

TECHNICAL REVIEW

DISTRICT PLAN REVIEW

PREPARED FOR WAIMAKARIRI DISTRICT COUNCIL

March 2019



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Waimakariri District Council

District Plan Review

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1. Introduction

Waimakariri District Council is currently undertaking a review of its District Plan and has sought advice on the following transport related matters:

- 1) Road widths;
- 2) Footpath widths;
- 3) Vehicle Crossing Widths;
- 4) Cycle provisions;
- 5) Various Design Criteria, Tables and Figures; and,
- 6) High Traffic Generating Activities.

This report provides an assessment of the Operative District Plan requirements against current best practice standards and also similar requirements from other district plans in order to make recommendations on whether any alterations to the transport rules are necessary. This report addresses items 1-5 above with Item 6, High Traffic Generating Activities being addressed in a separate report.

2. Road Widths

2.1 District Plan

The District Plan sets out design parameters for new roads in table 30.1 for roads within the wider district area, Table 30.2 for the Residential 7 Zone in West Kaiapoi and in Table 32.2 for Pegasus.

Table 30.1 allows for different carriageway widths to be specified for each road type and adjacent zone. However, the minimum carriageway width requirement for strategic roads, local roads and cul-de-sacs do not change with adjacent activity type and there may some potential to simplify the table. The key difference for these roads is the requirement for a parking lane in residential and business zones.

The general design standards are largely consistent with recommended design standards in the Austroads Guide to Road Design Part 3 whereas the other tables include subdivision specific parameters.

2.2 National Standards

The New Zealand Standard NZS4404:2010 Land Development and Subdivision Infrastructure provides guidance on road widths for new developments. The standards are broadly based on the following types of road.

- 1) Lanes – These are typically privately owned and provide access to six or less dwellings or provide rear service access. Lanes have a recommended minimum seal width of 3.5m within a 6m wide legal width and a design speed of 20km/h.
- 2) Residential Roads – the standard includes three categories of local road broadly grouped by the number of dwellings that will use the road: 6-20, 20 -200 and more than 200. Road widths of 5.5-5.7m are recommended for the first two groups with on-street parking being provided in bays when the number of dwellings reaches 100. The recommended width for a road serving more than 200 dwellings is 8.4m and typically would be expected to function as a Collector Road in the road hierarchy. The recommended design speed of the roads increases with the number of dwellings.
- 3) Industrial Roads – The standard recommends a road carriageway width of 8.4m.

The standard does provide some discussion of carriageway widths for residential areas that provides opportunity to create a local road hierarchy and also different approaches to providing for on-street parking.

On low volume roads, a carriageway width of 5.5-5.7m is recommended. This width allows for vehicles to park on one side of the road and still leave space for one through lane. The intent of this approach is that any parked vehicles act as part of the traffic calming and will contribute to low vehicle speeds.

On roads providing access to more than 100 dwellings, the standard recommends that parking is provided in bays. An alternative approach is a wider carriageway and the standard recommends widths in the range of either 7.2-7.5m or 9.0-9.5m. The 7.2-7.5m width allows for parking on one side of the road and

two-way movement or parking on both sides of the street with one through lane. The 9.0-9.5m width allows for parking on both sides of the road and two movement lanes.

2.3 Austroads Guide to Road Design

The Austroads Guide to Road Design suggests the following carriageway widths for new roads. A standard traffic lane width of 3.5m is recommended because this provides sufficient road width for overtaking manoeuvres without the need for one or other vehicle to cross the road edge. Narrower lane widths are only considered appropriate on low volume roads, roads with little truck movement or where low speed environments are being created. Table 2-1 provides a summary of suggested urban road widths with Table 2-2 showing rural road widths.

Table 2-1: Urban Road Widths

Road Type	Width	General Comments
General Traffic Lane	3.5	Appropriate for all roads
	3.0 – 3.4	Low speed roads with low truck volumes
Service road / lane	3.4 – 5.5	Service vehicle access
Wide kerbside lane	4.2	Locations with high truck volumes
	4.2 – 4.5	Locations where motorists and cyclists share the lane
HOV Lane	3.5 – 4.5	Bus Lane
Single lane	5.0-6.5	Minimum width between kerbs to allow a vehicle to pass a broken-down vehicle

The District Plan requirements for urban roads are generally well aligned with the general traffic lane requirements recommended by Austroads. However, it is noted that the District Plan allows for 3m wide traffic lanes on local business roads whereas the Austroads standard indicates that a wider carriageway would be appropriate. This reflects the fact that business roads will typically carry more truck movements and these require more space.

Table 2-2: Rural Road Widths

Element	Design AADT				
	1 -150	150 -500	500 -1,000	1,000-3,000	>3,000
Traffic lane (m)	3.7	6.2	6.2 – 7.0	7.0	7.0
Total Shoulder (m)	2.5	1.5	1.5	2.0	2.5
Minimum sealed shoulder (m)	0	0.5	0.5	1.0	1.5
Total carriageway (m)	8.7	9.2	9.2 – 10.0	11.0	12.0

The District Plan requirements for rural roads are well aligned with the Austroads standards for rural roads. The key difference is in relation to the requirements for shoulder areas and the District Plan could be improved by including requirements for both a total shoulder width and sealed shoulder width.

2.4 General Observations

The narrow carriageway widths recommended in NZS4404:2010 formed the basis of the design for roads in Pegasus and have been adopted by various councils across the country. However, this has not been without problems and concerns have been raised by councils in relation to:

- 1) Residents parking on berms; and
- 2) Insufficient width for larger vehicles such as rubbish trucks or emergency vehicles.

Both Christchurch City and the Selwyn District councils do not permit roads of this width to be constructed and have adopted a minimum requirement for 6m wide roads.

Based on our observations, the underlying concern with narrow roads is often not the width of the road but the supply rate of on-street parking in relation to the on-street parking demand. In the absence of parking bays and since a 5.5m wide road only allows for parking one side of the road, a road of this type can typically only provide about one on-street space per 11m length based on 3m wide driveways. Where lot frontages exceed 11m, this type of road can provide a parking supply rate of one space per two households. However, when the lot frontages to the road are less than 11m, the on-street parking supply rate per household can fall rapidly.

Nationally, car ownership levels have been increasing and the proportion of households owning three or more vehicles is close to 20%. The housing typology on a street will generally determine the number of off-street parking spaces that are available to a household. In many medium density residential environments, many houses often have only two spaces available, e.g. garage plus driveway, double garage or driveway only. With this number of spaces available, households with more than two vehicles will create an on-street parking demand. Our casual observations suggest that many garage spaces are not being used for vehicle parking which increases the likelihood for residents' parking to overflow onto the street. The potential for overspill is also increased by households that own trailers as these will often occupy off-street parking spaces. When the on-street parking demands occupy a high proportion of the available on-street parking supply, this can affect the ability of larger vehicles to negotiate the road.

Overall therefore, it has been concluded that the issue of whether or not a road provides sufficient width and on-street parking is more strongly influenced by the density of dwellings and the number of driveways along the road than by the width of the road.

2.5 Parking

The District Plan requires that a parking lane is provided on all urban residential and business roads. This results in very wide carriageways and can contribute to high vehicle speeds in areas where parking demands are low. The national subdivision standards take a different approach and promote narrower carriageways with parking proposed in the carriageway on low volume roads and in parking bays on higher volume roads. This approach to on-street parking typically results in kerb extensions becoming an integral part of the street design which reduces pedestrian crossing distances and promotes slower vehicle speeds. In this type of environment, the consequences of any crashes are expected to include a lower severity of injuries. Overall, it is considered that there would be some benefits to adopting a different approach to on-street parking in urban environments.

Within Christchurch, the Infrastructure Design Standard sets out specific requirements for on-street parking when parking is provided in bays, that is, a supply rate of one space per three dwellings. The QLDC Engineering Code of Practice requires a higher rate of supply of one on-street parking space per dwelling on residential roads subject to a caveat of "where physically possible". It is suggested that a design requirement setting out a minimum supply rate for on-street parking is incorporated either into the District Plan subdivision or the engineering standards. Based on our observations and analysis, we would suggest that a minimum parking supply rate on new roads of one space per two dwellings would be appropriate within the Waimakariri District.

2.6 Recommendations

The District Plan sets out design parameters for new roads in Table 30.1 for roads within the wider district area, Table 30.2 for the Residential 7 Zone in West Kaiapoi and in Table 32.2 for Pegasus. Having separate tables creates the potential for different driving environments in each area but could lead to some inconsistencies across the district. It is considered desirable to have a single set of design standards for the District for new roads but note that any changes to existing standards should be more evolutionary than revolutionary to avoid a multitude of road carriageway types across the district.

