IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of proposed Plan Change 12 to the partially operative Selwyn District Plan

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STATEMENT OF EVIDENCE OF LISA MARIE WILLIAMS

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16 April 2012

1. INTRODUCTION

1.1 My full name is Lisa Marie Williams. I am a transport planner practising with ViaStrada Limited[1] in Christchurch.

1.2 My experience includes six years employment in the field of planning and traffic engineering. I have previously been employed by the Christchurch City Council as a Planner.

1.3 I hold the qualifications of a Bachelor of Environmental Management from Lincoln University. I am currently studying part-time towards a Masters of Transport Engineering through the University of Canterbury. I am an affiliate member of the Institute of Professional Engineers of New Zealand (IPENZ) – Transport Group.

Scope of Evidence

1.4 Since early 2009 I have been engaged by the Selwyn District Council ('the Council') to assist with the review and amendment of the transport related provisions of the Selwyn District Plan. The Council has since notified proposed Plan Change 12 ('PC12') and has received submissions and further submissions on the proposed change.

1.5 I have been requested on behalf of the Council to provide transport evidence to inform the Council officer's s.42a report. The matters which I have been asked to consider in my evidence have been grouped into the following topic headings:

- Access to classified roads
- Parking provision
- Car park design and layout
- Sight distance
- Intersection spacing
- Separation of vehicle crossings from intersections
- Traffic generation
- Accessway widths

[1] Note that at the time of writing I am currently employed by ViaStrada Ltd however from the 10th of April 2012, I will be employed by Novo Group in the same role as that which I currently hold at ViaStrada Ltd. This change in employer does not alter the material presented in this evidence.

2. ACCESS TO CLASSIFIED ROADS

2.1 In respect to the proposed provisions for access to classified roads, I have been asked to comment on the following:

- The use of Diagram E10.B2 in respect to traffic volumes in the Selwyn District;
- Whether heavy vehicle and high volume accesses are appropriate onto lower order roads;
- The application of Rule 17.2.1.7 (Township Volume, Part 17) to the Business 3 Zone; and
- The Plan's definition of 'State Highway'.

2.2 Each of these aspects are discussed in turn below.

The use of Diagram E10.B2 in respect to traffic volumes in the Selwyn District

2.3 Diagram E10.B2 (Rural Volume, Appendix 10) is derived directly from the NZTA Planning Policy Manual Diagram and Perspective E as specified in Table App5B/4 – Accessway types (shown in Figure 1 below).

Table App5B/4 – Accessway types

Type of traffic using accessway (more than one slow, heavy or long vehicle movements per week?)	Volume of traffic using accessway (ecm/day[5])	Volume of traffic using state highway (vpd)	Accessway type
No	1-30	< 10,000	Diagram and Perspective C
		>=10,000	Diagram and Perspective D
	31-100	< 10,000	Diagram and Perspective D
		>=10,000	Diagram and Perspective E
Yes	1-30	All	Diagram and Perspective D
	31-100	All	Diagram and Perspective E

Figure 1: Extract from the NZTA Planning and Policy Manual

2.4 As shown in Figure 1, Diagram E is not only appropriate for accesses serving 31-100 equivalent car movements (ecm) per day onto roads over 10,000 vehicles per day (vpd) but also if there may be more than one heavy vehicle trip per week. It is not unreasonable to assume that most activities in the rural zone generating 31 to 100 equivalent car movements per day are also likely to generate at least one heavy vehicle trip per week.

2.5 It is also noted that some state highway and arterial roads within the Selwyn District are likely to exceed 10,000 vpd in the foreseeable future (i.e., within the next 10 year review

period). For example, CRETS[2] (2007) identifies that Springs Road south of Blakes Road will carry 10,300 vpd by 2021 and Shands Road will carry 14,200 vpd by 2021.

2.6 Based on CSME2[3], and the identification of new greenfield business land under Chapter 12A to the Regional Policy Statement, traffic volumes could also approach these levels on Marshs Road (note that Marshs Road forms the boundary between the Selwyn District and Christchurch City).

2.7 Rolleston Drive is also anticipated to increase to over 10,000 vpd. Current traffic volumes are around 7,000 vpd and anticipated development associated with Plan Change 7 to the Selwyn District Plan is likely to result in additional traffic generation. Weedons Road and Levi Road could also approach 10,000 vpd with the interchange at Weedons Road and State Highway 1. CRETS estimates around 7000 vpd at 2021 however the time scale is accelerated under the RoNs[4] scheme. For similar reasons Weedons Road north of the interchange and Jones Road west of the interchange could approach 10,000 vpd as the route to Izone Industrial Park is likely increase significantly with the advent of the Interchange. For example, CRETS has estimated 8600 vpd by 2021 on Jones Road but the additional traffic growth could occur sooner based on the Roads of National Significance (RoNS) projects and/or more rapid growth of Izone (for example, due to relocation following the Christchurch earthquakes).

2.8 As such, within the foreseeable future (10 years) a number of roads within the Selwyn District are anticipated to carry around 10,000 vpd and for that reason Diagram E10.B2 is appropriate.

2.9 This rule gives effect to objectives and policies seeking to future proof the through traffic function of state highway and arterial roads.

2.10 It is also noted that Diagram E is consistent with that for rural selling places (the only non-rural activity generally permitted in a rural zone) on minor arterial roads in the neighbouring Christchurch City Plan (Part 13, Appendix 7).

2.11 Where an access services 31-100 vpd but does not generate any heavy vehicle movements per week, and is not onto a road likely to carry in excess of 10,000 vpd in the future, then a resource consent (discretionary activity) can be sought for a lesser access design and formation standard. This however ensures consideration can be given to the effects on the through traffic function of these roads in the future as network planning continues to develop.

2.12 No change is therefore considered to be necessary.

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[2] Christchurch Rolleston and Environs Transport Study
[3] Christchurch Southern Motorway Extension Stage 2
[4] Roads of National Significance

Whether heavy vehicle and high volume accesses are appropriate onto lower order roads

2.13 Where retail activities are permitted (business zones) any lower order roads (local roads) would be suitable for business traffic and may carry high volumes simply because they provide a property access function to businesses. Local roads within a business zone should also be suitable for heavy vehicles and any effects associated with this traffic could be reasonably anticipated as a result of the business zoning.

2.14 Where activities are not permitted, wider consideration of effects (including effects on residential amenity if applicable) would be required as part of any resource consent application. Through such a process, access to a higher order road could be provided for where appropriate.

2.15 In my opinion, this rule is consistent with best practice guidance and industry standards which generally dictate that access should generally be to the lowest order road.

2.16 No change is therefore considered to be necessary.

The application of Rule 17.2.1.7 (Township Volume, Part 17) to the Business 3 Zone

2.17 The relevant clause states:

> **17.2.1.7 Any site with more than one road frontage to a road that is formed and maintained by Council shall have access to the formed and maintained (and legal) road with the lowest classification.**
>
> **Note: For example, where a site has frontage to both an arterial road and a local road access shall be to the local road.**

2.18 Submissions on this requirement raised concerns about the impact of this rule on the creation of new accesses to service existing activities and / or the expansion of existing research activities, in the future. Examples from Plant and Food and others located within the Business 3 Zone were cited to support these concerns.

2.19 From a traffic function and efficiency perspective the same principles apply regardless of the zone and as such this rule should be applied across all zones (including the rural zones). The resource consent process otherwise provides an opportunity to consider the effects and/or merits of access arrangements for existing sites where these change over time.

2.20 No change is therefore considered to be necessary.

The definition of 'State Highway'

2.21 The notified definition of 'State Highway' is (note that in the in Township Volume reference is to Appendix 7 and in Rural Volume to Appendix 9):

State Highway: means any road that is identified as a State Highway in the road hierarchy classification as listed in Appendix 7/9. State Highways are under the control of the New Zealand Transport Agency. They are high capacity and high speed roads of national importance providing inter-district and regional links between towns, cities, ports and other places of significance. State Highways are constructed and managed to high standards to ensure they operate correctly, including managing both road and property access to them. They are subject to access controls in this Plan.

2.22 The submitter requests the following wording changes (changes in bold, additions underlined, deletions shown with a strike through):

State Highway: means any road that is identified as a State Highway in the road hierarchy classification as listed in Appendix 7/9 **and managed by the New Zealand Transport Agency**. ~~State Highways are under the control of the New Zealand Transport Agency.~~ They are high capacity ~~and high speed~~ roads of national importance providing inter-district and regional links between **significant transport hubs such as** towns, cities, ports and other places of significance. State Highways are **maintained** ~~constructed and managed~~ to high standards to ensure they operate ~~correctly~~ **efficiently**, including managing both road and property access to them **through the New Zealand Transport Agency's powers under the Government Roading Powers Act.** They are **also** subject to access controls in this Plan.

2.23 It is recommend that the above changes be adopted except for the replacement of the word "hubs" with the word "destinations". "Destinations" is considered to be more consistent with terminology in other planning documents.

2.24 As such the definition in both Appendix 7 (Township Volume) and Appendix 9 (Rural Volume) should be amended to read:

State Highway: means any road that is identified as a State Highway in the road hierarchy classification as listed in Appendix 7/9 and managed by the New Zealand Transport Agency. They are high capacity roads of national importance providing inter-district and regional links between significant transport destinations such as towns, cities, ports and other places of significance. State Highways are maintained to high standards to ensure they operate efficiently, including managing both road and property access to them through the New Zealand Transport Agency's powers under the Government Roading Powers Act. They are also subject to access controls in this Plan.

3. PARKING PROVISION

3.1 In respect to the proposed provisions related to parking, I have been asked to comment on the following:

- Key transport related costs and benefits of parking provision;
- Determination of parking requirements;
- Reduction of parking rates for each town centre;
- Local centre parking rates;
- Neighbourhood centre parking rates; and
- Changes in parking demand across a day.

