

**ATTACHMENT F**

**PROVISIONAL  
PLANNING NOTES**

**for**

**Transit New Zealand's  
Provisional Passing and Overtaking  
Guidelines**

**Draft for Consultation  
Version 4**

**July 2008**

## Record of Amendments

<b>Amendment No.</b>	<b>Subject</b>	<b>Effective Date</b>	<b>Updated By</b>
	Provisional Planning Notes	4 July 2008	L J Cameron

## **Preface**

This document is a transitional version prepared for Transit staff and Transit's network consultants only. It assumes that the reader has some technical knowledge and experience with development and operation of New Zealand's rural two-lane state highway network. It has not been written with the general public as its target readership.

These provisional notes provide an indication of how Transit's Passing and Overtaking Policy could be implemented for planning issues. They are intended to help with the development of projects in 2008/09 and beyond, while we complete consultation on these Guidelines.

As this is a provisional document, we welcome your feedback. Please forward your comments to [larry.cameron@transit.govt.nz](mailto:larry.cameron@transit.govt.nz).

From 1 August 2008, Transit NZ will join with Land Transport New Zealand to become the New Zealand Transport Agency. The final version of the New Zealand Transport Agency's Passing and Overtaking Guidelines may vary from this document.

## Table of Contents

<b>Topic</b>	<b>Page</b>
<b>F/A. INTRODUCTION</b>	<b>1</b>
<b>F/B. RESOURCE PLANNING</b>	<b>4</b>
F/B1. Access Controls Onto State Highways	4
F/B2. Submissions On Planning Documents	5
F/B3. Encouraging Alternative District Roding Networks	5
F/B4. Designations On New/Wider State Highway Alignments	6
<b>FC. INTERSECTIONS &amp; DRIVEWAYS</b>	<b>8</b>
F/C1. Location Relative To Overtaking Zones & Passing Lanes	8
F/C2. Intersection Capacity	13
<b>F/D. DEVELOPMENT APPLICATIONS</b>	<b>15</b>
F/D1. Outline Of Process	15
F/D2. Effects On Treatments & Measures	16
F/D3. Wider Effects On Roding Network	18
F/D4. Part Of Mitigating Measures	19
F/D5. Assessment Of Effects	20
<b>FE. REFERENCES</b>	<b>22</b>

<b>List Of Tables</b>	<b>Page</b>
F1. Relevant Planning Policy Manual Sections	2
F2. Recommended Location & Sight Distance Relative To Existing/Proposed Passing Facility Or Overtaking Zone	9
F3. Maximum Flow Combinations For Uninterrupted Flow	13
F4. Modified Harmelink Model For Right Turns	14
F5. Capacity Limits For Roundabouts	14

*Continued on next page*

## Table of Contents continued

<b>List Of Figures</b>	<b>Page</b>
F1. Passing Lanes - Areas Of Particular Interest	10
F2. Overtaking Lanes - Areas Of Particular Interest	10
F3. 2+1 Lanes - Areas Of Particular Interest	10
F4. Process For Screening Effects On Passing & Overtaking Issues	15

---

## F/PART A. INTRODUCTION

---

**Purpose**

Planning Notes provide a better understanding of Passing and Overtaking (PO) Policy issues and the context within which resource and transportation planning measures should be applied.

These Notes supplement sections of Transit's Planning Policy Manual (PPM) that cover various resource planning measures. PPM sections are described below.

---

**Context**

Transit engages in a number of specific resource and transportation planning activities as a mechanism for delivering passing and overtaking objectives. These activities include:

**Resource Planning Measures**

- Control of access onto state highways through LAR classification, crossing approvals for Land Use Development and affected party submissions under the RMA.
- Seeking policies and rules in planning documents that facilitate the delivery of Regional Passing and Overtaking Plans.
- Encouraging alternative roading networks through improved structure plans and assessing applications for subdivisions fronting onto state highway.
- New alignments through designating land required for future passing facilities, intersection improvements or bypasses.

**Intersections Measures**

- Location of overtaking zones and passing lanes with respect to driveways and intersections will be assessed as part of development applications.
- Intersection rationalisation will ensure that, as traffic flows increase, access is progressively restricted to District Road arterials and will be done in conjunction with resource planning measures that encourage alternative roading networks.
- Where existing intersections are to be upgraded, provision for through traffic on state highways may require designations for additional land and segregation strips/access restrictions near proposed intersection upgrades.

**Responding to Development Proposals**

- Safeguarding existing and future passing facilities, overtaking zones and other passing and overtaking treatments.

*Continued on next page*

- Identifying wider network effects along the road section and neighbouring District roads.
- Identifying opportunities to improve passing and overtaking opportunities, as part of mitigating measures.

**Planning Policy Manual**

Table F1 provides the following PPM policy and guidance relating to passing and overtaking.

**Table F1. Relevant Planning Policy Manual Sections**

<b>Policy area</b>	<b>PPM section</b>
Passing and overtaking policy and guidelines	Section 3.4.3 and Appendix 3E
Designation	Section 3.6 and Appendix 3F
Land use planning	Chapter 4
Responding to development proposals	Chapter 5 and Appendices 5A and 5B
Segregation strips	Sections 3.2 & 5.2.4.7
Declaration of motorways and management of state highways as expressways	Section 3.2
Declaration of limited access roads	Section 5.2.4.7

**Key PO Documents**

Key documents written specifically for Passing and Overtaking include:

- Transit's *Passing and Overtaking Policy* is incorporated into Transit's Planning Policy Manual.
- Transit's *Provisional Passing and Overtaking Guidelines* help to provide a consistent approach to implementation of Transit's Passing and Overtaking Policy.
- If available, *Regional Passing and Overtaking Plans* (RPOPs) and other Transit Regional plans identify individual sites plus treatments and measures for individual sites and the road section as a whole.
- The *Background Technical Report for Passing & Overtaking Policy*, which was prepared as part of developing Transit's Passing and Overtaking Policy.

