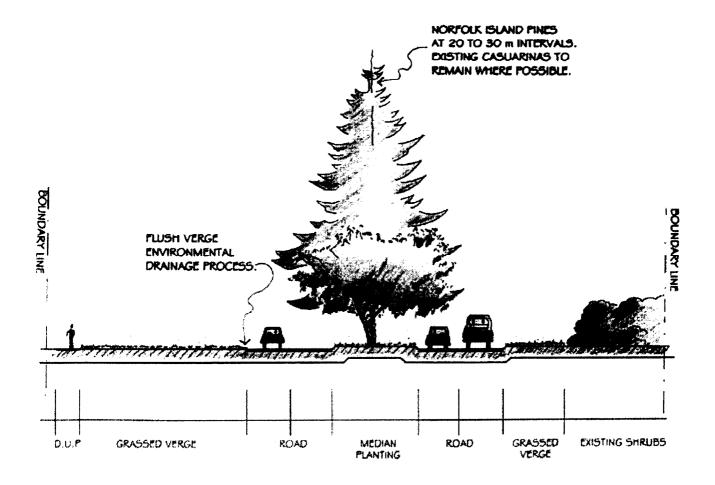
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APPENDIX 1(a)



Marmion Avenue

Note grass verge over inground services.

High pressure gas.

Water Corporation mains supply line.



Example

Marmion Avenue perspective – Beach Road to Warwick Road Works in Progress

Median and Verge Development Criteria

- No indigenous plants
 - High traffic flow
 - Long wide medians
 - No trees planted
- 2 25% indigenous trees,
 - No shrubs
 - Medium/High traffic flow
 - Less than 25% planted with various species
- 25%-50% indigenous trees and shrubs
 - medium/low traffic flow
 - More than 25% planted with various species
- More than 50% indigenous trees and shrubs
 - Low traffic flow
 - More than 50% planted with various species

MEDIAN - VERGE LANDSCAPE ASSESSMENT MAINTENANCE AREAS

ARTERIAL	LOCATION	SECTION	AREA VERGE	VERGE PRIORITY	AREA MEDIAN/ROAD ISLAND	MEDIAN PRIORITY	AREA TOTAL	RATING TRAFFIC	RATING VISUAL
BEACH ROAD	WARWICK	Wanneroo Rd to Freeway	4500	1		N/A	4,501	High	High
BEACH ROAD	DUNCRAIG	Freeway to Marmion Av	8800	1		N/A	8,801	High	High
BURNS BEACH ROAD	JOONDALUP	Yellowstone to Marmion Ave	6000	3	N/A	N/A	6000	Medium	Medium
BURNS BEACH ROAD	ILUKA	Marmion to Burns Beach Rd	6000	3	N/A	N/A	6000	Low	Low
CONNOLLY DRIVE	CURRAMBINE	Shenton Ave to Moore Dr	13,500	2	900	2	14,402	Medium	Medium
CONNOLLY DRIVE	CURRAMBINE	Moore Dr to Burns Beach Rd	12,550	1		1	12,551	Low	High
CONNOLLY DRIVE	KINROSS	Burns Beach Rd to Tamala Boundary	8,600	4 R	8,600	4	17,200	Low	Low
HEPBURN AVENUE	GREENWOOD	Wanneroo Rd to Moolanda Blvd	36,600	3	8,400	1	45,003	Medium	Medium
HEPBURN AVENUE	KINGSLEY	Moolanda Blvd to Freeway	91,350	3	13,200	1	104.553	Medium	Medium
HEPBURN AVENUE	KINGSLEY	Freeway to Marmion Av	68,825	2	13,200	1	82,027	Medium	Medium
HEPBURN AVENUE	HILLARYS	Marmion Av to West Coast Dr	33,000	2/3	200	1	33,200		High
HODGES DRIVE	CONNOLLY	Joondalup Dr to Marmion Av	25,000	S2 N3/4	15000	1R	40.000	High	High
HODGES DRIVE	OCEAN REEF	Marmion Av to Ocean Reef Rd	16500		150	2R	16,650		High
JOONDALUP DRIVE	EDGEWATER	Ocean Reef Rd to Hodges Dr	14,700	3	29,000	3	43,703		Medium
JOONDALUP DRIVE	JOONDALUP	Hodges Dr to Grand Blvd North	4,000	4 R	16,000	4R	20,000	High	High
JOONDALUP DRIVE	JOONDALUP	Grand Blvd North to Roundabout	36200	1	200	1	36,401	High	High
JOONDALUP DRIVE	JOONDALUP	Roundabout to Council Boundary	2,000	N1 S2/3	600	2/3	2,600	High	High
MARMION AVENUE	DUNCRAIG	Beach Rd to Warwick Rd	20,800	2 R	6,500	2 R	27,300	High	High
MARMION AVENUE	DUNCRAIG	Warwick Rd to Hepburn Av	52,300	2	22,000	2	74,302	High	High
MARMION AVENUE	PADBURY	Giles Av to Whitfords Av	16,500	2	13,200	2 R	29,702	High	High
MARMION AVENUE	CRAIGIE	Whitfords Av to Craigie Dr	32,000	2	17,600	2	49,602	High	High
MARMION AVENUE	CRAIGIE	Craigie Dr to Ocean Reef Rd	19,400	2	9,100	2	28,502	High	High
MARMION AVENUE	CONNOLLY	Ocean Reef Rd to Hodges Dr	23,000	2	18,000	2	41,002	High	High
MARMION AVENUE	CONNOLLY	Hodges Dr to Shenton Av	36,600	2	12,600	2	49,202		High
MARMION AVENUE	CURRAMBINE	Shenton Av to Burns Beach Rd	5100	1	20900	1	26,001	High	High

