

Integrated Design - Appendix A Streets, Roads & Utilities



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1. Introduction

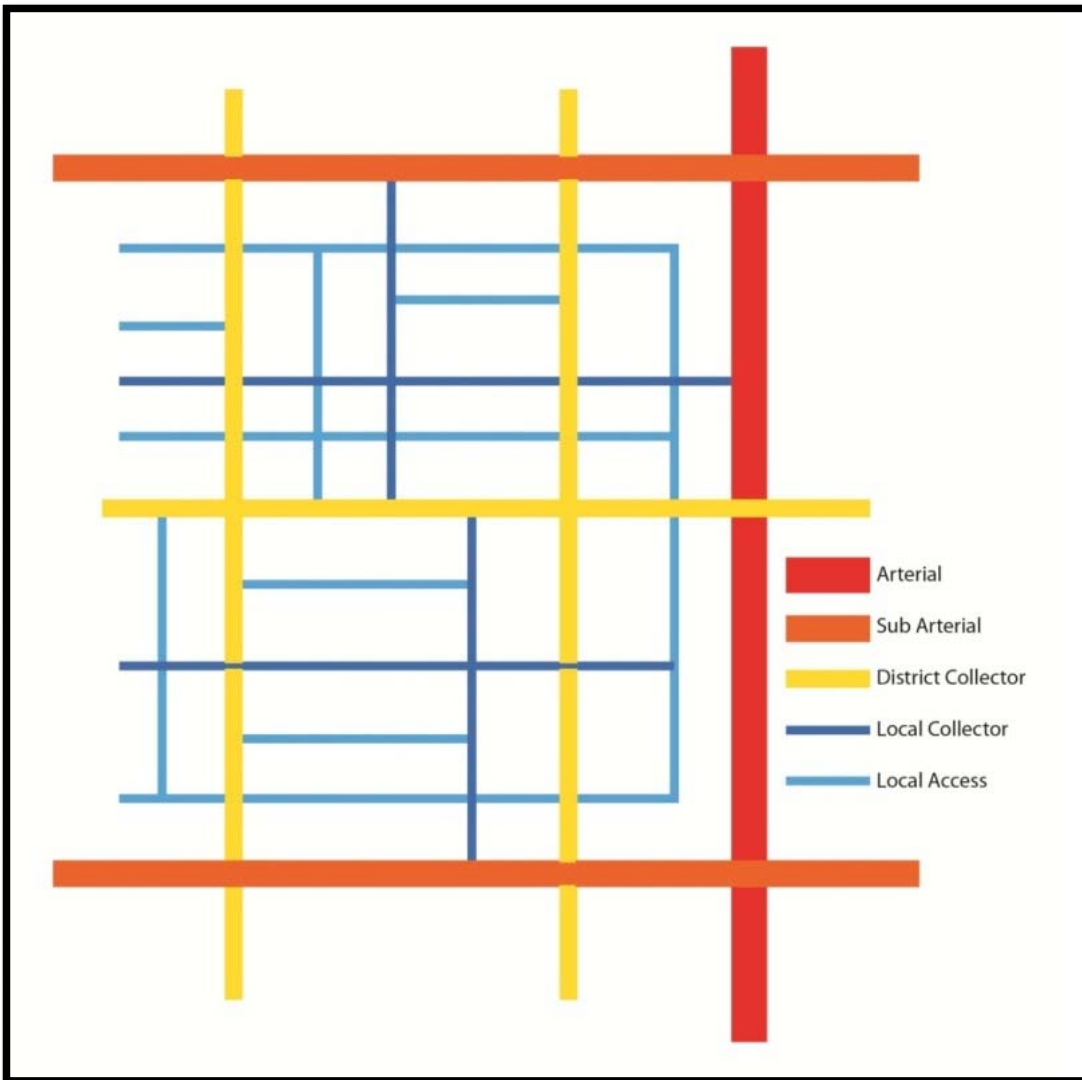
This appendix provides a step by step process to determining the appropriate road and street design standards and requirements for utility provision in new roads and streets, and for new development including Material Change of Use and Reconfiguring a lot.

A Road network plan may be required to be prepared for new developments in order to determine the appropriate road and street functions and applicable cross sections. Further guidance on preparing road network plans is contained in Planning Scheme Policy – Neighbourhood design.

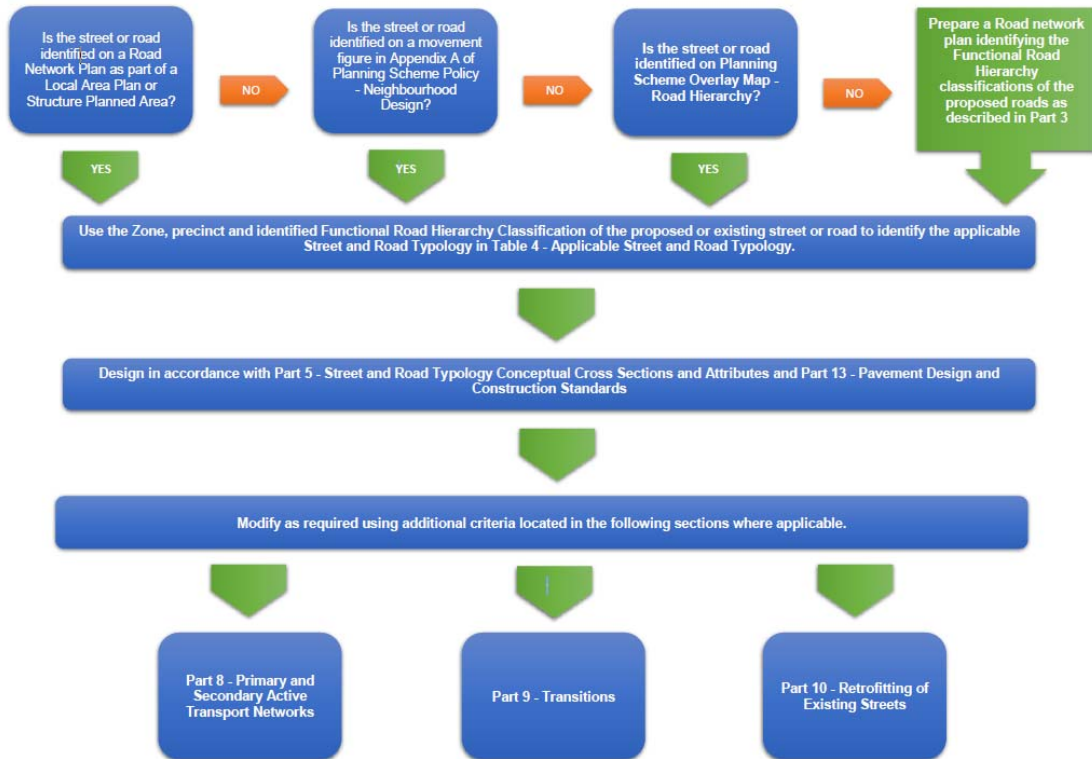
Part 2 of the appendix, provides the framework for the design and construction of new roads and streets , as well as retrofitting or upgrading of existing streets and roads. Additional design criteria related to street design also located in this appendix includes part 7 - Recommended Posted Speed Limits, Part 11 - Pedestrian Crossing Design and Locations, and Part 12 - Intersection Management. Appendix A also includes the design and location standards for driveways and crossovers in Part 14 - Driveways, Vehicle and Pedestrian Crossovers, and servicing standards for all new development in Part 15 - Street Lighting and Public utilities.

Reference is also made to Council's standard drawings listed in the Appendix H of this policy for specific detailed design standards for each component of roads, streets and utilities. The diagrams provided in this appendix are for conceptual purposes only, to illustrate how the attributes fit into an integrated cross section. Reference is also made to Appendix D - Landscape Design and Street Trees with regards to planting requirements for street trees and general landscaping within the reserve and Appendix C – Stormwater Management for design requirements for stormwater infrastructure including WSUD components.

Figure 1: Example Road Network Plan



2. Road & Street Selection framework



Note: Refer to Planning scheme policy – Neighbourhood design and Planning scheme policy - Integrated transport assessment for guidance on road layouts and network design.

3. Functional Road and Street Classifications

Detailed Function		Functional Hierarchy Designation	Primary Function
Regional movements Longer distance intra-regional movements Primary freight routes	Regionally and nationally significant movements.	Highway/Motorway	Movement Roads carrying through traffic
	Connections to and from highways and motorways Prioritises intra-regional movements	Arterial Road	
Connections between destinations and Arterial Roads.		Sub-Arterial Road	
Connections between suburbs and destinations. Connections between higher order roads (sub-arterial, arterials) and Access streets	Major connections between 2 or more suburbs; or Connections between higher order roads (Sub-arterial, Arterials)	District Collector Road	Place Streets providing local property access and collection of local traffic.
	Connections within a suburb or neighbourhood; Carry traffic likely to have a trip end within the suburb or neighbourhood	Local Collector Street	
Access to individual properties and local destinations.		Access Street	

4. Applicable Street and Road Typology

CENTRE		
Zone & Precinct	Role, Function or Location	Applicable Road Type
Higher Order Precinct ¹	Main Street (as identified in the planning scheme) (as identified on a movement diagram)	Main Street
	Roads located on the fringe of a centre (centre on one side of road only)	Urban Fringe
	District Collector roads or Above (other than Main Streets and roads on the fringe of the centre)	Urban
	Shared Streets (as identified in the planning scheme) (as identified on a movement diagram)	Shared Business
	Laneways (for service, loading or rear parking access)	Business Laneway
	All other roads and streets (Local Access or Local Collector)	Higher Order Access
District Precinct	Main Street (as identified in the planning scheme) (as identified on a movement diagram)	District Main Street
	Laneways (for service, loading or rear parking access)	Business Laneway
	All other roads (centre zone both sides)	Urban
	All other roads (centre one side only)	Urban Fringe
Local Precinct	Laneways (for service, loading or rear parking access)	Business Laneway
	All other roads (centre zone both sides)	Urban
	All other roads (centre one side only)	Urban Fringe
GENERAL RESIDENTIAL		
Zone & Precinct	Role, Function or Location	Applicable Road Type
Coastal Communities Precinct	Arterial and Sub-Arterial	Arterial and Sub-Arterial
	District Collector	District Collector
	Local Collector	Living Residential
	Access Streets	Access Residential
	Fringe of Centre Zone (centre on one side of road only)	Urban Fringe
Suburban Neighbourhood Precinct	Arterial and Sub-Arterial	Arterial and Sub-Arterial
	District Collector	District Collector
	Local Collector	Living Residential
	Access Streets	Access Residential
	Fringe of Centre Zone (centre on one side of road only)	Urban Fringe
Next Generation Neighbourhood Precinct ₂	Arterial and Sub-Arterial	Arterial and Sub-Arterial
	Access Streets	Living Residential
	District Collector	District Collector
	Fringe of Centre Zone (centre on one side of road only)	Urban Fringe
	Local Collector	Contemporary Residential
	Laneway	Laneway Residential
Urban Neighbourhood Precinct	Arterial and Sub-Arterial	Arterial and Sub-Arterial
	District Collector or Above	District Collector
	Fringe of Centre Zone (centre on one side of road only)	Urban Fringe
	All other roads	Contemporary Residential
	Laneway	Laneway Residential
INDUSTRY		
Zone & Precinct	Role, Function or Location	Applicable Road Type
All precincts	Access Streets	Industry Access
	Local Collectors	Industry Collector
	District Collectors	District Collector
	Arterial and Sub-Arterial	Arterial and Sub-Arterial
RURAL RESIDENTIAL		
Zone & Precinct	Role, Function or Location	Applicable Road Type
All Precincts	District Collectors, Local Collectors and Access Streets	Rural Residential
	Sub-arterial & Arterial Roads	As per AustRoads (must contain a 1.5 metre pathway and street trees as per access residential cross section)
RURAL		
Zone & Precinct	Role, Function or Location	Applicable Road Type
All Precincts	All Roads	As per Austroads
RURAL TOWNSHIP		
Zone & Precinct	Role, Function or Location	Applicable Road Type
All Precincts	Main Street (as identified on a movement diagram)	Rural Main Street
	Sub-arterial & Arterial Roads	As per AustRoads (must contain a 1.5 metre pathway and street trees as per access residential cross section)
	All other streets	Access Residential

EMERGING COMMUNITY

Zone & Precinct	Role, Function or Location	Applicable Road Type
Transition precinct	Arterial and Sub-Arterial	Arterial and Sub-Arterial
	Access Streets	Living Residential
	District Collector	District Collector
	Fringe of Centre Zone (centre on one side of road only)	Urban Fringe
	Local Collector	Contemporary Residential
	Laneway	Laneway Residential
Urban Neighbourhood (area Morayfield South)	Arterial and Sub-Arterial	Arterial and Sub-Arterial
	District Collector	District Collector
	Fringe of Centre Zone (centre on one side of road only)	Urban Fringe
	All other roads	Contemporary Residential
	Laneway	Laneway Residential

Caboolture West Local Area

Zone & Precinct	Role, Function or Location	Applicable Road Type
	Arterial and Sub-Arterial	Arterial and Sub-Arterial
	Access Streets	Living Residential
	District Collector	District Collector
	Local collector	Contemporary Residential
	Main Street	Caboolture West Main Street
	Landscape Character Street	Landscape Character
	Laneway	Laneway Residential

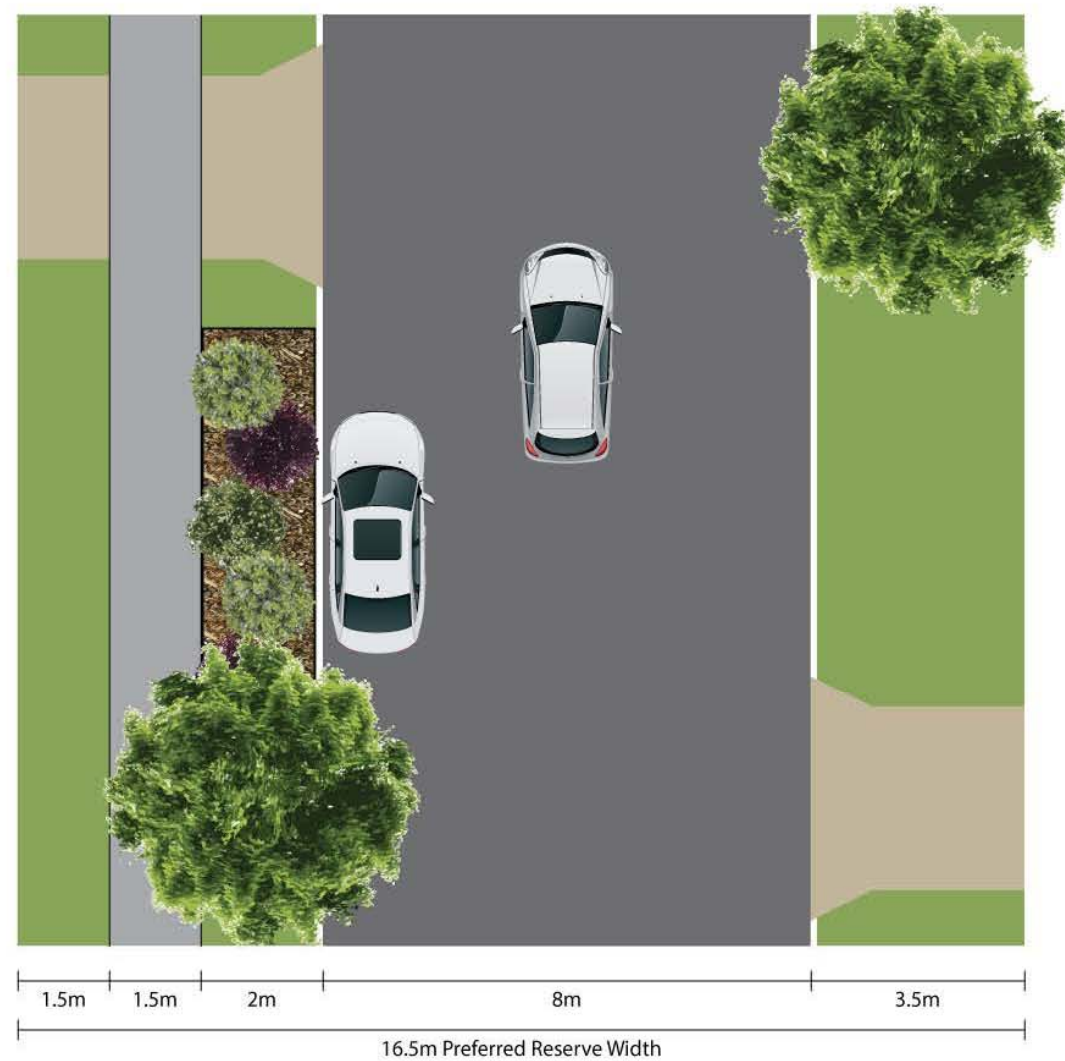
Redcliffe Kippa-Ring Local Plan

Zone & Precinct	Role, Function or Location	Applicable Road Type
<i>Kippa-Ring village precinct</i>	Main Street (as identified in the planning scheme) (as identified on a movement diagram)	Main Street
	Roads located on the fringe of a centre (centre on one side of road only)	Urban Fringe
<i>Redcliffe seaside village precinct</i>	District Collector roads or Above (other than Main Streets and roads on the fringe of the centre)	Urban
	Shared Streets (as identified in the planning scheme) (as identified on a movement diagram)	Shared Business
<i>Heath and Local services precinct</i>	Laneways (for service, loading or rear parking access)	Business Laneway
	All other roads and streets (Local Access or Local Collector)	Higher Order Access
Interim residential precinct	Arterial and Sub-Arterial	Arterial and Sub-Arterial
	District Collector or Above	District Collector
	Fringe of Centre Zone (centre on one side of road only)	Urban Fringe
	All other roads	Contemporary Residential
	Laneway	Laneway Residential

5. Street and Road Typology Conceptual Cross Sections & Attributes

5.1 Access Residential

Indicative Road & Street Typology Cross Section



Typology Attributes

This typology is applicable to a road hierarchy of Access Street within the Suburban neighbourhood precinct only.

Carriageway: ✓

- Minimum width of 8 metres.
- Centre line, traffic lane or parking lane line-marking is not required. Carriageway is to allow for informal kerbside parallel parking to occur on both sides of the carriageway, whilst maintaining sufficient width to allow a refuse or emergency vehicle to pass unimpeded.

Pathway: ✓

- Minimum width 1.5 metres on one side of carriageway.

Cycle Lane: x

- Not required.

Street Trees: ✓

- Minimum of 1 tree per lot frontage.

Verge: ✓

- 5.0 metres minimum width where containing a pathway; or
 - 3.5 metres where no pathway is provided.
- Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide, whilst the rear verge (between the edge of pathway and property boundary) is to be a minimum of 1.5 metres wide.

On Street Parking: ✓

- Minimum of 0.5 on street car parking spaces per lot frontage.
- Parking is to be provided informally within carriageway.

Direct Lot Vehicle Access: ✓

- Direct vehicle access is permitted.
- Lots with frontages of less than 10m that gain access directly from this road typology are to combine and share a single crossover in accordance with PSP - Neighbourhood Design.

Median: x

- Not required unless identified through detailed design for safety reasons.

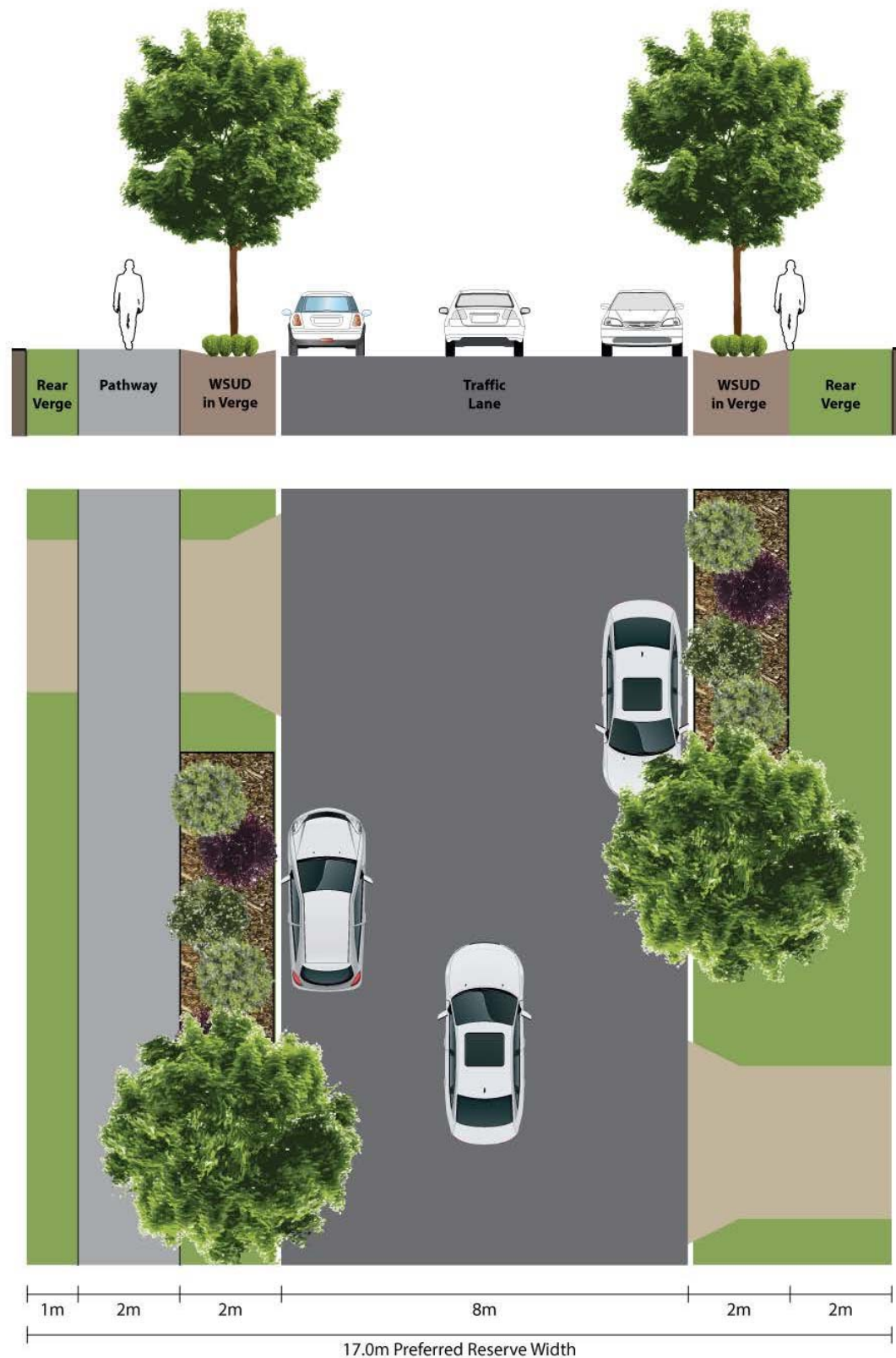
Possible Bus Route: x

- Not required.