3.2 Each of these aspects are discussed in turn below.

Key transport related costs and benefits of parking provision

3.3 The review of parking provisions in the Selwyn District Plan considered both operational issues identified by Council Planning Administration staff and what balance between on and off-site parking could most appropriately manage parking demand within the Selwyn District. The key considerations when determining what level of on-site parking provision is appropriate are:

- The actual parking demand.
- The amount of shared parking resources available (on-street, public or privately owned public parking areas / buildings).
- The type of on-street parking management (unrestricted, metered, time limited etc).
- The type of activity and characteristics of the parking demand (long term, short term, high peak periods, time of peak periods).
- The area required to accommmodate the parking spaces on-site relative to the likely occupancy and parking resources available elsewhere (e.g. existing on-street resources).
- Effects of parking provision on the future uses of the site (where parking provision could not be increased in the future).
- Other influences on parking demand (e.g. implementation of a travel plan or parking charges).
- The likelihood of mode-shift occurring where parking space resources are limited and the likelihood of the destination being substituted for a similar destination which is within walking or cycling distance.

- The availability of alternative modes of travel.
- The potential location of any overflow parking (e.g. where will vehicles park if on-site parking is not available).
- The effects of parking demand being met on-street, on the efficiency of the road network.
- The potential safety effects of high on-street parking demand particularly if there is a high turn-over of parked vehicles or from vehicles circulating in search of parking spaces.
- The potential amenity effects from vehicles parking on-street versus amenity effects of parking on-site.
- The potential effects of displaced parking on adjacent residential areas.
- The costs associated with formation and maintenance of parking spaces.
- Impact of accommodating on-site parking on urban design, site layout and efficient use of land.
- The potential for unintended consequences associated with an oversupply of parking spaces (e.g. encouraging motor vehicle dependancy).

3.4 The relative importance of these aspects must also be considered when determining the level of parking that should be provided on-site. In larger urban areas there is an increasing acknowledgement of the benefits of not having minimum parking requirements (i.e., no required parking and / or limits on how much parking can be provided) due to the economic, social and environmental costs of over provision of car parking. At this stage however retention of minimum parking requirements within Selwyn District was considered necessary for the following reasons:

- The District is primarily rural, serviced by a number of townships. These townships generally have a small business core surrounded by residential. Therefore a number of visitors to the township live beyond walking and or cycling distance.
- Public transport services are limited.
- There is a limited ability to substitute a destination for a similar destination closer to a place of residence in order to walk or cycle to the destination.
- Public parking resources are largely limited to on-street parking.
- On-street parking resources are generally already well utilised in most townships.
- The proximity of business zones to residential zones increases the likelihood of increased on-street parking demand extending into residential zones.

- Most township business zones are located on major through roads (either state highways or arterial roads) which requires careful management of on-street parking in terms of protecting the traffic function of these roads.
- There is limited on-street parking management (some use of time-restricted parking but no metered parking).
- Council is unlikely to be in a position to significantly increase on-street parking management to control demand in the next 10 years (unlikely to install a residential parking permit scheme or parking meters to control parking demand).
- Most rural roads do not provide sealed shoulders for on-street parking and typically have 100km/h operating speeds.
- It is noted that consideration also needs to be given to anticipated future growth pressures and the potential impact they may have on the existing character and amenity as well as the desire to achieve good street design and urban design outcomes.

3.5 The construction cost for surface level parking (including aisle space etc) is estimated to be between $1,664 and $2,121 (Hulme-Moir, 2010[5]). The cost of land can also be significant (for example, an estimated $5,750[6] per car park for a particular retail site in Rolleston).

3.6 Generally on-street parking should be avoided in locations where the use of on-street parking could cause a safety concern. This is managed through the use of yellow "no parking" restrictions (for example, in close proximity to intersections). The Austroads *Guide to Traffic Management, Part 11; Parking*, generally recommends that kerb-side parking should be avoided on roads with a speed limit above 60km/h and on high volume roads. This is necessary to protect safety unless adequate clearance is made between the trafficable lane and parking.

3.7 The manoeuvring of vehicles into and out of parking spaces can impact on the efficiency of through traffic. Where specific parking lanes are not provided, parking can noticeably decrease the midblock capacity of the road (900vph to 600vph – *Austroads Guide to Traffic Management Part 3; Traffic Studies and Analysis*).

3.8 On-street parking availability in adjoining residential zones has not been considered as it is undesirable for a high level of parking demand to overflow into adjoining residential areas. Experience in urban areas which have a high incidence of on-street parking overflow into residential areas suggests this is not welcomed by residents. The potential effects from on-

[5] Hulme-Moir, A. 2010. Making way for the Car: Minimum Parking Requirements and Porirua City Centre. Victoria University of Wellington. Wellington, New Zealand.
[6] Based on rate-able value of land

street parking spilling into residential areas can vary depending on the circumstance, however some of the effects commonly raised by residents (e.g. through submissions on resource consents) include:

- Reduction in on-street parking availability to meet the on-street parking demands of residents and their visitors. This varies by area depending on the level of on-site parking available within the sites.
- Disruption to property access associated with high parking demand and parking of vehicles too close to driveways and or parking across driveways (e.g. to duck into a shop / short term parking). This can be mitigated by enforcement (cars must legally be parked at least one metre from a vehicle crossing) however regular enforcement requires staff time and administrative resources.
- Disruption to through traffic associated with high turn over of parking areas becoming a frustration to residents travelling to and from their properties.
- Visual dominance of parked motor vehicles on the streetscape and character.
- Resistance by residents to intrusion of the residential neighbourhood by a large number of visitors (non-residents).
- Noise and general disturbance associated with regular incidents of vehicles starting, manoeuvring, doors opening and shutting, glare from headlights during winter months etc.

3.9 For these reasons, when setting parking requirements for the Town Centre Business 1 Zone, parking on adjacent residential areas has not been included in terms of available on-street parking resources. It is therefore considered necessary at this stage to manage parking supply to meet likely parking demand. In township business zones where operating speeds are typically 50 km/h, there is generally specific provision for on-street parking and a reasonable level of expectation by drivers that vehicles will be manoeuvring into and out of on-street parking. On-site space constraints also exist and therefore it is considered acceptable to balance on-site parking provision with use of on-street parking resources.

3.10 Determining the required parking rates for the Selwyn District's larger townships therefore necessitates distributing the anticipated parking demand between on-street and on-site parking. In determining the on-site parking requirement the following must be estimated:

- The likely increase in (all) business activities in the foreseeable future; and
- The resultant increase in (total) parking demand in the foreseeable future; and
- The existing (and any future) on-street parking resources available within the business zone.

3.11 The following discussion considers the likely parking demand for retail and food and beverage activities which generally dominate the township Business 1 Zone. It also considers the availability and suitability of reliance upon on-street parking to meet some of the total parking demand in the town centres. The aim is to determine an appropriate rate for on-site parking requirements which reflects that some parking demand will be met within surrounding on-street parking resources.

Determination of parking requirements

3.12 The existing District Plan parking rates for activities likely to establish in the Business 1 zones are:

- Commercial: 3 spaces per 100m² GFA[7] plus 1 space per 100m² outdoor storage / display area, plus 1 staff space per 100m² floor area.
- Commercial involving retail sales: 2 spaces per 100m² GFA and or outdoor display area.
- Restaurants and Taverns: 10 spaces per 100m² PFA[8], 10 spaces per 150m² outdoor dining area.

3.13 Experience by Council staff administering the existing parking requirements suggested that the existing rates were ambiguous and that the retail sales rate was too low. On this basis a review of the parking rates was undertaken including a comparison with other District Plan requirements and industry guides such as the RTA Guide to Traffic Generating Developments and the New Zealand Trips Database. On the basis of this review the following parking requirements have been notified within Plan Change 12:

- Retail (including sales and services): 4.5 spaces per 100m² GFA
- Food and Beverage: 4.5 spaces per 100m² PFA for the first 150m² of PFA then 19 spaces per 100m² PFA thereafter.

3.14 The recommended rates enable each activity to meet the parking demands of the activity on-site for all but the busiest times of the year (i.e., peak parking demand).

Reduction of parking rates for each town centre

3.15 As outlined above, it is considered appropriate for some of the total parking requirement of activities located within the town centre Business 1 Zone to be met within the on-street parking resources. This reduces the level of on-site parking which is required. In addition, the conglomeration of retail activities within town centres can reduce the overall parking

[7] Gross Floor Area
[8] Public Floor Area

demand through the sharing of parking resources (e.g., on-street parking resources being used by visitors to a number of sites).

3.16 Figure 2 below shows how the parking demand rate varies with the amount of retail floor area. Figure 2 is generated from parking survey data contained within the NZ Trips database. The computer generated trend line shows that the parking demand per 100m² GFA increases as the size of the shop decreases. It is also noted that the variability also increases as shop size decreases.