The approach outlined below is based on tables that separately set out the key attributes for urban and rural roads.

Table 2-3: Proposed Urban Road Design Standards

Element	Design AADT				
	<150	150 -500	500 -1,000	1,000-3,000	>3,000
	Cul-de-sac	Local	Collector	Arterial	Strategic
Road reserve width (m)	16.0	16.0	20.0	20.0	20.0
Traffic lanes (m)	2 x 3.0	2 x 4.0	2 X 3.5	2 x 3.5	2 x 3.5
Design Speed	30km/h	30km/h	40km/h	50km/h	50km/h
Parking	On-street	On-street	Lane / bay	Lane / bay	
Parking lane / bay width (m)			2.5	2.5	
Parking space supply rate	0.5 / HH	0.5 / HH	0.5 / HH	0.5 / HH	
Cycle Lanes	None	None	None	2 x 1.8	2 x 2.0

The proposed lane widths provide sufficient width for vehicles to park on the carriageway on local roads and form part of the speed control measures. On higher order roads, it is proposed that parking is

provided either in a parking lane or parking bays so that the traffic lanes are not obstructed by parked vehicles.

On new residential roads, the roads should be configured to provide an on-street parking supply rate of one space per two dwellings.

The proposed rural standards reflect the Austroads design standards and have been grouped by expected daily traffic volume rather than the road hierarchy classification. However, the traffic volume categories do broadly align with the five road hierarchy classifications within the District Plan. A requirement for cycle lanes has not been explicitly identified because space is provided within the sealed shoulder on the higher volume roads where higher speeds are expected. Cycle lanes should be considered on high volume roads where sealed shoulders are not provided.

Table 2-4: Proposed Rural Road Design Standards

Element	Design AADT				
	<150	150 -500	500 -1,000	1,000-3,000	>3,000
	Cul-de-sac	Local	Collector	Arterial	Strategic
Road reserve width (m)	20.0	20.0	20.0	20.0	20.0
Traffic lanes (m)	1 x 3.5	2 x 3.3	2 X 3.5	2 x 3.5	2 x 3.5
Total Shoulder (m)	2.5	1.5	1.5	2.0	2.5
Minimum sealed shoulder (m)	0.0	0.5	0.5	1.5	2.0
Total carriageway (m)	8.5	9.6	10.0	11.0	12.0

3. Footpaths

3.1 District Plan

The District Plan sets out the following requirements for footpaths.

Table 3-1: Residential and Business Zone Road Footpath Requirements

Road Type	Number of Footpaths	Footpath Width
Strategic	2	1.5m
Arterial	2	1.5m
Collector	2	1.5m
Local – Residential	1	1.5m
Local – Business 1	2	1.5m
Local – Business 2	1	1.5m
Cul-de-sac	1	1.5m

3.2 National Standards

The New Zealand Standard 4404:2010 land Development and Subdivision Infrastructure provides guidance on the number of footpaths and widths that should be provided on new roads. This can be broadly summarised by the following table.

Table 3-2: NZS4404:2010 Footpath Requirements

Road Type	Number of Footpaths	Footpath Width
Rural Residential	0	
Rural Business	2	1.5m
Urban Local Residential (AADT < 200vpd)	0	
Urban Local Residential (AADT < 2,000vpd)	2	1.5m
Urban Collector (AADT < 8,000vpd)	2	2.0m
Urban Centre	2	3.0 – 4.0m
Industrial Local (AADT < 2,000vpd)	2	1.5m
Industrial Collector (AADT<8,000vpd)	2	2.5 – 3.5m

It can be seen that the national standard generally promotes wider footpaths than are currently specified within the District Plan.

The NZTA Pedestrian Planning Guide also provides guidance on footpath widths as shown in the following table.

Table 3-3: NZTA Pedestrian Planning Guide Footpath Requirements

Road Type	Number of Footpaths	Footpath Width
Urban Arterial, CBD, Parks, etc	2	2.4 - 4.0m
Local Pedestrian Districts	2	1.8 – 3.6m
Commercial Districts	2	1.8 – 3.6m
Collector Roads	2	1.8 – 3.0m
Residential	2	1.5 – 2.4m

As with the subdivision standard, the guide promotes the adoption of wider footpaths particularly in areas where high volumes of pedestrian movements can be anticipated, for example, town centres or recreational areas.

The guide suggests that 1.5m wide footpaths should be considered an absolute minimum with 1.8m wide footpaths being preferred to provide sufficient space to allow two wheelchair users to pass each other.

3.3 Christchurch City Council

The Christchurch City Council sets out requirements for the number of footpaths on new roads in Chapter 8 of the District Plan which contains rules for subdivision. The required widths of the footpaths are specified in the Infrastructure Design Standards.

The subdivision rules generally require footpaths on both sides of all new urban roads providing access to more than 20 dwellings.

One benefit of this approach is its simplicity and the fact that it can be linked directly to land zones.

Table 3-4: CCC Footpath Requirements

Local Activity	Number of Footpaths	Footpath Width
Residential	2	1.5m
Retail / Town Centre	2	2.5m
Industrial	2	1.5m

3.4 Recommendations

The current District Plan requirements for footpaths are based entirely on the link function of roads and do not take into account the place function. It is considered that a better approach that takes some account of the adjacent activity would be to adopt an approach more similar to the CCC approach. This would require the following changes to the District Plan.

- 1) Removal of footpath number and minimum width requirements from Table 30.1 and Table 30.2.
- 2) Insertion of a new table setting out footpath requirements with the following form

Table 3-5: Suggested Footpath Requirements

Local Activity	Number of Footpaths	Footpath Width
Residential Roads		
< 20 dwellings (1)		
20 - 200 dwellings	2	1.5m
> 200 dwellings	2	1.8m
Business 1 / Key Activity Centre	2	2.5m
Business 2 – 6	2	1.5m

Notes

- (1) Footpaths shall be provided when required by any higher-level planning framework such as an Outline Development Plan.

4. Cycleways

4.1 Operative District Plan

The District Plan requirements for cycleways is limited to the road design attributes in Table 30.1, Table 30.2 (Residential 7 Zone West Kaiapoi), and Table 32.2 (Pegasus).

- Table 30.1 requires two cycleways on any road constructed after 20 June 1998 that are either Strategic, Arterial, or Collector / Urban Collector roads.
- Table 30.2 requires "provision for cyclists on or off road" for Collector / Urban Collector roads only.
- Table 32.2 requirements are shown in the table below

Table 4-1: Road Design Attributes to Pegasus Table 32.2

Road Type	Cycleway Requirement
Main Access Road	Both sides amongst street tree planting
Boulevard	Both sides combined with footpath
Main Street	Both sides
Primary Street	Both sides combined with footpath

The District Plan does not set out the width for cycle lanes but instead directs readers to the Waimakariri Engineering COP which stipulates that cycle facilities and widths are to be designed in general compliance with the New Zealand Supplement to Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles. It should be noted that this standard has now been superseded and current best practice guidance for cycling facilities is contained within the Austroads document "Cycling Aspects of Austroads Guides"

Note that Table 30.1 of the Plan includes minimum widths for traffic lanes, parking lanes, sealed shoulder, and footpaths. It is somewhat incomplete that there is no minimum width for cycle lanes given.

4.2 National Standards – NZTA

The New Zealand Supplement to Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles (2008) provides guidance on cycle provisions. For an urban road, the figure below is given as a basic guide. In a rural environment, the guidance is that it is usually safe for cyclists to share the width of the road with traffic, but where this is not able to be achieved comfortably due to high traffic volumes and/or speed, then a cycle facility may be provided in the form of:

- Sealed shoulder, or
- Cycle lane, or
- Cycle path

However, the comment is made that when cyclists are expected to use sealed shoulders then care must be taken to ensure that the continuity of facilities is maintained, i.e. any narrowing of the shoulder does not put cyclists at risk.