5.2 Living Residential

Indicative Road & Street Typology Cross Section

Typology Attributes



This typology is applicable to road hierarchies of Access Streets within the **Next generation neighbourhood precinct** and Local Collectors within the **Suburban neighbourhood precinct**.

Carriageway: ✓

- Minimum width of 8 metres.
- Centre line, traffic lane or parking lane line-marking is not required. Carriageway is to allow for informal kerbside parallel parking to occur on both sides of the carriageway, whilst maintaining sufficient width to allow a refuse or emergency vehicle to pass unimpeded.

Pathway: ✓

- Minimum width 2.0 metres on one side of carriageway.

Cycle Lane: x

- Not required.

Street Trees: ✓

- Minimum of 1 tree per lot frontage.

Verge: ✓

- 5.0 metres minimum width where containing a pathway; or
 - 4.0 metres where no pathway is provided.
- Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide, whilst the rear verge (between the edge of pathway and property boundary) is to be a minimum of 1 metres wide.

On Street Parking: ✓

- Minimum of 0.5 on street car parking spaces per lot frontage.
- Parking is to be provided informally within carriageway.

Direct Lot Vehicle Access: ✓

- Direct vehicle access is permitted.
- Lots with frontages of less than 10m that gain access directly from this road typology are to combine and share a single crossover in accordance with PSP - Neighbourhood Design.

Median: x

- Not required unless identified through detailed design for safety reasons.

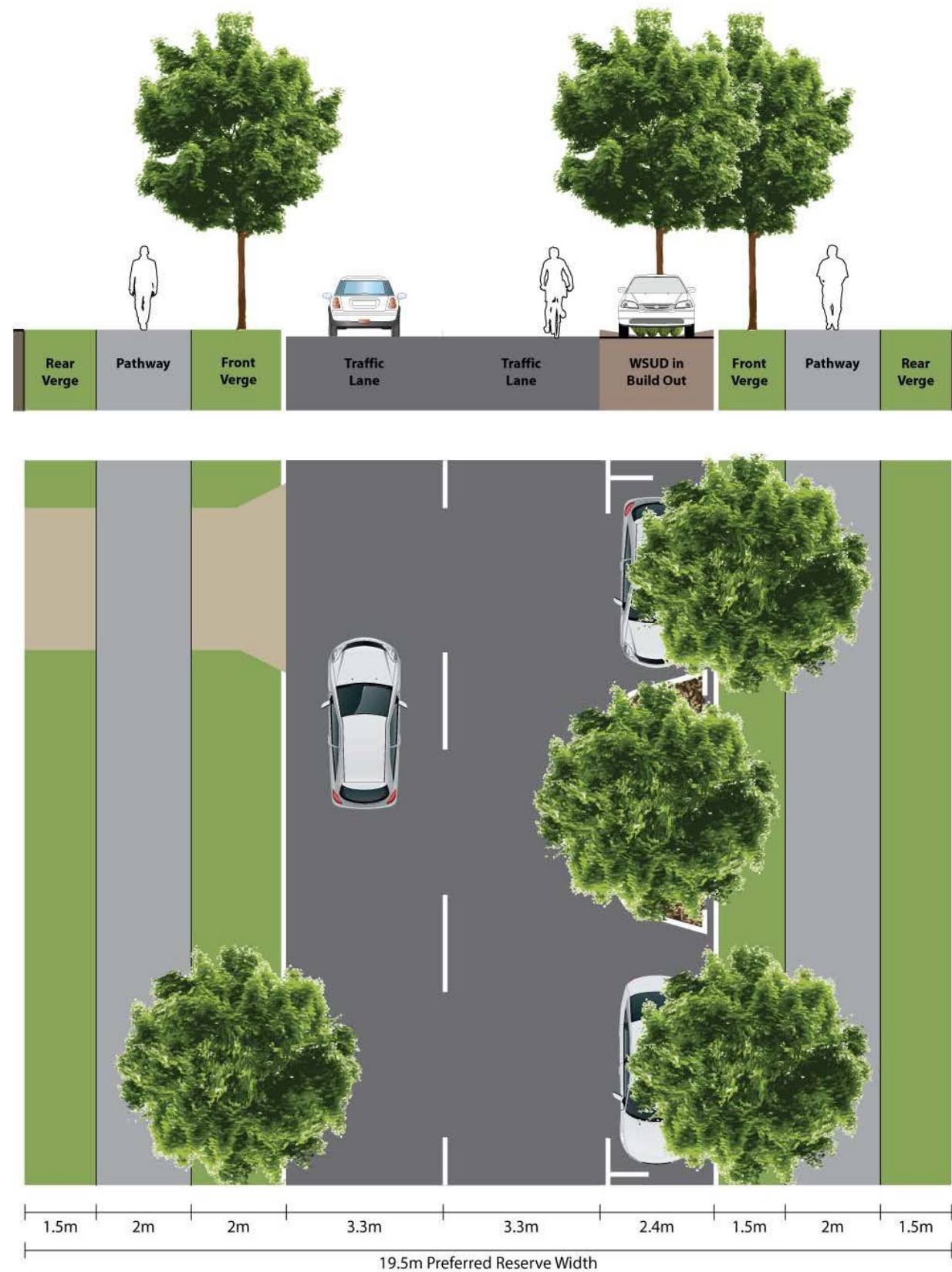
Possible Bus Route: x

- Not required.

5.3 Contemporary Residential

Indicative Road & Street Typology Cross Section

Typology Attributes



This typology is applicable to road hierarchies of Local Collector Streets within the **Next generation neighbourhood precinct** and Local Collectors and Access Streets within the **Urban neighbourhood precinct**.

Carriageway: ✓

- Minimum width of 3.3 metres per traffic lane.
- Centre line, traffic lane and parking bay line-marking is to be provided on this street type. Carriageway is to allow for kerbside parallel parking to occur on one or both sides of the carriageway, formalised by street tree build outs, whilst maintaining two clear through lanes.

Pathway: ✓

- Minimum width 2 metres on both sides of carriageway.

Cycle Lane: x

- Not required.

Street Trees: ✓

- Minimum of 1 tree per lot frontage plus 1 tree in every build out.

Verge: ✓

- 5.0 metres minimum width where containing a pathway; or
 - 3.5 metres where no pathway is provided.
- Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide, whilst the rear verge (between the edge of pathway and property boundary) is to be a minimum of 1.5 metres wide.

On Street Parking: ✓

- Minimum of 0.5 on street car parking spaces per lot frontage.
- Kerbside parallel parking bays are to be provided on at least one side of the carriageway, formalised by street tree build outs.

Direct Lot Vehicle Access: ✓

- Direct vehicle access is permitted.
- Lots with frontages of less than 10m that gain access directly from this road typology are to combine and share a single crossover in accordance with Planning scheme policy - Neighbourhood design.

Median: x

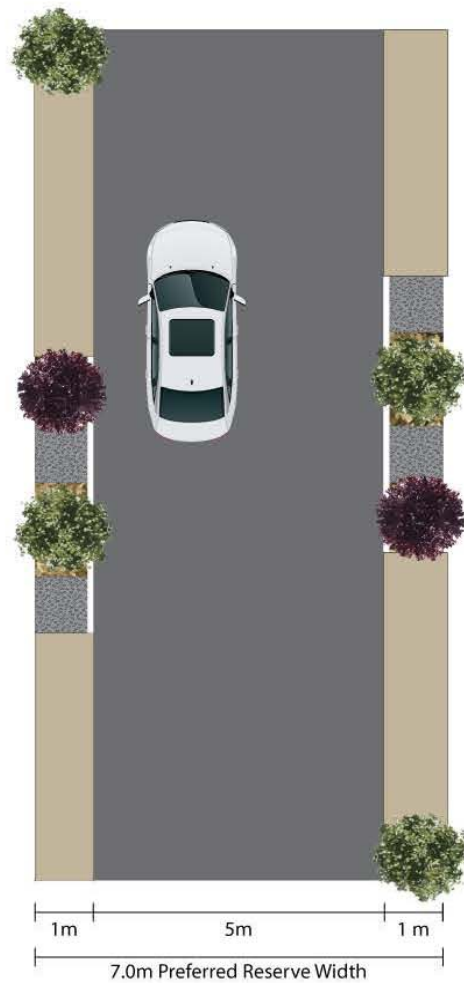
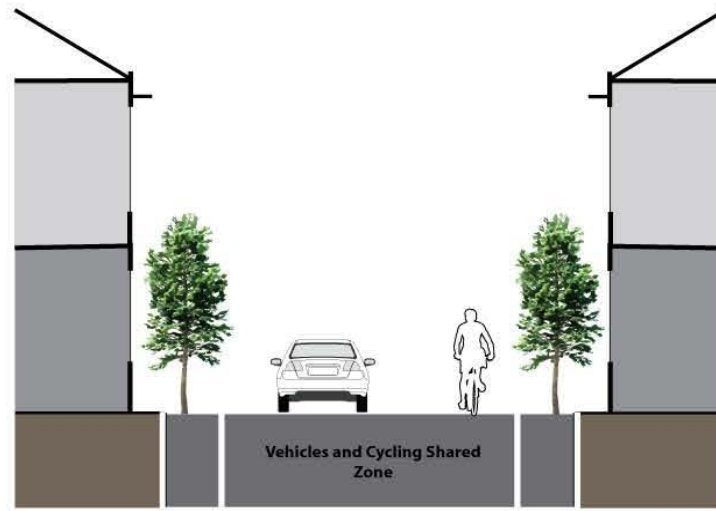
- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓

5.4 Laneway Residential

Indicative Road & Street Typology Cross Section

Typology Attributes



This typology is applicable to Laneways in all precincts of the **General Residential Zone** as permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 5 metres

Pathway: x

- Not required.

Cycle Lane: x

- Not required.

Street Trees: ✓

- Not required. Are permitted in verge dependent on appropriate size and species.

Verge: ✓

- 1.0 metre minimum width either side of carriageway. Verge width may be required to be widened to accommodate street lighting dependent on length of laneway and availability of space within mid lane pedestrian connections.

On Street Parking: x

- Parking is not to be accommodated on this street type.

Direct Lot Vehicle Access: ✓

- Direct vehicle access is permitted. Lots serviced by this street type must obtain vehicle access from it.

Median: x

- Not required

Possible Bus Route: x

- Not required.

This typology is applicable to District Collectors in all precincts of the **General Residential Zone** as permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 3.3 metres per traffic lane. Centre line, traffic lane and parking bay line-marking is to be provided on this street type. Carriageway is to allow for kerbside parallel parking to occur on both sides of the carriageway, formalised by street tree build outs, whilst maintaining two clear through lanes and dedicated on road cycle lanes.

Pathway: ✓

- Minimum width 2.5 metres on both sides of carriageway.

Cycle Lane: ✓

- Minimum width of 2 metres per cycle lane on each side of the carriageway.

Street Trees: ✓

- Minimum of 1 tree per lot frontage or 25m of street length whichever is the greater.

Verge: ✓

- 5.5 metres minimum width including pathway. Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide, whilst the rear verge (between the edge of pathway and property boundary) is to be a minimum of 1.5 metres wide.

On Street Parking: ✓

- Minimum of 0.5 on street car parking spaces per lot frontage. Kerbside parallel parking bays are to be provided on both sides of the carriageway, formalised by street tree build outs.

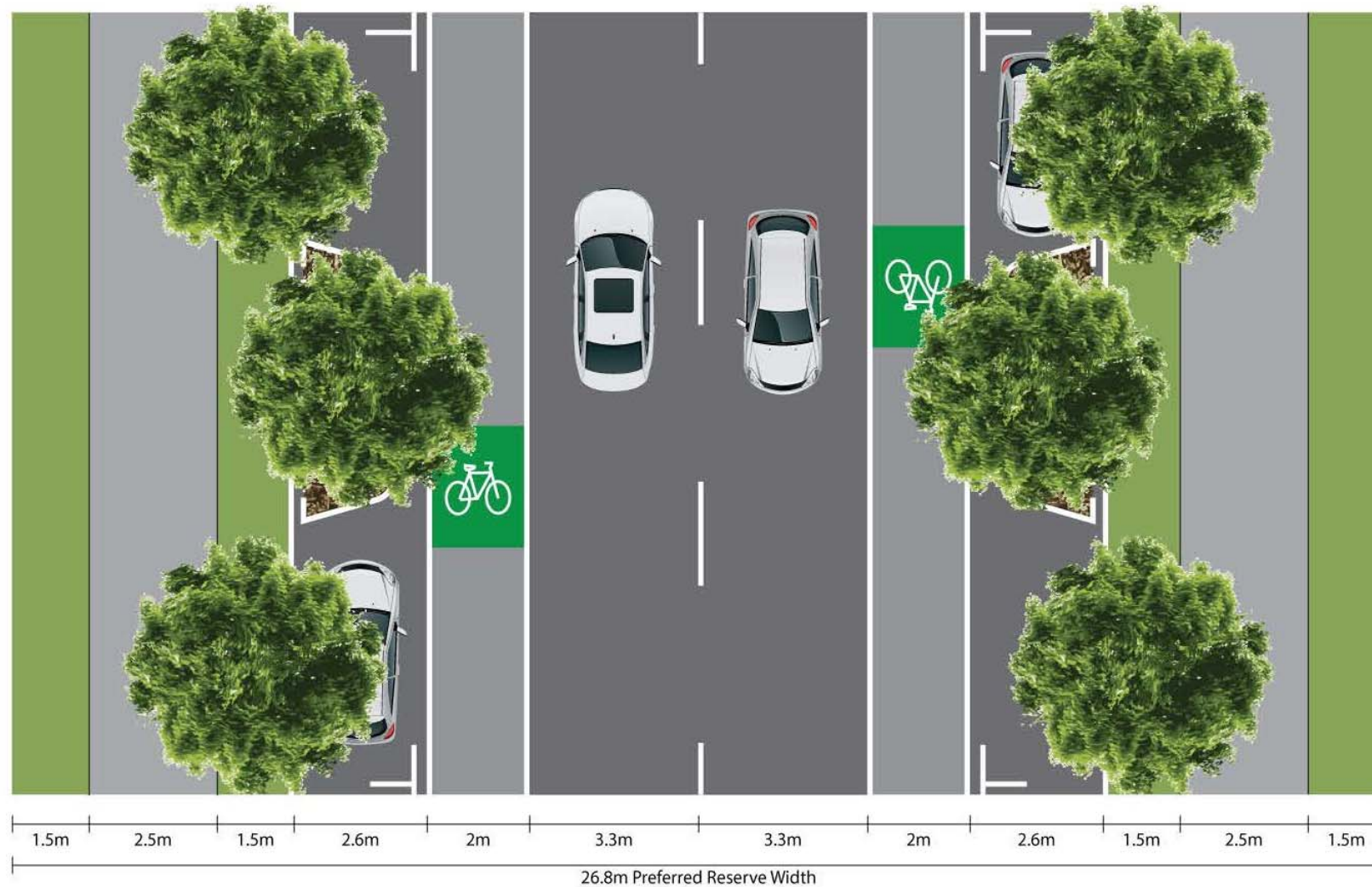
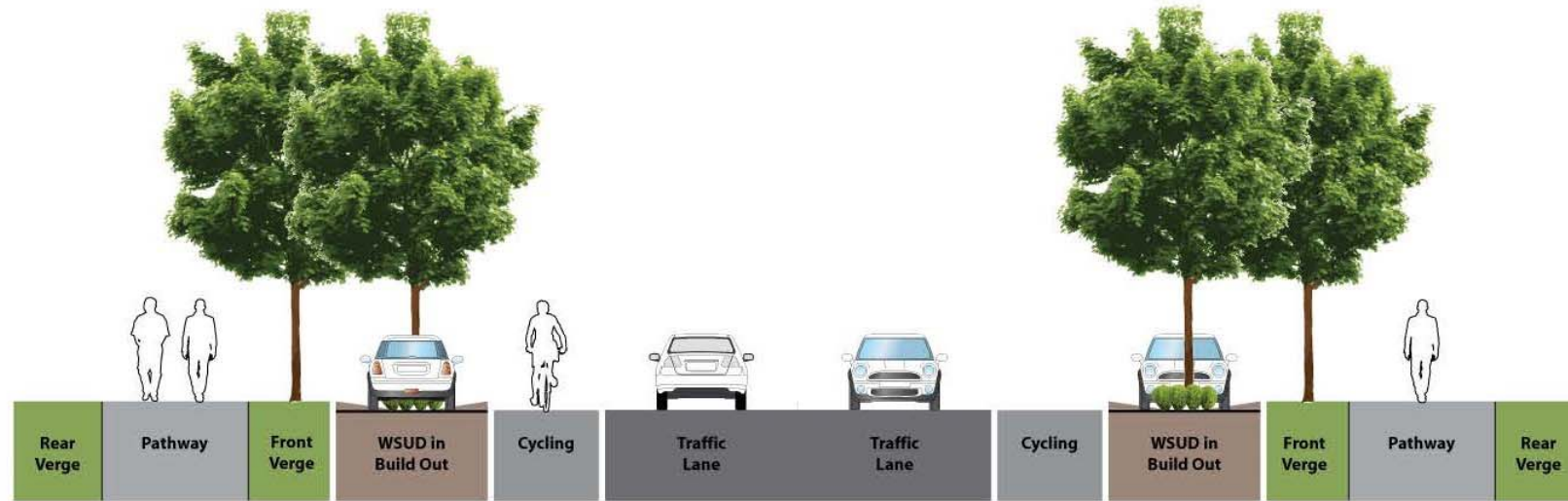
Direct Lot Vehicle Access: x

- Direct vehicle access is generally not permitted. Council may consider alternative access arrangements on a detailed design basis.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓

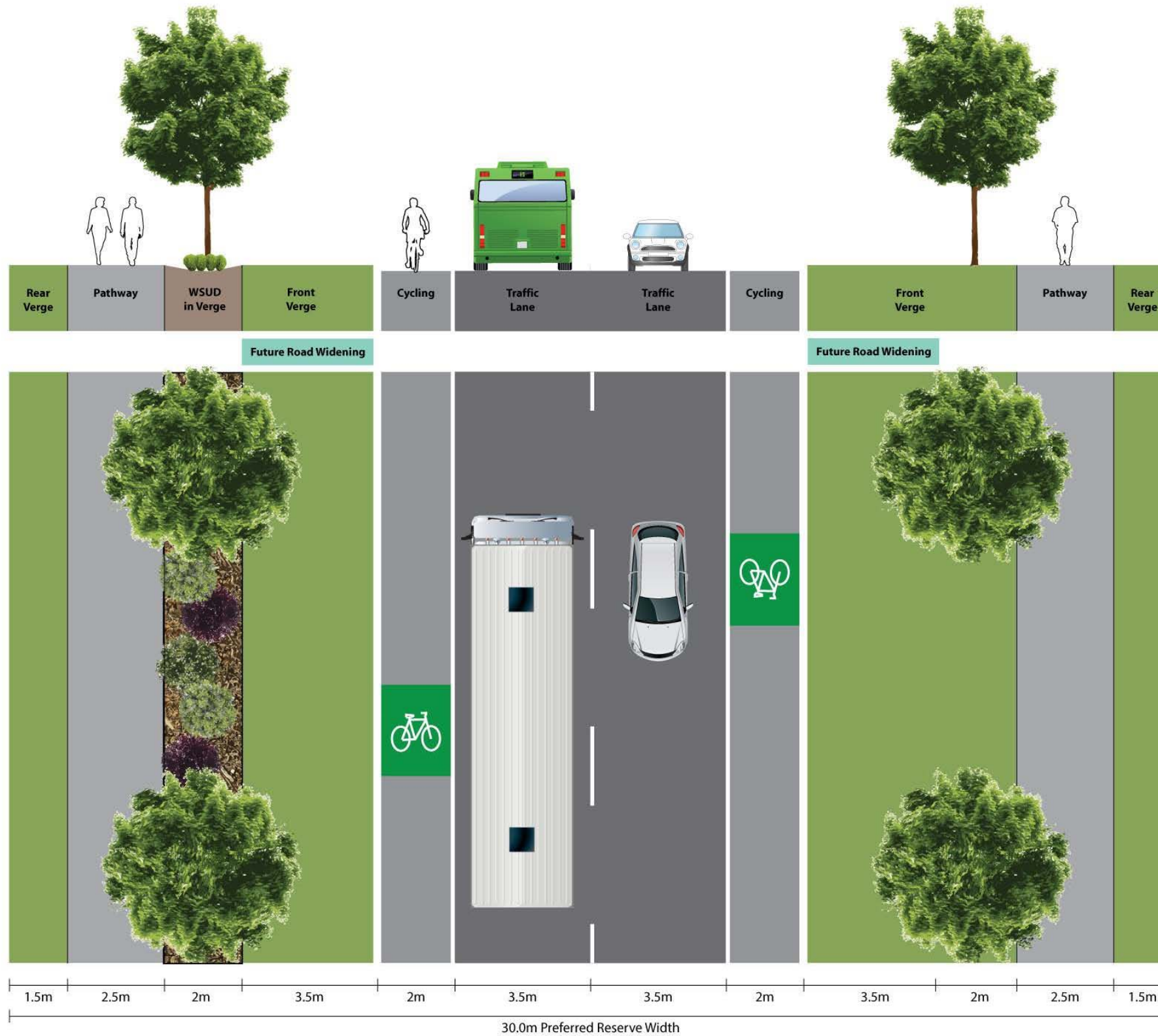


5.6 Arterial & Sub-arterial

Indicative Road & Street Typology Cross Section

Typology Attributes

This typology is applicable to Arterial and Sub-arterial Roads in **all Zones and precincts** as permitted by the planning scheme.