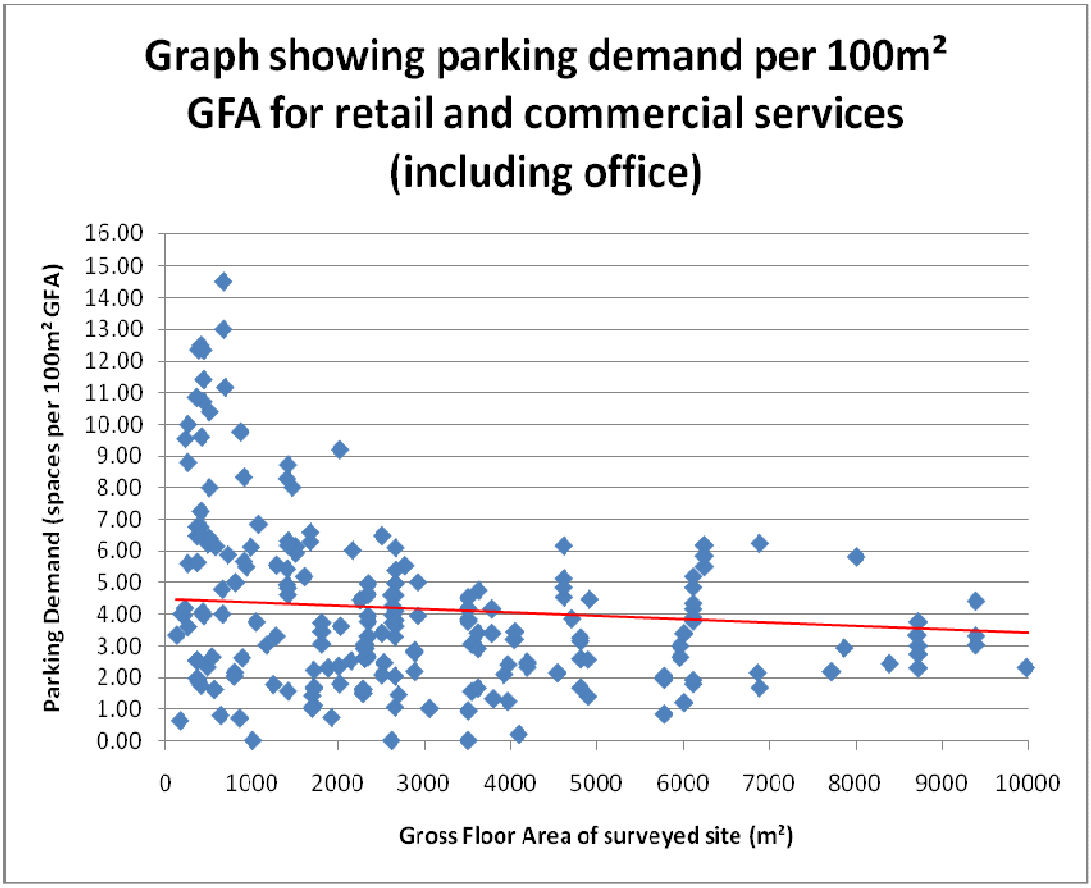


Figure 2: Change in parking demand rate as retail floor area increases

3.17 The parking demand data however indicates that a lower parking requirement could be appropriate where a number of shops (higher GFA) are located in close proximity. This recognises that the interaction between these shops often results in a lower total parking demand than the sum of the shops individually. This notion is commonly acknowledged with shopping malls where the parking area is shared by all tenancies. People parking at a mall typically visit several shops rather than just one, as such the parking demand is less than that of the sum of each shop individually.

3.18 This concept is also likely to occur in town centres although perhaps to a lesser extent given the distance between shops and the inability to park in a private (on-site) parking area where you are not shopping (i.e., the car must be moved between different developments as parking is permitted only for customers of the shop(s) on-site). On-street

parking however, does allow shopping at multiple tenancies similar to that of a mall situation.

3.19 In reducing on-site parking, it needs to be recognised that once sites are built / developed with a low level of parking it becomes very unlikely that a higher level of parking would ever be reinstated given the physical constraints to doing so. Therefore if issues associated with kerb-side parking were to arise there would be limited opportunity to resolve them. Council may then face pressure to provide futher public parking to avoid displacement of township parking into residential zones. Alternatively Council could instigate parking management and measures to mitigate the effects of on-street parking within residential zones.

3.20 Two key considerations have been used to determine the level of reduction which may be suitable in the town centre Business 1 Zone within Lincoln, Rolleston, Prebbleton, Darfield, Leeston and Southbridge.

- Firstly, the existing and anticipated GFA of retail activities (including food and beverage, commerial services) likely to occur in each township (based on zoning and growth predictions).
- Secondly, the availability and / or potential addition of on-road (or other public) car parking spaces.

Lincoln

3.21 The Lincoln Structure Plan allows for up to 20,000m² of floor area with in the Town Centre. This is however considered to be in excess of that which is likely to occur in the next 10 years. The Council has advised that planning for a future floor area up to around 16,000 to 18,000m² in the next 10 years would be considered a conservative (high) estimate. This is based on the amount of land likely to be converted from residential to business uses and that most developments in Lincoln are typcially only single story. Approximately 5,000m² of retail floor area currently exists within the township therefore new floor area of 11,000m² to 13,000m² can be anticipated.

3.22 A comprehensive parking survey within Lincoln Town Centre (undertaken to inform the master planning and the management of parking assets) provides information on the existing level of on-street parking demand. The survey results indicate that the existing (peak) on-street parking demand is around 2.4 spaces per 100m² of existing floor area[9]. This represents around 75% occupancy of existing on-street (i.e. kerbside) parking resources located within the Business 1 Zone.

[9] Based on a surveyed demand for 120 spaces and around 5,000m² GFA existing within the township.

3.23 Using data from the same Lincoln Town Centre survey, it is also noted that when considered in conjunction with a snap shot of parking demand (peak of 1.5 spaces per 100m² GFA) within a small retail area on the corner of Gerald Street and Maurice Street the total parking demand could be in the order of 3.9 spaces per 100m² GFA. This aligns well with Table 1 above for 5,000m² GFA within the existing township.

3.24 The increase in retail floor area may not result in a linear increase in parking demand due to vehicle occupants visiting more than one location (as discussed above). Extrapolating Table 1 above the anticipated future floor area would suggest an average retail parking rate of 3.0 spaces per 100m² GFA. In reality not all of this area will be retail or food and beverage type activities (for example, offices and or community activities) and given only on-street parks will be public (as mentioned above) the effect of a conglomeration of retail activities may not be as great as that suggested in Table 1. As such a rate of around 3.5 spaces per 100m² is considered appropriate for retail. A similar reduction is also applied to food and beverage activities (as a subset of retail).

3.25 Noting the above, the following parking rates have been recommended in the notified version of PC12 for Lincoln Township:

- Retail: 3.5 spaces per 100m² GFA
- Food and Beverage: 3.5 space per 100m² PFA for the first 150m² then 15 spaces per 100m² PFA thereafter.

3.26 No new roads are currently anticipated within the business zone therefore no increase in on-street parking resources are anticipated in the foreseable future. As such, the anticipated increase in floor area (11,000m²) cannot generate the same level of reliance on on-street parking without overflowing into adjoining residential zoned streets. Based on the Lincoln parking survey data mentioned above there are around 35 (un-occupied) on-street parking spaces available within the Business 1 Zone during busy periods.

3.27 Based on the addition of 11,000m² of floor area shared between the 35 available on-street parking spaces this equates to an allowance for around 0.3 spaces per 100m² of the parking demand to be met within existing on-street parking resources. Therefore as an absolute minimum on-site parking provision of 3.2 spaces per 100m² GFA should be required.

3.28 The recommended rate of 3.5 spaces per 100m² is considered an appropriate rate for inclusion within the District Plan recognising that there may be some instances where provision of on-site parking is not able to be achieved or to allow for greater than expected increases in GFA.

3.29 The recommended boundary for which these rates should apply is the Bussiness 1 Zone located generally along Gerald Street as shown on the relevant planning maps. This should not apply to any other business zones in Lincoln. The rates are intended to act as an incentive for businesses to locate in the Town Centre and reflect that the parking demand for businesses established in isolation is likely to be higher and that the use of on-street parking in the vicinity would be less acceptable outside of the Town Centre Business 1 Zone.

3.30 For the reasons set out above no change to the notified parking rates is recommended.

Rolleston

3.31 The Rolleston Structure Plan identified that there is around 7,850m^2 of existing floor area in the main town centre of Rolleston. Approximately 11,000m^2 of additional floor area is anticpated.

3.32 The level of on-street parking demand within the Rolleston Business 1 Zone has not been surveyed to the same extent as that which has occurred at Lincoln. It is however noted that no new roads are proposed and therefore no increase in on-street parking supply is anticipated.

3.33 The increase in retail floor area may not result in a linear increase in parking demand due to vehicle occupants visiting more than one location. From Table 1 above the anticipated growth in floor area would suggest an average retail parking rate of approximately 3.0 spaces per 100m² GFA. In reality not all of this area will be retail or food and beverage type activities (for example, offices and or community activities) and given only on-street parks will be public, the effect of a conglomeration of retail activities may not be as great as that observed in Table 1.

3.34 As such the following rates are recommended:

- Retail: 3.5 spaces per 100m² GFA.
- Food and Beverage: 3.5 spaces per 100m² PFA for the first 150m² of PFA then 15 spaces per 100m² PFA thereafter.

3.35 No formation of public (off-street) parking is currently planned within Rolleston, so only the above reductions are recommended at this stage. It is recommended that this reduction would apply to the existing Business 1 Zone generally located along Rolleston Drive and that any Plan Change to extend this zone, for example, along Tennyson Street would need to consider the applicability of broadening the reduced parking rates to include the extended zone.

3.36 For the reasons set out above no change to the notified parking rates is recommended.

Darfield

3.37 The Darfield Business 1 Town Centre is generally located on either side of State Highway 73 (SH73). There is great variety in the level of on-site parking provision, ranging broadly between some newer developments with a reasonable level of on-site parking to those with a few limited staff or visitor parks and some shops with no on-site parking. Darfield is located on SH73 and enroute to ski fields and the West Coast which means that at times high visitor / tourist numbers occur with resultant high levels of parking demand. Parking is generally permitted along both sides of the State Highway. Along a number of the intersecting local roads angled parking has been provided to increase the overall parking resources available.

3.38 The existing level of GFA within the Business 1 Zone is not known however is estimated to be in the order of 2,500m² GFA. Based on Table 1 above this would suggest a retail parking demand of around 4.1 spaces per 100m² GFA.

3.39 As the Darfield township is located either side of the State Highway this necessitates balancing the through traffic function on the State Highway and the site access and parking functions for the Town Centre. Existing wide shoulders either side of the State Highway achieve reasonable separation between parked vehicles and through traffic and limit the disruption to through traffic associated with vehicles moving into and out of parking spaces and vehicle crossings etc.

3.40 Further increases in on-street parking supply would need to be met by additional angled parking provision along the local roads. These local roads have wide road reserves and thus some additional angle parking could be provided (on those roads where this has not already occurred). It would however be generally undesirable for angle parking to extend too far into the residential areas which could start to impact on the residential character of these roads.