LEGEND

PRIORITY 1 NO INDIGENOUS PLANTS, HIGH TRAFFIC FLOW, LONG AND WIDE MEDIANS, NO TREES PLANTED.

PRIORITY 2 25% INDIGENOUS TREES, NO SHRUBS, MEDIUM/HIGH TRAFFIC FLOW, LESS THAN 25% PLANTED WITH VARIOUS SPECIES.

PRIORITY 3 25% - 50% INDIGENOUS TREES AND SHRUBS, MEDIUM/LOW TRAFFIC FLOW, 25% PLANTED WITH VARIOUS SPECIES.

PRIORITY 4 50%> INDIGENOUS TREES AND SHRUBS, LOW TRAFFIC FLOW, 50%> PLANTED WITH VARIOUS SPECIES.

DATE: 3 January 2001

OPERATIONS SERVICES MEDIAN - VERGE LANDSCAPE ASSESSMENT MAINTENANCE AREAS

ARTERIAL	LOCATION	SECTION	AREA VERGE	VERGE PRIORITY	AREA MEDIAN/ROAD ISLAND	MEDIAN PRIORITY	AREA TOTAL	RATING TRAFFIC	RATING VISUAL		
MARMION AVENUE	KINROSS	Burns Beach Rd to Tamala Boundary	25000	1	27500	1	52,501	High	High		
MOORE DRIVE	JOONDALUP	Blue Mountain Dr to Candlewood Blvd	8,000	N/A		2	8,000	Medium	High		
MOORE DRIVE	JOONDALUP	Candlewood Blvd to Joondalup Dr	8,000	N/A		2	8,000	Medium	High		
MOORE DRIVE	CURRAMBINE	Blue Mountain Blvd to Connolly Dr	8,000	1		1	8,001	Medium	High		
MOORE DRIVE	CURRAMBINE	Connolly Dr Roundabout to Marmion Av	23,750	2 R		1	23,750	Medium	High		
OCEAN REEF ROAD	WOODVALE	Wanneroo Rd to Trappers Dr	53,900	1/2	8,000	2	61,900	Medium	High		
OCEAN REEF ROAD	EDGEWATER	Trappers Dr to Joondalup Dr	14,700	2/3	7,300	2/3	22,000	Medium	Medium		
OCEAN REEF ROAD	CRAIGIE	Freeway to Eddystone Av	98,000	3	7,200	3	105,203	Medium	Medium		
OCEAN REEF ROAD	CRAIGIE	Eddystone Av to Marmion Av	9,050	2	9,600	2	18,652	Medium	High		
OCEAN REEF ROAD	OCEAN REEF	Marmion Av to Oceanside Prom	20,200	S1/2 N1/2	5,000	1/2	25,200	High	High		
SHENTON AVENUE	CONNOLLY	Joondalup Dr to Marmion Av	13,500	S2 N2		1	13,500	Medium	High		
SHENTON AVENUE	CONNOLLY	Marmion Av to Foreshore	6,860	4 R	2,600	4	9,460	Medium	Low		