Carriageway: ✓

- Minimum width of 3.5 metres per traffic lane.
- Line-marking is to be provided on this street type. Carriageway is to allow a minimum of two clear through lanes as well as cycle lanes. Stated reserve width allows for additional traffic lanes in either direction depending on traffic analysis.

Pathway: ✓

- Minimum width 2.5 metres on both sides of carriageway.

Cycle Lane: ✓

- Minimum width of 2 metres per cycle lane on each side of the carriageway.

Street Trees: ✓

- Minimum of 1 tree per lot frontage or 25m of street length whichever is the greater.

Verge: ✓

- 5.5 metres minimum width including pathway.
- Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide, whilst the rear verge (between the edge of pathway and property boundary) is to be a minimum of 1.5 metres wide.

On Street Parking: x

- Parking is not to be accommodated on this street type.

Direct Lot Vehicle Access: x

- Direct vehicle access is generally not permitted. Council may consider alternative access arrangements on a detailed design basis.

Median: x

- Not required as a minimum, but is likely to be required as a result of detailed design at intersections and other conflict points i.e. pedestrian crossings.

Possible Bus Route: ✓

5.7 Industry Collector

Indicative Road & Street Typology Cross Section

Typology Attributes

This typology is applicable to Local Collector Streets in the **Industry zone** as permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 3.5 metres per traffic lane.
- Line-marking is to be provided on this street type. Carriageway is to allow a minimum of two clear through lanes as well as cycle lanes. Stated reserve width allows for additional traffic lanes in either direction depending on traffic analysis.

Pathway: ✓

- Minimum width 2 metres on both sides of carriageway.

Cycle Lane: ✓

- Minimum width of 2 metres per cycle lane on each side of the carriageway.

Street Trees: ✓

- Minimum of 1 tree per lot frontage or 50m of street length whichever is the greater.

Verge: ✓

- 5.5 metres minimum width including pathway on both sides of carriageway.
- Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide, whilst the rear verge (between the edge of pathway and property boundary) is to be a minimum of 1.5 metres wide.

On Street Parking & Build Outs: ✓

- 2.6 metres minimum width on both sides of carriageway
- Kerbside parallel parking lanes are to be provided on both sides of the carriageway, formalised by street tree build outs at a maximum spacing of 100m along the street length.

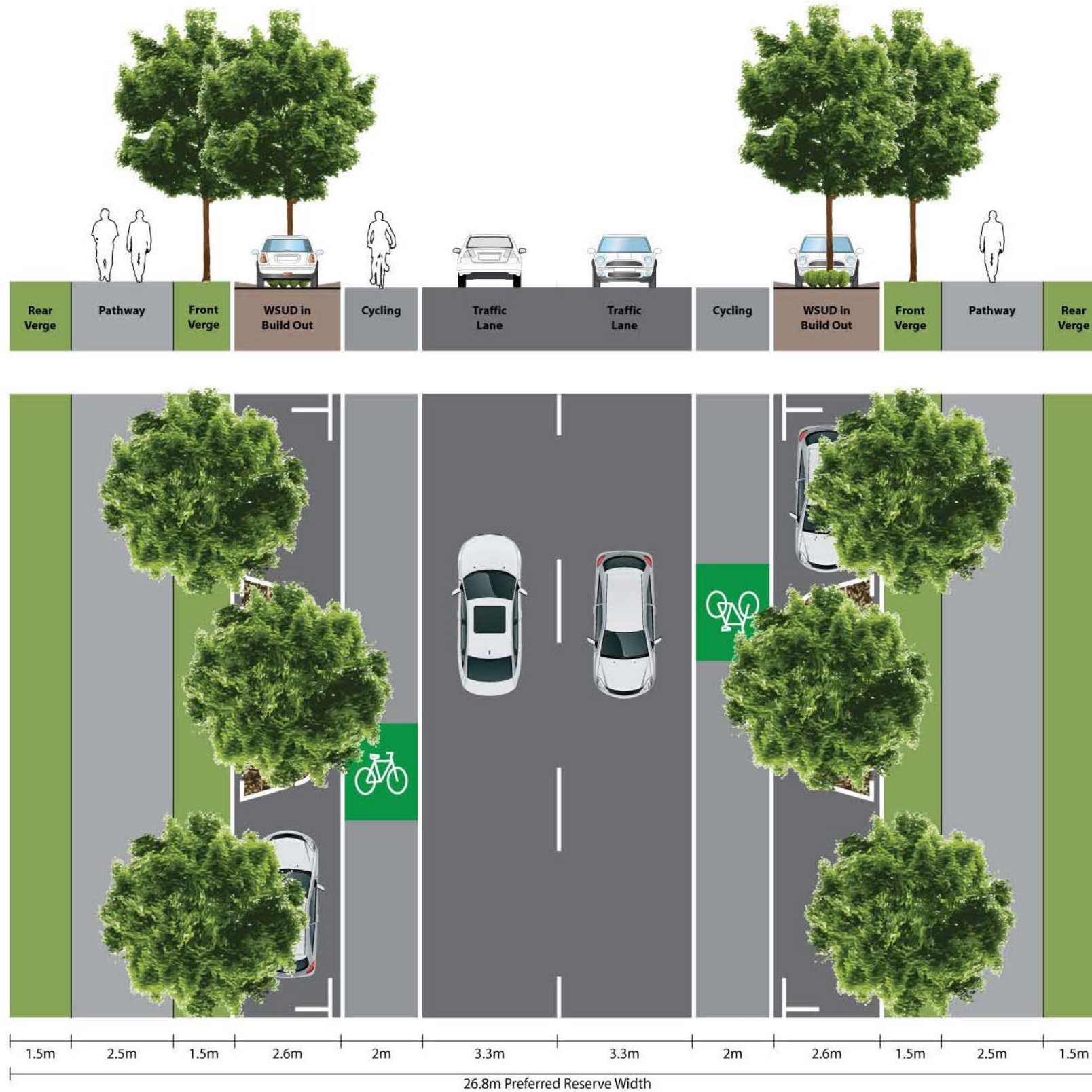
Direct Lot Vehicle Access: ✓

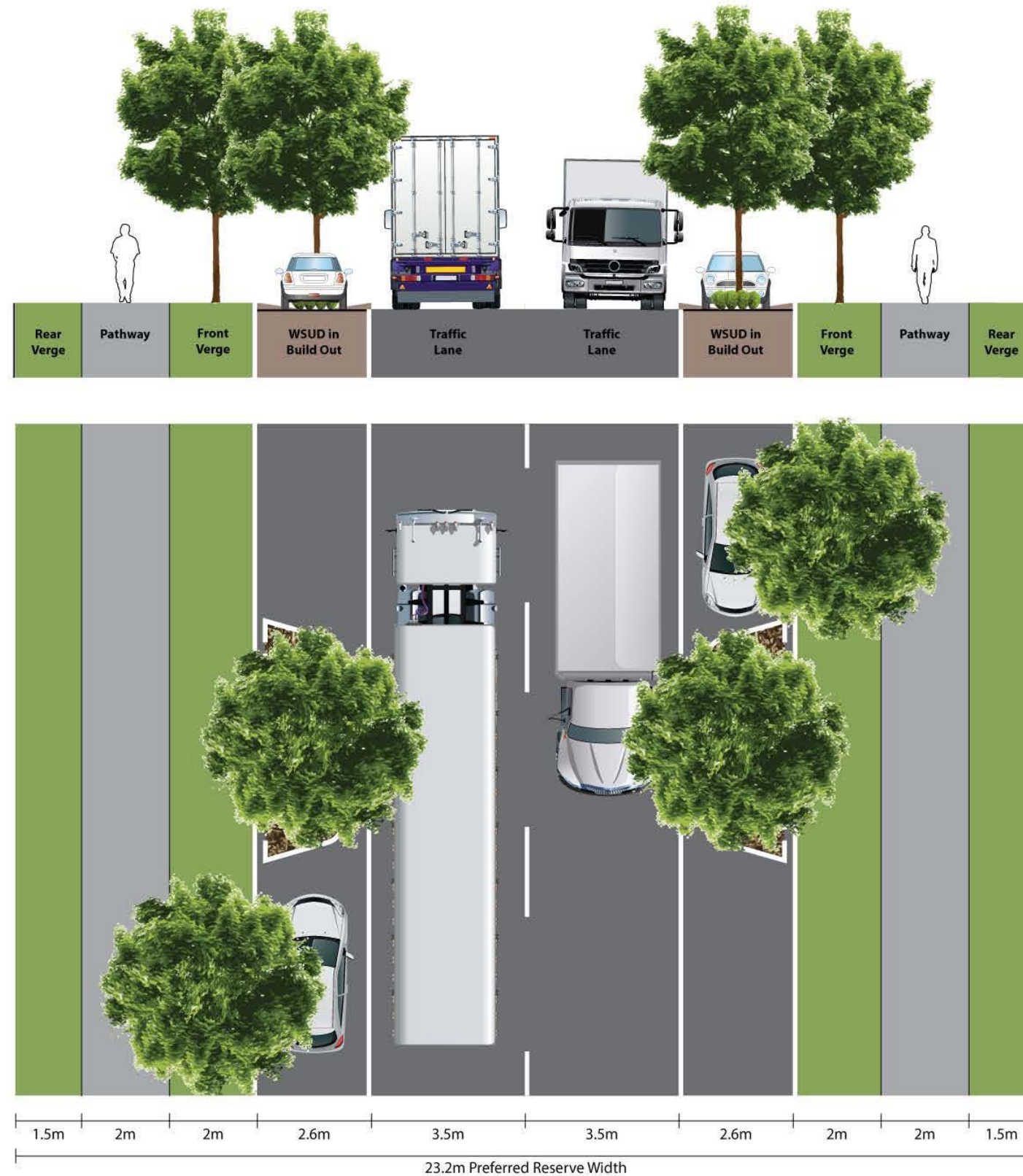
- Direct vehicle access is permitted.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓





This typology is applicable to Access Streets in the **Industry zone** as permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 3.5 metres per traffic lane.
- Line-marking is to be provided on this street type. Carriageway is to allow a minimum of two clear through lanes as well as cycle lanes. Stated reserve width allows for additional traffic lanes in either direction depending on traffic analysis.

Pathway: ✓

- Minimum width 2 metres on both sides of carriageway.

Cycle Lane: x

- Not required.

Street Trees: ✓

- Minimum of 1 tree per lot frontage or 50m of street length whichever is the greater.

Verge: ✓

- 5.5 metres minimum width including pathway on both sides of carriageway.
- Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide, whilst the rear verge (between the edge of pathway and property boundary) is to be a minimum of 1.5 metres wide.

On Street Parking & Build Outs: ✓

- 2.6 metres minimum width on both sides of carriageway
- Kerbside parallel parking lanes are to be provided on both sides of the carriageway, formalised by street tree build outs at a maximum spacing of 100m along the street length.

Direct Lot Vehicle Access: ✓

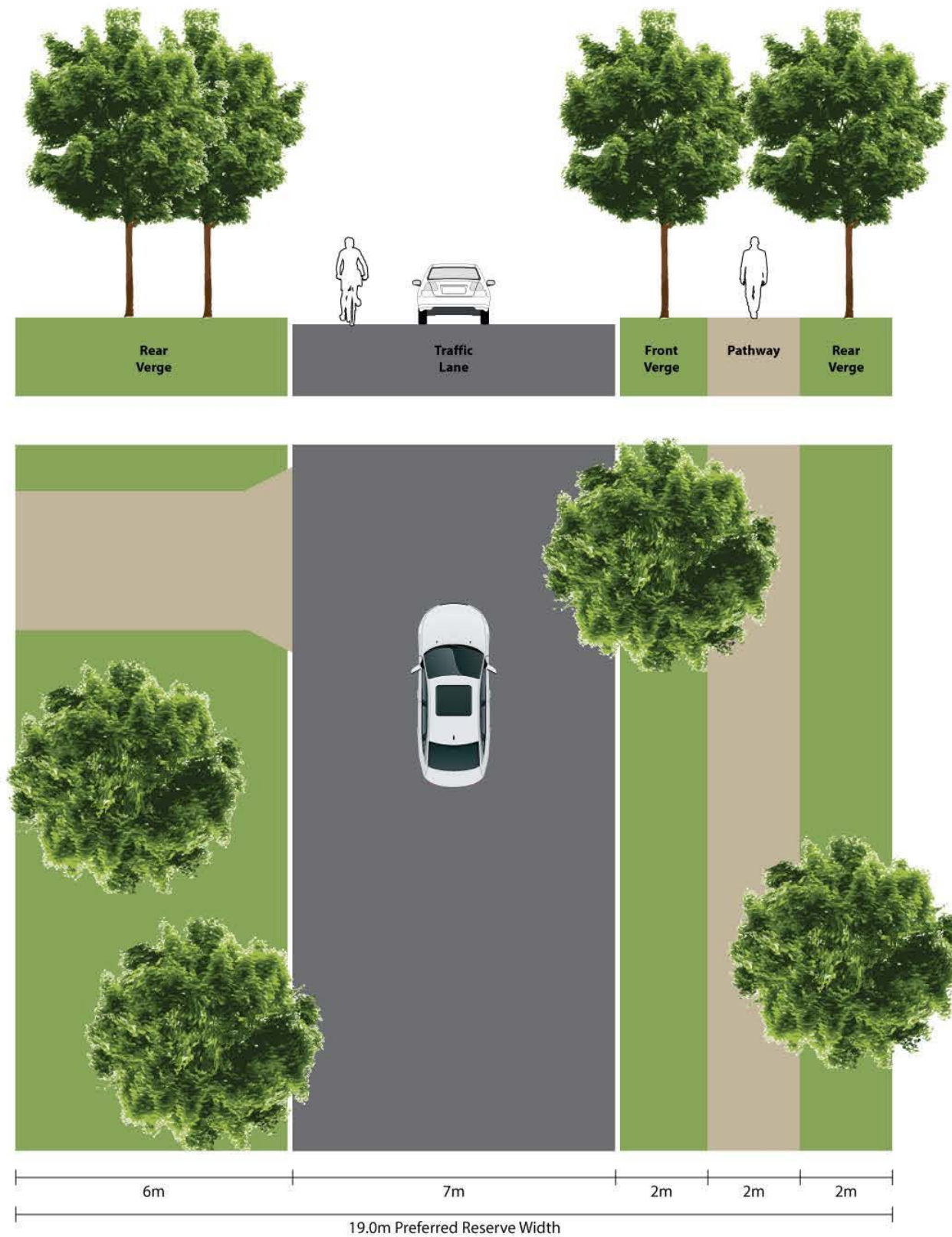
- Direct vehicle access is permitted.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: x

- Not required.



This typology is applicable to Access Streets and Local Collectors in the Rural residential zone as permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 7 metres.
- Centre line, traffic lane or parking lane line-marking is not required. Carriageway is to allow for informal kerbside parallel parking to occur on both sides of the carriageway, whilst maintaining sufficient width to allow a refuse or emergency vehicle to pass unimpeded.

Pathway: ✓

- The verge is to contain a minimum 2m clear pedestrian zone. Construction standards for pedestrian pathways if provided are located in Part 13 of this appendix.

Cycle Lane: x

- Not required.

Street Trees: ✓

- Minimum of 1 tree per lot.

Verge: ✓

- 6 metres minimum width on both sides of carriageway.
- Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide.

On Street Parking: ✓

- Parking is to be provided informally within carriageway.

Direct Lot Vehicle Access: ✓

- Direct vehicle access is permitted.

Median: x

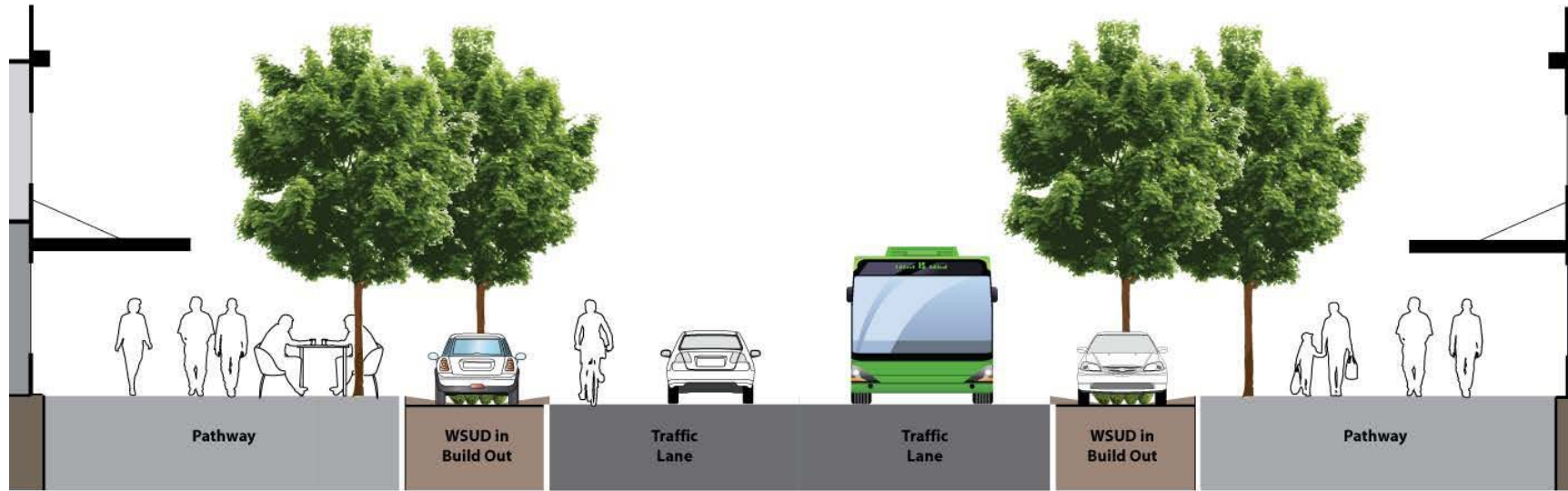
- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓

5.10 Higher Order Main Street

Indicative Road & Street Typology Cross Section

Typology Attributes



This typology is applicable to *all Functional road hierarchy classifications* in the **Centre zone - Caboolture, Morayfield and Strathpine precincts** where identified as a *'Main Street'* by the planning scheme.

Carriageway: ✓

- Minimum width of 4.5 metres per traffic lane (where no cycle lane is provided)
- Centre line, traffic lane and parking bay line-marking is to be provided on this street type.
- Carriageway is to allow for kerbside parallel parking to occur on both sides of the carriageway, formalised by street tree build outs, whilst maintaining a minimum of two clear through lanes for shared vehicle and cycle movement, unless a dedicated cycle lane can be provided.

Pathway: ✓

- Minimum width 6.5 metres on both sides of carriageway. Full constructed verge.

Cycle Lane: x

- Not required unless speed environment necessitates dedicated lanes.

Street Trees: ✓

- Minimum of 1 tree per 25m of street frontage.

Verge: ✓

- Minimum width 6.5 metres on both sides of carriageway

On Street Parking & Build Outs: ✓

- Kerbside parallel parking bays are to be provided on both sides of the carriageway, formalised by street tree build outs.

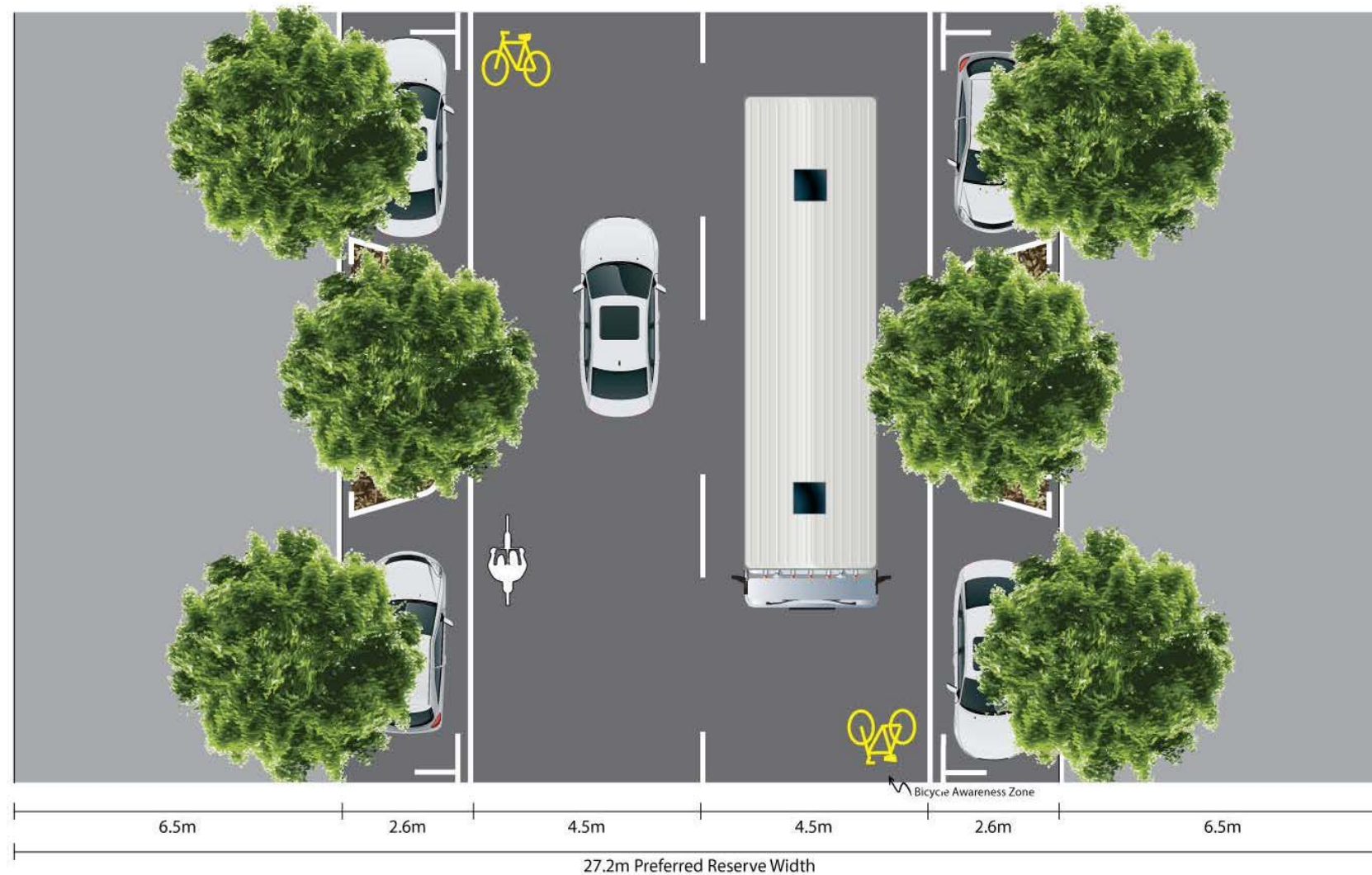
Direct Lot Vehicle Access: x

- Direct lot vehicle access to this road type is not to be provided to this road type. Consolidated access may be permitted dependent on detail design.