3.41 A survey of existing land uses within the Business 1 Zone of the township indicates that there are very few sites yet to be developed for retail / business activities. Whilst there may be increasing pressure to extend business development into the adjoining residential zone, significant futher growth in the existing Business 1 Zone appears unlikely.

3.42 In summary, given the existing level of retail floor area, anecdotal knowledge of peaks in occupancy of the existing on-street parking demand, limited likelihood of significant development within the Business 1 Zone and some limited opportunities to allow for additional on-street parking, the following rates have been recommended within the notified version of PC12:

- Retail: 3.5 spaces per 100m² GFA

- Food and Beverage: 3.5 spaces per 100m² PFA for the first 150m² of PFA then 15 spaces per 100m² PFA thereafter.

3.43 It is recommended that these rates apply only to the existing Business 1 Zone of the township as allowance has not been made for the additional parking demands associated with growth within surrounding non-business 1 zoned sites.

3.44 It is considered that these could be later revised as part of any Plan Change(s) associated with a Structure Plan and or Master Plan which I understand is proposed for Darfield in the future.

3.45 For the reasons set out above no change to the notified parking rates is recommended.

Prebbleton

3.46 A number of 'no parking' areas and site accessways limit kerbside parking supply in the vicinity of the main road shops.

3.47 Some 90 degree parking has been provided generally between the sealed carriageway and the main strip of shops. This parking has a posted P10 (10 minute) restriction ensuring turn-over for visitor parking. This parking area is likely to be servicing customers calling in to pick up general retail items and commercially prepared food etc.

3.48 Springs Road is a major arterial road and carries one of the highest traffic volumes in the District. This is likely to reflect the high level of commuter traffic travelling between Selwyn District and Christchurch City as well as travel to and from Lincoln University. The high traffic volumes make it important to avoid excessive side friction associated with vehicles pulling into and out of parking spaces disrupting the flow of vehicles within the adjoining traffic lanes. The area behind the 90 degree parking for example, allows vehicles to pull out of the parking space, turn and wait to enter the traffic lane clear of the traffic lane.

3.49 There appears to be limited potential to increase this type of parking due to the existing built environment and the road reserve width. That being said, the majority of zoned land is located to the east of the Springs Road shops and is likely to be serviced by new roads. Consideration would need to be given to the appropriateness of a high level of on-street parking being provided on these new roads versus the parking demand being met on each site.

3.50 A lot of 'no parking' areas and accessways limit parallel kerbside parking supply in the vicinity of the main road shops.

3.51 The likely future GFA within the township is as yet unknown however for the purposes of this assessment it has been assumed that the future GFA is likely to approach 6,000m²

Based on Table 1 above, a parking rate of 3.8 spaces per 100m² can be anticipated. In reality however not all of this may be retail activities and not all parkings spaces are shared therefore the conglomeration effect may be slightly less than that specified in Table 1.

3.52 For the reasons set out above no change to the notified parking rates is recommended.

Leeston

3.53 In Leeston the bulk of the Business 1 Zone is already developed with the exception of some residential sections generally located at the south-west of the zone which could be developed for business use in the future.

3.54 The Business 2 Zone along Station Street also contains some retail however this is characterised by lower turnover and large bulk retail type activities and the sites are generally much larger and capable of accommodating parking on-site.

3.55 Kerb-side parking is generally provided along both sides of High Street, a public parking area is located on the corner of High Street and Leeston and Lake Road and some angle parking has been provided along Gallipoli Street.

3.56 Overall, it would appear that significant additional development within the Business 1 Zone is unlikey. Existing on-street parking demand was observed to be reasonably high thus any additional reliance on on-street parking may be difficult to accommodate.

3.57 There is an historical lack of on-site parking due to buildings being built right up to the road boundary and this also limits the ability to provide additional parking on these sites.

3.58 The conglomeration of a large number and variety of retail and service activities established in the township (estimated GFA of 3,200m^2) suggests that average parking demand is likely to be 4.0 spaces per 100m² GFA. It is also considered that a comparable reduction to the number of parking spaces for food and beverage outlets is appropriate.

3.59 Given the significant on-site space constraints within Business 1 zoned land in Leeston and the ability for overflow parking to occur on-street within the adjacent Business 2 Zone (rather than immediately into residential areas) as well as the limited amount of zoned land to accommodate any significant increase in GFA a slight reduction in the parking rates to be consistent with that for other townships is considered acceptable. The following rates have therefore been notified under PC12 and no change is recommended:

- Retail: 3.5 spaces per 100m² GFA.
- Food and Beverage: 3.5 spaces per 100m² PFA for the first 150m² of PFA then 15 spaces per 100m² PFA thereafter.

Southbridge

3.60 The existing retail floor area within the Southbridge is low and would on its own not justify any reduction in parking rates based on the conglomeration of multiple retail activities. Whilst the existing Business 1 Zone would permit a reasonably high level of retail GFA to be established, it appears unlikely that significant new retail GFA is going to be established in this location in the forseeable future.

3.61 There is currently ample on-street parking supply within the Bussiness 1 Zone. Traffic volumes on High Street are reasonably low relative to other townships and therefore manoeuvring associated with on-street parking is unlikely to have any significant effect on traffic flow. The existing activities have either no or limited on-site parking. Existing on-street parking demand is low with the exception of an area on High Street, south of Wilson Street which is located outside of the Business 1 Zone but which contains several business activities.

3.62 Whilst it is not considered appropriate to allow for the effects of a conglomeration of retail activities, given the low risk of significant additional development occuring, and the wide availablilty of on-street parking the following rates were included in PC12:

- Retail: 3.5 spaces per 100m² GFA
- Food and Beverage: 3.5 spaces per 100m² PFA for the first 150m² of PFA then 15 spaces per 100m² PFA thereafter.

3.63 In order to encourage development of retail activities within this location it has been requested that consideration be given to whether a lower parking rate could be acceptable for small retail developments (for example, conversion of dwellings). Given the existing level of on-street parking available and limited likelihood of this being highly utilised in the foreseable future there is no reason that such an exemption could not be made. It has been suggested that most sites are able to accommodate 2-3 spaces within the existing constraints of the site and that floor areas of existing buildings (typically dwellings) within the Business Zone are likely to be around 200m² GFA or less. On this basis a parking requirement of 2.0 spaces per 100m² GFA would be reasonable. This rate should be limited to small retail activities.

3.64 It is recommended that consideration be given to including a parking requirement for small scale activities (less than 200m² GFA) to provide parking at the rate of 2.0 spaces per 100m² GFA. This is discussed further in conjunction with the local centre and neighbourhood centre parking rates below.

Local centre parking rates

3.65 In addition to the town centres discussed above, the Selwyn District contains a number of smaller townships referred to in the planning maps as local or neighbourhood centres. These are predominantly clusters of living zones scattered throughout the rural area. Only a few of these local centres have any form of business zone and these are typically small. These centres may however provide a location for local services e.g. dairy / general store, petrol station etc. Given such activities are generally small scale, limited in number and service the local population, limited on-street parking in the vicinity of these activities may be acceptable to nearby residents. Given the small size of these sites and Council's desire to avoid an overly commercial appearance of the site, the reliance on some on-street parking may also be practical.

3.66 Whilst in some instances these local centres may be located on an arterial road, the following points are noted:

- If parking is permitted adjacent to the site by Council or NZTA as the roading authority, it can be assumed that use of these spaces can occur safely and efficiently.
- The small scale of the activity will limit the extent of parking demand and there is not expected to be significant development within these centres over the next 10 years.
- If parking was not permitted directly outside the site, this could occur on nearby roads. Alternatively the applicant could choose to provide parking spaces on the site in excess of the minimum District Plan requirement, to meet the operational needs of the activity.

3.67 It is therefore considered that a reduced parking requirement of 2 spaces per 100m² GFA for small business activities could be permitted for these areas. The proposed Plan changes are shown below in conjunction with the neighbourhood centres discussion.

Neighbourhood centre parking rates

3.68 For neighbourhood centres where up to 450m² GFA tenancies may establish and the total floor area within the centre could be around 1,000-2,000m² GFA it is noted that a reduction in parking could be appropriate in respect to conglomeration of retail (as per Table 1 above) and in terms of available on-street parking.

3.69 At 2,000m² GFA Table 1 above would suggest a parking demand of 4.2 spaces per 100m² GFA. Whilst not all neighbourhood centres may achieve 2000m², given the local service nature of these activities there can also be a reduction in the on-site parking requirement

recognising that some use of on-street parking within the neighbourhood centre may be acceptable for local residents.

3.70 On balance therefore, a rate of 4 spaces per 100m^2 is recommended. This could be achieved by including activities with GFA less than 450m^2 in neighbourhood centres within the Table 1(B) (i.e., the same rates as applied to Prebbleton in the notified version of the Plan).

3.71 The following changes are recommended (Shown as highlighted text):

Table E13.1 (b) — Parking spaces to be provided for Town Centres, Local Centres and Neighbourhood Centres.

The following requirements shall apply (instead of the requirements in Table E13.1(a)) to:

- Retail and Food and beverage activities located within the main Business 1 zone within the town centres of Lincoln, Rolleston, Darfield, Prebbleton, Leeston or Southbridge, as shown on the respective Planning maps. For the avoidance of doubt, the following requirements shall not apply to isolated pockets of Business 1 zoned land or areas of Business 1 zone which are outside of the main town centre.

- Retail and Food and beverage activities of less than 450m² GFA located within a Neighbourhood Centre.

- Any activity other than residential, with a total floor area less than 200m² GFA and located either within the Business 1 Zone at South Bridge or a local centre.

ACTIVITY	MINIMUM PARKING SPACES TO BE PROVIDED
Food and Beverage (Lincoln, Rolleston, Darfield, Leeston and Southbridge)	3 .5 spaces per 100m² PFA for the first 150m² then 15 spaces per 100m² PFA thereafter. Of which the greater of 1 space or 15% of the total spaces required for the activity, shall be marked on-site to provide a minimum level of staff parking. Where there is no public floor area, for example a drive through only, one space shall be provided per staff member employed on the site at any one time.
Retail activities generally (including Commercial) (Lincoln, Rolleston, Darfield, Leeston and Southbridge)	3.5 spaces per 100m2 GFA and/or outdoor display area. Of which the greater of 1 space or 15% of the total spaces required for the activity, shall be marked on-site to provide a minimum level of staff parking.