**Supporting PO Documents**

Supporting documents include passing and overtaking sections but these documents are not written specifically for Passing and Overtaking. In addition to Transit's *Planning Policy Manual*, these supporting documents include:

*Continued on next page*

**Supporting PO Documents**  
continued

- Transit's *National State Highway Strategy*, which includes State Highway Categories and sits above both the Planning Policy Manual and Transit's Passing and Overtaking Policy in terms of Transit's policy hierarchy.
- Transit's *State Highway Forecast* (for approximate current interim strategy).
- Other Regional plans, strategies and policies (for treatments and measures, that help passing and overtaking, such as Travel Demand Management and Intelligent Transport Systems).

**Current Versions**

For references or publications referred within Planning Notes, current versions will apply at time of lodging application or submission. For overseas publications with a New Zealand supplement, the New Zealand supplement will apply.

**Non-Exclusive Lists**

Any lists of treatments, measures and options described within these Notes are not exclusive lists.

Other influences, such as new products, advances in technology, different management systems and opportunities for network development, may provide further opportunities for implementing Transit's Passing and Overtaking Policy.



---

## F/PART B. RESOURCE PLANNING

---

**Overview** This section provides guidance on PO resource planning options within a passing and overtaking context, namely:

- Access controls onto site highway.
- Submissions on planning documents.
- Encouraging alternative roading networks.
- Designations on state highway alignments

---

### F/B1. Access Control Onto State Highways

---

**Introduction** For roads covered by the PO Policy, Transit seeks to control access through:

- Using access management techniques, such as limited access roads, motorway status and segregation strips.
- Assessment of access applications either directly onto the state highway or onto nearby District roads that connect with state highways.

---

**Access Management Techniques** Although outside the RMA process, the PPM contains policy and guidance on access management techniques. See PPM App 5B.7 for more detail.

In addition, the following access management tools provide a mechanism for Transit to increase its level of control over access to state highways. These three tools should be used to support Transit's approach to engagement in the RMA process:

- When Transit should declare state highways as Limited Access Roads. See PPM Section 5.3.4.7.
- When a state highway should be legally declared as a motorway, such as for a 2+1 lane road. See PPM Section 3.2.
- When segregation strips should be created. See PPM Sections 3.2 and 5.2.4.7.

---

**Access Applications** An important part of Transit's Planning work is responding to access applications as part of development proposals. These access applications are part of either land use development and/or resource consent applications.

A more detailed outline for addressing passing and overtaking issues is provided under Section D Development Applications.

---

---

## F/B2. Submissions On Planning Documents

---

### Introduction

It is important for Transit to gain as much recognition and support as possible in planning documents for its approach to passing and overtaking provision. In particular, Transit should seek:

- Policies and rules in district plans that enable existing passing facilities and overtaking zones to be safeguarded from the adverse effects of development, as well as future sites for passing and overtaking provision plus support for implementation of supporting treatments and measures.
- Regional Land Transport Strategies that support the provision of passing and overtaking facilities plus supporting treatments and measures, and where appropriate prioritise funding accordingly.

### District Plans

Transit's approach to influencing planning documents is set out in Chapter 4 of the PPM. Appendix 4 to the PPM provides a series of suggested district policies.

The State Highway Forecast sets out a programme of proposed state highway capital projects over the next 10 years. The 10 year period is similar to District Plan horizons.

This programme in effect provides a 10 year interim strategy for passing and overtaking and a reasonable level of certainty over which passing and overtaking projects will be delivered over this time period.

### Regional Land Transport Strategies

The main mechanism for establishing future passing and overtaking provision are Transit Regional Passing and Overtaking Plans (RPOPs).

RPOPs will take a long-term approach, setting out proposed provision over a 25-30 year time period and will form part of Regional State Highway Strategies.

**Note:** Currently, both RPOPs and Regional State Highway Strategies are in the development stages.

---

## F/B3. Encouraging Alternative District Roading Networks

---

### Introduction

Transit initiatives to encourage local traffic activity onto alternative routes include:

- In conjunction with Territorial authorities, development of structure plans that link major District roads into state highways and are based on the District Plan road hierarchy.
  - As an affected party, evaluation of subdivision applications for either access directly onto state highways or onto District roads that are near to state highway intersections.
-

<b>Structure Plans</b>	Encouragement of alternative District roading networks is best done in conjunction with intersection rationalisation and review clauses on proposed access crossings.
	When access is provided onto an alternative District roading network, access onto the state highway should be closed.
	For more detailed information on structure plans refer to PPM App 3D and Section 5.2.3.2.
<b>Subdivision Applications</b>	For larger subdivision applications and where an alternative network exists, access is to be provided onto District roads rather than using state highway.
	Where an alternative roading network is currently not provided, provision should be investigated for future road linkage with adjacent land.
	Provision for alternative modes should be included within applications for new subdivision. Where possible, as well as motorised travel, the roading network should make provision for walking and cycle networks that connect with adjacent sub-divisible land, roading networks and/or public transport routes.