WARWICK ROAD	WARWICK	Wanneroo Rd to Erindale Rd	3,300	N/A	5,200	4	8,500	Medium	Low		
WARWICK ROAD	GREENWOOD	Erindale Rd to Coolibah Dr	40,000	N/A	7,500	4	47,500	Medium	Low		
WARWICK ROAD	GREENWOOD	Coolibah Dr to Freeway	4,200	N/A	7,00	4	4,200	Medium	Low		
WARWICK ROAD	DUNCRAIG	Freeway to Glengarry Dr	1,200	N/A	8,100	4	9,300	Medium	Low		
WARWICK ROAD	DUNCRAIG	Glengarry Dr to Marmion Av	16,700	N/A	39,000	4	55,700	Medium	Low		
WHITFORDS AVENUE	KINGSLEY	Wanneroo Rd to Trappers Dr	38,000	2	14,000	2	52,002	Medium	High		
WHITFORDS AVENUE	KINGSLEY	Trappers Dr to Freeway	18,800	2	7,800	2	26,602	Medium	High		
WHITFORDS AVENUE	CRAIGIE	Freeway to Gibson Av	11,600	2	7,800	2	19,402	Medium	High		
WHITFORDS AVENUE	PADBURY	Gibson Av to Marmion Av	32,700	3	10,800	2	43,503	Medium	High		
WHITFORDS AVENUE	HILLARYS	Marmion Av to Dampier Av	4,000	N2 SN/A	2,400	2	6,400	High	High		
WHITFORDS AVENUE	KALLAROO	Dampier Av to Belrose Dr	2,500	N2 SN/A	3,000	2	5,500	High	High		
WHITFORDS AVENUE	KALLAROO	Belrose Dr to Northshore Av	21,000	1	2,800	1	23,801	High	High		
WHITFORDS AVENUE	HILLARYS	Northshore Av to Hepburn Ave	30,000	3	10,300	3	40,303	High	Low		
WEST COAST DRIVE	MARMION	Beach Rd to Whitfords Ave	3,000	1	1,500	1	4,500	High	High		
LEGEND											
PRIORITY 1	NO INDIGENOUS	PLANTS, HIGH TRAFFIC FLOW, LONG AND W	IDE MEDIANS	, NO TREES F	LANTED.						
PRIORITY 2	25% INDIGENOUS	S TREES, NO SHRUBS, MEDIUM/HIGH TRAFFI	C FLOW, LES	S THAN 25% P	LANTED WITH V	ARIOUS SPECI	ES.				
PRIORITY 3	25% - 50% INDIGENOUS TREES AND SHRUBS, MEDIUM/LOW TRAFFIC FLOW, 25%> PLANTED WITH VARIOUS SPECIES.										

PRIORITY 3 25% - 50% INDIGENOUS TREES AND SHRUBS, MEDIUM/LOW TRAFFIC FLOW, 25%> PLANTED WITH VARIOUS SPECIES.

PRIORITY 4 50% INDIGENOUS TREES AND SHRUBS, LOW TRAFFIC FLOW, 50% PLANTED WITH VARIOUS SPECIES.

AREA

ATTACHMENT:

