

**TRAFFIC ASSESSMENT REPORT
FOR
PROPOSED
REZONING FOR
RESIDENTIAL SUBDIVISION
SEAHAM ROAD
NELSONS PLAINS
23 MAY 2013**

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1.0 INTRODUCTION

The purpose of this Traffic Assessment Report is for a proposed rezoning to provide a proposed residential subdivision and determine if a suitable access can be provided on Seaham Road to cater for between 60 and 80 residential lots.

The land is identified as Lot 1 DP 1014480 and is on the eastern side of the Seaham Road approximately 0.9 km north of Hinton Road in Nelsons Plains.

The proposed subdivision abuts an existing residential subdivision just north of the site.

The land is currently zoned 1(a) Rural Agriculture and it is proposed to rezone the land to 1c4 zoning – Rural Small Holdings under the existing LEP. If the draft Port Stephens LEP 2012 is adopted by Port Stephens Council prior to the lodgement of this Gateway application, the proposed change would be to R5 zoning – Large Lot Residential.

2.0 LOCALITY DIAGRAM



3.0 EXISTING USE OF SITE

The site of the proposed subdivision is undulating rural land containing grassed areas and a variety of trees.

The land has direct frontage to the Seaham Road and the only access available is via Seaham Road.

The land is grass covered and has some scattered trees throughout the site.

The land is gently undulating.

4.0 ADJACENT DEVELOPMENTS

Properties in the vicinity of the proposed residential subdivision consist of a mixture of large lot rural residential lots and small lot residential subdivision.

5.0 TRAFFIC ENVIRONMENT ON THE SEAHAM ROAD

The Seaham Road is part of State Road and aligned generally north-south past the proposed residential subdivision.

The Seaham Road has a sealed carriageway width of approximately 9.5 metres in the vicinity of the access to the proposed residential subdivision.

The cross –section on Seaham Road is non-urban with no kerb and gutter, formal longitudinal drainage or footpaths.

The Seaham Road has a curved horizontal alignment in the vicinity of the proposed residential subdivision, with relatively moderate gradients in the vicinity of the access point to the proposed subdivision.

There are centreline markings and edgelines along the Seaham Road in the vicinity of the site.

The speed zone on the Seaham Road is 90km/h past the access to the proposed residential subdivision.

6.0 TRAFFIC VOLUMES ON THE SEAHAM ROAD

Traffic volumes on the Seaham Road are measured by the RTA (now RMS) at counting station Nos. 05.993 (north of Raymond Terrace Road).

Traffic data at the above counting station is as follows.

COUNTING STATION	AADT (Year / Volume)				
	1992	1995	1998	2001	2004
05.993	3,241	4,228	5,080	5,710	6,021

The AADT at counting station 05.993 increased by 5.5% between 2001 and 2004 – an average annual traffic growth rate of 1.8%.

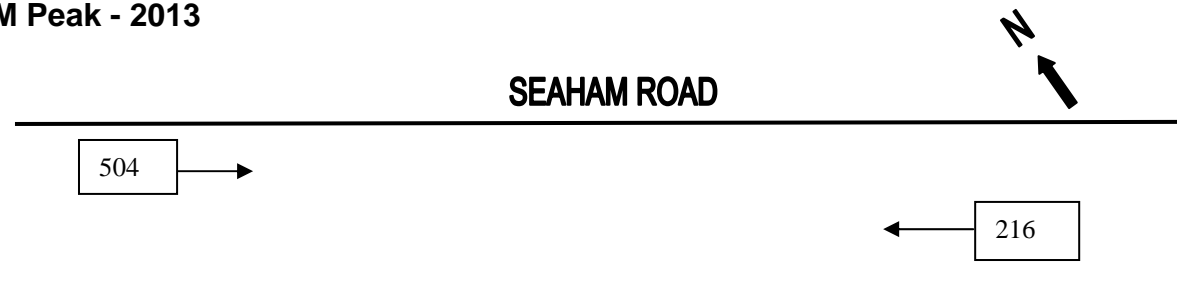
Assuming an annual traffic growth rate of 2% per annum, the projected 2013 traffic volume on the Seaham Road in the vicinity of the access to the proposed residential subdivision would be approximately 7,200 vehicles per day.