## **F/B4. Designations On New/Wider State Highway Alignments**

<b>Introduction</b>	The PO Policy will require the acquisition of critical locations through the designation process. Guidance is given within Transit PPM. For preparing Notices of Requirement, potential social and environmental effects relating to passing and overtaking works have been summarised below.
<b>Likely Locations</b>	For the PO Policy, new or amended designations and possibly additional resource consents may be required for: <ul style="list-style-type: none"> <li>• 2+1 lanes and some passing lanes.</li> <li>• Realignments (if access controls cannot be easily implemented).</li> <li>• Upgrade of high-volume intersections.</li> <li>• Special user requirements and utilities.</li> </ul>
<b>PPM Sections</b>	Transit's policy on designation is set out in PPM Section 3.6. Transit's approach to managing the environmental and social effects of state highways is set out in the Environment Plan.
<b>Specific considerations for AEE</b>	In addition to the above general guidance, when preparing the Assessment of Environmental Effects in support of a Notice of Requirement, the following specific considerations may need to be taken into account:

*Continued on next page*

**Specific considerations for AEE continued**

- Reduced vehicular access due to either location of diverge/merge areas, central median cables/guard rails or solid median. Also consider access effects due to restraining cables or guard rail within roadside.
  - Severance (a passing lane may make crossing the state highway more difficult for specific users).
  - Pick-up and drop off locations for rural school buses.
  - Rural mail boxes and rural mail van parking.
  - Lay-by parking in state highway reserve, sometimes also associated with rural school bus locations.
  - Possible loss of state highway reserve width for other existing roadside uses.
  - Disruption to utility services, unless part of clear zoning.
  - Topsoil removal.
  - Aggregate sources (as part of Regional Council resource consent).
  - Waterways i.e. natural (streams, rivers) and man-made (canals, piped drainage systems) and their beds.
  - Highway drainage and storm-water run-off.
  - Dug out and landscaped borrow sites.
  - Alteration to landform, e.g. changes to landscape and neighbouring drainage.
  - Diversion of watercourses.
  - Operational effects, noise, vibration on adjacent properties.
  - Construction effects, e.g. dust particularly for horticultural areas, silt control.
  - Removal of trees and other substantial vegetation, as part of clear zoning. Consider Transit's guidelines for state highway landscaping, particularly the use of low growth vegetation for replacement of plants and initial plant maintenance.
-

---

## F/PART C. INTERSECTIONS & DRIVEWAYS

---

**Overview**

There are various ways that intersections and high-volume driveways can affect passing lanes and overtaking zones, namely:

- Slow vehicles entering and exiting within a passing length can be disruptive to overtaking manoeuvres, if the intersection is not located correctly.
- Safe diverging and merging behaviour requires greater driver concentration and would be affected by additional demands from turning traffic at the diverge and merge locations, especially if right turning traffic.
- Depending on dominant directional flows, larger upstream rural roundabouts, that are located too close to a passing facility, can make platoon sizes larger than expected and therefore not appropriate for the passing length.
- Smaller upstream intersections without adequate turning provision, that are located too close to a passing facility, can split platoons, - (if some following vehicle/s turn at the intersection), resulting in only part of the platoon passing the platoon leader at the passing facility, if the back part of the platoon cannot catch up.
- Downstream travel time benefits can be reduced if passing lanes and overtaking zones are located too close to large intersections or high-volume driveways.

This section will provide guidance on the following PO intersection options, namely:

- Location of passing and overtaking treatments relative to driveways and intersections.
- Provision for through traffic.
- Rationalisation of intersections.

Table F2 is provided to help assess relative location. Intersection capacity is discussed with a view towards providing adequate intersection performance for through traffic and to determine which intersections should be progressively removed or changed to left-turn in/left turn out.

---

**F/C1.**

### Location Relative To Overtaking Zones & Passing Lanes

---

**Introduction**

Guidance is given to help locate proposed passing lanes and overtaking zones with respect to existing intersections and driveways. This information can also be used to assess development applications that would either increase traffic volumes at intersections with District roads or require intersections or driveways within or close to passing lanes and overtaking zones.

---

**Separation & Clear Sight Distance** Table F2 shows the separation and clear sight distance for passing facilities and overtaking zones relative to intersections and driveways. Most planning issues should be resolved by complying with Table F2.

Any distance less than the minimum specified distances within Table F2 does not necessarily mean that the location is unsatisfactory but should be assessed on a case-by-case basis with input from a road safety expert.

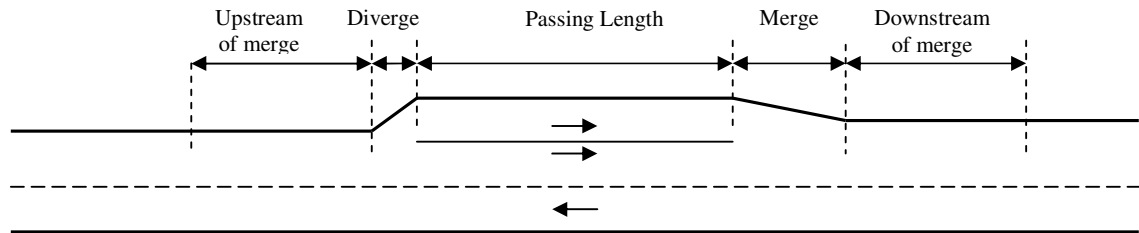
Supporting evidence may be required from the applicant to ensure that any reduced distance will be safe and not adversely affect the operation of the passing facility or overtaking zone.

Similarly, if the passing lane/slow vehicle bay is closer than the specified distances, Transit Regions applying for SAR approval of passing lanes or slow vehicle bays will be required to explain the basis of locating closer than the recommended distances, have input from a road safety expert and should have been considered within any safety audit process.

