2. Informal Trails	2. Formed and grassed.
	Grades	Desirable maximum: 20 %
		Absolute maximum: 25%

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CHAPTER 6, PART 3, DIVISION 7 - RURAL SUBDIVISION WORKS DESIGN CODE

Specific Outcomes for Assessable Development		Probable Solutions
	Formation width	Minimum width: 2m
	Crossfall	1(V) in 30(H) minimum; 1(V) in 10(H) maximum.
	Clearances	Horizontal: 3m; Vertical: 3m
	Drainage	Drainage works sufficient to provide reasonable all-weather useability and to minimise potential for erosion damage.
		Typically low flow pipes (375mm diameter minimum), rock fords or bridges at larger crossings. Longitudinal earth or rock lined table drains as necessary.
	Post and rail fencing is locate	ed at the ends of off road trails to minimise access by motor vehicles.
	Recreational trail direct road	crossings conform to Standard Drawing No. 8-60045.
SO 41 As constructed information is provided upon completion of the subdivision works.	PS 41 As constructed info	ormation is provided upon completion of the subdivision works.
7.3.6 Public Transport		
SO 42 The road design provides for the extension of existing bus routes and/or potential bus routes including safe convenient stops and, where necessary, bus turnaround areas.	PS 42 Bus stops are prov Piped crossovers to the tabl distance to approaching veh	ided at selected locations. These stops accommodate bus clear of the through traffic lanes. e drains are provided for passengers at the bus stop. Bus stops have adequate safe sight icles for the bus re-entering the driving lane from the bus stop.
SO 43 "As constructed" information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	PS 43 "As constructed" information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	
7.3.7 Public Open Space		
SO 44 Public open space provides for recreational, environmental and stormwater management needs.	PS 44 No solution provide	ed.
SO 45 "As constructed" information including test certificates for material quality (if required) is provided upon completion of the subdivision works.	PS 45 "As constructed" inf of the subdivision works.	formation including test certificates for material quality (if required) is provided upon completion
7.3.8 Utilities		
SO 46 Development only occurs in locations where there are adequate services and capacity for the desired use.	PS 46 The design of the e	electrical reticulation is in accordance with ENERGEX specifications.
7.3.8(a) Electricity		
SO 47 Where lots are intended to be provided with reticulated	PS 47 Electrical reticulation	on is provided in rural developments.
electricity the service is underground with design and construction of the associated infrastructure and connections being provided	Underground crossings of e methods including trenched	xisting roads are bored. In special circumstances, <i>Council's</i> engineer may approve other construction.
supports sustainable development practices.	Road crossing are not at acu	te angles to the road centreline.
	Electrical crossings are with intersections to enable 11kV	hin the area defined as an <i>intersection</i> under State legislation or are diagonally across cables to be installed without joints.

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Specific Outcomes for Assessable Development	Probable Solutions	
7.3.8(b) Street Lighting – (excludes State-controlled roads)		
SO 48 Street lighting is provided where a strong need has been identified to light a traffic hazard.	PS 48 Street lighting is provided where a strong need has been identified to light a traffic hazard such as a dip, causeway or intersection. All works are designed and constructed to AS1158, Public Lighting Code, 1986, Austroads Guide to Traffic Engineering Practice – Part 12, Roadway Lighting, 1988 and ENERGEX standards and approval.	
7.3.8(c) Telecommunications		
SO 49 All lots are able to be provided with a telecommunications service which is designed to give a safe, cost effective, coordinated and efficient system that supports sustainable development practices.	 PS 49 Application for telecommunications reticulation is made and pre-provisioning confirmation is received prior to subdivision works commencing. Telecommunications reticulation is installed in accordance with Telstra standards and a provisioning confirmation is provided for the works. 	
7.3.8(d) Alterations and Relocations		
SO 50 Any alteration or relocation in connection with or arising from the development to any service, installation, plant, equipment or other item belonging to or under the control of the telecommunications authority, electricity authorities, the <i>Council</i> or other person engaged in the provision of public utility services, is carried out prior to the approval of the plan of subdivision.	PS 50 No solution provided.	
7.3.8(e) As Constructed Information		
SO 51 As constructed information including test certificates for material quality (if required) and compaction is provided upon completion of the subdivision works.	PS 51 As constructed information including test certificates for material quality (if required) and compaction is provided to the relevant authority upon completion of the subdivision works.	