REPORT

DISTRIBUTOR ROAD	LOCATION	SECTION	AREA VERGE	VERGE PRIORITY	MEDIAN/ROAD ISLAND	MEDIAN PRIORITY	AREA TOTAL	RATING TRAFFIC	RATING VISUAL
ALLENSWOOD DRIVE	GREENWOOD	Hepburn Ave to Warwick Rd	1,220	N/A	26,000	4	27,220	Low	Low/Med
BERNEDALE DRIVE	KINGSLEY	Hepburn Ave to Whitfords	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BLUE MOUNTAIN DR	JOONDALUP	Burns Beach Rd to Moore Dr	16,850	2		N/A	16,852	Low	Medium
BRIENZ AVENUE	JOONDALUP	Candlewood Blvd to Joondalup Dr	2,250	1		N/A	2,251	Low	High
BURNS BEACH ROAD	JOONDALUP	Joondalup Dr to Yellowstone Way	10,700	3			10,703	Medium	Medium
CANDLEWOOD BLVD	JOONDALUP	Moore Dr to Windermere Park	10,800	2		N/A	10,802	Low	Medium
CRAIGIE DRIVE	CRAIGIE	Eddystone Av to Barwon Rd	3,500	2	3500		7,002	Low	Medium
COOLIBAH	GREENWOOD	Warwick to Allenswood	N/A	N/A	N/A	N/A	N/A	N/A	N/A
COCKMAN ROAD	GREENWOOD	Warwick to Hepburn	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DAMPIER AVE	KALLAROO	Whitfords to Ocean Reef	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DAVALLIA ROAD	DUNCRAIG	Warwick Rd to Beach Rd		N/A	6,000	1 R	6,000	Low	High
DELAMERE AVENUE	CURRAMBINE	Shenton Av to Marmion Av	8,800	3		3	8,803	Medium	Low
EDDYSTONE AVE	CRAIGIE	Whitfords to Joondalup Dr	2000	3	2,000	3	4,000	Low	High
ERINDALE ROAD	WARWICK	Warwick Rd to Beach Rd		1	18,000	2 R	18,001	Medium	High
FAIRWAY CIRCLE	CONNOLLY	Shenton Av to Country Club Blvd	12,000	2 R			12,000	Low	Medium
FAIRWAY CIRCLE	CONNOLLY	Country Club Blvd to Diablo Way	800	2 R	2800		3,600	Low	Medium
FLINDERS AVENUE	HILLARYS	Cook Av to Broadbeach Blvd	3,000	1			3,001	Low	Low
FLINDERS AVENUE	HILLARYS	Barclay Av to Brisbane Dr	4,000				4,000		
GIBSON AVENUE	PADBURY	Giles Av to Gibson Park North	7,200	3			7,203	Low	Medium
GLENGARRY DRIVE	DUNCRAIG	Warwick Rd to Doveridge Dr	500	N/A	4,900	2/3	5,400	Low	Low/Med
KINGSLEY DRIVE	KINGSLEY	Hepburn Ave to Whitfords Rd	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LAKESIDE DRIVE	JOONDALUP	Joondalup Dr to Boas Av	14,800	1			14,801	Low	Low
LAKESIDE DRIVE	JOONDALUP	Boas Av to Joondalup Dr South		1			1	Low	Low
LILBURNE DRIVE	DUNCRAIG	Warwick To Hepburn	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MOOLANDA DRIVE	KINGSLEY	Hepburn Ave to Whitfords Rd	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LEGEND			1		<u> </u>				

PRIORITY 1 NO INDIGENOUS PLANTS, HIGH TRAFFIC FLOW, LONG AND WIDE MEDIANS, NO TREES PLANTED.

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MEDIAN-VERGE LANDSCAPE ASSESSMENT MAINTENANCE AREAS

DISTRIBUTOR ROAD	LOCATION	SECTION	AREA VERGE	VERGE PRIORITY	AREA MEDIAN/ROAD ISLAND	MEDIAN PRIORITY	AREA TOTAL	RATING TRAFFIC	RATING VISUAL	ATTACHMENT
NORTHSHORE DRIVE	KALLAROO	Whitfords Av to Mullaloo Dr	2,000	E2 W3/4		2	2,000	Medium	Medium] ជួ
TRAPPERS DRIVE	WOODVALE	Whitfords to Ocean Reef	1500	3	2800	3	4300	Low	High	
TRAPPERS DRIVE	WOODVALE	Whitfords Av to Timberlane Dr	5,000	N/A	3,300	3	8,300	Low	Low	z
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LEGEND

PRIORITY 3

PRIORITY 1

NO INDIGENOUS PLANTS, HIGH TRAFFIC FLOW, LONG AND WIDE MEDIANS, NO TREES PLANTED. PRIORITY 2

25% INDIGENOUS TREES, NO SHRUBS, MEDIUM/HIGH TRAFFIC FLOW, LESS THAN 25% PLANTED WITH VARIOUS SPECIES.

25% - 50% INDIGENOUS TREES AND SHRUBS, MEDIUM/LOW TRAFFIC FLOW, 25%> PLANTED WITH VARIOUS SPECIES.

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50% INDIGENOUS TREES AND SHRUBS, LOW TRAFFIC FLOW, 50% PLANTED WITH VARIOUS SPECIES.