The projected 2023 traffic volume is projected to be approximately 8,775 vehicles per day. Peak hour volumes are generally approximately 10% of daily flows according to the RTA Guide to Traffic Generating Developments – that is, peak hour flows would be approximately 720 vehicles per hour (two-way) in 2013 and 878 vehicles per hour in 2023.

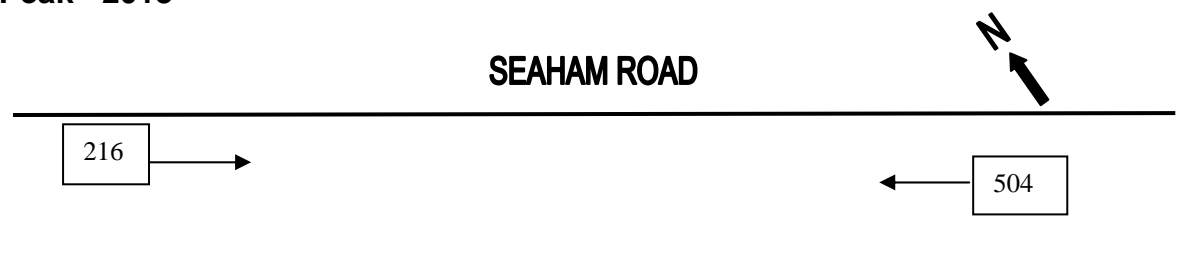
It is assumed that traffic split along the Seaham Road will be approximately 30% northbound and 70% southbound in the morning peak period, with the reverse split occurring in the evening peak period.

The estimated traffic volumes on the Seaham Road are shown diagrammatically below.

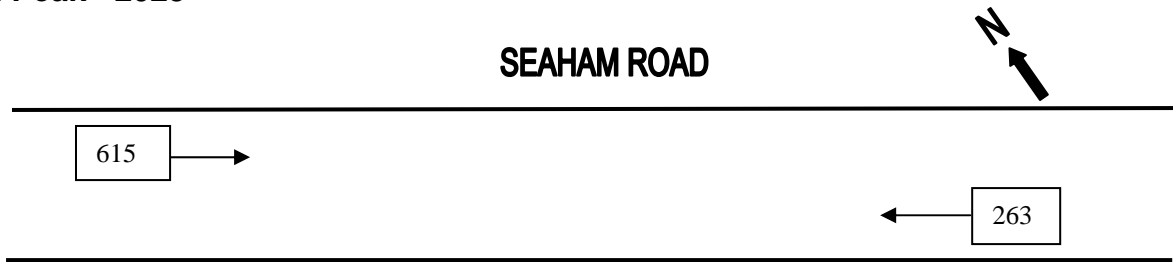
AM Peak - 2013



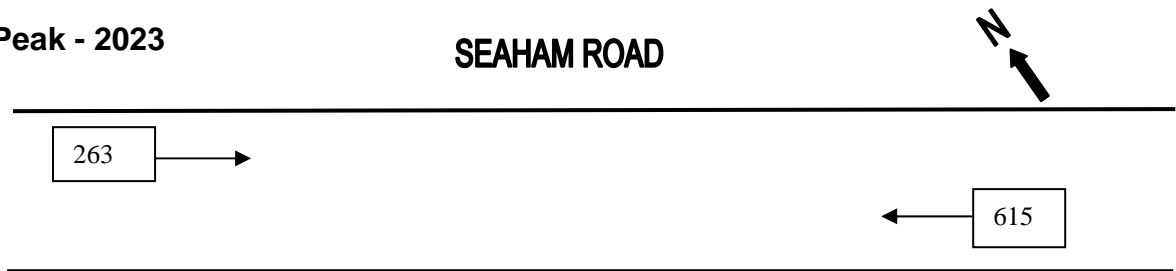
PM Peak - 2013



AM Peak - 2023



PM Peak - 2023



7.0 SIGHT DISTANCES AT SUBDIVISION ACCESS POINTS ON THE SEAHAM ROAD

An inspection of the site indicated that vehicular access to the site could be obtained at several points.

However, in order to maximise sight distances in both directions, it is recommended that access be provided approximately 210 metres north of Noongah Road

Sight distances at the location of the proposed subdivision access point on the Seaham Road are as follows:

Recommended Access on Seaham Road

- Towards the right (generally north) ≈ 300 metres
- Towards the left (generally south) ≈ 235 metres

It is recommended that Safe Intersection Sight Distance (SISD) be used as the desirable requirement based on the AUSTRROADS publication "Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections.