**Table F2. Recommended Location & Sight Distance<sup>1</sup> Relative to Existing/Proposed Passing Facility or Overtaking Zone**

Type of Access/ Intersection <sup>2, 3, 4</sup>	Before Diverge (upstream section) <sup>5, 6</sup>	Diverge <sup>6</sup>	Within PL or OT length	Merge <sup>6</sup>	AfterMerge (downstream section) <sup>6, 7</sup>
<b>30 vpd or less access<sup>7</sup></b> (PPM Diagram C or D required).	At least 300 m before mid point of diverge taper.	Access not allowed. Case-by-case for access tapers.	From end of diverge taper to at least 300 m before merge taper ends At least crossing spacing separation.	Access not allowed.	Greater of at least 300 m after taper end OR crossing spacing.
<b>31-100 vpd access</b> (PPM Diagram D or E required).	At least 300 m before mid point of diverge taper.	Access not allowed.	From end of diverge taper to at least 300 m before merge taper ends. To be on the treated side & preferably located near middle. <sup>8</sup>	Access not allowed.	Greater of at least 300 m OR crossing spacing after taper end.
<b>High-volume access, minor to collector District Roads</b> (Priority controlled with shoulder widening or turning bays required).	Greater of at least 500 m OR crossing spacing before mid point of diverge taper.	Access not allowed.	Case-by-case. T-junction only. To be on the treated side and near the middle.	Access not allowed.	Minimum greater of at least 500 m OR crossing spacing after taper end. Preferred 1,000 m.
<b>Major intersection between two SHs or SH and District arterial</b> (Rural roundabout or grade-separation required)	Minimum 500 m before mid point of diverge taper for rural roundabouts. Preferred 1,000 m for grade separation.	Access not allowed.	Access not allowed.	Access not allowed.	Minimum 1,000 m after taper end. During interim strategy stage, preferred 5,000 m for 2+1 lanes & PLs. <sup>9</sup>
<b>Notes.</b>					
<ol style="list-style-type: none"> <li>Location distances assume clear sight distance. If clear sight distance is not available, location distance is to be increased.</li> <li>Access and intersection capacity is to be based on projected flows over the next 25-30 years.</li> <li>If an intersection treatment is required above what projected flows suggest, separation distances will be for the higher level type of access or intersection.</li> <li>For all accesses up to 100 vpd, provide at least the safe intersection stopping distance (SISD) of 300 m approx sight distance in each direction, based on 110 km/hour operating speed at 2 second reaction time along the passing facility or overtaking zone. For all other cases, the entering sight distance (ESD) of 500 m is desirable, with SISD of 300 m approx as a minimum sight distance based on 110 km/hour operating speed.</li> <li>Where overtaking in the untreated direction occurs or is likely to occur, avoid crossings in the untreated direction from 300 m upstream of opposite diverge taper start until 300 m downstream of opposite diverge taper start.</li> <li>Consider possible adverse restriction on access for properties with short frontages within or close to diverge or merge areas.</li> <li>Excludes farm gate access to paddocks or similar with occasional use less than once per day on average.</li> <li>If there is/would be a high number of right turn movements (either in or out) across the passing facility, a central location is preferred.</li> <li>During interim development stages for a road section, a separation of 5 or 10 km will enable downstream benefits to be maximised before encountering a major intersection.</li> </ol>					

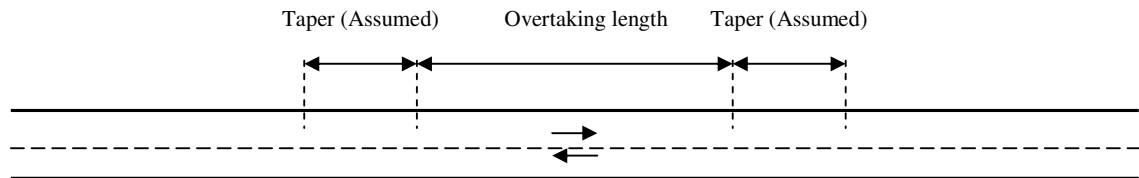
**Passing Lanes** For existing or proposed passing lanes, applications within the passing lane itself or immediately upstream of the diverge or downstream of the taper (as shown in Figure F1) should be considered for closer scrutiny. If a future passing facility is proposed, Figure F1 shall apply.



**Figure F1. Passing Lanes – Areas Of Particular Interest**

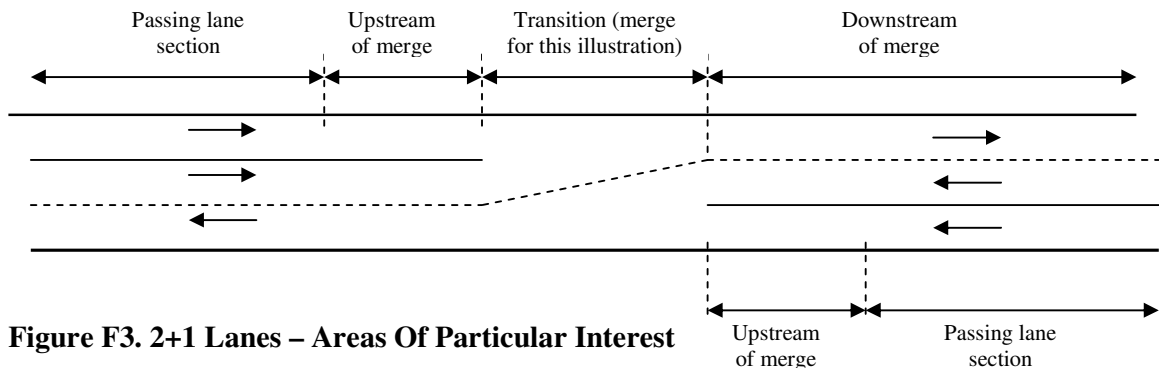
**Overtaking Zones** For existing or proposed overtaking zones, applications within the zone itself (as shown in Figure F2) should be considered for closer scrutiny. However, if a future passing facility is proposed, Figure F1 shall apply.

For assessing overtaking zones, assume a taper of 160 m length (assumed 110 km/hour operation speed) at each end. The taper end will finish with 300 m of clear vertical and horizontal sight distance remaining.



**Figure F2. Overtaking Zones – Areas Of Particular Interest**

**2+1 Lanes** For road sections with flat or rolling road gradient and projected 10,000-25,000 vpd where 2+1 lanes are proposed, applications should be assessed along the whole, as shown in Figure F3.