Median: x

- Not required unless identified through detailed design for safety reasons.

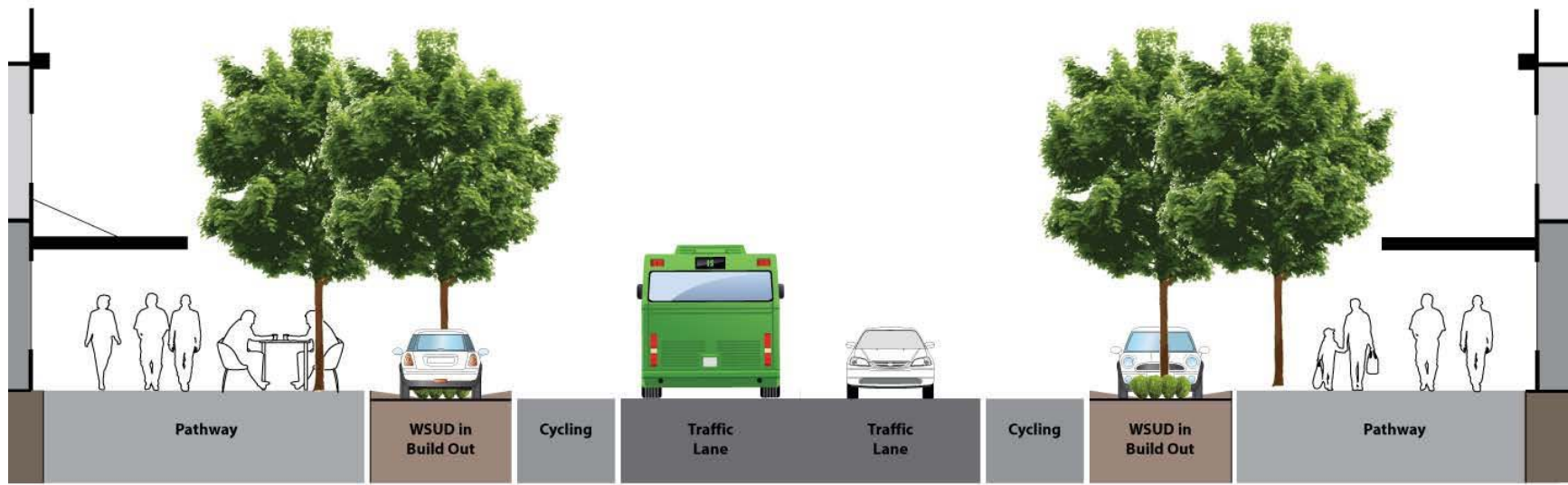
Possible Bus Route: ✓



5.11 District Main Street & Higher Order Access Street

Indicative Road & Street Typology Cross Section

Typology Attributes



This typology is applicable to *all Functional road hierarchy classifications* in the **Centre zone - Caboolture, Morayfield and Strathpine precincts**, and where identified as a **'Main Street'** in the **Centre zone - District centre precinct** as permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 3.3 metres per traffic lane. Centre line, traffic lane and parking bay line-marking is to be provided on this street type. Carriageway is to allow for kerbside parallel parking to occur on both sides of the carriageway, formalised by street tree build outs, whilst maintaining two clear through lanes and dedicated on road cycle lanes.

Pathway: ✓

- Minimum width 6 metres on both sides of carriageway.

Cycle Lane: ✓

- Minimum width of 2 metres per cycle lane on each side of the carriageway.

Street Trees: ✓

- Minimum of 1 tree per 25m of street frontage.

Verge: ✓

- Minimum width 6 metres on both sides of carriageway

On Street Parking & Build Outs: ✓

- Kerbside parallel parking bays are to be provided on both sides of the carriageway, formalised by street tree build outs.

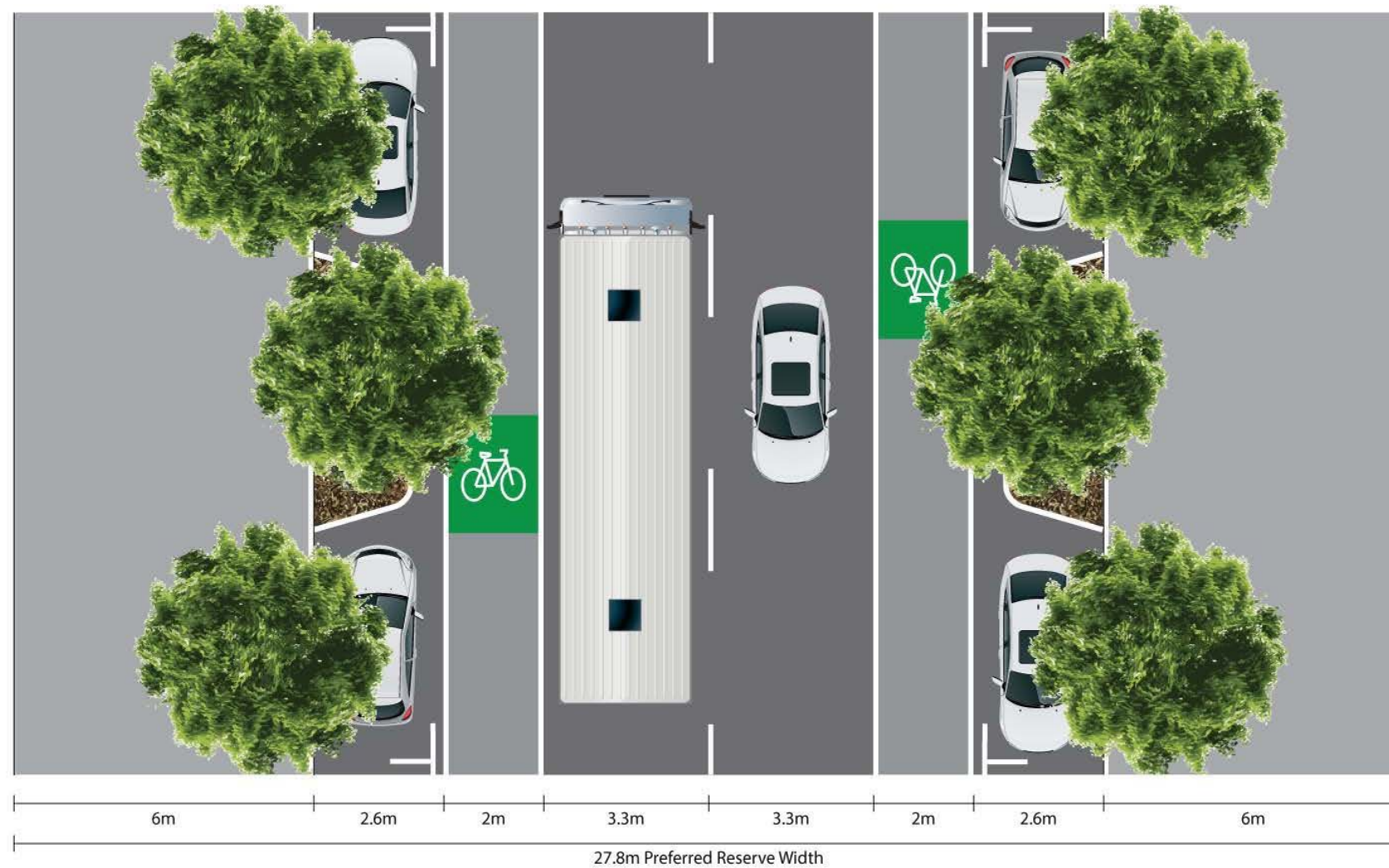
Direct Lot Vehicle Access: x

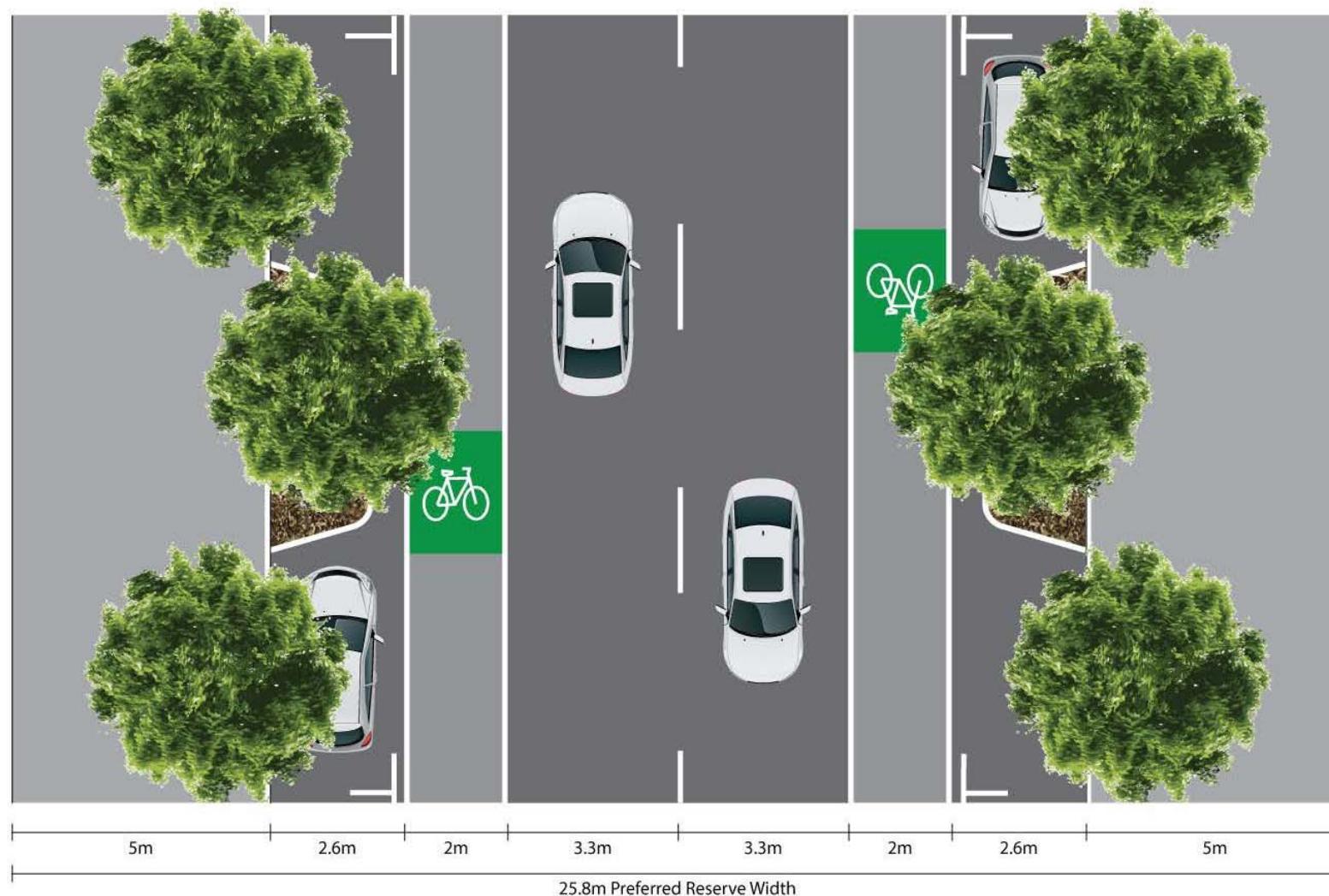
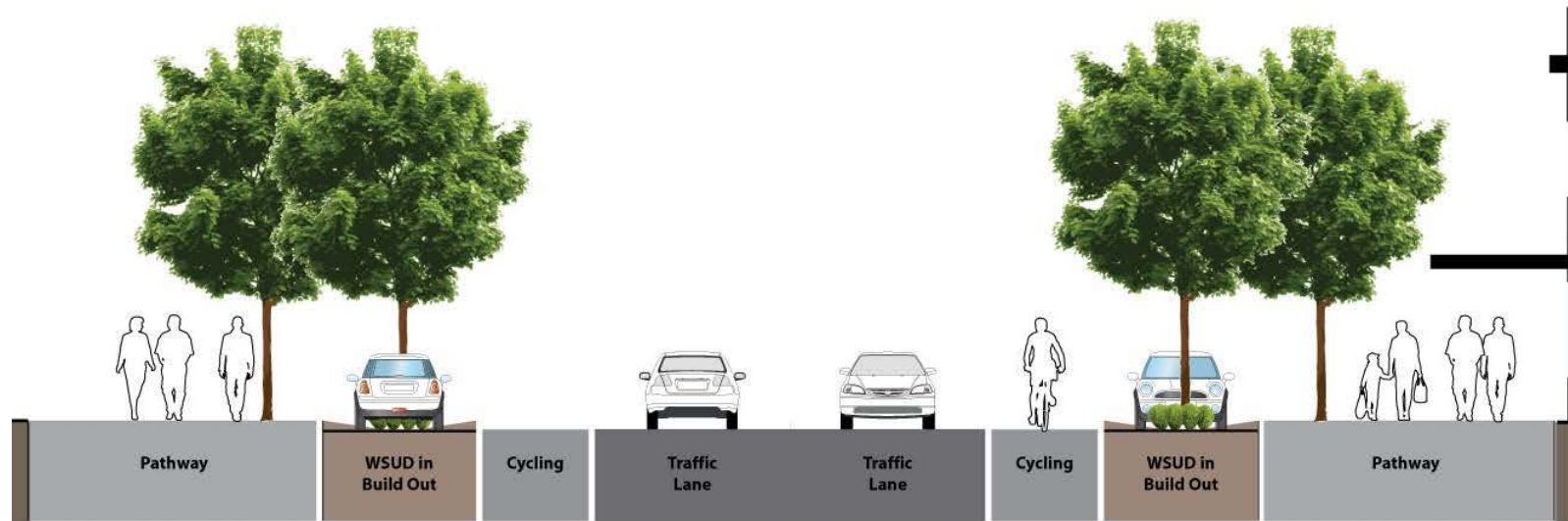
- Direct lot vehicle access to this road type is not to be provided to this road type. Consolidated access may be permitted dependent on detail design.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓





This typology is applicable to *all Functional road hierarchy classifications in the Centre Zone - District and Local Centre Precincts* other than where on the fringe of a centre, identified as a laneway or a Main Street, and *District Collectors and above in the Centre Zone - Strathpine, Morayfield, Caboolture or Redcliffe precincts* other than where on the fringe of the centre or identified as a laneway, shared street or Main Street as permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 3.3 metres per traffic lane. Centre line, traffic lane and parking bay line-marking is to be provided on this street type. Carriageway is to allow for kerbside parallel parking to occur on both sides of the carriageway, formalised by street tree build outs, whilst maintaining two clear through lanes and dedicated on road cycle lanes.

Pathway: ✓

- Minimum width 5 metres on both sides of carriageway.

Cycle Lane: ✓

- Minimum width of 2 metres per cycle lane on each side of the carriageway.

Street Trees: ✓

- Minimum of 1 tree per 25m of street frontage.

Verge: ✓

- 5 metres minimum width on both sides of carriageway.

On Street Parking & Build Outs: ✓

- Kerbside parallel parking bays are to be provided on the Centre zone side of the carriageway, formalised by street tree build outs.

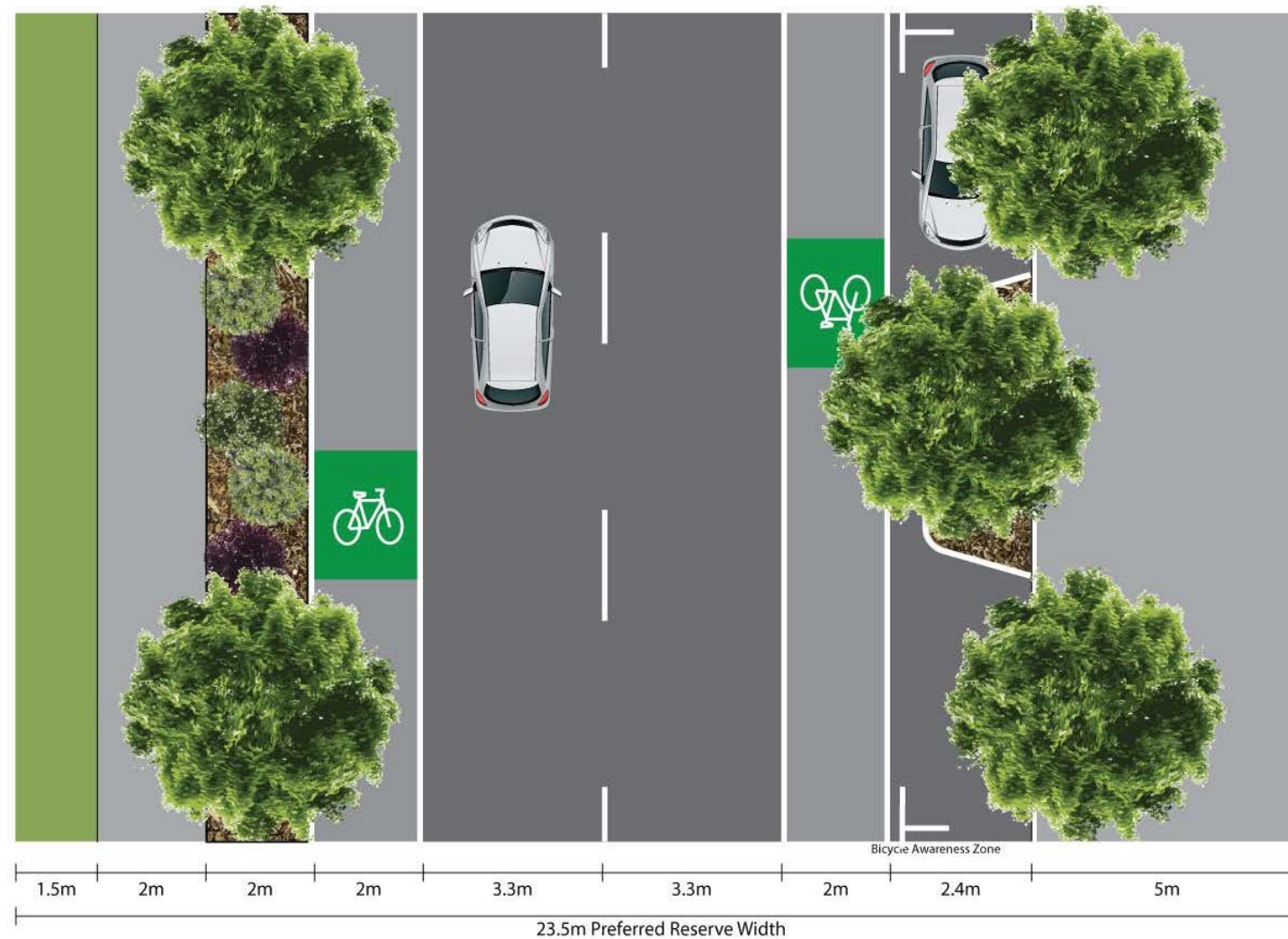
Direct Lot Vehicle Access: ✓

- Direct vehicle access is permitted.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓



This typology is applicable to all Functional road hierarchy classifications adjoining the **Centre zone (all precincts)** on one side of the road reserve and **General residential zone (all precincts)** on the other side as permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 3.5 metres per traffic lane.
- Line-marking is to be provided on this street type. Carriageway is to allow a minimum of two clear through lanes as well as cycle lanes. Stated reserve width allows for additional traffic lanes in either direction depending on traffic analysis.

Pathway: ✓

- Minimum width 5 metres on Centre zone side of carriageway.
- Minimum width 2 metres on other zone side of carriageway.

Cycle Lane: ✓

- Minimum width of 2 metres per cycle lane on each side of the carriageway.

Street Trees: ✓

- Minimum of 1 tree per lot frontage or 25m of street length whichever is the greater.

Verge: ✓

- 5 metres minimum width on Centre zone side of carriageway.
 - 5.5 metres minimum width including pathway on other zone side of carriageway.
- Where a verge contains a pathway, the front verge (between the edge of pathway and back of kerb) is to be a minimum of 2 metres wide, whilst the rear verge (between the edge of pathway and property boundary) is to be a minimum of 1.5 metres wide.

On Street Parking & Build Outs: ✓

Kerbside parallel parking bays are to be provided on the Centre zone side of the carriageway, formalised by street tree build outs.