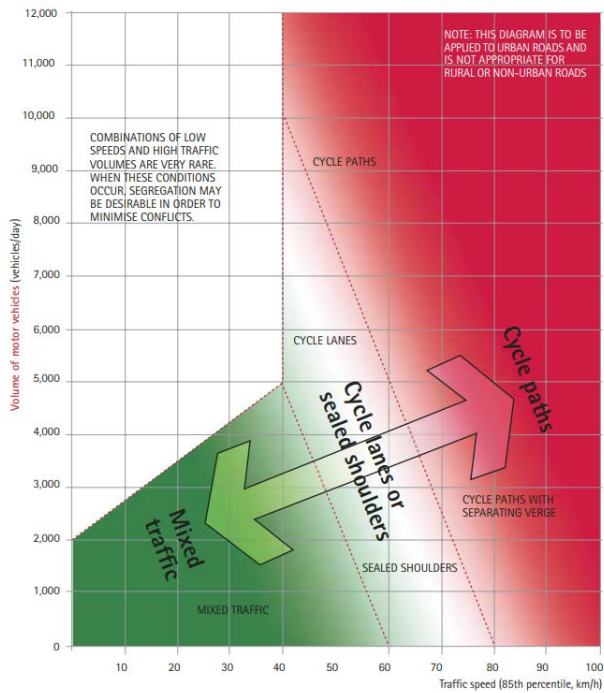


Figure 6.1: Preferred separation of bicycles and motor vehicles according to traffic speed and volume. This diagram is based on RTA NSW (2003) and Jensen et al (2000), also DELG (1999), Ove Arup and Partners (1997) and CROW 10 (1993).

Figure 4-1: New Zealand Supplement Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles (2008) Guide to choice of facility types for cyclists in urban areas

The New Zealand Supplement Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles (2008) also provides guidance on cycle lane widths as shown in the following table with interpolation for different speed limits acceptable.

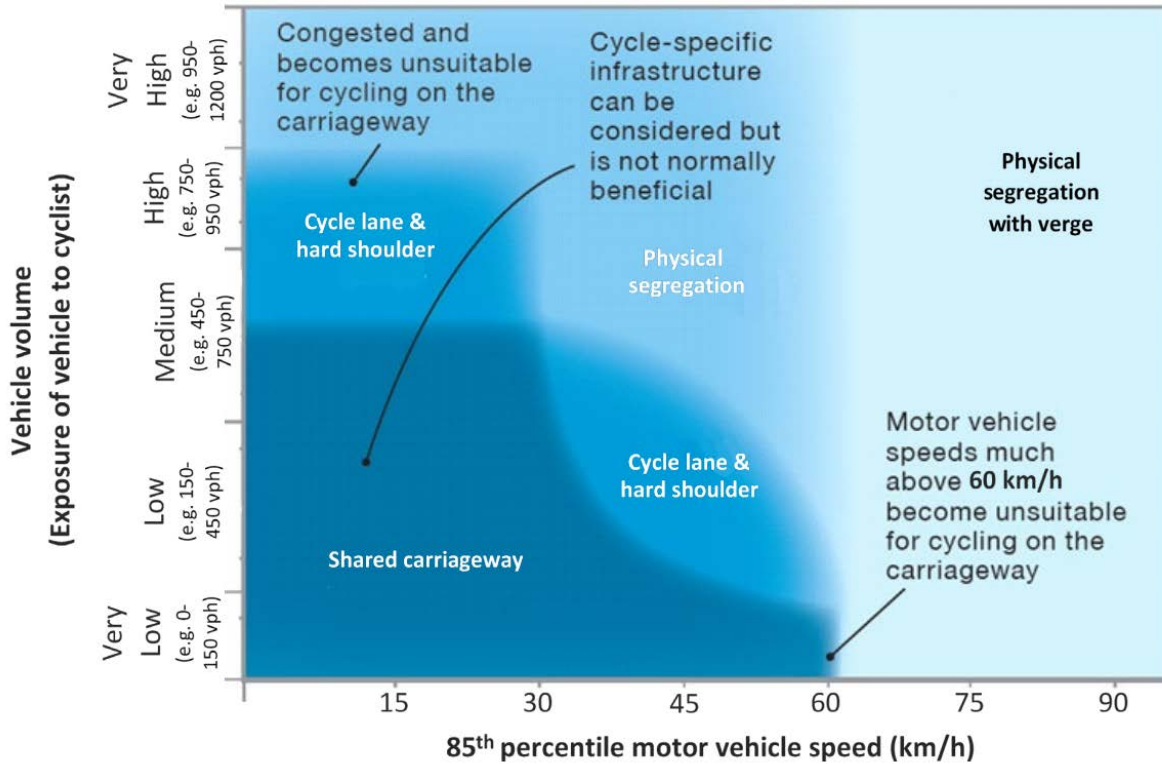
Table 4-2: The New Zealand Supplement Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles (2008) bicycle lane dimensions

Cycle Facility Type	Lane Width (m)			Parking Width (m)
	≤50 km/h	70 km/h	100 km/h ¹	
Cycle Lane and Sealed Shoulder Widths (Table 4.1)				
Desirable Minimum	1.5	1.9	2.5	
Acceptable Range	1.2-2.2	1.6-2.5	2.0-2.5	
Cycle Lane next to Parallel Parking (Table 4.2)				
Desirable Minimum	1.8	2.2		2.0
Acceptable Range	1.6-2.5	2.1-2.5		1.9-2.5
Cycle Lane Clearance from Angle Parking (Table 4.3)				
Desirable Minimum 45° parking angle	2.0			
60° parking angle	2.5			
90° parking angle	3.0			
Minimum 45° parking angle	1.5			
60° parking angle	2.0			
90° parking angle	2.5			

¹ Or cycle demand is heavy

4.3 National Standards - Austroads

Austroads provides guidance on the provision of facilities that may be provided for cyclists in the 'Cycling Aspects of Austroads Guide' (2017). This can be broadly summarised in the following figure for the minimum requirements.



Source: Adapted from Sustrans (2014).

Figure 4-2: Cycling Aspects of Austroads Guide (2017) guidance on the minimum separation of cyclists and motor vehicles

The Austroads Guide also provides guidance on cycle lane widths as shown in the following table with interpolation for different speed limits acceptable.

Table 4-3: Cycling Aspects of Austroads Guide (2017) bicycle lane dimensions

Cycle Facility Type	Lane width (m)				
	45 km/h	60 km/h	80 km/h	90 km/h	100 km/h
Exclusive (bicycle only) lane in urban areas (Table 4.3)					
Desirable		1.5	2.0		2.5
Acceptable Range		1.2-2.5	1.8-2.7		2.0-3.0
Wide kerbside lane (Table 4.4)					
Desirable Minimum		4.2	4.5		
Acceptable Range		3.7-4.5	4.3-5.0		
Parking lane – parallel parking (Table 4.6)					
Desirable Minimum		4	4.5		
Acceptable Range		3.7-4.5	4-4.7		
Parking lane – angle parking (Table 4.7)					
Desirable	7.3	7.6		8	
Acceptable Range	7.1-7.8	7.4-8.1		7.8-8.5	

With respect to the use of sealed shoulders, the Guide states:

Although warrants do not exist specifically for the provision of sealed shoulders for cyclists there are many instances on rural roads where the sealing of shoulders is justified specifically to make roads safer for cycling... Table 4.3 (for bicycle lanes in urban areas) should be used as a guide to the appropriate width of sealed shoulders.

4.4 Christchurch District Plan

The Christchurch District Plan sets out the road standards for new roads in Appendix 8 (Subdivision, Development, and Earthworks) of the District Plan. Like the Waimakariri District, the provision for cyclists are specified with respect to road classification as shown in the following table. There is scope to set out alternative standards in an outline development plan.

Table 4-4: Road Standards Appendix 8.10.3 Christchurch District Plan

Road Type	Cycle Facilities
Major Arterial Road - Urban	Yes
Major Arterial Road - Rural	Yes
Minor Arterial Road - Centres	Yes
Minor Arterial Road - Urban	Yes
Minor Arterial Road - Rural	Yes
Collector Road - Urban	Yes
Collector Road - Industrial	Yes
Collector Road - Rural	*
Local Road - Industrial	*
Local Road - Centres	*
Local Road - Residential	*
Local Road - Rural	*

Note: "yes" means that the provision shall be incorporated into the design and construction of the road;

*** means that the provision is allowed for in the standards for road design and construction and/or shall be considered as conditions of consent on subdivision.

The design widths for cycle lanes are given in the Christchurch Cycle Design Guidelines (2013) which are in line with the following design principles:

- Cycle lanes should be considered where vehicular volumes (roughly more than 2,000 vehicles per day) are expected to be too high for a neighbourhood greenway.
- The cycle lane ideally will be wide enough for cyclists to pass one another (approximately **1.8 to 2m**) and provide some protection from car doors opening.
- Recreational cycleways should provide generous widths to accommodate road cyclists riding side by side.
 - The Austroads recommended widths are: <50km/h – 1.5m; 70km/h – 1.9m; 100km/h – 2.5m.
 - If parking is present, refer to New Zealand Supplement to Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles.

4.5 Selwyn District Plan

The Selwyn District Plan sets out the road standards for new roads in Appendix E13 (Transport) of the District Plan. Like Waimakariri District, the provision for cyclists are specified with respect to road classification as shown in the following table. There are exceptions made for specific living and business zones which do not require cycle provisions.