ACTIVITY	MINIMUM PARKING SPACES TO BE PROVIDED
Food and Beverage (Prebbleton and activities less than 450m² GFA in Neighbourhood Centres)	4.0 spaces per 100m² PFA for the first 150m² then 17 spaces per 100m² PFA thereafter. Of which the greater of 1 space or 15% of the total spaces required for the activity, shall be marked on-site to provide a minimum level of staff parking. Where there is no public floor area for example a drive through only, one space shall be provided per staff member employed on the site at any one time.
Retail activities generally (including Commercial) (Prebbleton and activities less than 450m² GFA in Neighbourhood Centres)	4.0 spaces per 100m² GFA and/or outdoor display area. Of which the greater of 1 space or 15% of the total spaces required for the activity, shall be marked on-site to provide a minimum level of staff parking.
Any activity other than residential, with a total floor area less than 200m² GFA and located either within the Business 1 Zone at Southbridge or within a local centre.	1.5 spaces per 100m² GFA. Where there is no public floor area for example, a drive through only, one space shall be provided per staff member employed on the site at any one time.

Changes in parking demand across a day

3.72 As a general rule, the recommended parking rates have been set to cater for peak periods. The duration and time of peak parking demand differs between activities for example, lunch time for a café, start and finish times for schools, work hours for office. The overall on-street parking demand for the Lincoln Town Centre (including demand in immediately adjoining residential zones) has been surveyed across a day. This is shown in Figure 3 below.

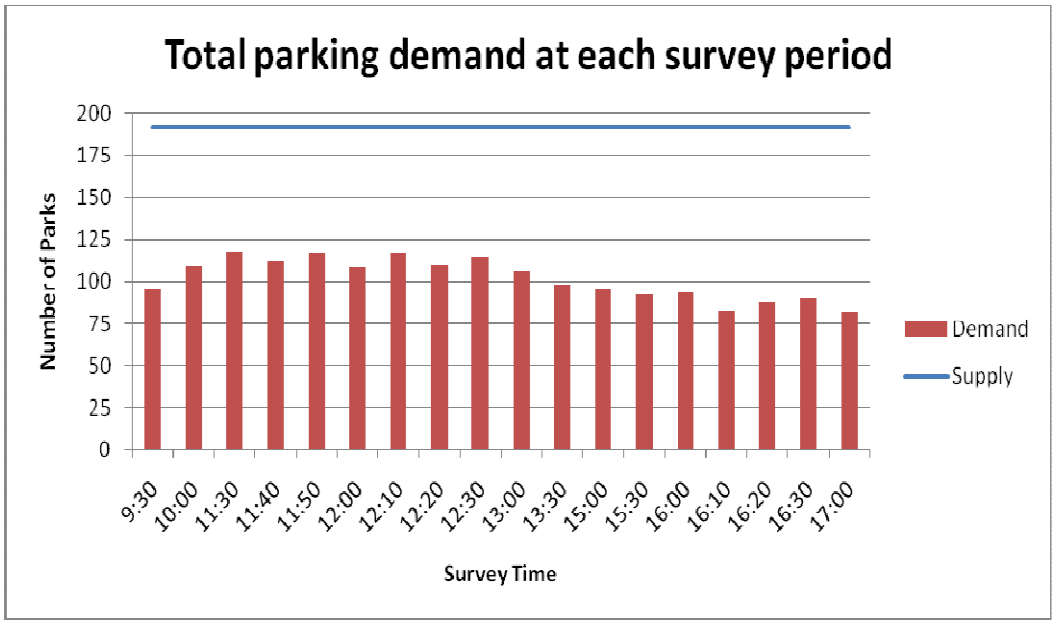


Figure 3: Parking demand for the Lincoln Town Centre

3.73 Using the information in Figure 3 and other available survey data, it is possible to analyse the actual total parking demand and the distribution of that demand between on-street and on-site parking. It is then possible to consider the likely increase in parking demand resulting from anticipated growth. From this information, the proportion of total parking demand that needs to be provided on-site can be determined based on the number of on-street parking spaces within the town centre which are currently un-utilised. It is also possible to consider the number of vehicles which would be displaced into adjoining residential areas if less on-site parking was provided. The likely displacement at peak periods is the focus of the following section of my evidence.

3.74 The parking demand across the survey period (shown in Figure 3) varied by around 30% between the peak period and period of lowest recorded parking demand. If the on-site parking provision for township rates were to be reduced by say 20% (from existing provision) this would mean that parking demand would overflow into residential areas for around 5 to 6 hours of the day (I.e., the busiest times of the day where parking demand is 80%-100% of the maximum demand).

3.75 Based on current demand (Figure 3), if 20% of the parking was displaced into residential areas this would mean up to 24 cars parking within the residential area.

3.76 The recommended on-site parking requirement for Lincoln of 3.5 spaces per 100m² GFA has been determined based on dispersal of total parking demand between on-site parking and on-street parking spaces which are currently un-utlised within the town centre.

3.77 Given the anticipated growth in floor area (11,000m²), if 20% of the required (3.5 spaces per 100m²) on-site parking spaces (i.e., 0.7 spaces per 100m² GFA) were to occur within residential areas this could equate to an additional 77 cars parking within the residential area over the busy period (10am to 3pm).

3.78 This however assumes that cars are parked for short periods of time (say less than 60 minutes) such that cars which arive during the busy periods and park in residential areas are not then parked for longer durations such that the vehicles remain parked within the residential areas after parks become available within the town centre business zone.

3.79 It should however be noted that staff parking is most likely to be displaced into adjoining residential areas once parking pressures are experienced in business zones. Staff parking typically has an all day (work hours) duration therefore even when parking spaces within the business zone may be available, staff vehicles may be parked within adjoining residential zones.

3.80 It is however noted that this parking demand would be dispersed between a number of adjoining residential streets which would reduce the extent of effects experienced in any one street.

3.81 It can be reasonably assumed that the peak parking periods within most of the Selwyn townships are likely to exhibit a similar parking demand profile across the day. The broader level policy decisions (refer to the section 7.5.2 of the 32 assessment) determined that parking rates to cater for parking demand at all but the busiest times of the year were the most appropriate for impending 10 years within the Selwyn District. This protects the adjoining residential areas.

4. CAR PARK DESIGN AND LAYOUT

4.1 In respect to proposed provisions related to car park design and layout, I have been asked to comment on the following:

- Intent of rules 17.7.1, 17.7.2 and 5.5.2; and
- The definition of redevelopment.

4.2 Each of these aspects are discussed in turn below.

Intent of rules 17.7.1, 17.7.2 and 5.5.2; and

4.3 The relevant text for rules 17.7.1, 17.7.2 and 5.5.2 as notified in the PC12 documents states:

17.7.1 Any development or redevelopment, of a parking area with more than 20 parking spaces shall be a controlled activity except that this rule shall not apply to any industrial activities within the Business 2 zone, to any activity within the B2A zone (Izone) or to the Business 3 zone.
17.7.1.1 The exercise of Councils discretion shall be limited to the following:

(a) The location, layout and orientation of parking areas relative to:
i. Buildings, the road frontage, and any physical constraints for the site, and
ii. Vehicle manoeuvring, access and circulation, and
iii. Pedestrian and cyclist access and circulation within the site particularly safety at vehicle crossings, and

(b) The provision of lighting for the safety and security of the parking area users, and

(c) The amount, location, height, variation and depth of landscaping within and adjacent to the parking areas and the road frontage.

17.7.2 In the Business 3 zone, any development or redevelopment, of a parking area with more than 40 parking spaces shall be a controlled activity.

17.7.2.1 The exercise of Councils discretion shall be limited to the following:

(a) The location, layout and orientation of parking areas relative to:

iv. Buildings, the road frontage, and any physical constraints for the site, and

v. Vehicle manoeuvring, access and circulation, and

vi. Pedestrian and cyclist access and circulation within the site particularly safety at vehicle crossings, and

(b) The provision of lighting for the safety and security of the parking area users, and

(c) The amount, location, height, variation and depth of landscaping within and adjacent to the parking areas and the road frontage.

5.45.2 Any development or redevelopment of a parking area of more than 40 parking spaces shall be a controlled activity, in respect to safety, circulation and access for pedestrians within the site and moving past vehicle crossings.

4.4 Parking involves a fundamental interaction between transport and land use and therefore this rule seeks to achieve integrated design and planning. This rule was developed to encourage best practice parking design and layout.

4.5 Parking spaces can occupy large portions of a site and therefore they can have a noticeable impact on the layout of the site particularly given the prescriptive nature of parking space provisions (e.g., stall width, length, aisle width and manoeuvring space requirements). Other site requirements such as building entrances and landscaping are often constrained by the need to accommodate parking. This can result in poor urban design and amenity outcomes. These aspects require collaborative planning to ensure a good overall outcome for the site is achieved.

4.6 Since the drafting of the Plan Change 12 provisions, a Commissioner's decision on Plan Change 29 has been released and a number of the key amenity and site layout considerations for the Business 1 Zone have been incorporated into the District Plan. As such it is considered appropriate to simplify rules 17.7.1 and 17.7.2 (note the numbering will change due to PC29) to focus primarily on the pedestrian safety and circulation aspects.

4.7 In terms of transport related on-site design, this rule is intended to provide some balance between efficient design of car parking areas for use by vehicles (e.g. stall and aisle dimensions etc) and use by other modes. For example, in parking areas where there are multiple rows of parking and / or high turnover of parks, it is desirable to avoid the main vehicle circulation route separating these parks from the building entrance. Solutions may be as simple as a re-orientation of the parking modules, for example, to provide more direct pedestrian routes within and across the site.