SISD for a design speed of 90km/h, a reaction time of 2.0 seconds and level gradients is 214 metres.

Subject to detailed survey and design and final location of the access, SISD is achievable in both directions.

8.0 PROPOSED SUBDIVISION

The proposed subdivision is conceptual at this stage and it is anticipated it will yield between 60 and 80 residential lots.

Detailed survey and detailed design may result in the final lot yield being closer to the lower end of the range.

9.0 TRAFFIC GENERATION POTENTIAL

RTA Guidelines for Traffic Generating Developments suggest the following traffic generation rates for residential properties:

- Daily Generation = 9.0 trips per dwelling
- Weekday peak hour generation = 0.85 trips per dwelling

Using the maximum estimated lot yield to represent the worst-case scenario, the traffic generation likely to result from the proposed subdivision when fully developed, would therefore be:

80 lots @ 9.0 per lot = 720 trips per day.

80 lots @ 0.85 per lot = 468 trips per hour

Traffic growth will of course be gradual as lots are built upon over possibly several years.

10.0 RECOMMENDED ACCESS DESIGN

The concept for the access type is based on the AUSTROADS publication “Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections.

The design speed used is 90km/h based on the signposted speed zone.

Figure 4.9b of the AUSTROADS publication “Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections has been used to assess the appropriate treatment for the access on Seaham Road for the proposed 60-80 lot residential subdivision. The projected 2023 traffic volumes on Seaham Road have been used to assess the appropriate treatment as it may take many years for the proposed subdivision to be fully occupied.

Appendix includes Figure 4.9(b) for the 2023 AM peak traffic volumes and also for the 2023 PM peak traffic volumes on Seaham Road.

The estimated AM and PM peak through traffic volumes and estimated turning volumes indicate that the access on Seaham Road should consist of a type

CHR(S) right-turn treatment and a type BAL left-turn treatment. The road gradient at the location of the suggested access point is quite low and no corrections have been made for grade.

The recommended access should consist of a right-turn lane 100 metres long (including taper) and a left-turn lane as outlined in Figure 8.2 of the AUSTRROADS publication "Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections. The low traffic volumes that would turn left onto Seaham Road do not justify the provision of an acceleration lane.

The final design details may alter slightly when detailed traffic surveys and SIDRA computer simulations are undertaken.

11.0 ORIGIN / DESTINATION CONSIDERATIONS

Based on the location of the proposed subdivision on the northern side of Seaham Road and generally north-west of Raymond Terrace, the Pacific Highway and Hinton Road, it is assumed that the majority of trips will be to and from the south-east. While some residents may be employed in the agricultural, mining or other local businesses and may travel to and from the north for such pursuits, the demand for trips to and from the north is likely to be considerably less than for trips to and from the south-east.

It is also assumed approximately 70% of morning trips would be outward, and 30% inward. The reverse is assumed in the evening peak period.

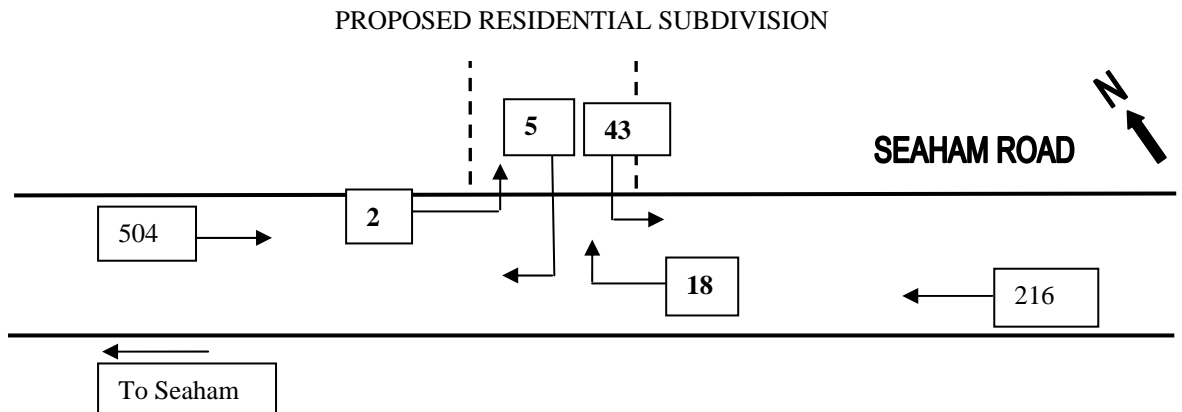
It is anticipated that traffic generation will essentially be oriented to the south-east towards the Raymond Terrace CBD, the Pacific Highway and areas linked by Hinton Road with approximately 90% of trips with that general orientation.