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OPERATIONS SERVICES MEDIAN-VERGE LANDSCAPE ASSESSMENT

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Reticulated	107550		64010	
Dry	370150		1037063	
TOTAL	477700		1101073	
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DISTRIBUTOR ROKES	MEDIAN			
Reticulated	12800		24000	
Dry	100220		45300	
TOTAL	113020		69300	
TOTAL AREAS	590720		1170373	
	1		1761093	
		=	176.11	Hectares

appendix 1(d)

MOVEMENT NETWORK

ELEMENT 2

Lane ways

Lane ways are generally used when smaller lot layouts justify rear parking, and where alternative vehicle access is needed for lots fronting major streets or parkland.

Culs-de-sac

Desirable cul-de-sac maximum length is 120m, servicing no more than 20 dwellings, and with no more than 15% of lots in a neighbourhood on culs-de-sac. Culs-de-sac should be placed in a through-street reserve, so that pedestrians and cyclists can have access and longer term connection for other traffic is possible. Culs-de-sac should be located so that they do not impede the overall interconnectivity of the system. Cul-de-sac design should be assessed on the basis that it will connect in future and traffic volumes may rise.

Network connectivity and management

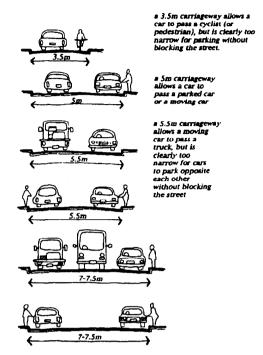
The local street network should be highly inter-connected with frequent junctions wherever possible with arterial routes to help limit travel distances and to promote walking, cycling, public transport usage and a strong sense of community. The Community Design Code proposes a network where traffic volumes and speeds are managed, not a return to the rigid grids of the past.

In centres, streets should be provided one block back from arterial routes to facilitate local access and to take the pressure off arterial intersections. These streets may be wide with extensive angled parking to serve the centre. They should be designed to make traffic behave appropriately by controlling the speed environment.

Control of vehicle speed in local streets

The Community Design Code sets out several design components to contribute to limiting vehicle speeds on local streets, including:

- road width appropriate to traffic volume and parking demand, so traffic is impeded and slowed by parked and opposing vehicles, but capacity is not unduly constrained;
- short leg lengths between street junctions and/or slow points (tight corners, bends or traffic-calming devices) encourages speed to 30 40 km/h or less;
- visually and physically tight intersections (small kerb radii);
- short local trips, reducing potential for driver frustration; and_____
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a 7 -7.5m carriageway is wide enough for two vehicles to pass each other while passing a parked car. It is wide enough for a moving ca to pass between two parked cars, but is clearly not wide enough for two moving vehicles to pass at once. One must give way.

Figure 1: Diagram of physical determinants for the width of local streets.

Intersection controls

Intersection design for vehicle and pedestrian safety needs to take account of traffic volumes and type of vehicles on each leg, likely traffic speeds, topography and the need for the junction to act as a slow point in one or more directions. Solutions may range from simple stop signs, narrowed throats and raised pavements, mini-roundabouts, or occasionally more complex traffic management devices.

Arterial routes will have signalised intersections in association with pedestrian locations, such as neighbourhood and town centres to provide pedestrian safety and convenience. Medians are used to allow staged pedestrian crossing of the arterial routes.

Traffic signals have significant capital and recurrent costs, but can be a cheaper alternative to underpasses. Main Roads is responsible for traffic signals and allocates priority for their installation. The Commission considers that any costs associated with the advancement in priority for signals should be bourne by the developer.

Proposals which contemplate intersection control using traffic signals should be discussed with Main Roads at an early stage.