4.8 This rule also complements other changes to the District Plan to achieve better connectivity and accessibility for all transport modes by ensuring that destination facilities

(in this respect being sites / parking areas / site entrances) are safe, convenient and pleasant places to be (note there is a correlation between the number of parking spaces and likelihood of being a destination, although the actual number of trips to the site varies by land use).

4.9 The 40 space threshold was identified based on the typical layout and construction of parking areas of this size. Analysis was undertaken of parking areas with less than 20 spaces and then in increments of 10 spaces (e.g. 21-30) up to 60 spaces and parking areas with more than 60 spaces. The first 10 sites with car parks found either on application plans or identified in aerial photos in each size category were chosen. The layout of the parking spaces within each site was then categorised as having a single parking module / single row of parks around the perimeter of the site or as having another arrangement (for example, multiple aisles or parking areas). This reflects the size at which a simple parking module / layout is not typically able to be achieved and thus more detailed scrutiny may be necessary.

4.10 The results are shown below:

Table 1: Change in parking demand rate as retail floor area increases

No. of parking spaces	Single Aisle or perimeter parking layout	Other arrangements (more than one aisle)
less 20	90%	10%
21-30	70%	30%
31-40	60%	40%
41-50	30%	70%
51-60	20%	80%
60	10%	90%

4.11 The table of results shown above indicates that in the 40 plus parking space categories the majority of parking layouts changed from a single aisle or perimeter parking layout to more varied arrangements (multiple aisles etc). This is considered to be a noticeable change from 60-90% of car parks below 40 spaces having a single aisle or perimeter layout to 30% or less, for car parks consisting of over 40 spaces.

4.12 The 40 space threshold is considered appropriate in terms of the need to give specific consideration to pedestrians. This would equate to an area of 860 to 1,250m² of parking area. In this sized car park pedestrians could be walking 35-40m between a parking space and building entrance often crossing behind 20-40 parks or through several rows of parking spaces.

4.13 Whilst it is acknowledged that in some instances sites with less than 40 parks could benefit from consideration of the pedestrian circulation it is likely that only a small number of the

parks are likely to be located a significant distance from the building entrance and it is likely that these parking spaces would be used on a less frequent basis which would mitigate the potential effects to a degree.

4.14 At a size of 40 parking spaces even if parking spaces turned over only once in an hour (assuming busiest hour of the day for low generating activities) this could equate to 80 vehicle movements within the car park (more than one per minute) and therefore a reasonable potential for vehicle and pedestrian movements to be occurring simultaneously.

4.15 Whilst it is acknowledged that some activities may have a higher traffic generation and therefore assessment of the impact of the parking layout on pedestrians could be appropriate, the smaller size and simpler layout of the parking area mitigates the potential effects to a degree. Activities with very low traffic generation tend to have distinct peak periods. For example, office activities typically have most vehicles arriving in the morning peak hour and departing in the evening with few trips during the day. This means that the majority of pedestrians and vehicle movements are interacting and therefore the same considerations are still warranted (although in smaller parking areas this may be less of a consideration).

4.16 Pedestrians entering the site from the street (not parking on-site) are likely to have to traverse the entire parking area and pass through key vehicle circulation routes.

4.17 In terms of the 40 space threshold this would equate to the following scale of activity for different land uses:

- 40 unit accommodation activity,
- 154 child preschool,
- 1,600m² of office,
- Health facility of more than 12 professional staff,
- 358m² PFA food and beverage,
- 888m² GFA retail,
- 400 seats / 400m² public area for recreation or places of assembly,
- 26 full time equivalent staff for any research activity.

4.18 This rule therefore applies only to larger developments where higher levels of people and vehicles could be using the parking area. Given that only larger developments would be subject to this rule and that the proposed activity status is controlled this is not considered onerous.

4.19 The following changes are recommended:

17.7.2 Any parking area with more than 40 parking spaces used for any activity other than industrial activities, shall be a controlled activity.

17.7.2.1 The exercise of Councils discretion shall be limited to the safety, circulation and access for pedestrians within the site and moving past vehicle crossings.

4.20 It is noted that outside of the Business 1 Zone other considerations other than pedestrian safety and circulation (for example, landscaping) may still be appropriate. This aspect is best discussed by others.

4.21 In respect to the Business 1 Zone where Plan Change 29 has established a 20 space parking threshold it is recommended that an additional assessment matter be added to that rule which considers the "*safety, circulation and access for pedestrians within the site and moving past vehicle crossings*".

4.22 Whilst the 20 parking spaces represents a lower threshold in respect to pedestrian considerations (than that of the 40 space threshold) as discussed above there are some instances where consideration may be warranted for car parking areas of less than 40 spaces. Such situations include those where there may be a higher turnover of vehicles and or higher volumes of pedestrians. Both of these scenarios are likely to occur in Business 1 Zones as they are typically located in town centres. Town centres typically have:

- Higher pedestrian volumes associated with people walking from surrounding residential areas and walking between various shops and activities within the town centre.
- Land uses predominated by retail activities which typically have a high turnover of parking spaces.

4.23 20 parking spaces are likely to occupy around 430m² to 630m² which does not equate to a significant distance over which pedestrians and vehicles may interact. However, in terms of retail activities, the higher turnover (e.g. 10-15 minute parking duration) of parking spaces associated with activities likely to establish in these zones means that it is appropriate to consider pedestrian aspects.

4.24 On this basis, the consideration of pedestrian safety and circulation should be added to the list of assessment matters for car parking areas with over 20 parking spaces located in the Business 1 Zone.

The definition of redevelopment

4.25 The changes recommended in respect to rule 17.7.1 above remove the need to have a definition of redevelopment.

5. SIGHT DISTANCE

5.1 In respect to the proposed provisions related to sight distance, I have been asked to comment on the following:

- Consistency of sight distance requirements with the NZTA Planning and Policy Manual and applicability to local roads.

5.2 The sight distance requirements notified in PC12 are:

Township:

Table E13.6 – Minimum Sight Distances

Posted (Legal) Speed Limit (km/h)	State Highways and Arterials Required Sight Distances (m)	Collector and local roads	
		Living Zones Sight Distances (m)	Business Zones Sight Distances (m)
50	113	45	113
60	140	65	140
70	170	85	170
80	203	115	203
90	240	140	240
100	282	250	282

Rural:

Table E10.4 – Minimum Sight Distances

Posted (Legal) Speed Limit (km/h)	State Highway, Arterial and Collector roads Required Sight Distances (m)
50	113
60	140
70	170
80	203
90	240
100	282

5.3 The applicable table in the NZTA Planning and Policy Manual (2007) is:

Table App5B/1 – Sight distance standards[2]

Posted speed limit (km/h)	85th percentile operating speed, measured at the site (or if above not known, posted speed plus 10 km/h)	Minimum sight distance standard (m)
Not applicable	50	89
50	60	113
60	70	140
70	80	170
80	90	203
90	100	240
100	110	282

[1] Refer Appendix 1 - Glossary. 85th percentile operational speed must be measured at the site.
[2] Based on Absolute Minimum Safe Intersection Sight Distances (SISD) in Austroads Guide to Traffic Engineering Practice Part 5, Intersections at Grade, 2005 (table 6.3). The 85th percentile operating speed is used instead of design speed in this table.

5.4 The above table from the NZTA Planning and Policy Manual (PPM) shows that the sight distances notified in PC12 are in accordance with this manual. The exception is the living zone requirements where the sight distance requirements are largely unchanged from the current Plan which appears to have relied upon Austroads sight distance values (albeit the values were rounded in some cases).

5.5 It should be noted that the PPM values are based on the minimum safe intersection sight distances (SISD) specified in Austroads (2005) for intersections. A change to the deceleration values used in the Austroads sight distance calculations has resulted in increased sight distance values and these are reflected in the new Austroads design guide series (2009). This change has not yet been reflected in the PPM. To avoid having to change the Plan in the near future it is proposed that the District Plan anticipate the update to the PPM and use the latest Austroads SISD sight distance values as shown below for State Highways/Arterials and Business Zones. Likewise it is recommended that the Living Zones sight distances which are based on the approach sight distance (ASD) be updated to the latest Austroads values.

5.6 The current Plan includes sight distance requirements for vehicle crossings on Strategic, Arterial and Collector Roads and these are based on the Austroads requirements for intersection sight distances. In the review of the Plan, Selwyn District Council sought to provide equity between road types in terms of safety and on this basis added the sight distance requirement for vehicle crossings on local roads. The only changes to the living zone requirements are the addition of a minimum sight distance for 60km/h and 90 km/h speed limits being introduced. Given living zones are predominated by residential trips,

lower traffic volumes and regular users, lower sight distance requirements are considered to be appropriate.

5.7 It is also noted that the diagrams in Appendix 10 and 13 (Diagram E10.A1 - Rural and E13.2 – Township) that are extracted from the PPM will require modification so that the tables in the diagrams do not conflict with the numbers specified in Tables E10.4 and E13.6. It is recommended that the tables within the Diagrams are removed (as shown below).