12.0 POTENTIAL TRAFFIC FLOWS FROM PROPOSED SUBDIVISION

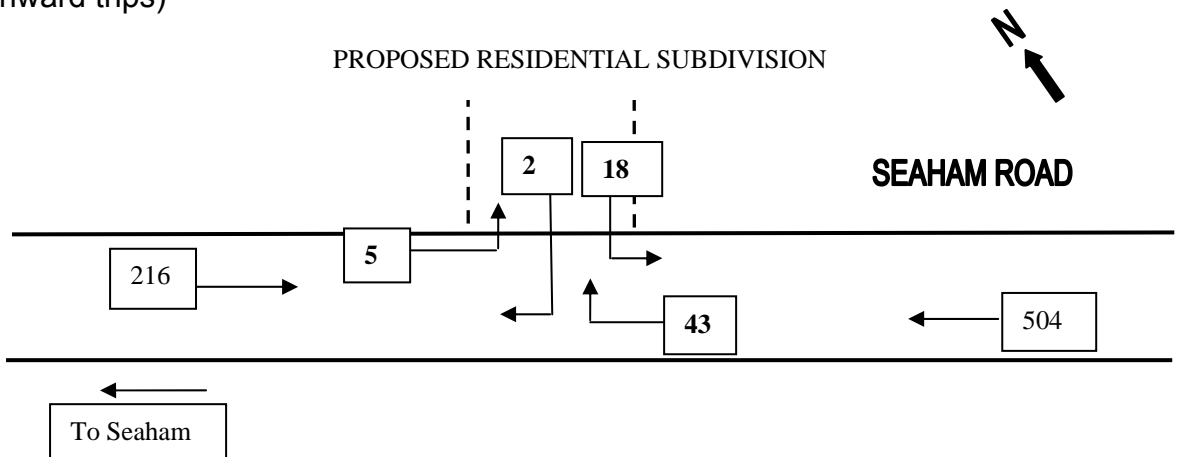
Traffic generation from the 80 lot subdivision is likely to be approximately 48 outward and 20 inward trips in the morning peak, and 20 outward and 48 inward trips during the evening peak.

The assumed traffic trip distribution on the Seaham Road is shown on the following diagrams.

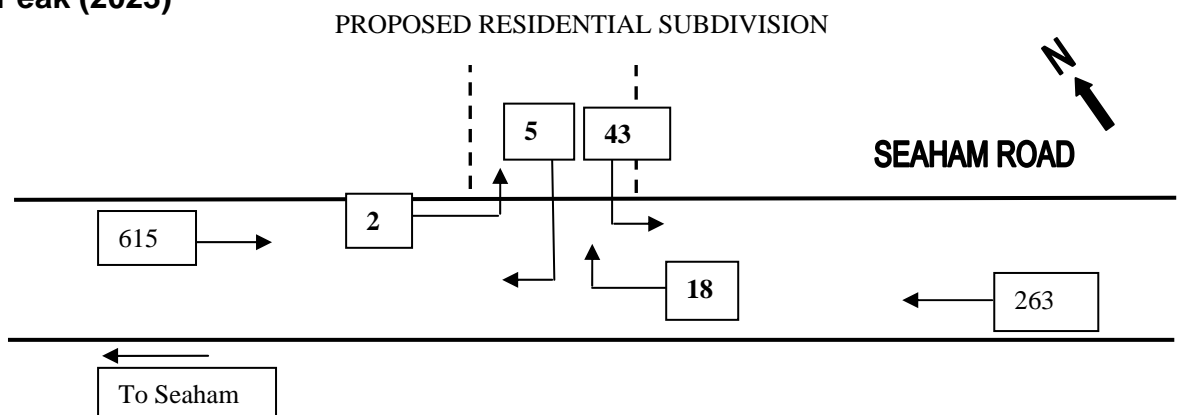
AM Peak
 (48 outward trips)
 (20 inward trips)