Table 4-5: Road Standards Table E13.8 Selwyn District Plan

Road Type	Specific Provision for Cycles (on road or off road)
State Highways	Yes
Arterial	Yes
Collector	Yes
Local - Business	Optional
Local - Living Zone 3	NA
Local - Living Zone 2	NA
Local - Major	Optional
Local - Intermediate	NA
Local - Minor	NA
Cycle/Pedestrian Accessway	Yes

The Selwyn District Plan does not set out the width for cycle lanes but instead directs readers to the Engineering COP, which like Waimakariri’s COP, stipulates that cycle facilities and widths are to be designed in general compliance with the New Zealand Supplement to Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles.

4.6 Recommendations

The current District Plan requirements for cycleways are based on the road classification which is not dissimilar to the approach taken by SDC and CCC. All three District Plans require cycle facilities for roads classified as a collector road or higher. This approach is a simplistic but justifiable application of the national standards which give guidance on selecting the appropriate facility based on different combinations of traffic speed and volume.

The associated explanation for WDC District Plan Policy 11.1.1.5 stipulates that “*The provision of cycleways will need to take into account the circumstances of the area. Matters to consider will include the width and location of cycleways.*” A shortcoming is that the Plan does not specify the required width of cycle facilities and we recommend that this is included for urban roads. With regard to rural roads, any new road should be designed in line with Austroads Guide to Road Design Part 3: Geometric Design (2016) which requires minimum sealed shoulder width of 2.0/3.0 m for roads where there is a bicycle demand (pg 50). It is not necessary to require a cycle lane as well as the sealed shoulder.

The proposed road standards identified in Table 2-3 and Table 2-4 include specific cycleway provisions to address the omissions identified in the District Plan.

5. Cycle Parking Rates

5.1 Operative District Plan

The Waimakariri District Plan on-site parking and loading space minimum requirements are given in Table 30.8 and include minimum parking space supply rates for cycle parking. These rates were introduced following Plan Change 40.

Table 5-1: On-Site Cycle Parking Requirements, WDC (Table 30.8)

Activity	Cycle parking
Dwelling house	NA
Residential care homes	2 short term parks for greater than 20 beds; 1 long term park per 5 full time employee equivalents
Visitor accommodation	1 long term park per 10 visitor accommodation units where there is no garage space provided
Educational facilities excluding pre-schools	1 short term park per 10 students and 1 long term park for every 5 full time equivalent employees

Activity	Cycle parking
Pre-school and childcare facilities	1 short term park per 20 children and 1 long term park for every 3 full time equivalent employees
General retail	Except for sites with frontage to a principal shopping street, 1 short term park and 1 long term park per 500m ² gross floor area
Home occupation	NA
Supermarket	1 per 500m ² gross floor area plus one long term park per 5 full time equivalent employees
Large format retail	1 park up to 500m ² gross floor area plus 1 per 1000m ² gross floor area thereafter, and 1 long term park per 1000m ² gross floor area
Food and beverage	1 short term park per 250m ² net floor area plus 1 long term park per 100m ² net floor area
Office	1 short term and 1 long term park per 500m ² gross floor area
Medical centre	1 short term park per 3 health professionals plus 1 long term park per 5 full time equivalent employees
Hospital	2 short term parks, plus 1 short term park per 50 beds; and, 1 long term park per 20 beds
Industrial	1 long term park per 1000m ² gross floor area
Warehousing and storage (excluding self-storage)	1 long term park per 1000m ² gross floor area
Self storage	NA
Places of assembly (includes club houses on sports grounds)	2 short term parks, plus 1 per 1000m ² gross floor area
Sporting grounds, playing fields	3 short term parks, plus 3 additional short term parks per hectare used for the activity
Golf courses (excluding mini-golf and driving ranges) without a clubhouse	3 short term parks plus 1 short term park per 10 hectares

5.2 National Standards

Austrroads 'Bicycle Parking Facilities: Updating the Austrroads Guide to Traffic Management' (2017) considers a generic 10% cycle mode share as a good starting point for estimating demand and required parking. However, to ensure a suitable level of cycle parking is provided, in areas where higher than 10% mode share is expected (or targeted) then the provision for parking should be factored up accordingly.

Austrroads 'Guide to Traffic Management Part 11: Parking' (2017) provides an example of parking rates for cycle parking that can be referred to for guidance in the absence of local standards in Table 4.3. Note that,

the application of these types of provision rates needs to be undertaken with caution as local circumstances may often render them inappropriate

5.3 Christchurch District Plan

Christchurch's requirement for cycle parking is set out in Table 7.5.2.1. This table has minimum cycle parking requirements in terms of activity and distinguishes between facilities intended for customer/visitor use and employee/resident use. If an activity fails to meet the cycle parking requirement, it becomes a restricted discretionary activity, with limited matters for Council Discretion primarily:

Whether the number of cycle parking spaces and end of trip facilities provided are sufficient considering the nature of the activity on the site and the anticipated demand for cycling.

5.4 Selwyn District Plan

Selwyn's requirement for cycle parking is set out in section 13.1.4. This is a simple method but the maximum of ten cycle spaces is questioned, i.e., it should not be discouraged if developers wish to supply more spaces if they wish to.

Table 5-2: On-Site Cycle Parking Requirements, SDC, section 13.1.4

Activity	Cycle Parking Required
Residential, temporary, and activities permitted in C10.9.1 (Living Zone Rules)	NA
Place of assembly, recreation, or education activity	Minimum of two spaces, then one cycle space for every five car parking spaces required
Any other activity	Minimum of two spaces, then one cycle space for every five car parking spaces required, to a maximum of ten cycle spaces

5.5 Recommendations

It is recommended that a similar approach to that taken by Selwyn District Council is adopted for provision of cycle parking in Waimakariri. Whilst the current WDC approach is in line with the Christchurch District Plan, it is considered that it is more complex than necessary because the demand for cycle parking at any destination is affected both by the activity, its location and cycle route access facilities:

- Not all activities are defined which creates discrepancies and lack of clarity of which rate to apply
- With a complicated approach, Council resources could be spent on determining if a shortfall of parking will result in adverse effects as there is limited policy to support decision makers combined with a multitude of factors influence cycling demand, including but not limited to:
 - Terrain
 - Surrounding land use
 - Cycleways (i.e. is there a safe route to the destination?)
 - End of trip facilities
 - Weather
- Selwyn's approach still achieves provision of cycle parking
- A simplified approach provides greater certainty for developers and lower costs for Council administration (i.e. more efficient)

It is recommended that a minimum rate is required of two spaces (one stand typically provides for two bicycles) so that even small activities will provide for employees which will go some way to encourage mode shift and achieving the WDC Walking and Cycling Strategy.

Table 5-3: Recommended Cycle Parking Requirements

Activity	Cycle Parking Required
Residential	None
Place of assembly, recreation, or education activity	Minimum of two spaces, then one cycle space for every five car parking spaces required
Any other activity	Minimum of two spaces, then one cycle space for every five car parking spaces required up to 150 spaces; no additional cycle parking is required for additional car parking spaces over 150.

Guidance could be given to refer to the basic rates in Austroads 'Guide to Traffic Management Part 11: Parking' (2017).

6. Cycle Parking Layout

6.1 Operative District Plan

The requirement in the Waimakariri District plan for the required layout of cycle parking is as follows:

Rule 30.6.1.45

Cycle parking required by Rule 30.6.1.34 shall be constructed:

- a) to support the cycle frame and not the wheel only;
- b) of durable materials and securely anchored to ground or building;
- c) to allow at least 1m between parking rails where more than one park is provided;
- d) for short term parking, be located:
 - i. within 15 m of the entrance to the activity;
 - ii. to be easily seen when approaching or leaving the activity;
 - iii. under shelter (where this is available);
- e) where cycles will be protected from motor vehicles;
- f) under lighting if designed to be used at night; and
- g) where use will not create a hazard for pedestrians, including visually impaired pedestrians; and
- h) for long term parking, to provide bicycle parking space within a secure, covered facility

The engineering COP states that installation of parking facilities near bus stops should be considered but does not give any more direction.

6.2 National Standards

The New Zealand Supplement to Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles (2008) does not discuss cycle parking.

AS/NZS 2890.3:2015 Parking Facilities – Bicycle Parking Facilities sets out three bicycle parking facility security levels based on use and provides informative diagrams for typical forms of bicycle parking.

Austroads 'Bicycle Parking Rails Facilities: Updating the Austroads Guide to Traffic Management' (2017) references AS/NS 2890.3:2015

6.3 Christchurch District Plan

The Christchurch District Plan requires stands to have the minimum dimensions as per the figure provided, and stands within the Central City shall be designed to accommodate the turning path of a cycle provided.