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS



Division 8 Access Easement Subdivision Works Design Code

8.1 Access Easement Subdivision Works Design Code

The overall outcomes are the purpose of this code.

The overall outcomes sought by the Access Easement Design Code are the following:

- (1) Access easements to a road include properly constructed driveways;
- (2) Access easements to a road have safe access points onto the road;
- (3) Access easements to a road minimise impacts on the amenity of adjacent residents;
- (4) Access easements to a road minimise impacts on existing infrastructure; and
- (5) Access easements to a road minimise impacts on the environment.

8.2 Compliance with the Access Easement Subdivision Works Design Code

Development that is consistent with the specific outcomes in Section 8.3 complies with the Access Easement Design Code.

Development Requirements 8.3

8.3 Development Requirements	
Specific Outcomes for Assessable Development	Probable Solutions
SO 1 Access easements contain a driveway constructed to suit the user's needs.	 PS 1.1 Driveways are constructed within access easements to carry a design loading of 2.3 x 10³ E.S.A for each lot entitled to use the driveway. PS 1.2 The driveway width is a minimum of 3m. PS 1.3 Urban driveways are 3m wide fully sealed gravel pavements, reinforced concrete slabs or interlocking concrete pavers over a gravel pavement. PS 1.4 Non-urban residential driveways are 3m wide fully sealed gravel pavements. PS 1.5 Rural driveways are 3m wide gravel pavements with sections that are greater than 10% slope being sealed (2 coat bitumen or 25mm thick asphalt) as well as a 30m length either end of the 10% sloped section. PS 1.6 The driveway is not inundated in the runoff from the 5 year ARI storm (fully developed catchment conditions). PS 1.7 The driveway has a general maximum longitudinal grade of 16%. In special circumstances, such as difficult terrain the absolute maximum grade is 20% for a distance not exceeding 60m. PS 1.9 Effective drainage control is provided to prevent scouring and erosion of the works.
SO 2 The access point onto the road is located with appropriate grading, verge cross section and safe sight distance for accessing vehicles, through traffic and pedestrians on the verge.	 PS 2.1 The driveway construction across the verge conforms with the relevant standard verge cross-section for the classification of the road. PS 2.2 The sight distance available between a vehicle leaving the lot at the driveway access point and a vehicle approaching on the frontage road is equal to the <i>Safe Intersection Sight Distance</i> (determined appropriate for the classification of the frontage road – refer to Austroads Guide to Traffic Engineering Practice – Part 5, Intersections at Grade).
SO 3 Any alteration or relocation in connection with or arising from the development to any service, installation, plant, equipment or other item belonging to or under the control of the telecommunications authority, electricity authorities, the Council or other person engaged in the provision of public utility services, is carried out prior to the approval of the plan of subdivision.	PS 3 No solution provided.
SO 4 Clearing of existing vegetation for construction of the driveway is minimised as far as practicable.	PS 4 The driveway is located in existing cleared areas.
SO 5 Stormwater runoff from disturbed areas (earthworks or clearing) is controlled to minimise environmental impacts.	PS 5 All areas disturbed for clearing or earthworks for the driveway constructed have suitable erosion, sedimentation and drainage controls in place. These devices are modified, as necessary, during construction to ensure their ongoing effectiveness.
SO 6 The driveway includes adequate permanent stormwater runoff control and drainage to minimise, as far as possible, erosion and scour.	 PS 6.1 Table drains are lined with appropriate materials in relation to the flow velocity. PS 6.2 Steep table drains are avoided. However, where steep table drains are used these contain "check dams" at appropriate spacing to reduce flow velocities to acceptable levels. PS 6.3 The flow velocity in all unlined or soft faced open drains is kept within acceptable limits for the type of material or lining and condition of the channel (refer QUDM Table 8.03).
•	 PS 6.4 Drain outlets include appropriate energy dissipaters and flow spreaders to minimise erosion and scour. PS 6.5 Drain outlets are located so as not to create nuisance or annovance to adjoining properties.
SO 7 The easement covers all works associated with the access.	PS 7 The easement covers all driveway construction including cut and fill batters, drainage works and utility services.

Effective from 15 December 2006

CHAPTER 6, PART 3 - ASSESSMENT CRITERIA FOR OPERATIONAL WORKS