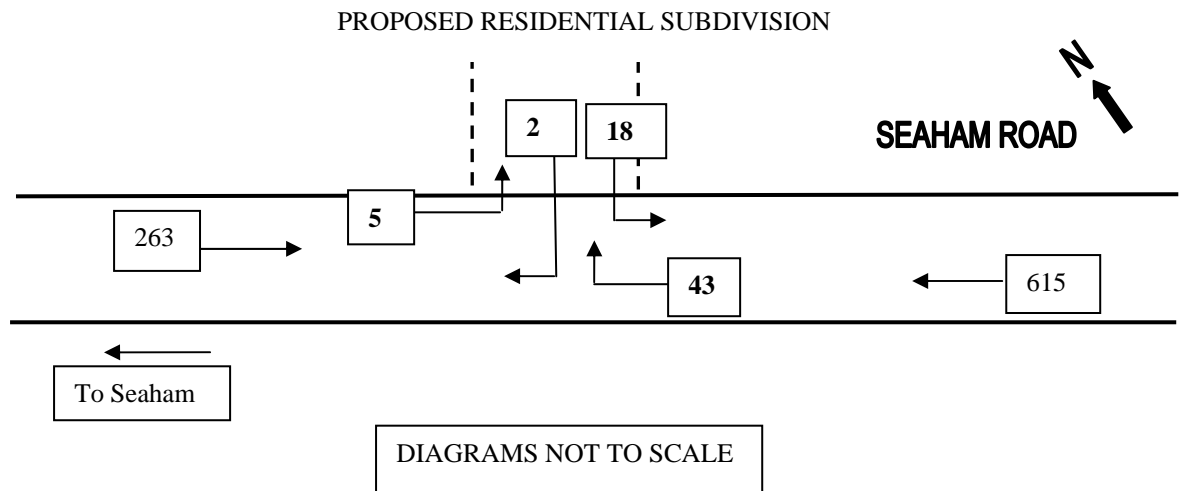
PM Peak
 (20 outward trips)
 (48 inward trips)



AM Peak (2023)



PM Peak (2023)



13.0 SUMMARY AND RECOMMENDATION

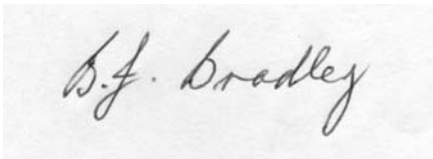
13.1 Summary

- a) The proposed rezoning is to permit a residential subdivision to provide between 60 and 80 lots that will be occupied over a period of time subject to demand. The higher yield has been used for access assessment to represent a worst-case scenario. Detailed design of the subdivision may result in a lot yield less than 80 lots and could be as low as 60 lots.
- b) Traffic volumes on the Seaham Road adjacent to the proposed subdivision are relatively low.
- c) The speed zone on the Seaham Road past the proposed residential subdivision is 90km/h.
- d) The RTA Guide for Traffic Generating Developments indicates that traffic generated by the eighty (80) residential lots would be approximately 720 trips per day, with approximately 68 trips being in the weekday peak periods.
- e) The roadway capacity of the Seaham Road will not be adversely affected by the traffic generated by the proposed subdivision.
- f) Estimated traffic flows on Seaham Road for 2023 indicate that an Austroads type CHR(S) right-turn bay may be required together with an Austroads type BAL left-turn treatment. Final details should be determined with detailed traffic surveys and SIDRA simulations for the final subdivision design when the lot yields are finalized.

13.2 Recommendations

I recommend the proposed rezoning to provide up to an eighty (80) lot residential subdivision as being a suitable development on the site as it would have no adverse affect on the level of service, capacity or level of traffic safety of the Seaham Road in the Nelson Plains area.

I recommend the appropriate treatment for the access is a type CHR(S) right-turn treatment with a deceleration lane approximately 100 metres long and a type BAL left-turn treatment from Seaham Road and a "Stop" sign on the exit from the subdivision with a minimal taper treatment onto Seaham Road in accordance with Figure 8.2 of the AUSTRROADS publication "Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections. Details of the junction layout to be finalised when the detailed design of the subdivision is available and SIDRA simulations are undertaken.