**Figure F3. 2+1 Lanes – Areas Of Particular Interest**

**Access for 100 vpd or less**

The 300 m value approximates to 290 m within AUSTRROADS Part 5 Safe Intersection Sight Distance (AUSTRROADS, 2006) travelling at 110 km/hour with a 2.0 second reaction time, except that the clear sight distance can be 1.05 m driver eye height to 1.15 m driver eye height - (Transit, 2002).

Vehicles merging at the end taper may have to slow to allow for vehicles entering or exiting the downstream driveway. The 300 m value allows for a 15 km/hour speed reduction over that distance and is considered more appropriate than any shorter crossing spacing. At the end of the merge taper, decelerating vehicles would be more likely to have following vehicles on a frequent basis.

If crossing spacings are greater, the longer crossing spacing is required to reduce the possibility of through traffic having to monitor two potential conflict points. Therefore, an increased separation distance would be required.

In some cases, merging behaviour may not be finished at the end of the merge taper. Therefore, because the end of merging behaviour is further downstream, the distance between the end of taper and access should be greater than 190 m but is unlikely that it should be greater than 300 m. The 190 m value is the AUSTRROADS Part 5 Approach Sight Distance and the minimum distance for a vehicle to come to a complete stop if travelling at 110 km/hour in an alerted (2 second reaction time) road environment.

Also, 290 m upstream plus the storage length of the turning bay is the length of upstream road affected by right turning traffic slowing down to use a right turn bay with an operating speed of 100 km/hour and speed differential of 10 km/hour (Transportation Research Board, 1996).

Within the diverge area, case-by-case approval of access will apply to seal widening associated with crossings. Crossings are excluded from the diverge area.

**High-Volume Access, Minor to Collector District Roads**

The 500 m value is the AUSTRROADS Part 5 Entering Sight Distance, for clear sight distance, except that 1.15 m driver eye height to 1.05 m driver eye height is used (Transit, 2002). Trucks can more easily accommodate speed differences over 500 m than the 300 m value. A lesser sight distance (but not separation distance) of not less than the Safe Intersection Sight Distance of 300 m will be allowed but taken from driver eye height of 1.05 m to ground level).

As mentioned above, about 300 m upstream plus the storage length of the turning bay is the length of upstream road affected by right turning traffic slowing down to use the right turn bay (Transportation Research Board, 1996). A similar length of road section would be affected by a left-turn deceleration lane.

*Continued on next page*



**High-Volume  
Access, Minor to  
Collector District  
Roads** continued

Therefore, the 500 m separation length would enable a right turn bay and/or deceleration lanes at the intersection to be provided in the future without affecting the merge behaviour of the passing facility or overtaking zone, provided that a 300 m clear sight distance between ground and driver eye height of 1.05 m can be achieved.

The 500 m distance is considered more appropriate than any shorter crossing spacing as an intersection with a right turn bay is more likely to have more deceleration effects on a frequent basis than an intersection requiring only shoulder widening.

If crossing spacings are greater, use the longer crossing spacing to reduce the possibility of through traffic having to monitor two potential conflict points. Therefore, an increase in separation distance is required.

Include minor to collector roads so that flows on minor roads can increase without any adverse effect on overtaking zones or passing facilities. Upstream of the diverge area has to allow for possible overtaking behaviour in the untreated direction. Therefore, a separation length of 500 m is required.

---

**Major Intersections**

The 500 m (minimum) to 1 km (preferred) separation between an upstream intersection and a downstream passing lane allows provision for future free-turn lanes to be provided at the major intersection without affecting the passing facility. These free turns are likely to be provided at-grade and would diverge/merge with the start of the grade-separated section.

Therefore, this diverge/merge location is likely to be some distance from the centre of the intersection. It is unlikely that the requirement will apply to overtaking zones, which would not be utilised on roads with projected high traffic volumes.

The 1 km separation between a downstream intersection and an upstream PL enables additional downstream lanes to be provided at the major intersections and their diverging/merging behaviour will not affect merging from the passing facility.

During the interim stage of 2+1 lanes and passing lanes in series, passing facilities should be located at 5 or 10 km from the major intersection to optimise downstream benefits, depending on the effective length for the road section's projected flows. Generally, at the interim stage of developing a full 2+1 layout along a road section, the initial 2+1 layout would be approximately centrally located along the road section to optimise benefits.

---

**Extension of facility  
length**

Safeguard extra length of state highway, if slow vehicle bays or passing lanes are to be extended to form passing lanes or longer lanes as part of a long-term strategy.

---

## F/C2. Intersection Capacity

### Introduction

Guidance is given on intersection capacity so that the current and future efficiency of intersections and driveways can be determined for increases in either through traffic, turning traffic or a combination of both flows.

Planning is required for long-term intersection solutions, namely progressive rationalisation of intersections and intersection upgrades. Where possible, intersection rationalisation and upgrades should be undertaken in conjunction with a District structure plan.

### Unsignalised Intersections with Minor Roads

The capacity limits and threshold criteria in Table F3 are included to help identify minor intersections (AUSTROADS Part 5 Table 4.1) namely:

- Intersections with projected traffic volumes that exceed the two-lane values outlined in Table F3 may require upgrading or conversion from cross roads to T-junctions at a later date.
- The four-lane volumes in Table F3 show the maximum volumes for 2+1 lanes and possible situations close to four-laning, where the reliance on critical gaps is of greater importance for unsignalised intersections.

See AUSTROADS Part 5 Appendix B for more detailed analysis. **Note:** Check the critical acceptance gap and follow-up headway for the rural speed environment, as this may differ from the urban speed environment.

**Table F3. Maximum Flow Combinations For Uninterrupted Flow**

Major Road Type	Major Road Flow (vph)	Minor Road Flow (vph)
<b>Two-Lane</b>	400	250
	500	200
	650	100
<b>Four-Lane</b>	1,000	100
	1,500	50
	2,000	25

### Turning Bays

AUSTROADS Part 5 Figure 6.41 provides criteria for turn lanes but the NZ supplement applies. Therefore, intersections with shoulder widening (BAR) and pavement widening with a protected turn (CHR) are required. Pavement widening without protection turn (AUR) will not be provided.