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MOVEMENT NETWORK

ELEMENT 2

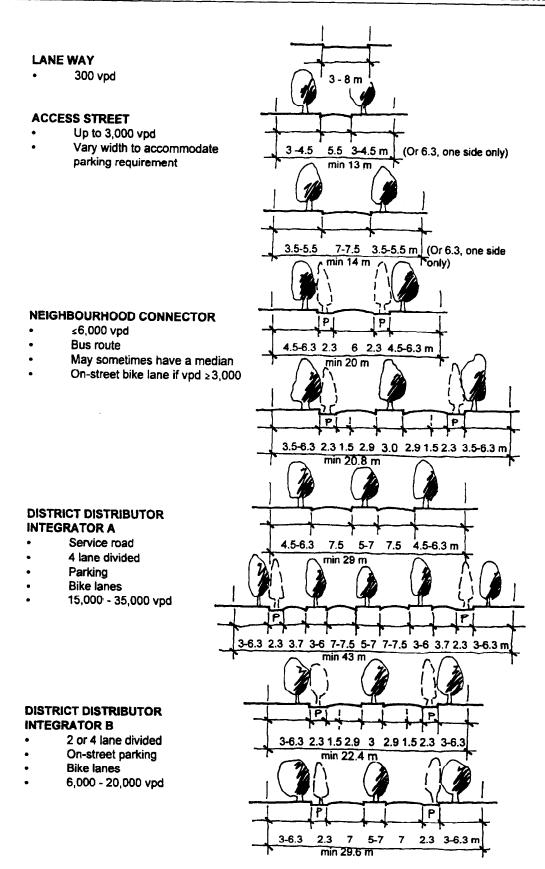


Figure 2: Minimum street reservations and typical road widths of the Community Design Code.

ELEMENT 2

Cycling on paths

- R37 Specifically designed cycle paths not within roadways should be designed in accordance with approved construction standards and take into account the specific requirements of long distance commuter cycling and recreational cycling. Paths for the use of pedestrians, wheelchairs/motorised wheelchairs and cyclists should be constructed in accordance with the approved construction standard, and take into account the safety requirements of all potential users.
- R38 Dual use paths must be provided with facilities for the separation of pedestrians and cyclists where appropriate (e.g. meeting points or junctions on high use activity areas).
- R39 Path width and design should cater for projected user types and volumes, and to facilitate ease of use by the disabled, aged and the very young. Grade separations can be provided where topography assists or where the road crossed is such that a direct path route is desirable.
- R40 Dual use pedestrian/cycle paths in neighbourhood connectors or arterial routes providing major access to a school should be desirably 2.5m wide (minimum 2m) and designated as a dual use pedestrian/cycle path in accordance with Bikewest Department of Transport guidelines. Figure 6 provides indicative dimensional criteria for shared paths.

Pavement construction

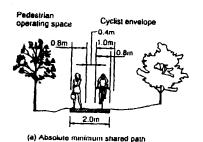
R41 Footpaths or dual use paths must have a durable, non-skid surface with tactile paving at bus stops and traffic signals to assist the visually impaired.

Streetscape

- R42 The design of each street should convey to the user its primary function, character and identity, and encourage appropriate driver behaviour. Street design should respond to landscape features, vegetation and landforms.
- R43 Appropriate street trees should be provided in all streets for pedestrian shelter, streetscape and amenity and traffic management.

Street reserves, road and crossovers

R44 The street reserve and road width must be sufficient to cater for all functions that the street is expected to fulfil, including safe and efficient movement of all users, providing for parking on the majority of streets, buffering residents against traffic nuisance, providing for public utilities and landscaping. This may be satisfied by using the typical street designs shown in Figures 9 to 13.



Pedestrian
Operating Space

Cyclist Envelope

0.8m

1.0m

1.0m

(b) Desirable minimum shared path

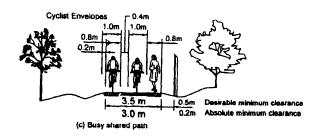


Figure 6: Indicative dimensions for shared paths.

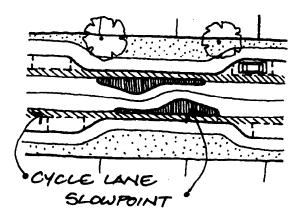
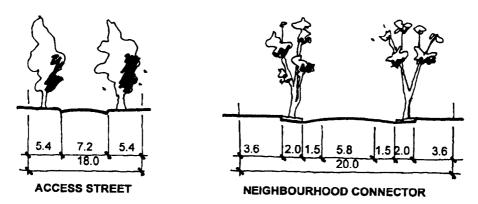


Figure 7: Example of slow point to accommodate cyclists.