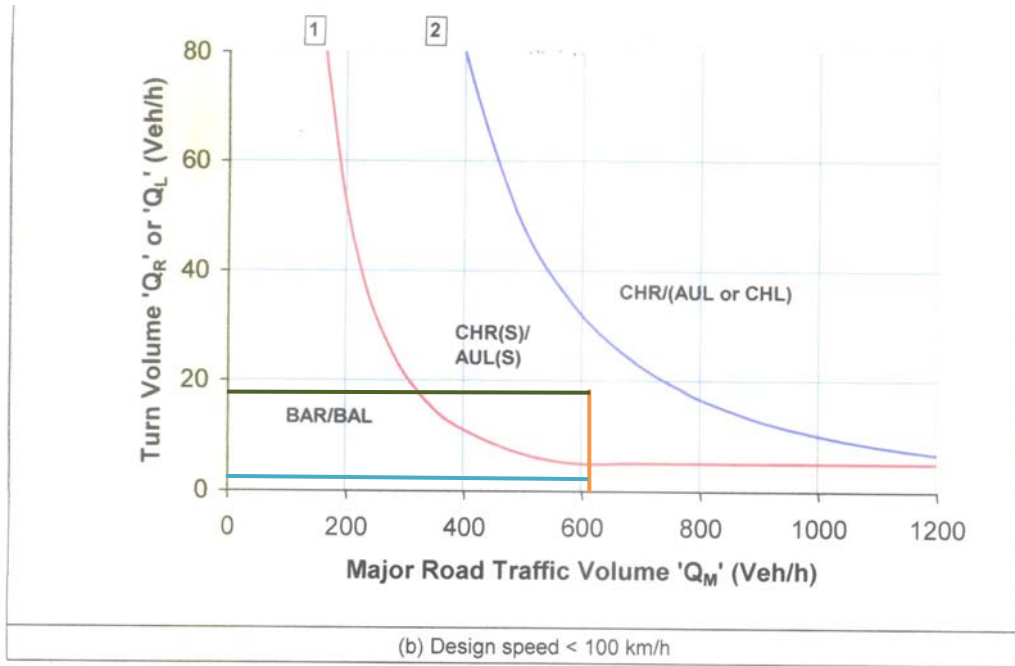
A handwritten signature in cursive script that reads "B.J. Bradley". The signature is written in dark ink on a light-colored, slightly textured background.