5.8 Table E10.4 and Diagram E10.A1 (Rural Volume) and Table E13.6 and Diagram E13.2 (Township Volume) should be replaced with the following amended versions:

Table E10.4 – Minimum Sight Distances

Posted (Legal) Speed Limit (km/h)	State Highway, Arterial and Collector roads Required Sight Distances (m)
50	123
60	151
70	181
80	214
90	248
100	285

Table E13.6 – Minimum Sight Distances

Posted (Legal) Speed Limit (km/h)	State Highways and Arterials Required Sight Distances (m)	Collector Roads Living Zones Sight Distances (m)	Local and Collector Roads Business Zones Sight Distances (m)
50	123	73	123
60	151	92	151
70	181	114	181
80	214	139	214
90	248	165	248
100	285	193	285

Diagram E10.A1 – **Sight Distance Measurement and State Highway /Arterial sight distance values**

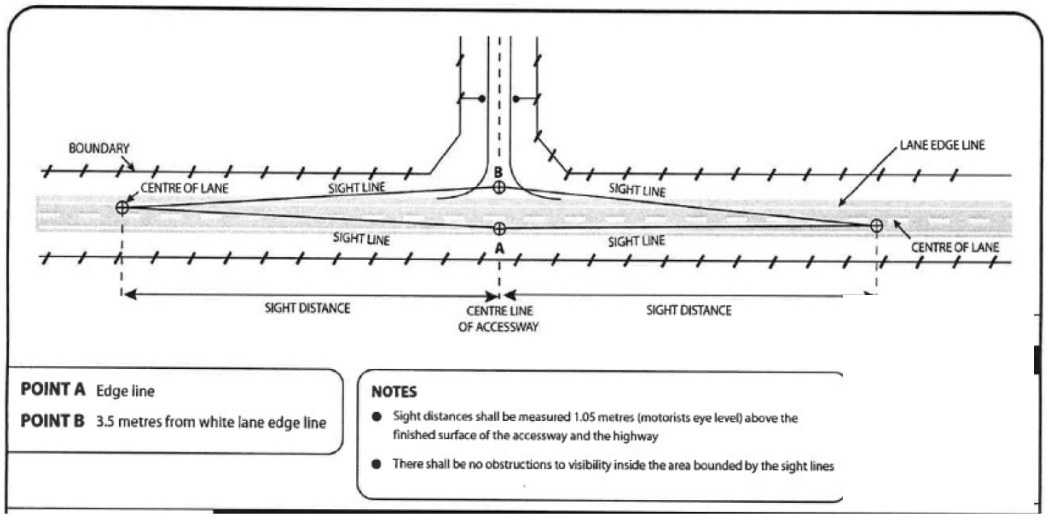
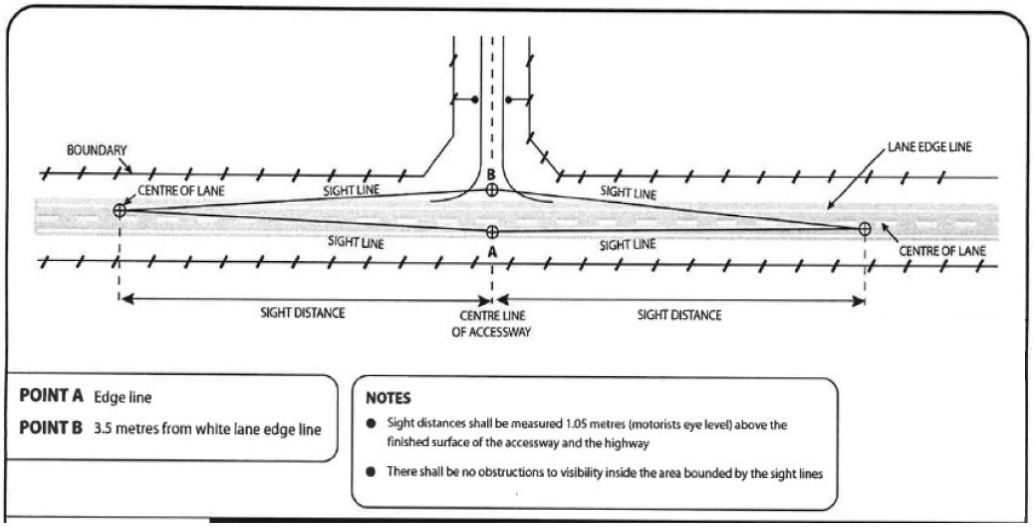


Diagram E13.52 - Sight Distance Measurement and State Highway/Arterial sight distance values.



6. **INTERSECTION SPACING**

6.1 In respect to the proposed provisions related to intersection spacing, I have been asked to comment on the following:

- Use of ESD or SISD for separation distances.

6.2 The minimum intersection requirements as notified in PC12 are:

Township:

Table E13.910 – Minimum Distance between Intersections

Posted (Legal) Speed Limit (km/hr)	Road types	Distance (m)
100	All	800
90	All	500
80	All	400 ~~550~~
70	All	305 ~~220~~
60	All	220 ~~160~~
50	State Highways, Arterials and Local Business Roads	160 ~~125~~
50	Collector roads only	125
50 (or less)	Local roads only	75

Note

Table E13.9 does not apply to roads within the B2A zone that are located as shown within Appendix E22, E32 or E33 (refer to rule 17.1.1.4).

Rural:

Table E10.6– Minimum Distance between Intersections

Posted (Legal) Speed Limit (km/hr)	Distance (m)
100	800
90	**500**
80	**400**
70	**305**
60	**220**
50	**160**

6.3 The current Plan includes intersection separation requirements based on sight distance requirements for strategic, arterial and collector roads and these are based on the Austroads requirements for entering sight distances (ESD). The Ashburton and Waimakariri District Plans use the same approach. However, as noted in the section 32 assessment these Plans are all based on design speeds and have been incorrectly applied to the posted speed limit (typically 10km/h less than design speeds). The proposed plan change and values shown above correct this aspect such that the intersection separation values within PC12 are consistent with the appropriate sight distance requirement for operating speeds likely to occur at a give speed limit (i.e., operating speeds 10km/h greater than the speed limit).

6.4 As discussed above (under sight distances) there has been a change to the deceleration values used in the Austroads sight distance calculations. This result is increased sight distance values and these are reflected in the new Austroads design guide series (2009). In addition to this, the Guide to Road Design, Part 4A: Unsignalised and signalised intersections has not included ESD stating that "*It should be noted that entering sight distance (ESD), as published in previous guides, is not included in this design guide. While ESD is theoretically desirable it has been found to be impracticable in practice and has therefore rarely been applied in intersection design by road authorities.* [Section 3.2].

6.5 Another new Austroads design guide, *Guide to Traffic Management Part 12: Traffic Impacts of Developments*, suggests an intersection separation distance of between 0.8 and 1.5 kilometres to prevent disruption to through traffic on arterials (and state highways) from multiple road intersections. This supports the provision of a minimum requirement of 800m intersection separation on high speed roads (100km/h). In the context of the Selwyn District most townships are located on either a state highway or arterial road necessitating a balance between achieving good urban form and layout of the township and ensuring safe and efficient access of the arterial road.

6.6 On this basis the intersection spacing for roads can be based on SISD for speed limits less than 100km/h. 100km/h roads will retain the current distances based on Austroads guidance outlined above.

6.7 In townships it is considered that a local road intersection spacing of less than SISD (123m) is acceptable given the low speed environment and increased driver awareness. A 75m spacing is generally required to accommodate two residential sections (one with frontage to each road). As such it is recommended that the proposed 75m spacing is retained for local road to local road intersections in townships.

Table E10.6 – Minimum distance between intersections

Posted Speed Limit (km/hr)	Distance (m)
100	800
90	~~500~~ 248
80	~~400~~ 214
70	~~305~~ 181
60	~~220~~ 151
50	~~160~~ 123

Table E13.9 – Minimum distance between intersections

Posted Speed Limit (km/hr)	Road Types	Distance (m)
100	All	800
90	All	~~500~~ 248
80	All	~~400~~ 214
70	All	~~305~~ 181
60	All	~~220~~ 151
50	State Highways, Arterials, Collector and Local Business Roads	~~160~~ 123
~~50~~	~~Collector Roads~~	~~125~~
50 (or less)	Local roads only	75

6.8 It is recommended that Table 10.6 (Rural Volume, Appendix E10) and Table 13.9 (Township Volume, Appendix E13) be updated with the figures shown above.

7. SEPARATION OF VEHICLE CROSSINGS FROM INTERSECTIONS

7.1 In respect to the proposed provisions related to the separation of vehicle crossings from intersections, I have been asked to comment on the following:

- Consistency of separation distances between different road classifications.

7.2 The proposed minimum separation distances for a vehicle crossing to a road intersection (Rural Volume and Township Volume, Appendix E10 and E13 respectively) as notified in PC12 are:

7.3 Township:

Table E13.5 – Minimum Distances of any Vehicle Crossing from Intersections

	~~Intersecting Road Type Distances in Metres~~							
~~Vehicle Crossing Joins to~~	~~State Highway~~		~~Arterial~~		~~Collector~~		~~Local~~	
~~Posted speed Km/hr~~	~~≤50~~	~~> 50~~	~~≤50~~	~~> 50~~	~~≤50~~	~~> 50~~	~~≤50~~	~~> 50~~
~~Strategic State Highway~~	~~70~~	~~180~~	~~70~~	~~180~~	~~55~~	~~180~~	~~35~~	~~90~~
~~Arterial~~	~~70~~	~~180~~	~~70~~	~~180~~	~~55~~	~~180~~	~~35~~	~~90~~
~~Collector~~	~~50~~	~~75~~	~~40~~	~~75~~	~~40~~	~~60~~	~~20~~	~~60~~
~~Local~~	~~25~~	~~75~~	~~25~~	~~75~~	~~25~~	~~60~~	~~10~~	~~60~~

		Intersecting Road Type Distances in Metres			
~~Vehicle Crossing Joins to~~	~~Posted speed Km/hr~~	~~State Highway~~	~~Arterial~~	~~Collector~~	~~Local~~
~~Strategic State Highway~~	~~> 50~~	100	100	75	75
	~~≤50~~	30	30	50	25
~~Arterial~~	~~> 50~~	100	100	75	75
	~~≤50~~	30	30	50	25
~~Collector~~	~~> 50~~	100	100	60	60
	~~≤50~~	30	30	40	25
~~Local~~	~~> 50~~	100	100	60	60
	~~≤50~~	30	30	40	10

7.4 Rural:

~~Table E10.3 – Minimum Distances of any Vehicular Accessway from Road Intersections~~

	~~Intersecting Road Type Distances in Metres~~							
~~Vehicular Accessway Joins to~~	~~Strategic~~		~~Arterial~~		~~Collector~~		~~Local~~	
	~~< 50 km/hr~~	~~> 50 km/hr~~	~~< 50 km/hr~~	~~> 50 km/hr~~	~~< 50 km/hr~~	~~> 50 km/hr~~	~~< 50 km/hr~~	~~> 50 km/hr~~
~~Strategic~~	~~70~~	~~180~~	~~70~~	~~180~~	~~55~~	~~180~~	~~35~~	~~90~~
~~Arterial~~	~~70~~	~~180~~	~~70~~	~~180~~	~~55~~	~~180~~	~~35~~	~~90~~
~~Collector~~	~~50~~	~~75~~	~~40~~	~~75~~	~~40~~	~~60~~	~~20~~	~~60~~
~~Local~~	~~25~~	~~75~~	~~25~~	~~75~~	~~25~~	~~60~~	~~10~~	~~60~~

Table E10.3 – Minimum Distances of any Vehicle Crossing from Road Intersections

		Intersecting Road Type Distances in Metres			
Vehicle Crossing Joins to	**Posted speed Km/hr**	**State Highway**	**Arterial**	**Collector**	**Local**
State Highway	**> 50**	100	100	75	75
	≤50	30	30	50	25
Arterial	**> 50**	100	100	75	75
	≤50	30	30	50	25
Collector	**> 50**	100	100	60	60
	≤50	30	30	40	25
Local	**> 50**	100	100	60	60
	≤50	30	30	40	10

7.5 The figures that have changed in the table above are those that relate to state highways and arterials. These now reflect the distances required in the NZTA PPM (*Table App5B/3 Guidelines for minimum accessway spacings*).