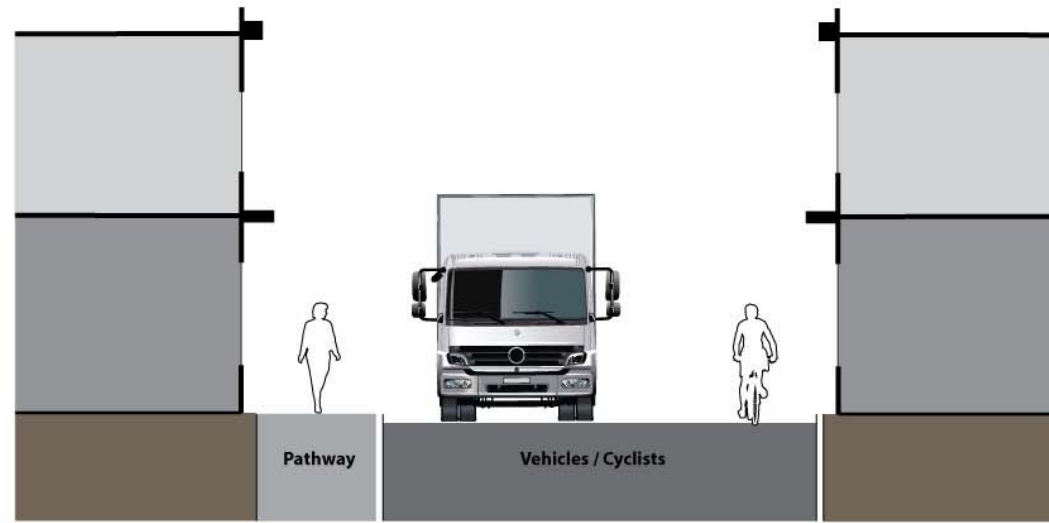
Direct Lot Vehicle Access: ✓

- Direct lot vehicle access to this road type may be permitted dependent on detail design.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓



This typology is applicable to Access Streets in the **Centre zone** where proposed to provide servicing, loading and rear parking access to development that otherwise fronts an alternative street type as permitted by the planning scheme.

Carriageway: ✓

- Minimum 7 metre carriageway. Centre line, traffic lane or parking lane line-marking is not required. Carriageway is to allow for informal kerbside short term loading and pickups to occur on both sides of the carriageway, whilst maintaining sufficient width to allow a refuse or emergency vehicle to pass unimpeded.

Pathway: ✓

- Minimum width 2 metres on one side of carriageway.

Cycle Lane: x

- Not required.

Street Trees: x

- Not required.

Verge: ✓

- Minimum width 2 metres on one side of carriageway where containing a pathway.

On Street Parking: x

- Not required.

Direct Lot Vehicle Access: ✓

- Direct vehicle access is permitted.

Median: x

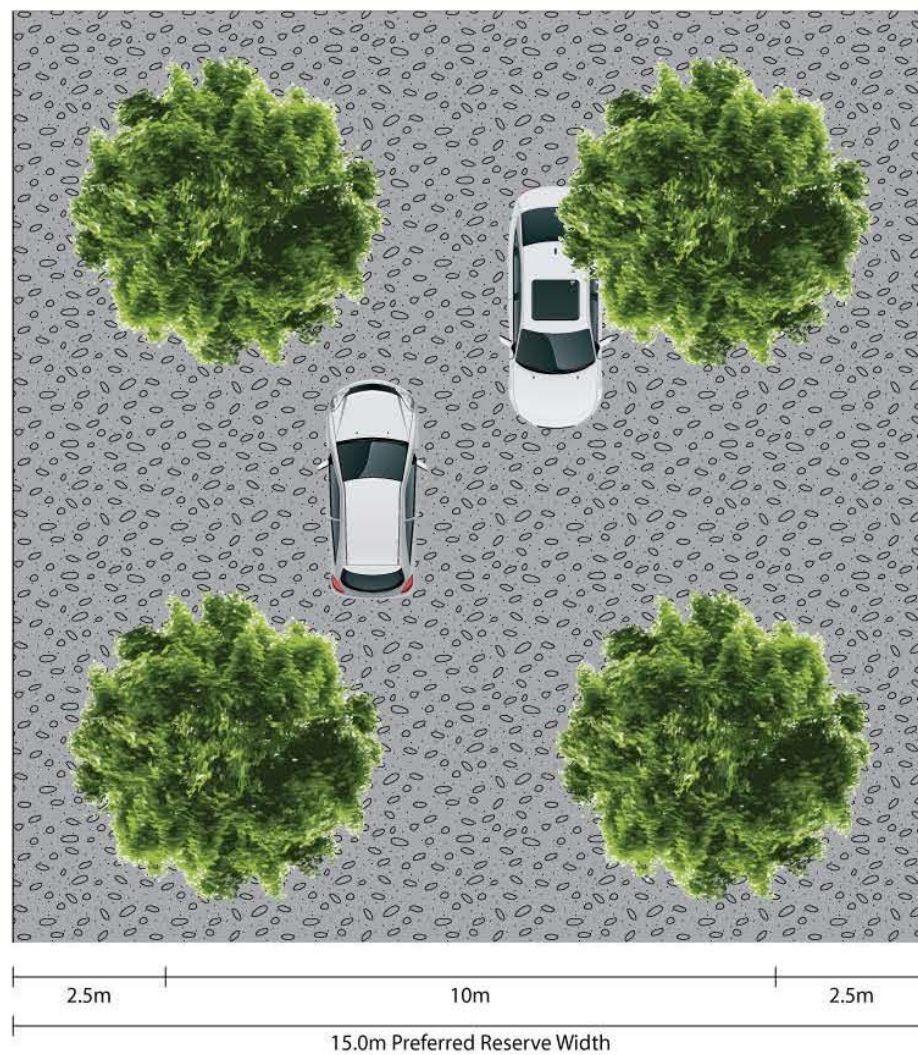
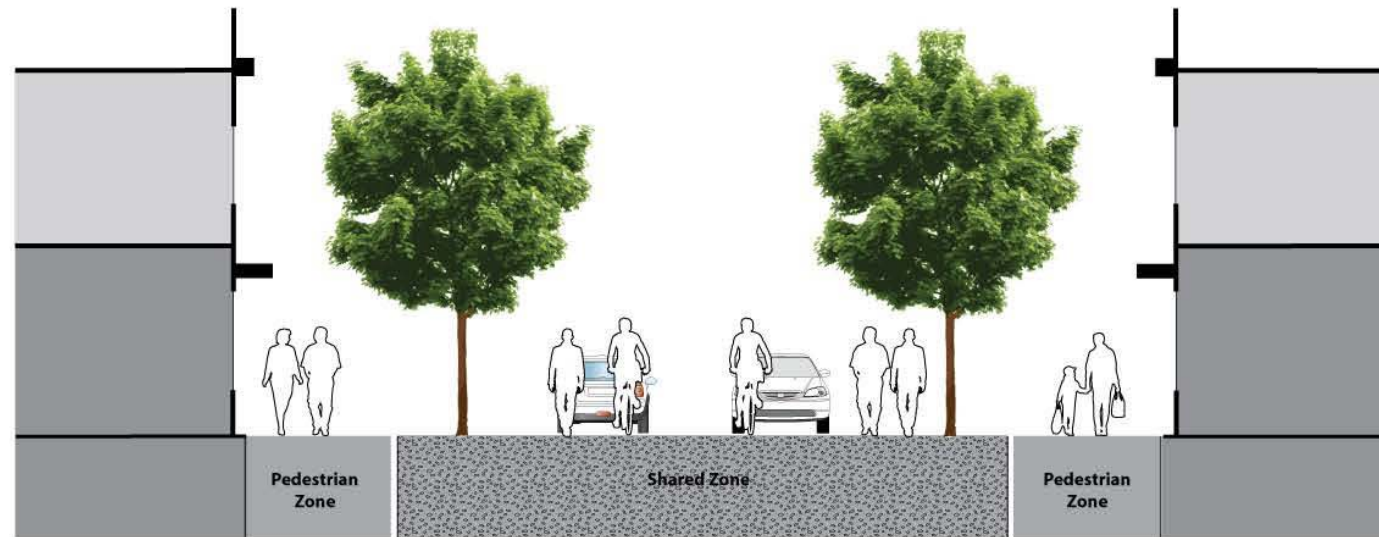
- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: x

- Not required.

Indicative Road & Street Typology Cross Section

Typology Attributes



This typology is applicable to Access Streets within the **Centre zone (all precincts)** where identified as a *Shared Zone* within the planning scheme or as part of a master-planned centre permitted by the planning scheme.

Carriageway: ✓

- Minimum width of 10m constructed shared zone
- Line-marking is not required to be provided on this street type, however stenciling or alternative surface treatments are to be used to delineate between shared zones and dedicated pathway areas.

Pathway: ✓

- Minimum width 2.5 metres on both sides of carriageway.

Cycle Lane: x

- Not required.

Street Trees: ✓

- Minimum of 1 tree per 25m of street length.

Verge: x

- Not required. Total of 15 constructed road reserve.

On Street Parking: x

- On street parking is not to be provided on this street type.

Direct Lot Vehicle Access: x

- Direct lot vehicle access to this road type is not to be provided to this road type.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route:

- Not required

5.16 Boulevard - Single Carriageway

Indicative Road & Street Typology Cross Section

Typology Attributes



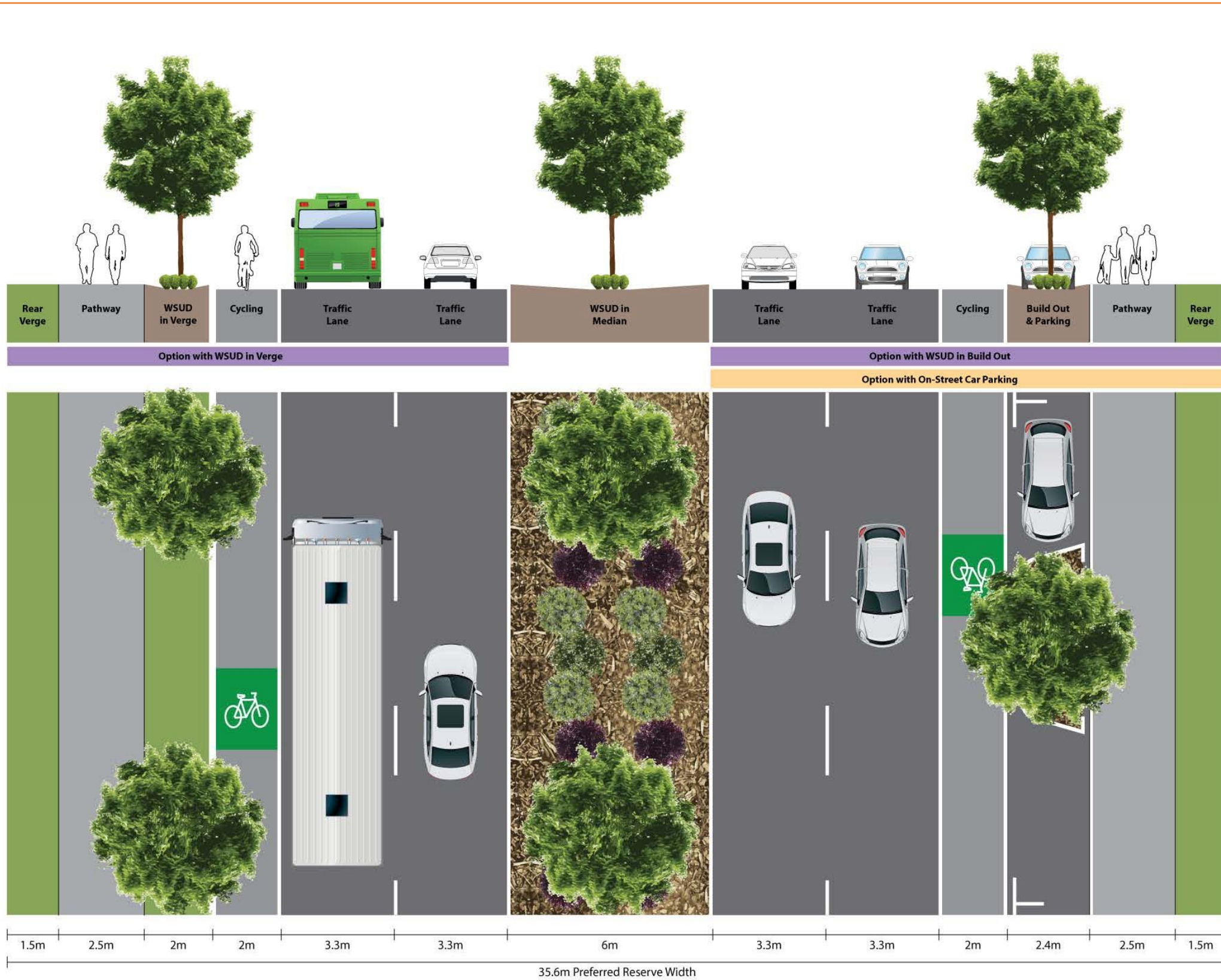
This typology is an indicative representation of a standard road or street type which has been treated as a boulevard by the addition of a landscaped centre median. The cross section shown is that of an Arterial or Sub-arterial road typology which has a 6m centre median but remains as a single traffic lane in each direction.

Additional traffic lanes can also be added to District collector or higher order functional road classifications where traffic carrying capacity necessitates. The overall width of reserve required is to be widened by the additional widths of required lanes or median. All other attribute widths remain as per the standard road typology attributes.

5.17 Boulevard - Dual Carriageway

Indicative Road & Street Typology Cross Section

Typology Attributes



This typology is an indicative representation of a standard road or street type which has been treated as a boulevard by the addition of a landscaped centre median. The cross section shown is that of an Arterial or Sub-arterial road typology which has a 6m centre median and an additional traffic lane added.

Additional traffic lanes can also be added to District collector or higher road types where traffic carrying capacity necessitates. The overall width of reserve required is to be widened by the additional widths of required lanes or median. All other attribute widths remain as per the standard road typology attributes.

5.18 Caboolture West Main Street

Indicative Road & Street Typology Cross Section

Typology Attributes

This typology is applicable where identified as a 'Main Street' by the Road Typologies

Carriageway: ✓

- Minimum width of 3.3 metres per traffic lane
- Centre line, traffic lane and parking bay line-marking is to be provided on this street type.
- Carriageway is to allow for kerbside parallel parking to occur on both sides of the carriageway, formalized by street tree build outs, whilst maintaining a minimum of two clear through lanes for vehicle movement, and dedicated cycle lanes.

Pathway: ✓

- Minimum width 5 metres on centre sides of carriageway. Full constructed verge.
- Minimum width of 2 metres on other side of carriageway.

Cycle Lane: ✓

- Minimum width of 2 metres per cycle lane on each side of the carriageway.

Street Trees: ✓

- Minimum of 1 tree per 25m of street frontage.

Verge: ✓

- Minimum width 5 metres on centre side of carriageway.
- Minimum width 5.5 metres on other side of carriageway with the front verge (between the edge of pathway and back of kerb) being a minimum of 2 metres wide, and the rear verge (between the edge of pathway and property boundary) being a minimum of 1.5 metres wide.

On Street Parking & Build Outs: ✓

- Kerbside parallel parking bays at a minimum width of 2.4 metres are to be provided on both sides of the carriageway, formalised by street tree build outs.

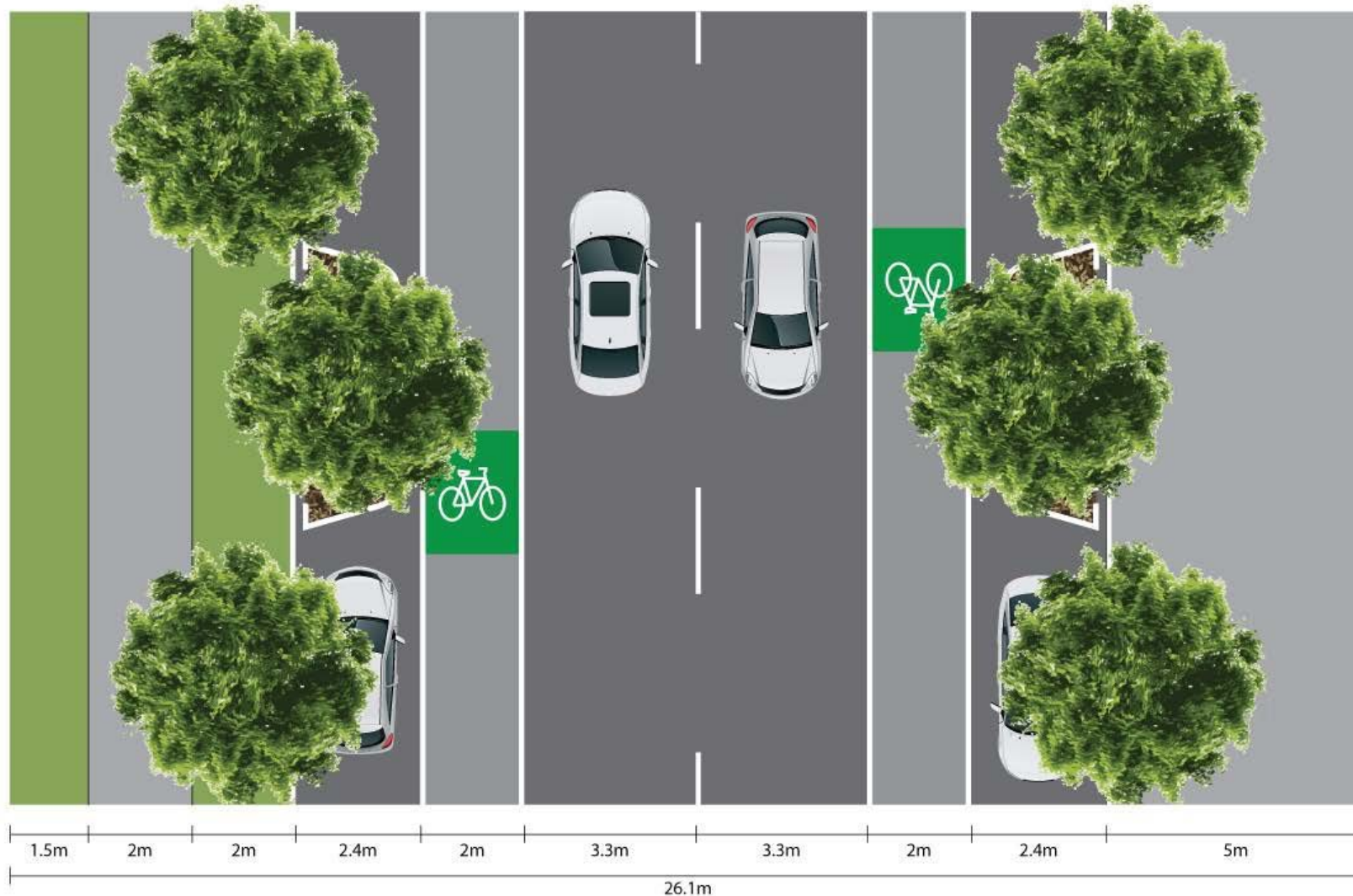
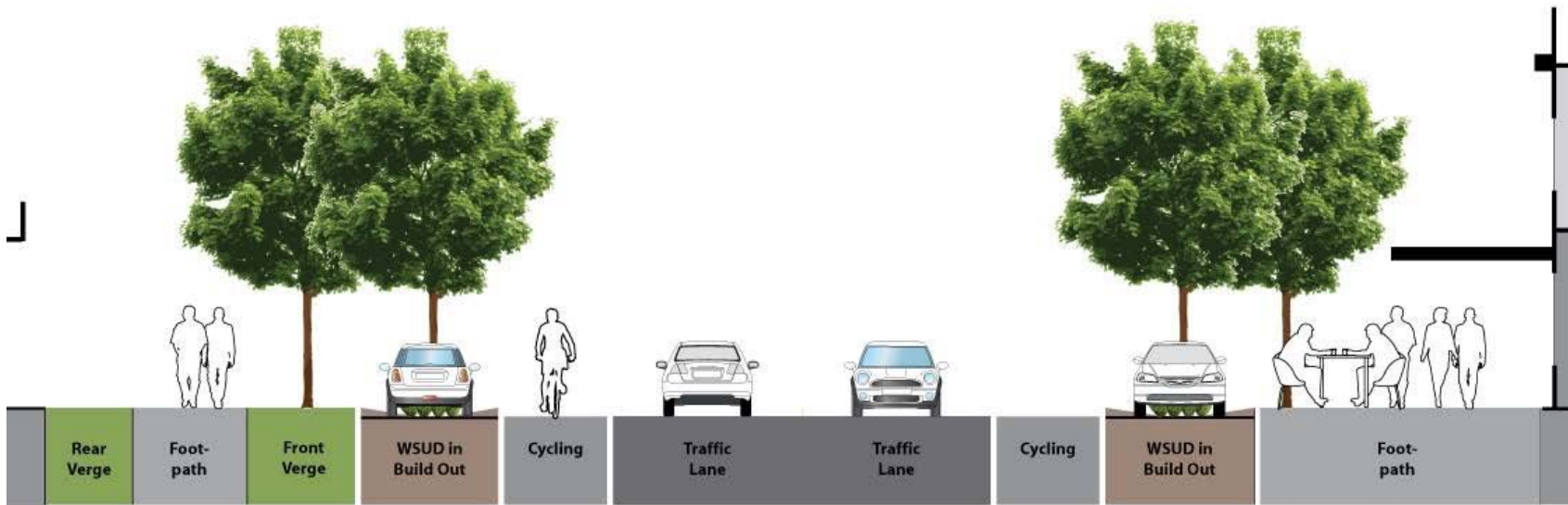
Direct Lot Vehicle Access: x

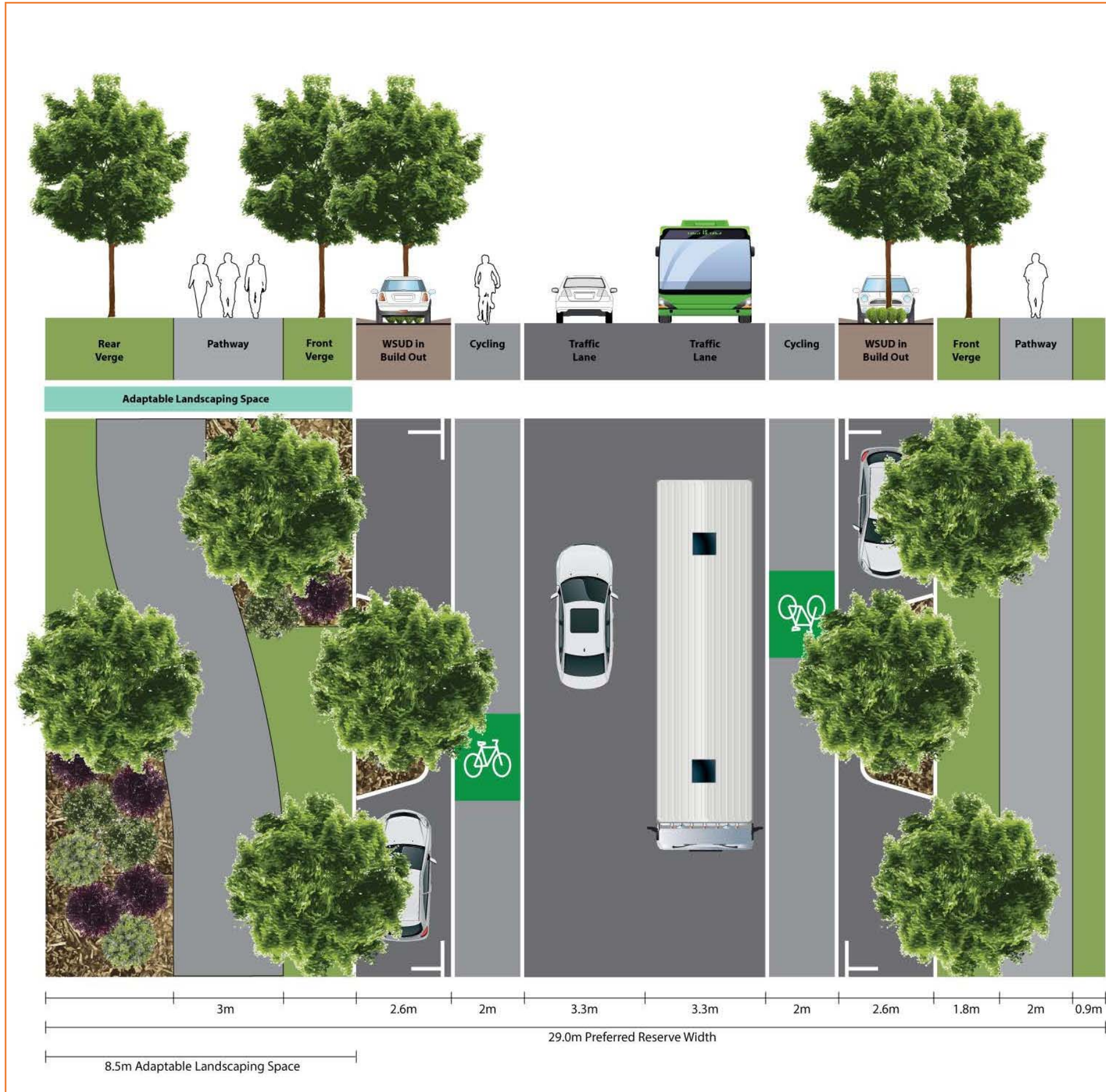
- Direct lot vehicle access to this road type is not to be provided to this road type. Consolidated access may be permitted dependent on detail design.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓





This typology is applicable where identified as a 'Landscape Street' by the Road Typologies

Carriageway: ✓

- Minimum width of 3.3 metres per traffic lane
- Centre line, traffic lane and parking bay line-marking is to be provided on this street type. Carriageway is to allow for kerbside parallel parking to occur on both sides of the carriageway, formalized by street tree build outs, whilst maintaining a minimum of two clear through lanes for vehicle movement, and dedicated cycle lanes.