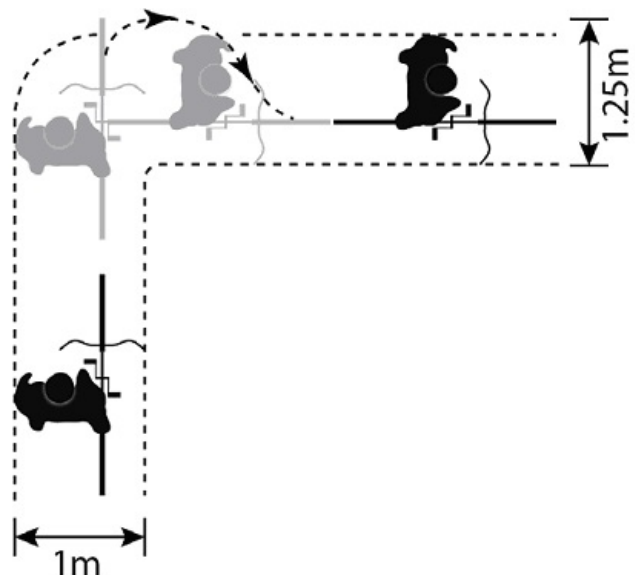
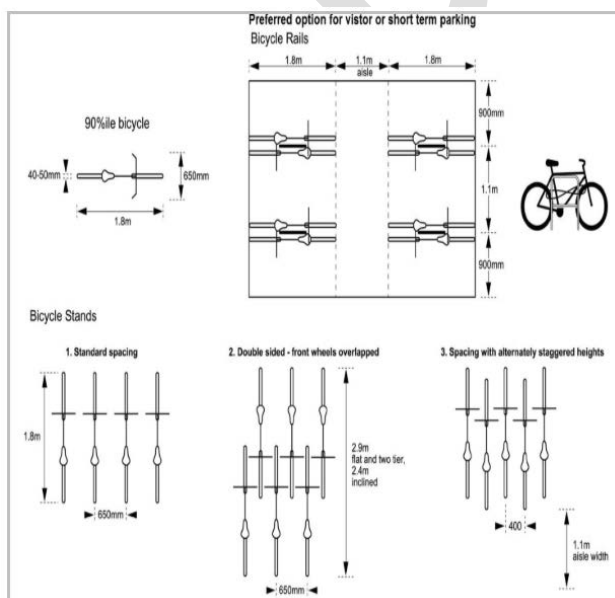


Figure 6-1: Minimum cycle parking dimensions, CCC Figure 2 Appendix 7.5.2

Figure 6-2: Cycle turning circle, CCC Figure 3 Appendix 7.5.2

6.4 Selwyn District Plan

The Selwyn Engineering COP provides a 'staple' design for cycle stands, sourced from the Christchurch District Plan.

6.5 Recommendations

Rule 30.6.1.45 of the Waimakariri Plan sets a good outline for the requirement for cycle parking. However, this could be improved with the use of diagrams such as those provided in the Christchurch and Selwyn District Plans.

7. Cycling End of Trip Facilities

7.1 Operative District Plan

The Waimakariri Plan does not make reference to, nor require, end of trip facilities for cyclists.

7.2 National Standards

There is limited guidance in the published standards regarding rates for providing end of trip facilities for cyclists, but the need for them is outlined:

- Austroads 'Cycling Aspects of Austroads Guide' (2017)

In order to make bicycle trips in excess of five kilometres attractive to people it is necessary that clean, functional, secure showers and changing facilities be provided in the workplace.

Cycling can be encouraged by the provision of bicycle access into and through all new land developments, the provision of treatments that assist bicycle travel and the provision of suitable showers and secure parking facilities in the workplace.

- Austroads 'Guide to Traffic Management Part 7: Traffic Management in Activity Centres' (2019)

At workplaces where all-day bicycle parking is used on a regular basis, bicycle parking can be expected to be combined with end-of-trip facilities such as showers, lockers etc.

- Austroads 'Guide to Traffic Management Part 4: Network Management' (2016)

Cyclists who are commuting often require shower and change facilities.

- Austroads 'Bicycle Parking Facilities: Updating the Austroads Guide to Traffic Management' (2017)

Table 7-1: End of trip facility provision rates Austroads 'Bicycle Parking Facilities: Updating the Austroads Guide to Traffic Management' (2017), Table 5.2

Facility Type	Requirement
Number of showers	One shower for the first five bicycle spaces or part thereof, plus an additional shower for each 10 bicycle parking spaces thereafter
Change rooms	One change room or direct access to a communal change room per shower

7.3 Christchurch District Plan

The Christchurch District Plan has the following policy:

Policy 7.2.1.6 Promote public and active transport by... (ii) ensuring activities provide an adequate amount of safe, secure, and convenient cycle parking and, outside the Central City, associated end of trip facilities.

This is achieved by setting a minimum number of cycle parking end of trip facilities required for commercial activities, tertiary education and research activities, and hospitals located outside the Central City. These rates are given in the table below.

Table 7-2: Minimum number of cycle parking end of trip facilities, Christchurch District Plan Table 7.5.2.2

Number of staff cycle parks required	Number of end of trip facilities required
1-10	<ul style="list-style-type: none">• None
11-100	<ul style="list-style-type: none">• 1 shower per every 10 staff cycle parks required

Number of staff cycle parks required	Number of end of trip facilities required
	<ul style="list-style-type: none"> 1 locker per every staff cycle park required
>100	<ul style="list-style-type: none"> 10 showers for the first 100 staff cycle parks required + 2 showers for each additional 50 staff cycle parks required 1 locker per every staff cycle provided

7.4 Selwyn District Plan

Like the Waimakariri District Plan, the Selwyn District Plan does not require end of trip facilities.

7.5 Recommendations

In line with Waimakariri's District Council's Walking and Cycling Strategy and vision to encourage cycling to and from work, it is recommended that a similar approach to CCC is adopted regarding end of trip facilities, that is:

Table 7-3: Minimum end of trip facilities,

Number of staff cycle parks required	End of trip facilities required
1-10	<ul style="list-style-type: none"> None
11-100	<ul style="list-style-type: none"> 1 shower per every 10 staff cycle parks required 1 locker per every staff cycle park required
>100	<ul style="list-style-type: none"> 10 showers for the first 100 staff cycle parks required + 2 showers for each additional 50 staff cycle parks required 1 locker per every staff cycle provided

8. Table 30.5 Minimum Sight Distances

8.1 Operative District Plan

Rule 30.6.1.24 outlines minimum sight distances for vehicle crossings on arterial, strategic and collector roads. Sight distance requirements are provided for 50km/h, 70km/h and 100km/h speed limits in residential zones and business/rural zones.

8.2 National Standards

Austrroads states that desirably, sight distances at accesses should comply with the sight distance requirements for intersections. However, it acknowledges that the criteria often cannot be met in constrained environments and the extended design domain (EDD) safe intersection sight distances (SISD) can be used.

Table 8-1: Austrroads SISD Requirements

Design speed (km/h)	SISD (m)	EDD ² SISD (m)
40	73	58
50	97	77
60	123	97
70	151	120
80	181	144
90	214	169
100	250	197
110	285	226

The NZTA RTS06 guidelines sets out sight distance requirements for low volume and high volume driveways, for different operating speeds and by road classification type.

² 2 seconds observation time and 2 seconds reaction time

The sightline requirements for state highways in the NZTA Planning Policy Manual are based on the speed limit rather than an operating speed or a design speed. The PPM requirements are more onerous than the Austroads EDD requirements above, taking the design speed to be the speed limit plus 10km/h.

Table 8-2: PPM Sight Distance Requirements

Speed Limit (km/h)	Minimum Sight Distance (m)
50	113
60	140
70	170
80	203
90	240
100	282

8.3 Other District Plans

The Christchurch District Plan sets out sightline requirements for rural roads only. The distances have been taken from the NZTA Planning Policy Manual (PPM) and are based on the posted speed limit rather than an operating or design speed. The Austroads design standards are expected to be provided in urban environments.

The Selwyn District Plan only has sightline requirements in the Rural Volume and they only apply to accesses on state highway, arterial and collector roads. As for Christchurch, the required sight distances are based on the PPM requirements.

The Queenstown Lakes District Plan sets out sight distance requirements based on the posted speed limit only but does allow for reduced requirements for residential activity.

8.4 Recommendations

Consider simplifying the standard by removing the link type reference and specifying minimum sight distance requirements as a function of the posted speed limit only and in accordance with the Austroads design standards. It is recommended that the table is extended to include 30km/h and 40km/h speed limits for residential zones with the minimum SISD based on EDD criteria.