Generally, AUSTROADS Part 5 safety criteria will dominate, as illustrated in Figure 6.42, rather than Figure 6.41 criteria. For safety purposes, right turn bays (or left turn deceleration lanes) are required where the volume of turning traffic is:

- About 20 vph and the total approach volume (in the same direction) exceeds about 330 vph, OR

*Continued on next page*

**Turning Bays**  
continued

- About 60 vph and the total approach volume exceeds about 200 vph.

For uneven traffic volumes (i.e. opposing versus same direction), consider applying the Modified Harmelink model shown in Table F4 (Cited in Mutabazi, Russell & Stokes, 1999).

Table F4 values assume that the operating speed of opposing traffic is about 100 km/hour. The shaded area relates to flow conditions that may require a right turn bay but do not satisfy the AUSTRROADS Part 5 safety criteria.

**Table F4. Modified Harmelink Model For Right Turns**

Opposing Volumes (vph)	Total Approaching Traffic & (Right Turn Traffic) (vph)			
	294 (15)	207 (21)	154 (31)	146 (44)
800	365 (18)	259 (26)	187 (37)	165 (50)
600	461 (23)	324 (32)	238 (48)	206 (62)
400	586 (29)	414 (41)	303 (61)	263 (79)
200	663 (33)	468 (47)	344 (67)	297 (89)
100				

**Rural Roundabouts**

Roundabouts in rural settings are not recommended, except for intersections with other high-volume state highways or District arterial roads.

Table F5 provides an indication of the upper capacity limit for roundabouts (AUSTRROADS, 2005).

**Table F5. Capacity Limits For Roundabouts**

Approach lanes	Roundabouts (vph)
1 lane	2,600
2 lane	4,550
3 lane	6,000
4 lane	NA

**Note:** Check the critical acceptance gap and follow-up headway for the rural speed environment. Traffic flows are for total hourly approach flows from all legs. Four - legged intersections with equal demand for all movements is assumed.

**Grade Separation**

See NAASRA Grade-Separated Intersections: A Design Guide for more detail (NAASRA 1984).

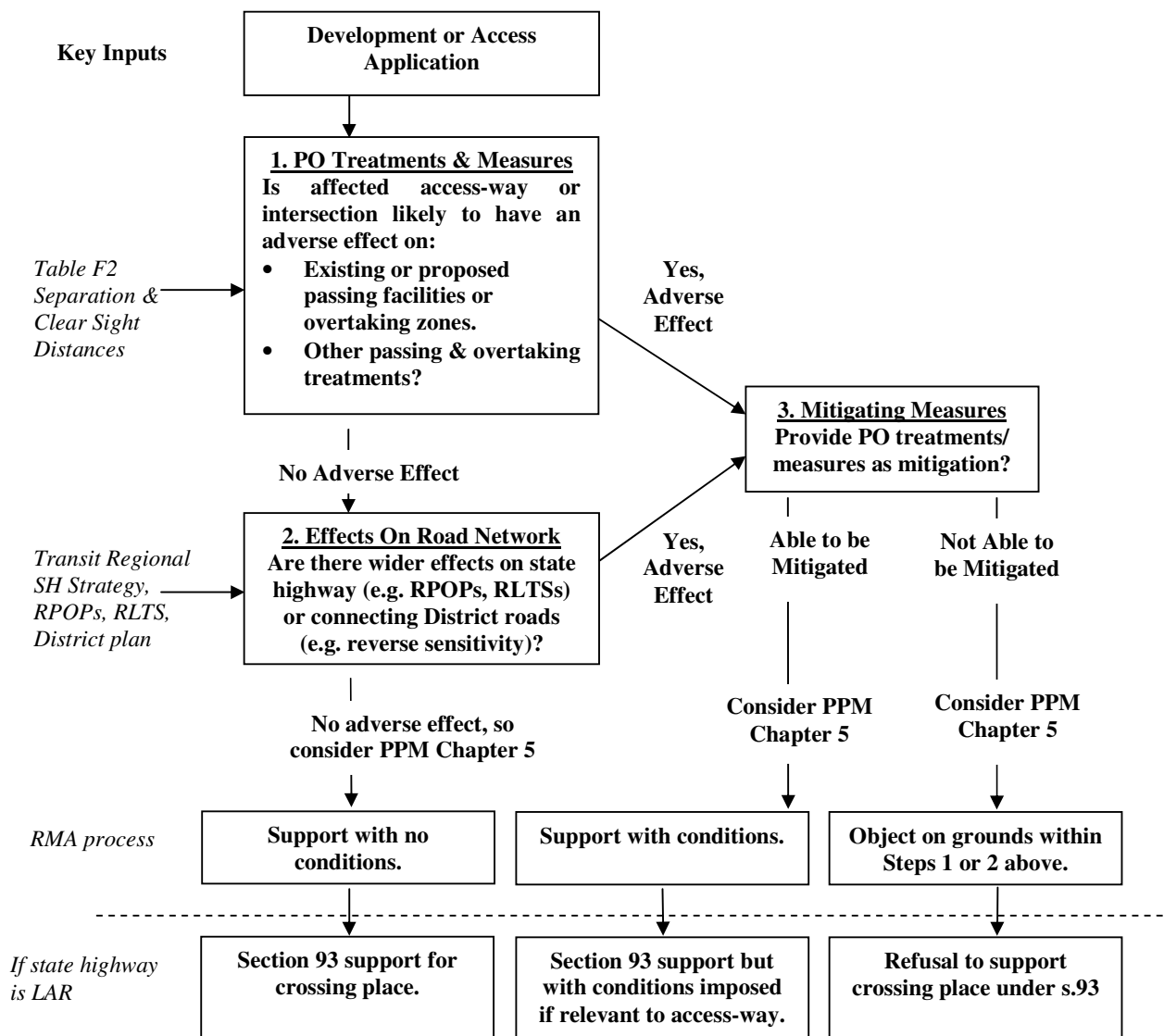
**F/PART D. DEVELOPMENT APPLICATIONS**

**Overview** Existing and proposed passing facilities and overtaking zones should be safeguarded from adjacent land use. A screening process is outlined that will help assess development applications against the PO Policy.