Pathway: :

- Minimum width 2 metres on eastern side of carriageway.
- Minimum width 3 metres on western side of carriageway.

Cycle Lane: ✓

- Minimum width of 2 metres per cycle lane on each side of the carriageway.

Street Trees: ✓

- Minimum of 1 tree per 25m of street frontage.

Verge: ✓

- Minimum width 4.7 metres on eastern side of carriageway with the front verge (between the edge of pathway and back of kerb) being a minimum of 1.8 metres wide, and the rear verge (between the edge of pathway and property boundary) being a minimum of 0.9 metres wide.
- Minimum width 8.5 metres on western side of carriageway.

On Street Parking & Build Outs: ✓

- Kerbside parallel parking bays at a minimum width of 2.4 metres are to be provided on both sides of the carriageway, formalised by street tree build outs.

Direct Lot Vehicle Access: ✓

- Direct vehicle access is permitted.

Median: x

- Not required unless identified through detailed design for safety reasons.

Possible Bus Route: ✓

6. Typology Attributes Detail Criteria

6.1 Carriageway

- i. Carriageways in a Laneway are to allow for sufficient maneuvering of vehicles to access garages on one or both sides of the carriageway. Where a laneway is to provide for refuse collection it is also to ensure adequate turning movements are provided for the appropriate refuse vehicle type as specified in Planning Scheme Policy - Waste Management.

6.2 Pathway Width

- i. Pathway width may be narrowed to a width of not less than 1.5 metres for short distances to cater for the retention of existing trees or significant vegetation, accommodation of bus stops or street furniture, or due to significant topographical conflicts or safety concerns.
- ii. Roads with a functional road hierarchy classification of Arterial, Sub-arterial or District Collector are to be designed to accommodate active transport movement both on and off- road. The minimum width of an off-road shared path is 2.5m.

6.3 Cycle Lane

- i. Street or road typologies that do not show on-road cycle lanes may still be required to provide them if the street is located on a Primary active transport route as identified on Overlay map - Active transport routes.
- ii. Where a street or road typology requires on-road cycle lanes, the specified width of cycle lanes as indicated combined with the specified width of on-street parking bays provides for the required cycle lane width within the speed environment and a 0.4 m safety clearance to ensure cyclists are clear of any potential conflict due to car door openings. Any reduction in cycle lane width or adjacent parking bay widths must consider adequate buffering to ensure vehicle doors do not cause conflict with cyclists travelling within the cycle lane. Refer to Standard Drawings in Appendix H for further details related to on road cycle facilities.

6.4 Street Tree

- i. Street trees located in the front verge are to be planted from 45 litre pot sizes and provided with a minimum of 1.2 metres of clear verge width within the front verge. Trees planted in build outs are to be planted from 100 litre pot sizes. Where sufficient clear space to locate a tree in front of a particular lot cannot be provided, the required tree is to be planted elsewhere within the same street. Street trees are to be planted a maximum of 25 metres apart in General Residential and Centre zones and 50 metres in the Industry zone. Refer to Standard Drawings in Appendix H for further details on street tree plantings.

6.5 On-Street Parking & Build Outs

- i. Where a street typology requires build outs to formalise on-street parking bays, the build outs are to be provided at the same width as the parking bay, and at a maximum spacing of 50 metres along the street length unless otherwise specified.
- ii. Where formalized parking bays/lanes and build outs are required on both sides of a carriageway, the overall width of the reserve is to be widened by the required width of the parking bay unless otherwise agreed to by Council.
- iii. Parking spaces generated by lots accessed via a laneway are to be accommodated on the alternate street frontage of the lot and not within the laneway.

6.6 Direct Lot Access

- i. Council may consider direct lot vehicle access on District Collectors and lower order roads dependent on the traffic environment modelled for the corridor. The following table provides a guide to where access may be appropriate based on the number of Vehicle Per Day subject to detail design.

Vehicles Per Day	1000	2000	3000	4000	5000	6000	7000	8000	9000	>10000
Direct Lot Vehicle Access	Allowed			At Councils discretion						
					Not Allowed					

6.7 Medians

- i. Notwithstanding the requirements of a specific street or road typology, where medians are required for safety reasons (i.e. pedestrian crossing refuges, protected turning, intersection design, split grade carriageways, etc.) as a result of detailed design, or to create a boulevard, they can be accommodated on any functional road hierarchy classification.
- ii. The overall width of all road reserves as specified in the cross section attributes is to be widened by the required width of median unless otherwise agreed to by Council.

7. Recommended Posted Speed Limits

Zone / Precinct	Functional Road Hierarchy Classification	Recommended Posted Speed Limit (KPH) ¹
Centre	All Roads	50
General Residential	Arterials	-
	Sub-arterial	60 - 80
	District Collector	60
	Local Collector & Access Streets	50
Industry	Arterial & Sub-arterial	-
	District Collector	70
	Local Collector & Access Streets	50
Rural Residential	Arterial & Sub-arterial	-
	District & Local Collectors	60
	Access Streets	50
Other Zones	Local Collectors & Access Streets	50
	All other classifications	-

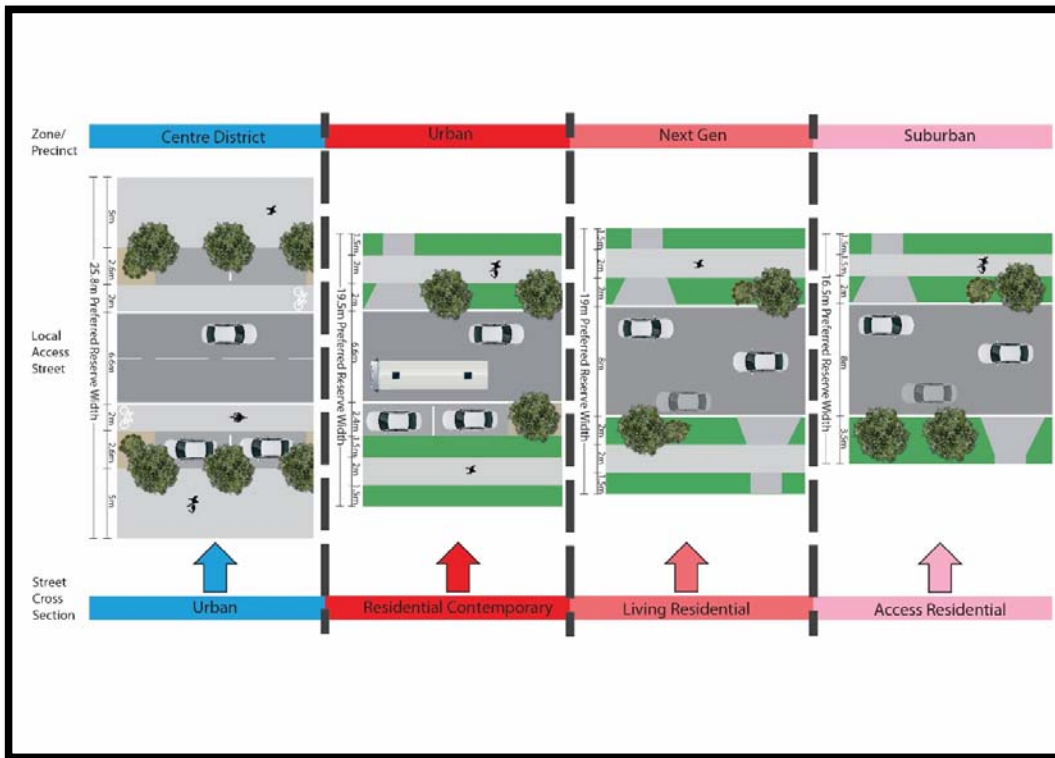
8. Primary and Secondary Active Transport Network

The primary and secondary active transport networks are identified on the Primary and Secondary Active Transport Network Overlay Map. These networks incorporate the most critical inter and intra-regional trips for cyclists and pedestrians. As development occurs, works and/or land may be required in the provision of these networks. A determination will be made as to the extent of works and/or land required as part of the development assessment process. In circumstances where the attributes of the primary or secondary active transport network vary from the pathway width and cycle lane attributes mentioned in other parts of Appendix A of the PSP - Integrated Design, the attributes contained in the table below prevail.

Zone & Precinct	Centre zone - Strathpine, Caboolture, Morayfield, Redcliffe & District centre precincts General residential zone - Urban neighbourhood, Next generation neighbourhood and Coastal communities precincts, Industry Zone - all precincts Rural Townships zone - all precincts. Rural Residential zone General residential zone - Suburban neighbourhood precinct All other zones and precincts where not otherwise stated.		
Functional Road Hierarchy Classification	Shared paths both sides, width in metres		
Arterial and Sub-arterial	Urban 5.0m, Main street 6.0m	2.5m where street/road contains dedicated on-road cycle lanes 3.0m where street/road does not contain cycle lanes	2.5m
District collector	2.5m		2.0m
Primary route on lower-order road (Local collector and below)	2.5m where street/road contains dedicated on-road cycle lanes, 3.0m where street/road does not contain cycle lanes.		2.0m where street/road contains dedicated on-road cycle lanes, 2.5m where street/road does not contain cycle lanes.
Primary route through open space	3.5m	3.0m	
Secondary route on lower-order road (Local collector and below)	2.0m where street/road contains dedicated on-road cycle lanes 2.5m where street/road does not contain cycle lanes		
Secondary route through open space	3.0m	2.5m	

9. Transitions

The applicable cross section is to transition depending on its adjoining zone and precinct. As illustrated below, a single functional road and street classification such as a Local Access Street may have a different applicable cross section as it moves through different environments. How road and street types transition between each other will be specific to each situation, however, consideration needs to be given to safety for pedestrians, cyclists and vehicles as well as adjoining land uses and infrastructure. Generally, a higher order cross section should be continued to the next intersection.



Where a street or road adjoins a different residential precinct on the other side of the street or road, the cross section required for the particular street type in the higher order precinct is to be provided. For clarification the following table lists the priority of precincts for road and street type selection.

9.1 Precinct Priority

General Residential Zone	
1.	Urban Neighbourhood Precinct
2.	Next Generation Neighbourhood Precinct
3.	Suburban Neighbourhood Precinct
4.	Coastal Communities Precinct

10. Retrofitting Existing Streets

Where establishment of a desired road or street typology cross section is to be achieved through retro-fitting of an existing reserve, the following is to be used as a guide to which elements of the road or street typology cross section could be reduced if the existing reserve is inadequate. Every endeavour is to be made to maintain the existing alignment of kerbs, however the order of which elements are to be identified for modification will differ between those roads with a “place” function and those with a “movement” function as determined in Section 2 of this Appendix.

The hierarchy of modifications to be considered is as follows (with the elements to be considered for reduced first appearing first in the listings below):

“Movement” types:

1. Reduce kerbside parking width (to a minimum of 2.4 metres)
2. Remove kerbside parking from one side
3. Remove kerbside parking from both sides
4. Reduce or remove “rear” verge (whilst maintaining a minimum 3.5 metre total verge width)
5. Reduce footpath (to a minimum of 2.0 metres whilst maintaining a minimum 3.5 metre total verge width)
6. Reduce cycle lanes (to a minimum of 1.5 metres where speed is not in excess of 60kph)
7. Reduce lane width to 3.3 metres

“Place” types:

1. Reduce lane width to 3.3 metres
2. Reduce cycle lanes (to a minimum of 1.5 metres where speed is not in excess of 60kph)
3. Convert cycle lanes to Cycle Awareness Zones (in conformance with technical standards)
4. Reduce or remove “rear” verge (whilst maintaining a minimum 4.5 metre total verge width)
5. Reduce kerbside parking width (to a minimum of 2.4 metres)
6. Remove kerbside parking from one side
7. Remove kerbside parking from both sides

Where the existing configuration includes a road and street reserve and/or pavement width is wider than required by the applicable typology cross section, council will determine how the additional space is to be best utilised.

Where kerbside parking is retained and verge width is constrained for tree planting, consideration will be given to including tree planting within the parking lane using permeable pavements and structural soils. Note every endeavour must be made to retain existing vegetation within road and street design including through tunnel trenching (utility services), raised footpaths / bike paths with pier foundations to avoid tree root severance / damage.



11. Pedestrian Crossings Design and Location

Zone & Precinct	Functional Road Hierarchy Classification	Pedestrian Crossing Type	Maximum Pedestrian Crossing Separation
CENTRE ZONE			
All precincts	Arterial	Signalised, Zebra or Refuge. If > 2 lanes, signalised only	100m where identified as a main street within a movement diagram or structure plan; Or
	Sub-arterial	Signalised, Zebra, Refuge or Shared Zone. If > 2 lanes, signalised only	
	District Collector	Signalised, Zebra, Raised Platform, Shared Zone or Refuge	200m where not identified as a main street within a movement diagram or structure plan; Or
	Local Collector		
	Access Street	Zebra, Raised Platform or Refuges as required by Council, taking into account safe sightlines, concentrations of activity, adjoining land uses and likely pedestrian desire lines.	
GENERAL RESIDENTIAL ZONE			
Suburban Neighbourhood & Coastal Communities	Arterial	Zebra or Refuge where approved by Council, otherwise signalised. If > 2 lanes, signalised only	At all signalised intersections, where identified as a primary or secondary Active Transport Route, or 600m, whichever is the lesser.
	Sub-arterial	Zebra, Refuge or Shared Zone where approved by Council, otherwise signalised. If > 2 lanes, signalised only	
	District Collector	Zebra, Raised Platform, Shared Zone or Refuge	Where identified as a primary or secondary Active Transport Route, or 200m, whichever is the lesser
	Local Collector	Refuges where identified as a primary or secondary active transport route. Uncontrolled crossings where sightlines are adequate.	
	Access Street	Not required	
Next Generation Neighbourhood	Arterial	Zebra or Refuge where approved by Council, otherwise signalised. If > 2 lanes, signalised only	At all signalised intersections, where identified as a primary or secondary Active Transport Route, or 400m, whichever is the lesser.
	Sub-arterial	Zebra, Refuge or Shared Zone where approved by Council, otherwise signalised. If > 2 lanes, signalised only	
	District Collector	Zebra, Raised Platform, Shared Zone or Refuge	Where identified as a primary or secondary Active Transport Route, or 200m, whichever is the lesser.
	Local Collector	Zebra or raised platform where identified as a primary or secondary Active Transport Route. Uncontrolled crossings where sightlines are adequate, otherwise Refuges	
	Access Street	Not required	
Urban Neighbourhood	Arterial	Zebra or Refuge where approved by Council, otherwise signalised. If > 2 lanes, signalised only	At all signalised intersections, where identified as a primary or secondary Active Transport Route, or 400m, whichever is the lesser.
	Sub-arterial		
	District Collector	Zebra, Raised Platform, Shared Zone or Refuge	Where identified as a primary or secondary Active Transport Route, or 200m, whichever is the lesser.
	Local Collector	Zebra or raised platform where identified as an active transport route. Refuges otherwise.	
	Access Street	Zebra, Raised Platform, Refuges or Uncontrolled as required by Council, taking into account concentrations of activity, adjoining land uses and likely pedestrian desire lines.	
INDUSTRY ZONE			
	Arterial	Zebra or Refuge where approved by Council, otherwise signalised.	At all signalised intersections or 400m, whichever is the lesser.

All Precincts	Sub-arterial	If > 2 lanes, signalised only	
	District Collector	Zebra, Raised Platform, Shared Zone or Refuge	
	Local Collector	Refuges or Uncontrolled as required by Council, taking into account concentrations of activity, adjoining land uses and likely pedestrian desire lines.	Where identified as a primary or secondary Active Transport Route, or 200m, whichever is the lesser.
	Access Street	Not Required	
Zone & Precinct	Functional Road Hierarchy Classification	Pedestrian Crossing Type	Maximum Pedestrian Crossing Separation
RURAL TOWNSHIP ZONE			
Township Centre & Convenience	Arterial	Zebra or Refuge where approved by Council, otherwise signalised.	400m;
	Sub-arterial	If > 2 lanes, signalised only	400m;
	District Collector	Zebra, Raised Platform, Shared Zone or Refuge	Or
	Local Collector	Zebra or Refuges as required by Council, taking into account safe sightlines, concentrations of activity, adjoining land uses and likely pedestrian desire lines.	100m where identified as a main street;
Access Street	Or Other appropriate distance as required by council taking into account safe sightlines, concentrations of activity, adjoining land uses and likely pedestrian desire lines.		
Township Industry	All	Refuges or Signalised. Uncontrolled only where permitted by Council, taking into account safe sightlines, concentrations of activity, adjoining land uses and likely pedestrian desire lines. If Arterial, Sub-arterial > 2 lanes, Signalised only.	400m; At all signalised intersections, where identified as a primary or secondary Active Transport Route, or 600m, whichever is the lesser.
Township Residential	Arterial, Sub-arterial	Zebra or Refuge where approved by Council, otherwise signalised. If > 2 lanes, signalised only	At all signalised intersections, where identified as a primary or secondary Active Transport Route, or 400m, whichever is the lesser.
	District Collector	Zebra, Raised platform or Refuge Uncontrolled only where permitted by Council, taking into account safe sightlines, concentrations of activity, adjoining land uses and likely pedestrian desire lines.	
	Local Collector and Access Streets	Not Required	
EMERGING COMMUNITY ZONE			
Transition Precinct	Arterial	Signalised, Zebra or Refuge If > 2 lanes, signalised only	At all signalised intersections, where identified as a primary or secondary Active Transport Route, or Sub-arterial 400m, whichever is the lesser.
	Sub-arterial	Signalised, Zebra, Refuge or Shared Zone If > 2 lanes, signalised only	
	District Collector	Zebra, Raised Platform, Shared Zone or Refuge	
	Local Collector	Zebra or raised platform where identified as a primary or secondary Active Transport Route. Uncontrolled crossings where sightlines are adequate, otherwise Refuges.	Where identified as a primary or secondary Active Transport Route, or 200m, whichever is the lesser.
	Access Street	Not Required	

12. Intersection Management

Function Road Hierarchy Classification	Intersection Type and Design ²
Where intersecting with an Arterial or Sub-arterial Road	
Arterial or Sub-arterial Roads	Signalised or as per Austroads
District Collector or Local Collector Streets	Signalised or left-in left-out access to and from the Collector
Access Streets	No vehicular access, pedestrians and cyclists only
Where intersecting with a District Collector	
District Collector	Stop, give-way to be used with priority assigned to suit local circumstances (sight lines, etc.) or Single lane roundabout
Local Collector or Access Street	Single lane roundabout or give-way on lower order street.
Where intersecting with a Local Collector	
Local Collector	Alternating give way priority treatment along street length or single lane roundabout
Access Street	Single lane roundabout or give-way on access street.
Where intersecting with Access Street	
Access Street	Alternating give-way priority along street length or Single lane roundabout.

Note - Intersection corner radii to be determined using Austroads.

13. Pavement Design and Construction

13.1 Pavement and Median Crossfall

Roads and streets on straight alignment shall be designed with a normal crossfall of pavement and shoulders of 3%. Where steeper or flatter crossfalls than the normal are required, for example on superelevated curves at intersections or turning areas, the maximum and minimum permissible pavement crossfalls shall be 5% and 2% respectively with consideration of high vehicles turning.