Table 8-3: Recommended Minimum Sight Distance Requirements

Design speed (km/h)	Residential Activity except High Traffic Generators (m)	Other Activity (m)
30	40	
40	60	75
50	80	100
60	100	125
70		150
80		180
90		215
100		250

9. Figure 30.4 Sight Distances and Sight Lines

9.1 Operative District Plan

Figure 30.4 describes how to measure sight distances at vehicle crossings on arterial, strategic and collector roads. It states that sightlines shall be measured from a height of 1.15m above the existing road surface and the proposed surface level of the vehicle crossing.

The measurements are taken 3.5m back from the edge of the traffic lane.

9.2 National Standards

Figure 30.4 is consistent with Diagram A in the NZTA Planning Policy Manual, except that it stipulates sightlines shall be measured 1.1m above the ground rather than 1.15m.

The RTS6 standard has sightlines measured 5m from the centre of the near traffic lane. In practice, the point 3.5m back from the edge of the traffic lane is at least 5m from the centre of the near traffic lane (based on a minimum 3m wide traffic lane).

Within the Austroads Guide to Road Design, the SISD is measured 5m back from the lip of channel or edge line, or 3m as a minimum. Given Figure 30.4 is for sight distances at accesses rather than at intersections, the measurement being from 3.5m back from the edge of the traffic lane is considered appropriate.

9.3 Recommendations

Since the Austroads Guide to Road Design represents the current best practice, consider updating Figure 30.4 to show 1.1m as the driver eye height.

10. Figures 30.5-7 Acceleration and Deceleration Tapers

10.1 Operative District Plan

There are three rural vehicle access standards in the District Plan:

- Figure 30.5 for any retail activity on a strategic, arterial or collector road, but not a state highway, with a posted speed limit more than 70km/h in a rural, residential 4A or residential 4B zone
- Figure 30.6 for a vehicle crossing on a state highway with a speed limit of 70km/h or greater and with 30 or fewer equivalent car movements (ecm) per day
- Figure 30.7 for a vehicle crossing on a state highway with a speed limit of 70km/h or greater and with between 30 and 100 ecm per day

It is understood the Figure 30.5 standard is for retail activities only on classified rural (but non-state highway) roads. However, the wording of the rule is potentially confusing because there could be other activities e.g. industrial activities, which should also have a similar standard accessway.

The Figure 30.5 standard is very similar to the Figure 30.7 standard for 100km/h roads, so there may be unnecessary duplication.

The Figure 30.7 standard is for between 30 and 100 ecm per day but there is no wording to say what to do if an activity will generate more than 100 ecm per day.

10.2 National Standards

The PPM includes three access standards for stage highways (Diagrams C, D and E) and a table (App5B/4) which outlines which access standard is appropriate based on heavy vehicle usage, traffic volumes using the accessway and passing traffic volumes. It is considered this table is appropriate for all classified rural roads, regardless of whether they are state highways or not.

10.3 Other District Plans

A review of other District plans indicates that these typically adopt table App5B/4 and the three diagrams from the PPM for rural vehicle crossings on classified roads.

10.4 Recommendations

Incorporate Table App5B/4 and Diagrams C, D and E from the PPM into the District Plan in place of the current rules relating to Figure 30.5-30.7.

Table 10-1: Recommended Access Design Standards

Heavy Vehicle Movements per week	Average daily traffic volume	Located on State Highway	Design Standard
≤1	≤30	No	30.6
≤ 1	≤30	Yes	30.7
>1	31 –100	No	30.5
>1	31 –100	Yes	30.7

Accessways that are expected to carry more than 100 vehicle movements per day or have peak hour flows of more than 20 movements should be treated as intersections and meet the intersection design standards set out in the Austroads Guide to Road Design.

11. Figure 30.13 Sight Lines at Railway Crossings

11.1 Operative District Plan

Rule 30.6.1.46 includes a restriction on where buildings can be erected in relation to railway crossings, to preserve sightlines. Figure 30.13 requires that 30m back from the nearest set of rails, 140m of visibility is available along the railway.

These requirements do not reflect the latest guidance for railway crossings.

11.2 National Standards

The Traffic Control Devices Manual (TCDM) Part 9 Level Crossings outlines approach visibility and restart view requirements at level crossings. The approach visibility is so that a driver approaching a level crossing can either see a train and stop safely or see far enough that they can continue across the railway safely. It is measured 30m from the railway. The restart view is so that a driver stopped at the railway can accelerate and clear the crossing before a train passes through. This is a longer requirement but is measured only 5m from the railway.

The calculations for the two visibility requirements have a number of variables, including site specific variables such as vehicle speeds, grades and angles of crossings.

11.3 Other District Plans

The Christchurch District Plan has sight triangles for road/rail level crossings and for rail siding level crossings. For each, there are 'approach sight triangles' and 'restart sight triangles'.

The level crossing approach sight distance diagram equivalent to Figure 30.13 has a visibility requirement of 320m along the railway, as opposed to the 140m requirement currently in Figure 30.13. This suggests that the CCC diagrams represent a higher, more stringent design standard.

11.4 Recommendations

The design standards set out in the District Plan may be acceptable for certain sets of variables but they would not be acceptable under all possible scenarios based on the TCDM Part 9 equations. It is considered the District Plan requirement should be a "high end" requirement appropriate for all scenarios. For specific locations that do not require such long sightlines, based on their characteristics, applicants will be able to provide site specific assessment.

The following diagram is recommended for inclusion in the District Plan to replace Figure 30.13. It is based on the Christchurch District Plan Appendix 7.5.13 Figure 21 but the sightline distances are increased to 330m (from 320m), which is the highest requirement in the TCDM Part 9 Table B4.

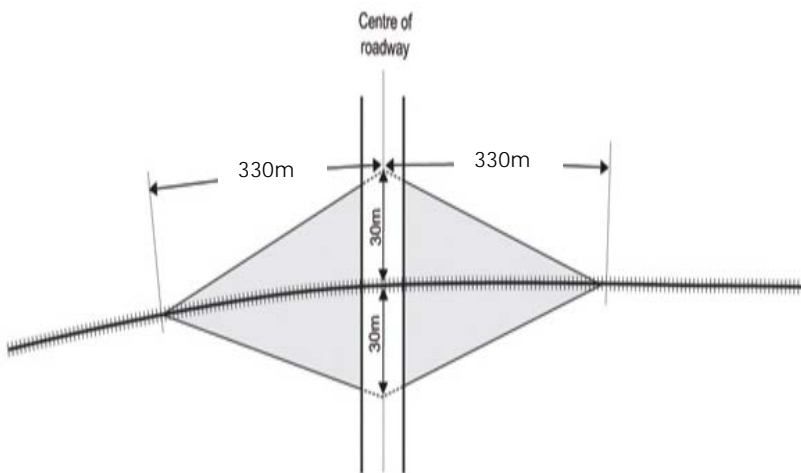


Figure 11-1: Railway Crossing Approach Sight Triangles

It is also recommended that the restart sightline requirement is reflected in the District Plan. The following recommended diagram is based on the Christchurch District Plan Appendix 7.5.13 Figure 22 but the sightline requirement is 490m (rather than 677m), which is based on the highest restart view requirement from the TCDM Part 9 Table B4.