ELEMENT 2



NOTES FOR NEIGHBOURHOOD CONNECTOR

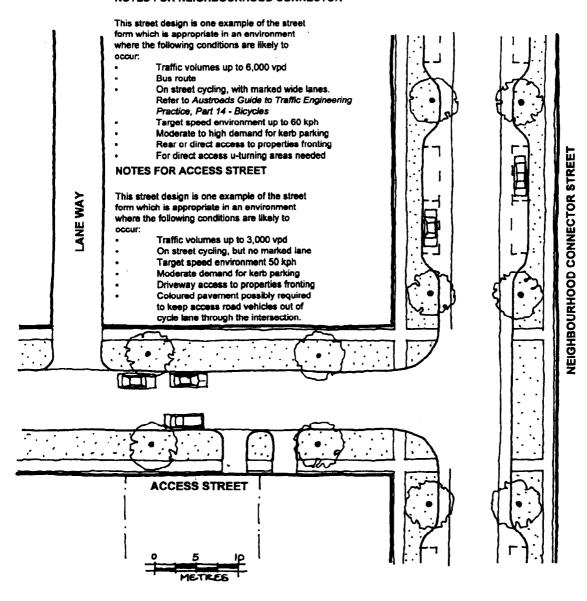
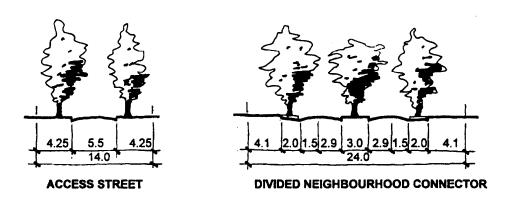


Figure 9: Intersection of typical Community Design Code access street and neighbourhood connector with on-street bike lane.



NOTES FOR NEIGHBOURHOOD CONNECTOR

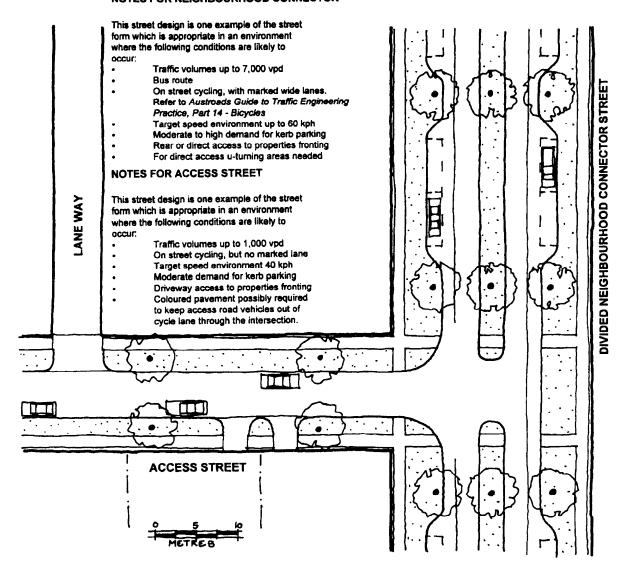


Figure 10: Intersection of typical Community Design Code access street and neighbourhood connector with median and on-street bike lane.

MOVEMENT NETWORK

ELEMENT 2

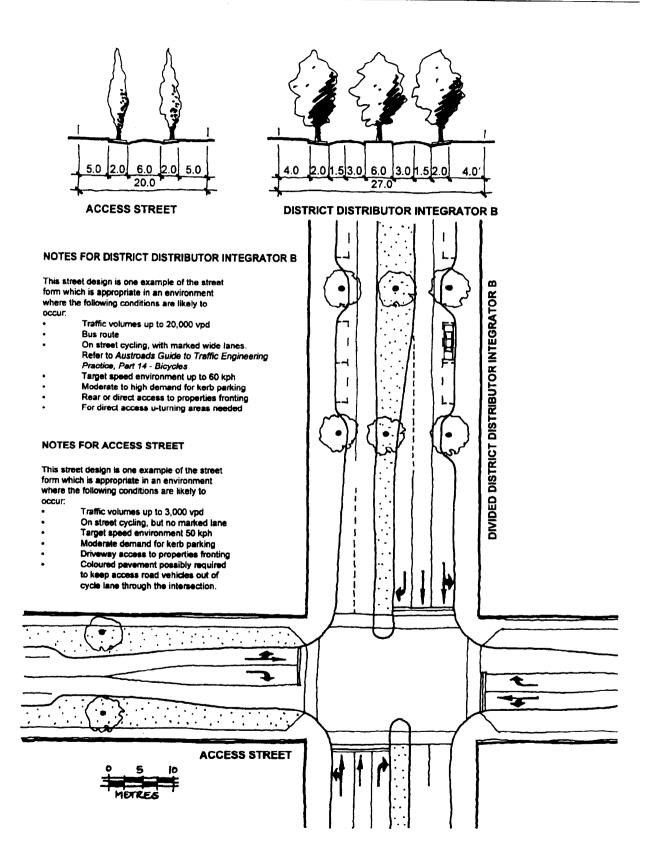


Figure 11: Intersection of typical Community Design Code access street and district distributor integrator 'B' with median and on-street bike lane.