At intersections and cul-de-sac heads contour details are required to demonstrate that there is no ponding of water. Where minimum crossfall cannot be achieved the longitudinal grades may be used to shed the water.

The desired maximum crossfall for grassed medians on divided roads shall be 1 in 6 with an absolute maximum of 1 in 4. At median openings, the pavement crossfall should not exceed 5%.

Split level and divided roads/streets should be avoided. Where this is not possible, prior written approval shall be obtained from Council's nominated representative.

13.2 Pavement Tapers

Pavement tapers to existing construction shall be designed in accordance with the current AUSTRROADS based on the design speed as accepted by Council's nominated representative. Detailing should include lengths, typical section(s), linemarking and signing. Tapers shall be constructed to the same standard as the proposed full road pavements.

13.3 Kerb and Channel

Kerb or kerb and channel shall be provided on both sides of road pavements on all urban and rural residential roads unless otherwise approved by Council.

Kerb and channel or concrete lined table drains shall be provided on all Rural roads when grades are in excess of 10%. For soils which are easily eroded, kerb and channel or concrete lining will be required when the grades of rural roads are greater than 7%. Consideration may be given to using kerb and channel through deep cuttings.

Unless otherwise approved, the type of kerb and channel used shall be as listed below and shall be designed in accordance with IPWEAQ Standard Drawings for Kerb Profiles:

- Industrial and Commercial areas and Park frontages - Barrier kerb (B1 300)
- Traffic islands - Semi Mountable (SM3) Modified to key in 125mm below pavement surface
- Roundabouts – SM5
- Non-channelled roads – edge beam M6 or ER2
- All other locations - Mountable kerb (M3)

The desirable minimum longitudinal grade for kerb and channel shall be 0.5%. Pavement of minimum depth of 125mm is to extend a minimum of 150mm behind kerb and channel.

Where proposed construction adjoins existing kerb and channel Council's nominated representative shall decide whether the existing profile shall be extended or whether the new construction will be tapered smoothly to the existing kerb and channel.

13.4 Subsoil Drainage

Subsoil drains shall be provided beneath all kerb and channel. On roads with no kerb and channel, subsoil drainage will be required where poor subgrade drainage exists and at locations directed by Council's nominated representative. Subsoil drainage is to be provided in accordance with I.P.W.E.A.Q. Standard Drawings subject to the details described below:

- Pavement of minimum depth of 125mm is to extend a minimum of 150mm behind kerb and channel; and

- Subsoil drainage trench backfill is to extend to the underside of the kerb.

Trimming and compaction of subgrade is to be completed and approved before subsoil drains and service conduits are constructed. The trenches shall then be excavated, and the excavated material placed on the footpath and not the subgrade.

Where subsoil drains pass under service conduits, the side drains are to be deepened and graded out to a normal depth at a minimum grade of 1:250.

For roads without kerb and channel the subsoil drainage trench is to be 300mm wide and positioned such that the outer edge of the trench is in line with the outer edge of the pavement seal. The subsoil drainage is to be centrally located within the trench.

In dispersive, soluble or fine grained soils, the developer's representative is to evaluate whether geofabric wrapped subsoil drains are required. Where geofabric wrapped subsoil drains are proposed the developer's representative is to provide details for approval by Council's nominated representative.

Road subsoil drainage must be 'daylighted' and discharged to an approved legal point of discharge. Caps are to be provided to upstream ends of subsoil drains.

13.5 Pedestrian and Cycle Infrastructure

Pedestrian and Cycle infrastructure is to be provided for as identified in the Road and Street Typology Cross Section. Refer to AUSTRROADS for additional guidance in relation to detailed design and construction requirements.

Pathway construction is to be in accordance with I.P.W.E.A.Q. Standard Drawings. Where applicable the pathway is to be removed and replaced with a standard crossover. The crossover is to give priority to the footpath profile. New concrete pathways are to be pinned to adjacent concrete infrastructure.

All new concrete pedestrian and cycle infrastructure is to be pinned to adjacent existing concrete infrastructure (driveways, pathways, etc.) using N12 dowel bars in accordance with Council's Standard Drawings and subject to the following requirements:

- a) The dowel bars are to be placed along the pathway midway between joints at 300mm centres.
- b) The dowel bar end within the existing concrete is to be epoxy bonded to the existing concrete and the section of the bar within the new concrete is to be greased.

13.6 Kerb Ramps

Kerb ramps are to be provided at all intersections, at all kerb returns and at the end of all pathways i.e. between lots, park access, etc. At intersections, the ramps are to be located in accordance with AS1428 Design for Access and Mobility to align with existing or future pathways. Tactile indicators are to be installed in accordance with AS 1428.4.

Kerb Ramps are to be constructed in accordance I.P.W.E.A.Q. Standard Drawings. Kerb ramps are to be directional in all instances.

13.7 Grassing

Minimum fifty (50) millimetres compacted thickness of approved topsoil shall be placed over the balance areas of all footpaths and pathways, where the subsoil has the capacity to support sustained grass growth. In known problem soils, depth of topsoil is to be increased to 100mm. As a minimum the verge is to be fully turfed. Landscaping of verge areas is to be approved by Council's representative, however, all balance areas of the verge are to be turfed. Refer to the Appendix D – Landscape Design and Street Trees.

13.8 Road Edge Guide Posts and Guardrails

Road edge guideposts shall be provided at all locations where kerb and channel is not constructed e.g. half road construction, tapers, ends of roads, etc. in accordance with Department of Main Road Manual

of Uniform Traffic Control Devices. Guard rail locations and installation is to be as per AUSTRROADS Guide to Road Design.

13.9 Pavement Design

This section is intended to facilitate the checking and approval of proposed pavement designs for roadworks associated with subdivisions, building development and re development works. It is not intended to be used in lieu of design manuals. Pavement designs are to be submitted and approved by Council.

The pavement is to be designed in accordance with AUSTRROADS Guide to Pavement Technology including design parameters, subgrade evaluations, laboratory testing and design charts. The design pavement depth does not include the asphaltic concrete (A.C.) surfacing where the A.C. surfacing thickness is less than 50mm.

The proposed pavement design is to be submitted for approval at least five (5) days prior to a subgrade inspection.

13.10 Determination of Subgrade Strength

A design California Bearing Ration (CBR) is to be determined for each identifiable unit defined on the basis of topography, geological and drainage condition of the site. The four day soaked CBR at a compaction of 100% Standard compaction is to be the standard test. Tests are to be carried out in a NATA registered laboratory (National Association of Testing Authorities).

The test results are to be submitted with the proposed pavement design. The design CBR is to be detailed on plans.

The sampling is to be randomly located within each length of the proposed roadway with constant subgrade material. It is required that a minimum of 1 test per material type be carried out. The location of material type variances are to be detailed in accordance with sample test and adjoining lot. For less than five results the design CBR shall be the least estimated insitu CBR result. For more than four results, the design CBR shall be the 10th percentile of all estimated insitu CBR results. The samples shall be taken generally in the position of the outer wheel path on both sides of the proposed road. A sketch plan showing the location of all tests is to be submitted with the test results for pavement design approval.

13.11 Design Basis

The design traffic in Table 13.11 below shall be adopted unless the developer's representative submits to Council, and has approved, alternative design traffic values. To determine the design traffic the developer's representative shall use the methodology in the AUSTRROADS design manuals.

Street and Road Pavements shall be designed in accordance with AUSTRROADS Design Manuals, utilising such amendments and additional criteria stated in this manual. The pavement design life adopted for all roads is to be 20 years. The minimum pavement depth is 200mm. The minimum pavement depth does not include the asphaltic concrete surfacing. The minimum pavement layer thickness for minor roads is 100mm and for major roads is 125mm.

Where pavement widening is required, testing/onsite inspection is to be undertaken to demonstrate that there is existing quality gravel in the road pavement to a depth that satisfies the classification typology of the road. Where this is evident the widening is required to be constructed to full pavement depth as approved by Council's nominated representative in accordance with the classification typology of road. Where existing quality gravel of suitable depth cannot be demonstrated the road must be constructed with full depth pavement. Where a development permit does not condition a minimum width, the road must be constructed with full pavement and seal to the (ultimate) centre line of the road or a minimum of 3 metres, whichever is the greater.

13.12 Pavement Materials

Pavement Materials shall be in accordance with Main Roads Technical Specifications (MRTS 05) for Unbound Pavements. The minimum gravel material types for lower sub-base, upper sub-base and base are 2.5, 2.3 and 2.1, respectively. Where a single sub-base layer is nominated Type 2.3 material shall

be used. The use of recycled unbound pavement material is subject to a Council product approval. Alternative product proposals shall receive written product approval from Council prior to use.

A copy of the material grading and CBR are to be provided to the nominated representative prior to acceptance of on maintenance. Compaction testing results are to be recorded and provided to the nominated representative upon their request and as part of the on maintenance documentation. If these details are not available the Contractor shall carry out testing suitable to verify the stability and quality of the pavement layers and submit these results to Council as part of the on maintenance documentation.

13.13 Surfacing

In urban and rural residential areas, the Asphaltic Concrete (A.C.) surfacing thickness is to be:

- 25mm (BCC Type 2) on Access type streets and Laneways with traffic volumes less than 4×10^5 ;
- 50mm (BCC Type 3) for Arterial and Sub Arterial roads; and
- 40mm (BCC Type 3) for all other streets.

In Commercial and Industrial areas the minimum A.C. surfacing thickness is to be 40mm.

Where stencilled or patterned surface treatments are proposed an additional 10mm shall be added to the design thickness of the surfacing. The A.C. Binder type is to be in accordance with AUSTROADS. A.C. Surfacing are to be constructed in accordance with Brisbane City Council Standards (BCC S310 Supply of Dense Graded Asphalt and S320 Laying of Asphalt).

Primers seals are required to be placed under all asphalt surfaces. Primer seals shall consist of cutback bitumen (AMC4) or bitumen emulsion to Main Roads Specification (MRTS 11 Sprayed Bituminous Surfacing excluding Emulsions) and MRTS 12 Sprayed Bituminous Emulsion Surfacing) with 10mm aggregate. Where cutback bitumen is used the minimum curing time before the next sealed layer (asphalt) can be placed will be fourteen (14) days. Where bitumen emulsion is used the minimum curing time before the next sealed layer (asphalt) can be placed will be four (4) days.

Application rates of primer binder and aggregate are to be designed in accordance with the current edition of AUSTROADS Practitioners Guide to Design of Sprayed Seals.

In rural areas bitumen spray seal surfacing is to be provided in the form of a 2 coat Polymer Spray Seal (14mm/7mm) in accordance with Main Road Technical Specifications (MRTS 18 Polymer Modified Binders, MRTS 11 Sprayed Bituminous Surfacing excluding Emulsions).

The Degree of Saturation of base course prior to surfacing is to be less than 65%. Test results demonstrating degree of saturation are to be provided to Council's nominated representative at the pre-seal inspection and as a part of the on maintenance documentation.

For Rigid pavements, concrete and gravel thicknesses are to be designed in accordance with AUSTROADS Design Manuals. Notwithstanding the above, unless otherwise approved by Council's nominated representative, the minimum thickness of the reinforced concrete pavement shall be 175mm with a minimum of 100mm type 2.3 compacted gravel.

Colouring of stencilled or patterned concrete shall be subject to approval of Council nominated representative. Particular attention is to be given to the selection of surface treatments which ensure that appropriate skid resistance is maintained. Where colouring of the rigid pavement is proposed, the complete pavement mix is to be coloured. Light colours are to be avoided.

Where the rigid pavement section being designed is less than 25m in length and is abutted by flexible pavement which is greater than 275mm then the combined thickness of the rigid pavement and its supporting sub base shall be equivalent to the combined thickness of the abutting flexible pavement base, sub base and select material courses.

13.14 Pavement for Low Subgrade CBR

If the Design CBR determined for the subgrade is less than the minimum CBR 3, then the following is required:

- replacement with 300mm, minimum CBR 15 replacement material; and

- re-design pavement based on CBR 3 or design in accordance with AUSTRROADS.

Alternative designs incorporating geogrids and geofabrics will be considered when submitted for approval by an appropriately qualified and experienced engineer.

13.1 Design Basics

Road Typography ESA	Function Road Hierarchy	Design Traffic
Roundabout additional 0.5x10 ⁴	Access Street	Allow
Roundabout additional 1x10 ⁴	Local Collector and above	Allow

13.15 Construction

Each pavement course should not be commenced until the previous course, i.e. subgrade, sub base/s, base or existing pavement, has been inspected and approved and certified by the consultant with respect to compaction, finished levels and texture of finish. Compaction tests of each layer are required and consultants must ensure that all tests are satisfactory before proceeding to the next layer. All test results are to be provided to Council's nominated representative prior to surfacing.

13.16 Subgrade Preparation

Subgrade is to be trimmed to an even surface free from loose material and graded to be free-draining. Unsuitable material such as organic matter is to be removed. Subgrade affected by rainfall after final trimming shall not be accepted until appropriate drying out treatment has been affected. Appropriate management of subgrade with moderate to high shrink/swell index.

13.17 Unbound Pavement Course Placement

Unbound pavement course material is to be placed only on underlying layers maintained at the correct moisture content. Prepared subgrades and preceding layers of base course shall be moistened immediately prior to spreading the next course.

Pavement material is to be maintained at the specified moisture content prior to and during spreading. The leading edges of the pavement material are to be kept moist. Minimum compacted layer thickness shall be 100 millimetres and maximum compacted thickness shall be 150mm.

13.18 Compaction Testing and Frequency

Determination of the compaction performance of the subgrade and pavement gravel materials – laboratory reference density, field density, optimum moisture content, field moisture content -shall be carried out in accordance with AS1289 Methods of Testing Soils for Engineering Purposes, in particular the E series tests. The laboratory reference density shall be:

- Natural Subgrade - 100% Standard Maximum Dry Density (MDD)
- Pavement upper and lower sub base layers – 100% Standard Maximum Dry Density (MDD)
- Pavement base layer - 100% Standard Maximum Dry Density (MDD)

The minimum frequency of testing shall be in accordance with Council's Planning Scheme Policy Operational Works Inspections, Maintenance and Bonding procedures.

A minimum of three (3) tests per project will be required. A sketch plan showing the location of the tests is to be submitted with the results. All tests are to be distributed reasonably evenly through the full depth and area of pavement.

The testing frequencies stated above are based on a "not one to fail" basis. Failure of compaction tests on any layer will require:

- Removal or reworking of material; and
- Re-testing; and
- Resubmission of failed test results, successful test results and description of remedial treatment undertaken at the developer's representative's directions to Council's nominated representative prior to the relevant inspection.

13.19 Pavement Depth Verification

Pavement depths shall be verified by the provision of as constructed levels of the subgrade and pre-seal stage (or top of kerb if installed) at a frequency of three (3) levels (right hand side, centre and left hand side) every 50 metres. The surveyed information is to be provided in a tabulated format and is to be certified by both the surveyor and consulting engineer provided with on maintenance submission.

13.11 Design Basis

Zone & Precinct	Functional Road Hierarchy Classification	Design Traffic ESA
All Zones		
All Precincts	Arterial	1.5 x 10 ⁷
	Sub-arterial	3 x 10 ⁶
	Driveways	2.5 x 10 ³
General Residential		
Coastal community & Suburban neighbourhood	Access Street	8 x 10 ⁴
	Local Collector	2.5 x 10 ⁵
	District Collector	8 x 10 ⁵
Next generation neighbourhood	Laneway	2 x 10 ⁴
	Access Street	1.2 x 10 ⁵
	Local Collector	3 X 10 ⁵
	District Collector	8 x 10 ⁵
Urban neighbourhood	Laneway	2 x 10 ⁴
	Access Street	1.5 x 10 ⁵
	Local Collector	3 X 10 ⁵
	District Collector	8 x 10 ⁵
Centre Zone		
All Precincts	All Classifications	To be determined in accordance with Austroads Guide to Pavement Technology.
Industry Zone		
All Precincts	Access Street	3 x 10 ⁶
	Local Collector	1 x 10 ⁷
	District Collector	1.5 x 10 ⁷
Rural Residential Zone		
N/A	Access Street	2.0 x 10 ⁵
	Local Collector	2.5 x 10 ⁵
	District Collector	3.5 x 10 ⁵
Where not otherwise specified		
N/A	All Classifications	To be determined in accordance with Austroads Guide to Pavement Technology.

14. Driveways and Pedestrian Crossovers

Note - Where accepted development subject to requirements crossover works are undertaken:

- a) the construction is the responsibility of the property owner;
- b) the construction is at the risk of the property owner;
- c) the construction of the kerb and channel (where required by the Planning Scheme) is considered part of the construction of a driveway crossover and is therefore the responsibility of the property owner;
- d) it is recommended "Dial Before You Dig" is contacted if excavation is required;
- e) any damage caused by crossover works or damage not notified to Council prior to commencing crossover works will be repaired at the property owner's expense;
- f) crossovers that do not comply with the criteria as listed below, and where an approval has not been sort from Council, the applicant may be directed to undertake modifications at the property owner's expense;

14.1 Driveway crossover and driveway

The following terms used throughout this Planning Scheme Policy are defined below:

- a) *Driveway crossover* is a constructed access crossing connecting a property boundary with the carriageway;
- b) *Driveway* is an access crossing connecting the on-site vehicle accommodation or standing area to the property boundary.

For the purpose of constructing a driveway crossover, Moreton Bay Regional Council grants permission to carry out work on a road reserve or on Council owned land, subject to the following criteria:

14.1.1 Dwelling houses

This section provides the accepted development subject to requirement driveway crossover and driveway location, design and construction criteria associated with Dwelling houses.



14.1.1.1 Location

- a) Driveway crossovers and driveways are located so as to provide a clear view of passing pedestrians, cyclists and vehicles;
- b) Driveway crossover of one allotment does not encroach on the frontage of an adjacent allotment;

- c) Driveway crossovers do not directly adjoin painted or concrete traffic islands on the road;
- d) Driveway crossovers are setback a minimum 1m from any stormwater pit, electricity pole or road sign;
- e) Driveway crossovers are setback a minimum 3m from any street tree;
- f) Driveway crossovers and driveways do not disturb, cover or restrict access to:
 - i. a survey mark;
 - ii. water meters, fire hydrants or valves;
 - iii. the water supply pipe between the main and the meter;
 - iv. a Council or public sector entity easement;
 - v. utility corridors and pits (e.g. Telstra, NBN, Gas)
- g) Driveway crossovers and driveways are setback a minimum 10m of the approach side of a bus stop;
- h) Driveway crossovers and driveways are located clear of the prohibited locations as referenced in AS2890.1.

14.1.1.2 Design

- a) Where for a Dwelling house subject to the Dwelling house code:
 - i) driveway crossover widths are a maximum 40% of the frontage access is being obtained from, or 4.8m whichever is the lesser. No maximum for a laneway lot.
 - ii) driveways do not include a reversing bay, manoeuvring area or visitor parking spaces (other than tandem spaces) in the front setback
- b) Where for a Dwelling house not subject to the Dwelling house code, driveway crossover widths are in accordance with the relevant standard drawing - (RS-049, RS-050) or RS-056.
- c) Driveway crossovers are designed in accordance with the relevant standard drawings in Appendix H of Planning scheme policy - Integrated design;
- d) Driveway crossovers match the level of the existing concrete footpath or finished ground level where there is no footpath;
- e) Where a driveway services multiple allotments, the design traffic ESA of driveway crossovers is to be 2.5×10^3 per property serviced.

14.1.1.3 Construction

- a) Driveway crossovers are to be constructed from concrete (includes plain, coloured or stencilled/stamped concrete and exposed aggregate concrete), asphalt or bitumen;
- b) Adequate warning of the presence of works on a road reserve or Council owned land shall be given in accordance with the Manual of Uniform Traffic Control Devices (MUTCD). The MUTCD is available free from Transport and Main Roads website: <http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Manual-of-uniform-traffic-control-devices>;
- c) Outside of work hours such warning is to consist of a barrier with warning flags or a warning sign on each side of the crossover works;
- d) Any steps necessary for the protection of the public during construction shall be taken by the applicant at the applicant's expense;
- e) All driveway crossover construction works shall proceed without any interruption to traffic. If traffic lane closure is required, the person carrying out the works shall have the "Notification of Temporary Road Closure" form approved prior to any road closure occurring;
- f) Works shall be carried out in accordance with the MUTCD;
- g) Before construction is completed, areas disturbed by crossover construction works are to be reinstated to the satisfaction of Council;
- h) Before construction is completed all damages attributed to the driveway crossover works are to be repaired by the applicant to the satisfaction of Council;
- i) The applicant is to obtain a Public Liability Insurance Policy for not less than \$20 million covering any risk arising from the proposed driveway crossover work;
- j) A minimum 1.5m pedestrian throughway shall be maintained at all times during the driveway crossover works. This pedestrian throughway shall be of equivalent standard to adjoining or closest existing footpath.

14.1.1.4 Rear of allotment driveways

- a) Access handles for rear lots are to contain a driveway and provision for services appropriate to the use. The driveway is to be designed with a loading of 2.5×10^3 ESA for each lot entitled to use the driveway. The driveway is to be sealed for a minimum width of 3.0 metres. Additional width or passing bays maybe required on long driveways to facilitate vehicles passing along the length of the driveway. For urban residential driveways the construction shall be reinforced concrete slabs or interlocking concrete pavers. For non-urban residential driveways the construction shall be reinforced concrete slabs or a 2 coat sealed gravel pavement or 25mm asphalt sealed gravel pavement. The minimum gravel pavement shall be of type 2.1 gravel with compacted thickness of 150mm.
- b) Appropriate longitudinal drainage, cross drainage and scour/erosion protection works must be provided. The appropriate longitudinal and cross drainage design requirements can be located within Planning Scheme Policy Integrated Design Appendix C. The general maximum longitudinal grade shall be 16%. Consideration is to be given to the maintainability of unsealed sections of the access handle and appropriate longitudinal and cross-sectional grades.
- c) Conduits are to be installed for underground electricity supply and telecommunications, including draw wires within, for the entire length of the accesshandle.
- d) Bin pads are to be provided for lots with rear of allotment driveways, shared driveways or lots that do not have sufficient frontage to allow waste vehicle access to the kerb. Bin pads are to be constructed from 125mm thick reinforced concrete within the front verge immediately behind the back of kerb. Bin pads are to be 2 metres long x 1 metre wide for each allocated lot to allow for general and recycling waste collection and are to be located at the closest reasonable location to the allocated lot. Bin pads are to be clear of crossover flares and other utilities and street trees in the footpath area.
- e) Bin pads are to be painted with house numbers (not lot numbers) to show allocated lots prior to the acceptance of off maintenance. Adequate waste vehicle access to the adjacent lot where the bin pads are located must also be demonstrated and the space available to the adjacent lot for waste collection must not be compromised. Council may require that an additional bin pad is also constructed for the adjacent lot whose frontage is being used for bin pad construction.