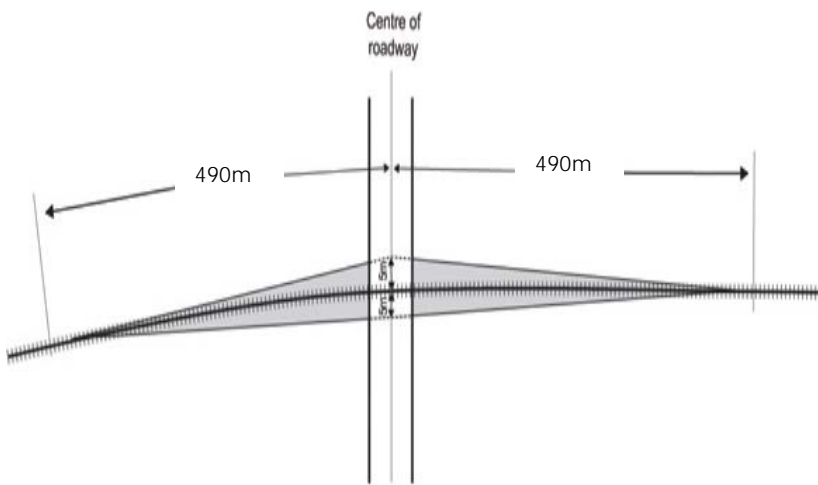


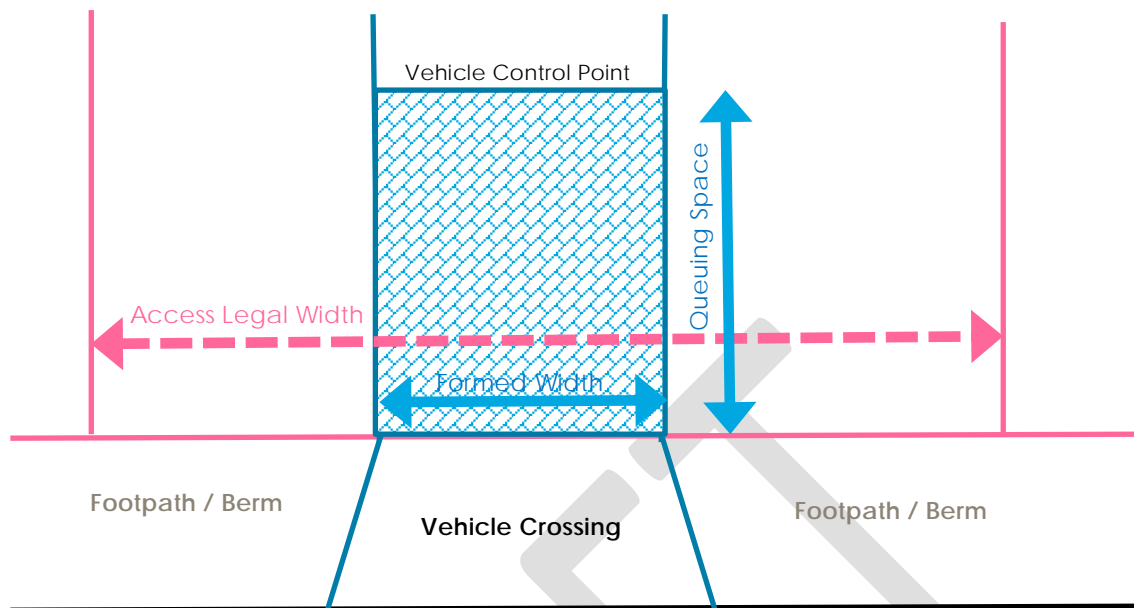
Figure 11-2: Railway Crossings Restart Sight Triangles

12. Table 30.4 Vehicle Crossings

12.1 Operative District Plan

Table 30.4 contains maximum numbers of vehicle crossings per site, minimum spacings between vehicle crossings and minimum and maximum widths for vehicle crossings, by zone type. The table applies to vehicle crossings on all roads except State Highways with a 70km/h speed limit or greater.

There is a separate requirement (30.6.1.20) for the minimum distances between crossings on a State Highway with a 70km/h or greater speed limit, which is based on the NZTA PPM requirements. That requirement can also be used to determine the maximum number of crossings per site, using the site frontage length. The design of these vehicle crossings is covered by a separate rule for rural access design.



The maximum number of crossings per site per road frontage does not take into account the length of the road frontage or the classification of the road. It is considered these should be linked to the requirement.

It is unclear why the maximum number of crossings requirement is not applicable to rural zone activities.

In rural zones, vehicle crossings can be spaced less than 10m apart or greater than 180m apart. It is considered the speed limit should be part of the consideration.

The 4m minimum vehicle crossing width is wide for a residential activity.

The minimum and maximum vehicle crossing widths may not be appropriate for rural road vehicle crossings which may need to be designed to higher standards.

12.2 National Standards

The NZTA PPM has recommended minimum distances between accessways for 70km/h and faster roads. For those higher speed roads, the maximum number of crossings per site frontage can be calculated using the minimum spacings and the site frontage lengths. The widths of the accesses on those roads are measured at the throat of the access which may be within the site given the large radii often required for manoeuvring.

12.3 Other District Plans

The Christchurch District Plan requirement for the maximum number of vehicle crossings per site frontage is based on the length of the frontage road and the classification of the frontage road. This requirement applies to all activities on all types of roads.

Table 7.5.11.2 - Maximum number of vehicle crossings outside the Central City

<u>Type of road frontage</u>				
	<u>Frontage length (metres)</u>	<u>Local road and collector road</u>	<u>Minor arterial road</u>	<u>Major arterial road</u>
a.	0 - 16	1	1	1
b.	> 16 - 60	2	1	1
c.	> 60 - 100	2	2	1
d.	> 100	3	2	2

Figure 12-1: Christchurch Number of Vehicle Crossing Requirement

In the Christchurch District Plan, the minimum vehicle crossing spacing rule only applies to vehicle crossings on roads with speed limits of 70km/h or greater. On those roads, the minimum requirements are based on the speed limit and the classification of the road. The arterial road requirements are based on the NZTA PPM and the collector and local road requirements are reduced.

Table 7.5.11.1 - Minimum distance between vehicle crossings (distance in metres)

Type of road frontage		Arterial	Collector	Local
	Frontage road speed limit (km/h)			
a.	70	40	40	40
b.	80	100	70	50
c.	90	200	85	65
d.	100	200	105	80

Figure 12-2: Christchurch Access Spacing Requirements

The vehicle crossing width and access width requirements in the Christchurch District Plan have been simplified so that there is one requirement which covers the vehicle crossing width at the property boundary and accessway widths.

Table 7.5.7.1 - Minimum requirements for private ways and vehicle access

Activity	Number of marked parking spaces provided (For residential activities, the number of residential units)	Minimum legal width (metres)	Minimum formed width (metres) (refer to b)	Maximum formed width (metres)	Central City Height (metres)
a. Residential activity and offices	1 to 3	3.0 (refer to d)	2.7	4.5	3.5
b. Residential activity and offices	4 to 8	3.6 (refer to d)	3.0	6.0	4.0
c. Residential activity and offices	9 to 15	5.0 (refer to c and d)	4.0	6.0	4.0
d. All other activities	1 to 15 ¹	5.0 (refer to c)	4.0	7.0	4.0
e. All activities	More than 15	6.5 (refer to c)	5.5	9.0	4.0

Figure 12-3: Christchurch Access Width Requirements

This approach means there is no District Plan requirement for the length of the cut-down kerb at a vehicle crossing. A concern could be very long splays being provided, which may lengthen pedestrian crossing distances over driveways, depending on the location of the footpath.

The Selwyn District Plan Township Volume has requirements for the maximum number of crossing per frontage based on the zone and the length of the frontage. The space between crossings are the same for residential and business zones, being less than 1m or greater than 7m. The vehicle crossing width requirements are measured at the road boundary and are similar to the Table 30.4 requirements but there are small differences.

Table E13.7 – Vehicle Crossing Requirements

Zone	Distance Between Crossings (m) on Same Side of Road	Width (m)	
		Minimum	Maximum
Living zones	Vehicle crossing to a shared accessway Greater than 7m;	Residential activities – 3.5m	Residential activities – 6m
	All other vehicle crossings; Less than 1m or greater than 7m	Non-residential activities – 4m	Non-residential activities – 7m
All Business zones except the B2A Zone (Izone)	Less than 1m or greater than 7m	5m	7m or 8m for shared crossings
B2A Zone (Izone)	Less than 1m or greater than 7m	5m	12m

Figure 12-4: Selwyn Vehicle Crossing Requirements

12.4 Recommendations

Consider adopting the Christchurch District Plan requirements for the maximum number of crossings per site per road frontage, since these are based on the type of road and the length of the frontage.

Consider adopting the Christchurch District Plan requirements for access separation on roads with a speed limit of 70km/h or greater. At lower speeds, the existing rules are appropriate.

For high traffic generating activities, the access safety should be assessed as part of the transport assessment that is required for restricted discretionary activities. It is expected that this would address the location of the access relative to other accesses.

Consider combining the vehicle crossing width requirements and the access width requirements into one simplified table, as has been done in Christchurch. The design could be linked to a standard vehicle crossing design from the Engineering Code of Practice and any non-standard vehicle crossing designs e.g. ones with large splays for vehicle manoeuvring, could result in a restricted discretionary activity status.

13. Table 30.6 Minimum Separation Distances

13.1 Operative District Plan

Table 30.6 sets out minimum separations for crossings from intersections and has been based on the frontage road and intersection road classifications and the speed limits of the frontage road.

It is understood the speed limit is for the road that the vehicle crossing joins to, rather than the intersecting road. However, in the table, the speed limits are grouped with the intersecting road types and this could create some uncertainty.

13.2 National Standards

The PPM outlines vehicle crossing/intersection separation requirements at state highway / local road intersections, based on the posted speed limit. The requirements can be grouped into three speed limit ranges; less than 70km/h, 70-80km/h and more than 80km/h. The separation requirements on the state highway are higher than those on the intersecting local road. The requirements apply to access on both sides of the main road, since accesses opposite an intersection would still have vehicle manoeuvring occurring at the intersection.