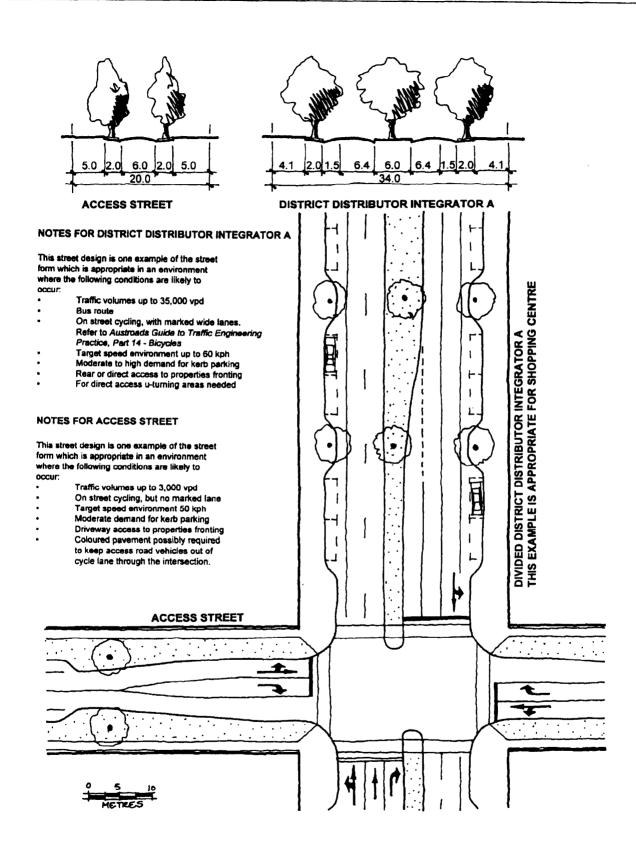


Figure 12: Intersection of typical Community Design Code access street and district distributor integrator 'A' with median and on-street bike lane.

ELEMENT 2

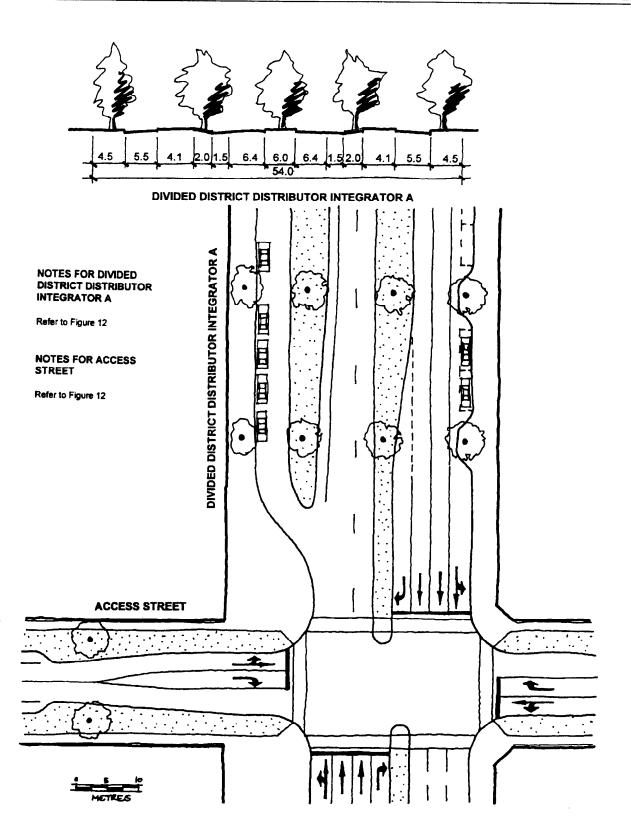


Figure 13: Intersection of typical Community Design Code access street and district distributor integrator 'A'; with median, on-street bike lane and service road on one side.