14.1.2 Industrial and commercial uses

This section provides the self-assessable criteria for the location, design and construction of driveway crossovers associated with industrial and commercial uses.

14.1.2.1 Design

- a) Driveway crossovers are designed in accordance with the relevant standard drawings in Appendix H of Planning scheme policy - Integrated design;
- b) Driveway crossovers match the level of the existing concrete footpath or finished ground level where there is no footpath;
- c) Driveway crossovers are designed to cater for the following service vehicles:

Frontage Road	Minor Road	Major Road	Major Road
Development Generated Traffic	N/A	≤100 vpd	>100 vpd
Design Service Vehicle from Table SC8.1.1	Type of crossover		
Small Rigid Vehicle	General Wide Flared (6.5m)		Centre Island W1 - 5.5m, W2 - 5.0m
Medium Rigid Vehicle	General Wide Flared (7.5m)		Centre Island W1 - 5.5m, W2 - 5.0m
Heavy Rigid Vehicle	General Wide Flared (7.5m)		Centre Island W1 - 5.5m, W2 - 5.0m
Articulated Vehicle	General Wide Flared (9.0m)		Centre Island W1 - 9.0m, W2 - 7.5m

14.1.2.2 Construction

- a) Adequate warning of the presence of works on a Road Reserve or Council Owned Land shall be given in accordance with the Manual of Uniform Traffic Control Devices (MUTCD). The MUTCD is available free from Transport and Main Roads website: <http://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Manual-of-uniform-traffic-control-devices>
- b) Between sunset and sunrise such warning is to consist of a barrier with warning flags or a warning sign on each side of the crossover works;
- c) Any steps necessary for the protection of the public shall be taken by the applicant at the applicant's expense;
- d) All driveway crossover works shall proceed without any interruption to traffic. If traffic lane closure is required, the person carrying out the works shall have the "Notification of Temporary Road Closure" form approved prior to any road closure occurring. Works shall be carried out in accordance with the MUTCD
- e) The driveway crossover works are to be backfilled, consolidated and the surface reinstated immediately after the works are completed;
- f) Any subsidence or other damage which occurs and is attributable to the driveway crossover works are to be repaired by the applicant;
- g) The applicant is to obtain a Public Liability Insurance Policy or not less than \$20 million covering any risk arising from the proposed driveway crossover work.
- h) A minimum 1.5m pedestrian throughway shall be maintained at all times during the driveway crossover works. This pedestrian throughway shall be of equivalent standard to adjoining or closest existing footpath.

14.1.3 Pedestrian crossover and paths

For the purpose of this Planning scheme policy, the following term is defined as:

- *Pedestrian crossover* is a constructed access crossing connecting the property boundary with the footpath and is located in the rear verge between the property boundary and the footpath.



For the purpose of constructing a pedestrian crossover, Moreton Bay Regional Council grants

permission to carry out work on a Road Reserve or on Council Owned Land, subject to the following criteria:

14.1.3.1 Location

- a. Pedestrian crossovers do not disturb, cover or restrict access to:
 - i) a survey mark;
 - ii) water meters, fire hydrants or valves;
 - iii) the water supply pipe between the main and the meter;
 - iv) a Council or public sector entity easement;
 - v) utility corridors and pits (e.g. Telstra, NBN, Gas)

14.1.3.2 Design

- a) Pedestrian crossovers are a maximum of 1.5m wide and are designed in accordance with the relevant standard drawing in Appendix H of Planning scheme policy - Integrated design

14.1.3.3 Construction

- a) Pedestrian crossovers are to be constructed from concrete (includes plain, coloured or stencilled/stamped concrete and exposed aggregate concrete);
- b) The footpath is to remain unobstructed at all times during the pedestrian crossover works. Where there is no footpath, a minimum 1.5m pedestrian throughway shall be maintained at all times during the pedestrian crossover works;
- c) Between sunset and sunrise such warning is to consist of a barrier with warning flags or a warning sign on each side of the pedestrian crossover works;
- d) Any steps necessary for the protection of the public shall be taken by the applicant at the applicant's expense;
- e) The pedestrian crossover works are to be backfilled, consolidated and the surface reinstated immediately after the works are completed;
- f) Pedestrian crossovers are to be pinned to adjacent existing concrete infrastructure (driveways, pathways, etc.) using N12 dowel bars in accordance with Council's Standard Drawings and subject to the following requirements:
 - i) The dowel bars are to be placed along the pathway midway between joints at 300mm centres.
 - ii) The dowel bar end within the existing concrete is to be epoxy bonded to the existing concrete and the section of the bar within the new concrete is to be greased.
- g) Any subsidence or other damage which occurs and is attributable to the pedestrian crossover works are to be repaired by the applicant;
- h) The applicant is to obtain a Public Liability Insurance Policy or not less than \$20 million covering any risk arising from the proposed driveway crossover work.

15 Street Lighting and Public Utilities

15.1 General Requirements

Unless stated otherwise, the Developer is responsible for the design of public utility services including liaison with the relevant public utility authorities, supply and installation of all service conduits, including the provision of all services and/or conduits along the full length of any rear allotment access or access easement. The Developer must also meet the cost of any alterations to the public utility mains, existing mains, services or installations required in connection with the development. This includes the relocation of any fire hydrant and/or valves from within the limits of the development's vehicular crossings, if applicable.

If road or street widening is required along the frontage of the development, the Developer must relocate the services onto the correct alignment within the verge. In some instances, the services may need to be lowered to provide sufficient cover when the footpath is regraded to the design profile.

Services crossing existing arterial and sub-arterial roads are to be tunnel bored. Council may require that other functional road hierarchy classifications be tunnel bored, depending on the condition of the existing road or street.

15.2 Street Lighting

15.2.1 Principal Consultant

The Developer must appoint a suitably qualified Principal Consultant to liaise with Council for the approval of street lighting and electrical reticulation. The Principal Consultant must be a RPEQ and hold professional indemnity insurance to the value of not less than \$1,000,000.

15.2.2 Standards

Unless specified otherwise in this chapter or as directed by Council, the provisions and detailed design of street lighting installations must conform to the following standards.

15.2.3 Lighting Category

The lighting categories referred to in AS 1158 are broadly described as follows:

- Category V lighting. Lighting which is applicable to roads on which the visual requirements of motorists are dominant, e.g. traffic routes.
- Category P lighting. Lighting which is applicable to roads on which the visual requirements of pedestrians are dominant, e.g. local roads and public activity areas.

15.2.3 Lighting Categories

Road/Location	AS1158 Lighting Category
Major Road	
Arterial	V3
Sub-arterial	V5
Urban Road	
District Collector	P4
Local Collector	P4
Access and Laneway	P5
Rural	
All roads	Refer to locational requirements in section 15.2.4 (i) below.
Pathways	
Between residential lots	P4
Open and civic space area	P4
Commuter links	P4
Other locations	As advised by Council

15.2.4 Alignment

Within access streets serving 20 lots or less, the streetlights are to be located on one side of the street only. Where a pathway is only located on one side of the street, the lighting is to be provided along the same side of the street as the pathway.

Within other access streets the streetlights are to be installed alternatively on opposite sides of the street (staggered arrangement).

The location of light poles should avoid the likely vehicle conflict points, minimise the risk of damage to both poles and vehicles and injury to vehicle occupants, minimise glare complaints, and minimise conflicting with driveway locations.

The following factors should be considered when determining the street lighting alignment:

- a) The potential for vehicle collision on built to boundary lots and rear access lot driveways.
- b) The pole type installed is to be in accordance with the requirements of the relevant Australian Standards have regard for the pole location and speed environment
- c) Locate street light poles in line with abutting property boundaries or on truncation points at intersections. In cul-de-sac locations, the alignment is measured along a line projected lot side boundary to the kerb.
- d) Locating poles in cul-de-sac adjacent to narrow property frontages is undesirable due to possible conflict with adjoining driveways.
- e) Lighting poles must be located in accordance with the relevant Standard Drawings. See Appendix H – Standard Drawings.
- f) The centre of the street lighting pole must be located 0.9 metres behind the kerb invert.
- g) The preferred configuration of lighting at a roundabout is for the light poles to be located on the approach side of each intersection street without poles in the central median island. Lighting poles must be located as far as practicable, away from the intersection. Council would only consider the installation of central island lights if the aforementioned preferred lighting arrangement cannot be achieved, then the poles are of the cantilever (pivot arm) type and satisfactory maintenance vehicle access is provided clear of landscaping.
- h) For bikeways, the lighting column must be located 1.2 meters from the edge of the bikeway pavement.
- i) The proposed light must be at least 7.0 metres clear from any existing street trees.

15.2.5 Subdivisions & Other Developments

The specific requirements of new developments, in particular subdivisions, are as follows:

- a) The lighting design must be cost effective in regard to minimising the annual operating costs and where possible, the installation capital costs. The Developer is responsible for all capital costs associated with the design and installation of the street lighting scheme. Where it may be advantageous for the Developer to install lighting work outside the specified limits at the time of development, Council may contribute towards some of the capital costs, but these must be specifically agreed between the Council and the Developer. Council will only bear operating costs under Rate 2 of Energex's *Public Lighting Tariff*.

- b) Where the new development adjoins an existing street, the new poles/lights must match the existing types to the maximum practicable extent. This is not applicable when the existing road or street contains GI poles.
- c) Where the development requires partial road or street construction (typically when the development adjoins an undeveloped site), the lighting must be designed for the full width. However the lights on the development side only would need to be installed (assuming a staggered arrangement is required). In this instance conduits must be placed for future lighting on the non-constructed side.
- d) Where major traffic routes (i.e. Category V road) are not likely to carry high volumes of traffic until the future stages are developed and occupied, either one of the following options is acceptable.
 - i) Install half the ultimate lighting with the provision of conduits for the remainder lighting in the future.
 - ii) Install smaller pole/lower wattage luminaires in the final position for upgrading at a later date. The use of base plate or rag bolt mounted columns in this case may be advantageous.
- e) The lighting design for the development must integrate aesthetically with the adjoining / developments / estates / stages. Also the design must incorporate as far as practicable, the future planning of the area.
- f) An aeroscreen luminaire on an integral 0.5 metre outreach must be used on a pedestrian laneway. The light will generally be located midway along the laneway at abutting property boundaries. If the laneway exceeds 60.0 metres then more than one light may be required. Hinging Base Plate Mounted (HBPM) columns must be used in this instance for maintenance purposes.
- g) Underground electricity supply pillars must be provided at 150 metre intervals along park frontages for future supply to internal park lighting and other electrical park equipment.
- h) Pedestrian underpasses require special consideration. The Principal Consultant must contact the Council Lighting Officer for site specific requirements before the commencement of design.
- i) For subdivisions in the Rural zone and where allotment reticulation electrical supply is provided, suitable flag street lighting is to be provided in the following situations:
 - i) Intersections & cul-de-sacs
 - ii) Sharp bends
 - iii) Traffic control devices
 - iv) Culverts and bridges
 - v) Identified traffic hazards
- j) Provision of access for maintenance of lighting is to comply with the specific requirements of the energy provider. Suitable vehicle access is to be provided for light poles no further than 100 metre walking distance from the service vehicle.
- k) For subdivisions in the Rural residential zone, suitable street lighting to the required lighting category is to be provided in the following situations:
 - i) Intersections & cul-de-sacs
 - ii) Sharp bends

- iii) Traffic control devices
 - iv) Culverts and bridges
 - v) Identified traffic hazards
- l) Notwithstanding all the above items a) – k), Council may vary the required street lighting category for any street or road in consideration of special circumstances or require additional lighting in the following situations:
- i) Intersections.
 - ii) Roundabouts.
 - iii) Sharp bends.
 - iv) Traffic control devices.
 - v) Pedestrian crossings/refuges.
 - vi) Cul-de-sacs.
 - vii) Bridges (minimum Category V5 at abutments and minimum Category P4 on deck).
 - viii) Night time accident locations.
 - ix) Frequently used night time bus stops.
 - x) Areas that may generate pedestrian traffic or vehicle night traffic.
 - xi) Wildlife movement and crossing locations

15.2.6 Decorative Lighting

Decorative lighting must not be used on Category V traffic routes. Council will not accept any decorative light or supporting pole for the lighting of public roads and laneways unless it is a standard stock item of Energex. If the development is an extension of an existing estate already installed with Nostalgia units, then the Developer must continue to use matching Nostalgia units.

15.3 Electricity

15.3.1 General

In the context of these guidelines, 'underground electricity' means the installation of conduits and supply of services such as electrical reticulation (up to and including 11 kV), pilot cables, street lighting, traffic signals and public lighting to transport facilities, parks, bikeways and telephone booths, etc. The provision of underground electricity is required within new developments except those in the Rural zone where overhead electricity is acceptable.

15.3.2 Approval Process

- a) All the design and construction work on the electricity supplier's (Energex) assets must be carried out by the electricity supplier or an approved electricity supplier's consultant/contractor.
- b) Prior to the Council's endorsement of any survey plan proposing;
 - i. the creation of an additional lot; or
 - ii. substantial changes to a boundary of an existing lot, sufficient to affect the provision of reticulated electricity to an existing lot,
 - iii. a copy of the subdivider supply agreement or certificate of electricity supply from the electricity supplier to provide the necessary services in accordance with approved electricity reticulation plans, must be submitted to Council concurrent with any application seeking the Council to endorse the survey plan.

15.3.3 Subdivisions/Developments in the Rural Zone

The specific requirements of new developments, where within the Rural zone are as follows:

- i. Development within 500 metres of the existing electricity supply network. Where development is within 500 metres of an existing electricity supply network, the development is to connect to the existing network via underground or above ground connection in accordance with any Energex standards and approvals.
- ii. Development not within 500 metres of the existing Electricity supply network. No minimum connection standard prescribed.

15.3.4 Subdivisions/Developments in all other zones

The specific requirements of new developments, in particular subdivisions in other than the Rural zone are as follows:

a) Development Involving the Dedication of New Road

- i. For development other than in the Rural zone involving the dedication of new road for both freehold and community titled lots, full underground electricity reticulation including consumer service pillars must be provided within the road reserve to all allotments including adjacent parkland.
- ii. Where necessary the Developer is to supply conduits across the road for the extent of any new road construction.

a) New Dedicated Roads

- i) For newly dedicated roads, full underground electricity reticulation including consumer service pillars must be provided within the road reserve to all allotments including adjacent parkland.

b) Development on Existing Dedicated Roads (Including Road Widening)

- a) Where development adjoins or is opposite a Park, foreshore area or Humpybong Reserve, the lot voltage (240V single phase / 415V three phase) and 11 kV must be converted to underground for the development frontage and the development/allotments supplied from consumer service pillars. The existing overhead lines and power poles are to be removed for the length of the development frontage (subject to Energex approval).
- b) Where development does not adjoin or is not opposite park, foreshore area or Humpybong Reserve, and the overhead electricity reticulation exists along the frontage of the development and the development is are to take access off the existing dedicated road:

- 1) The supply for the new development may be taken from existing overhead mains provided the development is not for a rear lot subdivision, the supply does not traverse another property outside the boundaries of the development, or require the installation of new overhead conductors across the road, or extended spans of overhead lines down pathways/driveways to new underground terminations. The supply must be taken either underground from the nearest existing overhead pole or traversed outside the development boundary. Private property poles will not be supported.
- 2) Where the development cannot achieve the above criteria, The lot voltage (240V single phase / 415V three phase) and 11 kV must be converted to underground and all allotments supplied underground from consumer service pillars.
- 3) Where the existing overhead lines do not continue to service other existing properties, the redundant lines and power poles are to be removed (subject to Energex approval) with the exception of small frontage (i.e. the development frontage lies wholly within 2 consecutive electricity poles spaced less than 100.0 metres apart) where the existing overhead lines may remain in parallel.

- iii. Where the overhead electricity reticulation exists along the frontage of the development, but the proposed development/allotments are to take access and have electricity supply from an internal road system:

- A) The low voltage (240V/415V) component of the existing overhead system along the external frontage of the development must be converted to underground and all allotments supplied underground from consumer service pillars.
 - B) Where the existing overhead lines do not continue to service other existing properties, the redundant lines and power poles must be removed with the exception of small frontages (i.e. the development frontage lies wholly within 2 consecutive electricity poles spaced less than 100.0 metres apart) where the existing overhead lines may remain.
 - C) Conduits must be installed for either the future undergrounding of the existing 11 kV component or new proposed future Low Voltage (240V/415V).
- a) Where necessary the Developer must supply conduits across the road, for the extent of any new road construction.

c) Existing Houses/Buildings

- i) Where an existing dwelling/building is to remain within the limits of a development, and all other lots/development is to be supplied by new underground reticulation, then any existing

overhead electricity (and telecommunication) service to the building must be converted to underground.

d) High Voltage Feeders (33 KV and Higher)

- i) All existing conductors of 33kV or higher may remain overhead. However if the Developer wishes to remove high voltage feeder lines, the necessary approvals must be obtained direct from Energex/Powerlink and Council.
- ii) New or relocated > 33kV systems may be overhead at the discretion of Energex/Powerlink.

e) Transformers (PMT and PT)

- i) Generally all new transformers required for a development must be the pad mounted transformer (PMT) type even if their location is remote from the development, except under the following circumstances:
 - A) For a small development in a fully developed area, the use of a PT and extension of 11 kV may be considered upon request. This option is mainly restricted to industrial developments.
 - B) Existing pole transformers are not to be upgraded for supply of electricity to new subdivisions.
 - C) PMT locations are to be in addition to the nominated road reserve. Any PMT's located adjacent to park area are to be excised from the park area.

f) Low Voltage Supply (240V/415V)

- i) Where an existing Low Voltage Overhead supply traverses an existing parcel of land that is to be subdivided into smaller allotments, the supply to the newly created lots is to be serviced through the road fronting the development and any existing low voltage supply traversing the lots to be terminated. Council will not favour wayleave arrangements for electrical supply traversing lots on any new developments.

g) Spare Conduits

- i) Council reserves the right to specify spare conduits for future use on half/full width road crossings for the extension of service to/from adjacent existing and future developments. (Note: Where rear access lots or lots with a narrow access easements are proposed, future electrical and telecommunication conduits are to be installed for the full length of the access handle or easement before any concrete driveways are installed).
- ii) It is the responsibility of the electricity supplier to ensure that the quantity of conduits installed within the development will also cater for any future mains upgrade.

h) Costs

- i) The Developer is responsible for all the design (including that pertaining to item 9.6.3 b) iii) above) and construction costs including any relocation of Energex assets, if required as part of the development.

15.4 Gas

If underground gas is to be supplied to the new development, these service conduits must be shown on the engineering plans. Gas services are in accordance with the service provider's requirements.

15.5 Telecommunications

- a) Underground telecommunication services must be provided separate to the electricity service, to all allotments. Where overhead telecommunication lines exist along the development frontage, the same conditions as per electricity will apply as per Section 15.6.3 i) and ii).
- b) Prior to signing and sealing of the survey plan, a copy of a letter of agreement from the telecommunication carrier to supply the necessary services must be submitted to Council.
- c) Telecommunication cabinets are to be located in widened sections of the road or street reserve.
- d) Telecommunication services are in accordance with the service provider's requirements.

15.6 Sewer

1561 Service connection

- a) Where in the Centre zone, Community facilities zone, Emerging community zone - Transition precinct, General residential zone, Industry zone, Recreation and open space zone, Township zone, Redcliffe Kippa-Ring Local Plan and Caboolture West Local Plan - Urban living precinct where on a serviced lot, all development is to be connected to the reticulated sewerage system in accordance with South East Queensland Water Supply and Sewerage Design and Construction Code and the relevant Water Service Association of Australia (WSAA) codes and standards.
- b) Where in all other zones and local plan precincts:
 - i) Where the development is in a sewerage connection area or sewerage future connection area as detailed in the Unitywater Connections Policy, all allotments are to be connected to the reticulated sewerage system.
 - ii) Where the development is not in a sewerage connection area or sewerage future connection area as detailed in the Unitywater Connections Policy, each allotment is to contain and be serviced by an appropriate onsite sewerage facility.
 - A) A site and soil evaluation report may be required where an on-site sewerage facility is proposed. Reports are to be prepared in accordance with AS/NZS 1547 On-site domestic wastewater management and the Queensland Plumbing and Wastewater Code. The report is to include a review of the existing on-site effluent disposal system including setback requirements.
 - B) On-site sewerage facility in the Water supply buffer on Overlay map - Infrastructure network must comply with the relevant assessment criteria.

1562 Trade waste

- a) Trade waste is to be pre-treated on site prior to discharging into the reticulated sewerage network.

15.7 Water

a) Service connection

- i) Where in the Centre zone, Community facilities zone, Emerging community zone - Transition precinct, General residential zone, Industry zone, Recreation and open space zone, Township zone, Redcliffe Kippa-Ring Local Plan and Caboolture West Local Plan - Urban living precinct where on a serviced lot, all development is to be connected to the reticulated water supply system in accordance with South East Queensland Water Supply and Sewerage Design and Construction Code and the relevant Water Service Association of Australia (WSAA) codes and standards.
- ii) Where in all other zones and local plan precincts:

- A) Where the development is in a water connection area or water future connection area as detailed in the Unitywater Connections Policy, all allotments are to be connected to the reticulated water system.
- B) Where the development is not in a water connection area or water future connection area as detailed in the Unitywater Connections Policy, each allotment is provided with a potable water supply of at least 45,000 litres by way of on-site storage which provides equivalent water quality and reliability to support the user requirements of the development.