7.6 Tables E13.5 and E10.3, as shown above, have been reconfigured in the Plan Change to clarify which is the intersecting road. However several figures have been incorrectly transferred to the new layout; these are shown below as corrections (highlighted text).

		Intersecting Road Type Distances in Metres			
Vehicle crossing Joins to	**Posted speed Km/hr**	**State Highway**	**Arterial**	**Collector**	**Local**
State Highway	>50	100	100	~~75~~ 100	~~75~~ 100
	≤50	30	30	~~50~~ 30	~~25~~ 30
Arterial	>50	100	100	~~75~~ 100	~~75~~ 100
	≤50	30	30	~~50~~ 30	~~25~~ 30
Collector	>50	~~100~~ 75	~~100~~ 75	60	60
	≤50	~~30~~ 50	~~30~~ 40	40	25
Local	>50	~~100~~ 75	~~100~~ 75	60	60
	≤50	~~30~~ 25	~~30~~ 25	~~40~~ 25	10

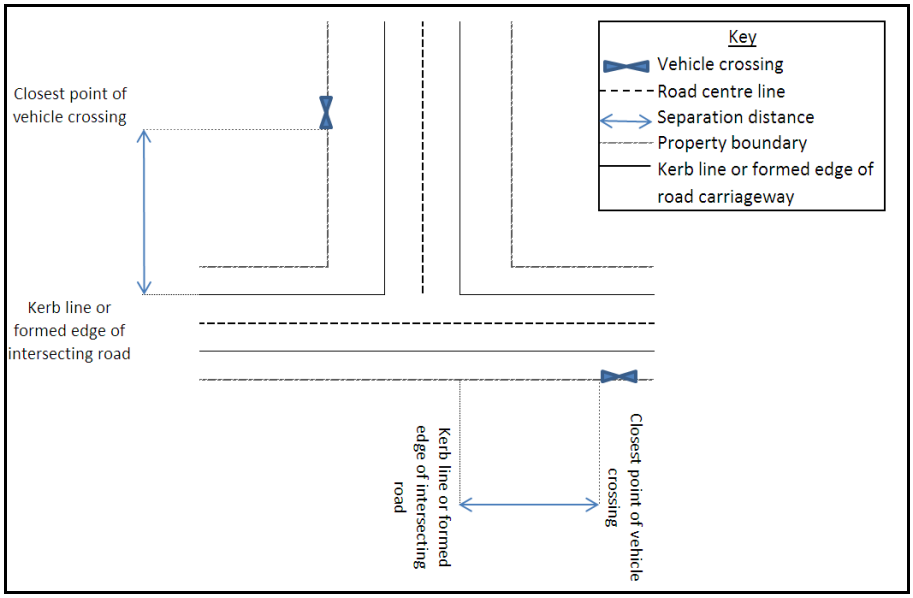
7.7 The correction of those figures incorrectly transferred resolves the submitter's concern regarding the 100m separation for local and collector roads being the same as that applicable to arterial roads and state highways. The required 60-75m setback for a local road is now also less than that for a collector road and not the same.

7.8 The 40-50m setback for a vehicle crossing on a collector road from the intersection with a state highway or arterial is also changed to a 30m setback consistent with the PPM.

7.9 It is recommended that Table E10.3 (Rural Volume, Appendix E10) and Table E13.5 and (Township Volume, Appendix E13) be replaced with the following:

		Intersecting Road Type Distances in Metres			
Vehicle crossing Joins to	**Posted speed Km/hr**	**State Highway**	**Arterial**	**Collector**	**Local**
State Highway	**>50**	**100**	**100**	**100**	**100**
	≤50	**30**	**30**	**30**	**30**
Arterial	**>50**	**100**	**100**	**100**	**100**
	≤50	**30**	**30**	**30**	**30**
Collector	**>50**	**75**	**75**	**60**	**60**
	≤50	**30**	**30**	**30**	**25**
Local	**>50**	**75**	**75**	**60**	**60**
	≤50	**25**	**25**	**25**	**10**

7.10 The diagrams shown in the notified versions of the Appendix 10 and 13 (Diagram E10.A2 – Rural and E13.4 – Township) are extracted from the PPM. To avoid any potential confusion, a specific diagram illustrating the measurement of separation distance has now been drafted. It is recommended that this new diagram be included in the Plan instead of the one extracted from the PPM. The following diagram should therefore be inserted for (Diagram E10.A2 – Rural and E13.4 – Township).



8. TRAFFIC GENERATION

8.1 In respect to the proposed provisions related to traffic generation, I have been asked to comment on the following:

- Applicability of the proposed traffic generation rule for the business zones.

8.2 The proposed 250 trips per day limit is consistent with both the (neighbouring) Christchurch City Council and Waimakariri District Council Plans. Since the writing of this submission, the Christchurch City Council has proposed changes to the equivalent rule within the Draft Central City Plan. The changes include increasing the daily threshold for some areas of the Central City. Note that this change only relates to the Central City and the 250 trip limit will continue to apply to the other zones. Regardless, the traffic environment within the Christchurch Central City business area differs to that within the Selwyn District and therefore it would not be appropriate to adopt these changes for the Selwyn District.

8.3 Recent growth in Selwyn has included the establishment of larger retail, commercial and other land uses which on their own, generate volumes of traffic similar to the volume on some local roads. The Council's experience to date suggests that the existing access controls may not be sufficient to appropriately avoid, remedy or mitigate the adverse effects of access to these land uses. Of particular concern are the adverse effects arising from:

- The proximity of vehicle crossings to each other for activities with a high level of traffic generation in townships;

- The impact and potential conflicts with pedestrians and cyclists on the frontage road moving along and across the high volume accesses; and
- The impact on the frontage road in terms of capacity, safety and efficiency.

8.4 The inclusion of this rule is considered to contribute to achieving the relevant objectives, particularly objective B2.1.1 *(An integrated approach to land use and transport planning to ensure the safe and efficient operation of the District's roads, pathways, railway lines and airfields is not compromised by adverse effects from activities on surrounding land or by residential growth)*.

8.5 The 250 trip threshold proposed represents a reasonable level of traffic which is comparable to a low volume local road (for example, a road serving 25-30 dwellings). Roads are subject to minimum intersection spacing's and necessary works to the local road environment would occur. As such, it is considered appropriate that additional consideration be given to access, once more than 250 trips to one site are occurring per day.

8.6 Analysis of the existing traffic volumes on roads within business zones in the Selwyn District indicates an average AADT[10] count of around 1,222 vpd. Therefore, 250 trips per day represents around a 20% increase on the average road within a business zone. The volumes on these roads however vary from less than 100 vpd to over 10,000 vpd and as such the effects of adding 250 trips per day may also vary. For example, on lower volume roads the change in traffic volumes may represent a noticeable change above the existing environment whilst on higher volume roads the increase in traffic may be indiscernible. However on higher volume roads the increase in traffic may require more detailed consideration in terms of location and design of access points.

8.7 Given the need to assess a number of inter-related factors concerning site access and vehicle generation and the difficulty with encapsulating these considerations within a design and location type rule (for example, separation of vehicle crossing rules etc), the proposed traffic generation rule is considered appropriate.

9. ACCESSWAY WIDTHS

9.1 In respect to proposed provisions related to accessway widths, I have been asked to comment on the following:

- The minimum width for accessways in business zones specified in Table E13.4.

9.2 Table E13.4 specifies a minimum legal width of 7.0m and a carriageway width of 5.0m. It is firstly noted that Table E13.4 applies only to accessways (from a road to the bulk of the allotment) and not to driveways within a development (for instance within car parks).

9.3 The specified carriageway width is required to accommodate two way flow of vehicles and the legal width is to allow clearance on either side of the carriageway for passing vehicles and for other services (for example, swales).

9.4 Very few sites have separate accessways and it is therefore unlikely that one, single lane accessway would be suitable. Where exceptions do occur these can be considered on a case by case basis through the resource consent process. Given the infrequent provision of two accessways to a site, I do not consider this to be particularly onerous.

9.5 In respect to differences between the values in Table E13.4 and E13.7 it is noted that the vehicle crossing widths for residential zones are 3.5-6.0m, with access carriageway widths varying from 3.0 to 4.5m. This enables the vehicle crossing to be wider than the carriageway width of the access. This is because the crossing needs additional width to accommodate turning manoeuvres.

9.6 Generally crossings should be as narrow as possible whilst still being able to accommodate vehicle turning requirements. Narrower crossings reduce the distance over which pedestrian and vehicle conflicts could occur and force cars to reduce their speed to turn. This improves safety for pedestrians and reflects the priority given to pedestrians utilising the footpath.

Lisa Williams
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