13.3 Other District Plans

The Christchurch District Plan has separation requirements for three different speed limit groups (<70km/h, 70-90km/h and >90km/h) and a separate table for the central city. The requirements are generally based on the PPM requirements, with vehicle crossing separation requirements on arterial roads matching those for state highways in the PPM, and collector and local road requirements meeting the PPM side road requirements. Some concessions are made for urban collector / local and local / local intersections.

The Christchurch District Plan states that the separation requirements only apply on the same side of the road as an intersection.

13.4 Recommendations

Consider adopting Table 7.5.11.4 from the Christchurch District Plan Appendix 7.5.11 (copied below). The table should be updated so that the arterial road requirements from apply to WDC strategic and arterial roads and the collector road requirements apply to WDC collector and urban collector roads.

It is recommended that the separation distances apply on both sides of the main road i.e. not just on the same side of the road as a T-intersection.

Speed limit < 70 km/h				
Intersecting road type (distance in metres)				
	Frontage road	Arterial road	Collector road	Local road
a.	Arterial road	30	30	30
b.	Collector road	20	20	10
c.	Local road	20	15	10
Speed limit 70 - 90 km/h				
Intersecting road type (distance in metres)				
	Frontage road	Arterial road	Collector road	Local road
d.	Arterial road	100	100	100
e.	Collector road	45	45	45
f.	Local road	45	45	45
Speed Limit > 90 km/h				
Intersecting road type (distance in metres)				
	Frontage road	Arterial road	Collector road	Local road
g.	Arterial road	200	200	200
h.	Collector road	60	60	60
i.	Local road	60	60	60

Figure 13-1: Recommended Vehicle Crossing Separations from Intersections

14. Table 30.7 Intersection Separation

14.1 Operative District Plan

Table 30.7 outlines minimum intersection spacing requirements by speed limit.

It is not clear how the separation distances in Table 30.7 were developed originally and they may be out of date.

14.2 National Standards

Austrroads recommends at least five seconds of travel time between intersections. The separation distances in the table are all well in excess of five seconds of travel time, ranging from 9s to approximately 30s at the posted speed limit.

14.3 Other District Plans

Many District Plans do not include a rule to control intersection separations and any design controls often appear within the Engineering Code of Practice or equivalent document for the district.

The national standard NZS4404:2010 states that intersections between connector / collector roads or connector / collector intersections with arterial roads shall have a minimum separation of 150m, centre-line to centre line.

The Christchurch City Council Infrastructure Design Standard requires a minimum 150m spacing between all urban intersections except local-local intersections which can be 40m apart.

The Selwyn District Plan includes a similar table to Table 30.7 but allows intersections involving local roads only to be 75m apart where the urban speed limit applies.

14.4 Recommendations

Consider extending Table 30.7 to allow closer intersection separations between local roads where the urban speed limit applies.

Table 14-1: Minimum Intersection Separation

Posted Speed Limit (km/h)	Intersecting Roads	Minimum Separation (m)
100	All	800
80	All	550
60	All	160
50	Local / State Highway Arterial, Collector, business	125
50	Local / local	75

15. Table 30.9 Parking Space Dimensions

15.1 Operative District Plan

The Table sets out minimum car parking dimensions for long term, medium term and short term parking and by parking angle.

15.2 National Standards

The following standards have been reviewed:

- AS/NZS 2890.1: 2004 Part 1: Off-street car parking
- AS/NZS 2890.6: 2009 Part 6: Off-street parking for people with disabilities
- NZS 4121:2001 Design for access and mobility: Buildings and associated facilities

The NZS 2890 standard specifies 5.4m long parking spaces but it states that, in New Zealand, spaces can be marked 5.0m long provided there is no consequential reduction in the combined length of space and width of parking aisle. This means that for 90 degree parking, a minimum kerb to kerb width of 16.6m should be provided assuming that no vehicle overhang.

All District Plan space depths are 5.0m and the aisle widths have been increased by 0.4m on those listed in NZS 2890.1 which does not achieve the NZS2890.1 requirement to provide the kerb to kerb width requirement.

It is noted that, for angled parking spaces, the whole additional 0.4m aisle width may not be necessary but it is considered a good outcome to have a slightly wider aisle and it is not worth trying to reduce the aisle widths by 100-200mm.

Two departures from the NZS2890 standard have been identified.

For long term 90-degree parking, accommodating single entry and exit manoeuvres, a combined space depth and aisle width of 16.6m is required by NZS 2890. With a 5.0m space depth, that would require a 6.6m aisle width, whereas the District Plan permits a 6.4m aisle width.

Accessibility parking spaces are only required to be 3.5m wide in both NZS 2890.6 and NZS 4121, whereas the District Plan currently requires a 3.6m width.

15.3 Recommendations

- Increase all parking aisle width requirements to align with the NZS2890.1 kerb to kerb width requirement for double sided aisles as shown in Table 15-1.

- Consider including a comment stating that space widths should be widened by 300mm when next to an obstruction
- Consider allowing for vehicle overhang in the rule.

Table 15-1: Proposed Parking Space Dimensions

User Type	Parking Angle (degrees)	Manoeuvring Space (m)	Stall Width (m)	Stall depth (m)
All Users	Parallel	3,3 one way aisle 5.5 two way aisle	2.5	5.0 unobstructed 6.1 obstructed
Long Term (Class 1)	30	3.5	2.1	5.0
	45	4.5	2.4	5.0
	60	5.6	2.4	5.0
	90	7.0	2.4	5.0
Medium term (Class 2)	30	3.4	2.3	5.0
	45	4.3	2.5	5.0
	60	5.3	2.5	5.0
	90	6.6	2.5	5.0
Short Term (Class 3A)	30	3.9	2.5	5.0
	45	4.8	2.6	5.0
	60	5.8	2.6	5.0
	90	7.0	2.6	5.0
Accessible	As above	As above	3.6	5.0

16. Table 30.3 Minimum Accessway Formation Widths

16.1 Operative District Plan

Table 30.3 sets out minimum access formation widths and legal widths for accessways by zone type. It applies to all accessways, except those on State Highways with speed limits 70km/h or greater. It is noted that there is no text to clarify what would be required for accessways on those roads.

The current requirements for residential zones, except for comprehensive residential development, are separated for 0-2 dwelling houses and 3-6 dwelling houses or any other activity. No requirement is listed for comprehensive residential development.

The minimum formation width for 3-6 dwelling houses is 5m. It is expected this was intended to allow for two-way movement, whereas it is considered less than required for comfortable two-way movement.

The New Zealand Fire Service has issued guidance on minimum access way widths to allow a fire truck to get within 20m of a building. These require that a clear passage of not less than 3.5m width is provided to allow for fire truck movement.

There are a number of associated rules that relate to the formation of the accessway that are specific to particular residential zones across the District. It is considered that these rules could be consolidated and simplified.

16.2 National Standards

NZS2890 for off-street car parking includes minimum roadway widths of 3m for one-way travel and 5.5m for two-way travel. Outside of those widths, 300mm clearance should be provided from any vertical obstructions higher than 150mm e.g. a boundary fence.

NZS4404:2010 recommends that accessways have a minimum legal width of 5.5m. This is wider than the minimum legal width permitted in the District Plan for the lowest level of accessway, that is, one providing access to two or less properties.

16.3 Other District Plans

The Christchurch District Plan has minimum legal width and minimum and maximum formed width requirements for accesses based on the activity type and the size of the activity (number of car parks served).

The Christchurch District Plan has other rules that go with the table e.g. rules relating to pedestrian provision, clearance heights, passing opportunities and fire truck access.

16.4 Recommendations

The following table provides one way of consolidating the various requirements for accessways and incorporates thresholds that are consistent with NZS4404:2010.

Table 16-1: Recommended Accessway Formation Design Standards

Activity	Number of units / parking spaces	Minimum legal width (m)	Minimum Formed Width (m)	Maximum Formed Width (m)	Passing Bays
Residential	1-3	5.5	3.0	4.0	Yes
	4-6	5.5	4.5	6.0	Yes
	>6	7.0	5.5	6.0	
Business	1- 15	8.0	5.5	8.0	
	>15	8.0	6.0	8.0	
Rural	Any	10.0	4.0	8.0	Yes

Notes:

- 1) In Business zones, it is acceptable for access to be provided by two separate one-way crossings with a minimum width of 3.5m.
- 2) Passing bays shall be provided at intervals of not more than 50m where an accessway does not provide sufficient width for two-way vehicle movement.

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