**F/D1. Outline Of Process**

**Introduction** Figure F4 shows the key screening steps of:

- Step 1. Effects on PO treatments and measures.
- Step 2. Wider effects on the road network.
- Step 3. PO treatments/measures as part of mitigating measures.



**Figure F4. Process For Screening Effects on Passing & Overtaking Issues**

---

**F/D2. Effects On Treatments & Measures**


---

**Introduction**

Applications can be roughly grouped into three categories, namely:

- Access onto state highway and within current or proposed passing facilities or overtaking zones.
- Access onto state highway but not within current or proposed passing facilities or overtaking zones.
- Access onto District road.

Each category is then assessed against effects on passing and overtaking treatments and measures. In some cases, the location of the access/intersection relative to passing facilities or overtaking zones is the key assessment criteria. All applications are assessed against Chapter 5 of Transit's PPM.

Efforts should be made to ensure that the location and design of the new proposed access driveway allows flexibility in the provision of future passing and overtaking treatments.

---

**Access Within  
Existing/Proposed  
Passing Facilities &  
Overtaking Zones**

It is recommended that applications in this category be checked against the interim and long-term PO strategies. The following list is not exclusive and other treatments and measures can be considered:

1. Use Table F2 to check access location relative to passing facilities and overtaking zones.
2. Check that supporting treatments and measures are not compromised, such as:
  - **Sight distance improvements.** Check whether the location or gradient of the access driveway, including recessed gateway, may block sightlines, or compromise the possibility of linking shorter sections of clear visibility to form a road section with adequate overtaking sight distance in the future.
  - **Realignments.** Check whether the location or gradient of the access driveway, including recessed gateway, may compromise realignment proposals.
  - **Seal widening works.** Ensure that the location and gradient of any proposed access crossing will not affect any proposed future carriageway or seal widening.
  - **Centreline treatments**, such as median barriers or cables.
  - **Intersections.** If the application requires an intersection or high-volume driveway, check if an intersection is proposed at this location. If so ensure minimal through-traffic delays and that the intersection will service adjacent surrounding land not just the development.

*Continued on next page*

**Access Within Existing/Proposed Passing Facilities & Overtaking Zones**  
continued

- **Alternative roading networks.** Check the possibility of current or future access for a lower hierarchy road.
- **Fixed or mobile enforcement equipment, such as speed cameras.** Any access location or signage from adjacent land use should not affect enforcement equipment or its location, operation and maintenance.
- **Fixed or mobile variable message signs.** Any access location or signage from adjacent land use should not affect variable message signs or their location, operation and maintenance.

3. Assess against Chapter 5 of Transit's PPM.

---

**Access Onto SH but Not Within Existing/Proposed Passing Facilities or OT Zones**

It is recommended that applications in this category are checked against the interim and long-term PO strategies :

1. Table F2 check not required.
2. Check that supporting treatments and measures are not compromised such as:
  - Same as for applications within facilities or overtaking zones.
  - **Side guard rails or cable restraints.** Check if the location has an adverse crash history or potentially high safety risk involving loss of control type crashes.
  - **Seal widening on curves at the same location.** See seal widening in Access Within Existing & Proposed Passing Facilities & Overtaking Zones.
  - **Curves at the same location.** Check if any signs from the proposed adjacent land use would affect curve signs with speed advisory signs.

3. Assess against Chapter 5 of Transit's PPM.

---

**Access onto District Roads**

It is recommended that applications in this category are checked against the interim and long-term PO strategy for any affected District road intersections with state highway:

1. Table F2 check required, if intersection is within an existing or proposed passing facility or overtaking zone.
  2. Check that supporting treatments and measures are not compromised such as:
    - **Centreline treatments**, such as median barriers or cables.
    - Whether increased traffic flows will alter the type of **intersection treatment** to be provided and therefore affect intersection rationalisation or provision for through traffic.
  3. Assess against Chapter 5 of Transit's PPM.
-

**F/D3.****Wider Effects On Rooding Network****Introduction**

In some cases, various Transit and Local Authority strategies and plans can be affected by granting a development application. Implications for the rooding network may extend beyond the site.

**Context**

Development applications can have wider effects in two ways, namely:

- Larger development applications may have significant impacts along a road section and if sited close to a major rural intersection may impact on several road sections.
- If there are no suitable alternative sites, the inability of a rooding project to proceed at that location can have wider implications for the state highway road section by transferring its PO demand to other parts of the network.

**Planning Documents**

Planning documents to consider when checking on impacts for the wider network include:

- **Transit's Regional PO Plan.** Effect on interim or long-term PO strategy, especially if there are no nearby alternative sites for a passing lane or overtaking zone.
- **Transit's Regional State Highway Strategy.** Effect on other co-ordinated Transit Regional strategies, policies and plans proposed for the road section.
- **Transit's National State Highway Strategy.** Effect on road section as part of a national, regional or sub-regional route.
- **Regional Land Transport Strategy.** Effect on Regional Growth Strategy/Policy, other programmed works.
- **District Plan.** Effect on District road hierarchy, change to adjacent land use and its demand on the adjacent state highway road section.

The above list is not exclusive and other relevant planning documents should be considered on a case-by-case basis

Transit's response should reflect the possibility that specific elements of some strategies/plans for that state highway may be undeliverable, and this may have knock-on effects for the rest of the strategy/plan.

Where the site is close to other District or Regional boundaries, also consider the effects on neighbouring District and Regional planning documents.

**Regional Initiatives**

As well as various strategies and plans for the road section, area wide initiatives may also be affected. In some cases, granting an application may affect the viability of Regional initiatives that a number of rooding agencies contribute to, namely:

*Continued on next page*

- Regional Initiatives** continued
- **Transit Regional TDM Strategy.** Inability to reduce PO demand at this site may increase PO demand on nearby parts of the network, where TDM measures have been applied or are required. This applies particularly if this road section has high weekend recreational flows, high HCV flows or is on a rural commuter route.
  - **Transit Regional ITS Strategy.** Inability to reduce PO demand at this site may affect other high demand parts of the network that rely on upstream reduction of PO demand at this site to make the overall strategy viable.
  - **Regional Road Safety programme.** Diversion of resources from other more crash prone locations).
  - **Regional Speed Enforcement programme.** Downstream effects beyond the site.

**F/D4.****Part Of Mitigating Measures**

<b>Introduction</b>	Where possible, increases in passing/overtaking demand should be avoided. If this is not possible then mitigating measures should be considered so that any adverse effects on passing/overtaking demand are not more than minor.
<b>Passing and overtaking benefits</b>	It may be possible, when discussing development proposals with the applicant and the local authority, in addition to applying the standards set out above for access driveway location, sight distances and design, for Transit to secure passing and overtaking benefits from the developer to mitigate any adverse effects. The following are examples:
<b>Sight distance improvements</b>	It may be possible to agree with the applicant for vegetation on their land holding to be removed, or landform modified, to improve sight distances and/or create overtaking zones.
<b>Centreline Treatments</b>	If more restrictive centreline strategies are proposed, the access layout of a proposed development may allow for left turn in and left turn out onto state highway.
<b>Intersection Treatments</b>	A higher standard of intersection may be allowed as part of a development if an upgraded intersection is eventually planned for that location and adequate provision is made for adjacent land to use the proposed intersection.
<b>Education Measures</b>	Consider if the activity is part of a passing and overtaking target audience and whether drivers would benefit from education measures, e.g. generates large amounts of HCV traffic.
<b>Enforcement Measures</b>	For applications involving large fleets of heavy commercial, tour coaches or other long vehicles, it may be possible to encourage use of individual vehicle identification numbers with an independent call centre phone number to monitor any complaints about driver behaviour, e.g. excessive speed at passing facilities, vehicles in convoy.



---

**TDM Measures** For applications generating a large number of heavy commercial vehicle trips, consider changes to hours of operation or staggered shifts. Consider a travel plan if the activity will have a large number of employees.

---

## **F/D5. Assessment Of Effects**

---

**Introduction** PPM Appendix 5B.1 provides assessment criteria for access driveways. Additional requirements are recommended for high-volume access driveways that act as intersections.

---

**PPM** All proposed access driveways and intersections should be assessed in respect to PPM Appendix 5B.1:

- Location.
- Safety considerations.
- Sight distances.
- Access driveway spacing.
- Access driveway design.

Also consider a review clause on access crossings, if an alternative road will be created as a result of the development or an alternative road is proposed in the future.

---

**High-Volume Access Driveways as Intersections** As mentioned within the PPM, some development applications may generate sufficient traffic for the access driveway to be regarded as an intersection. As set out in the PPM, access driveways with either 20 vph during peak hour flow or at least 100 vpd should be considered as intersections in this way.

Other developments that generate high volumes of traffic may seek access to state highways via a new local road and intersection. Other developments may increase traffic flows on existing intersections.

---

**Through Traffic Delays at Intersections** Proposed new intersections should not have a marked effect on through traffic movements. Intersection layouts that incur delays to traffic associated with the land-use activity are preferable to any allocation of delay to both turning and through traffic.

The location of turning bays on new intersections and accesses are not to conflict with turning movements from other existing accesses. Where possible, other access crossings are to be amalgamated to minimise conflict points between through and turning traffic.

---

---

<b>Intersection Rationalisation</b>	Intersections proposed as part of development applications, that reduce the priority given to state highway through traffic (i.e. rural roundabout) should be avoided, unless the intersection is part of an intersection rationalisation programme and has sufficient spacing between similar types of intersection.
<b>Future Use of Intersection</b>	Where Transit has agreed to an intersection, the development should have provision for neighbouring land use to link into any proposed intersection and associated access. If possible, the development should be located on one side of the access.
<b>Intersection within Roadway Hierarchy</b>	State highway intersections that are linked to District roads should reflect any District Plan's existing roadway hierarchy and future District structure plan i.e. preferably state highways linked to rural District arterial and possibly collector roads that are planned to become rural District arterial routes.

---

---

**F/PART E. REFERENCES**

---

1. AUSTRROADS, 2006. "Guide to Traffic Engineering Practice – Part 5: Intersections at Grade," Austrroads Publication No. AP-G11.5/05, ISBN 0 85588 734 6, Sydney, Australia. April, 2006.
  2. Mutabazi, M, Russell E.R. & Stokes R.W., 1999. "Review of Effectiveness, Location, Design and Safety of Passing Lanes in Kansas", Report No. K-TRAN:KSU-97-1, Prepared for Kansas Department of Transport. 1999.
  3. NAASRA, 1984. "Grade-Separated Intersections: A Design Guide" NAASRA. 1984.
  4. Transit New Zealand, 2006. "Background Technical Report for Passing and Overtaking Policy" Unpublished Report. May, 2006.
  5. Transportation Research Board, 1996. "Driveway and Street Intersection Spacing" Transportation Research Circular No. 456, ISSN 0097-8515, Transportation Research Board. Mar, 1996.
-