B J Bradley BE Grad Dip Man MIEAust CPEng

APPENDIX A

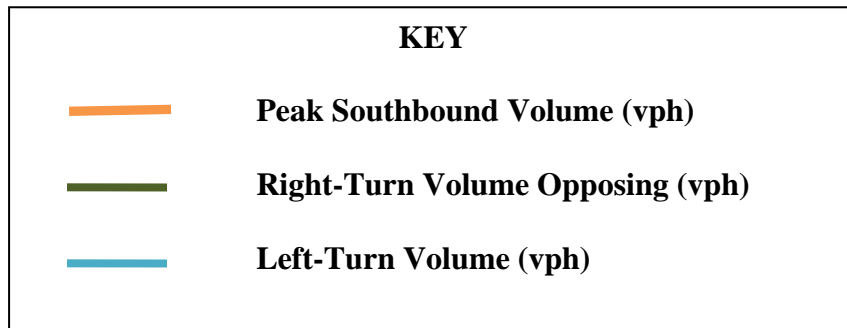
AUSTROADS FIGURE 4.9 – WARRANTS FOR TURN TREATMENTS

2023 AM Peak

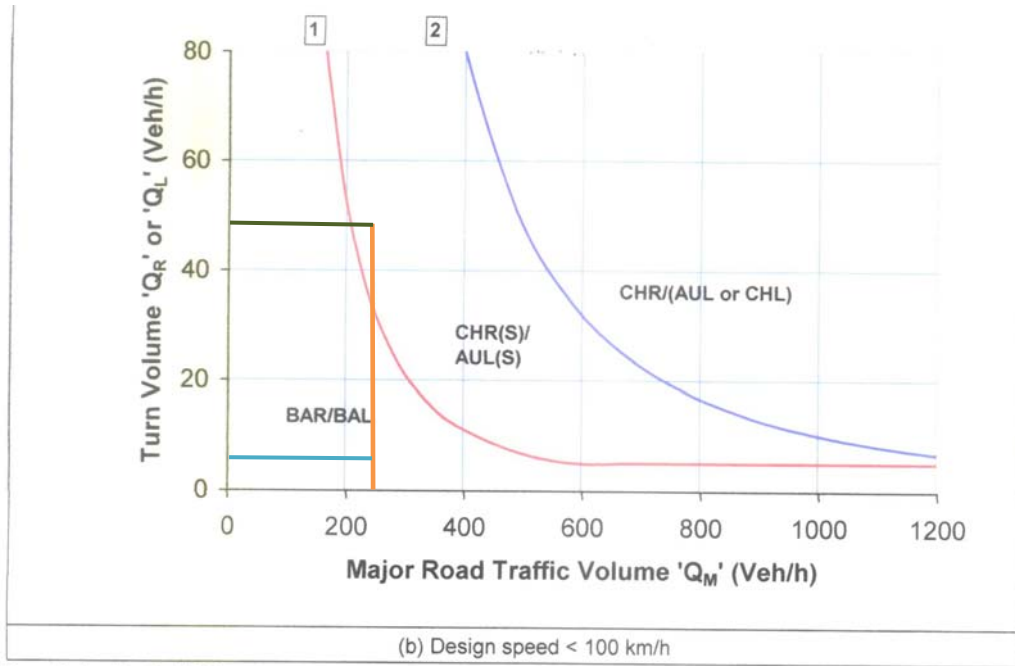


Source: Arndt and Troutbeck (2006).

Figure 4.9: Warrants for turn treatments on the major road at unsignalised intersections

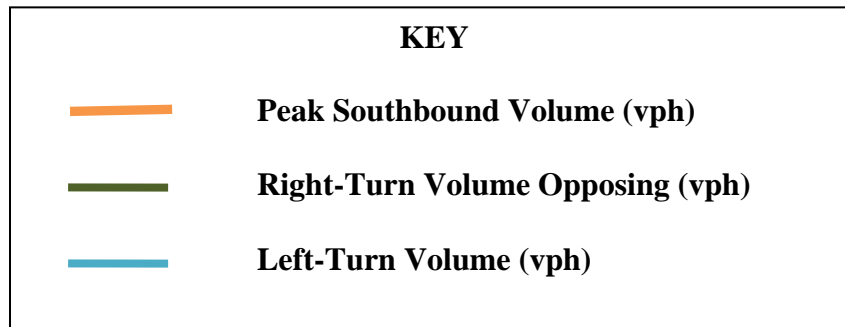


2023 PM Peak

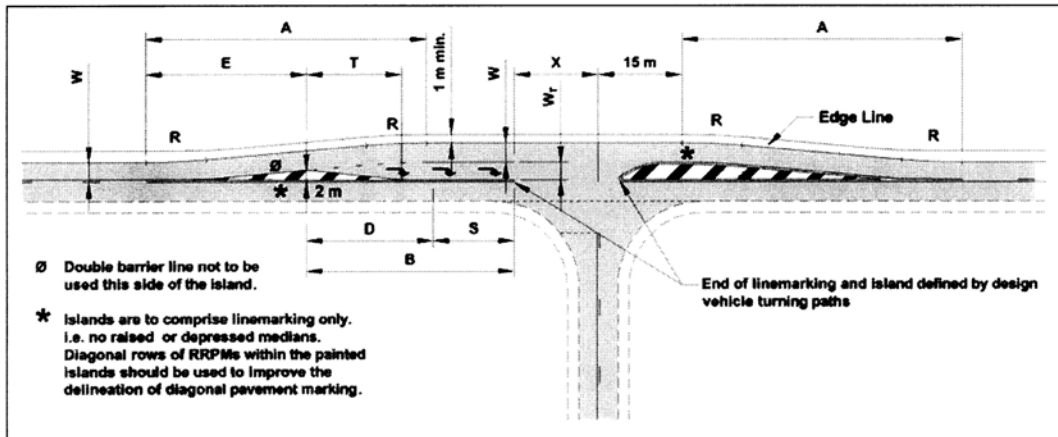


Source: Arndt and Troutbeck (2006).

Figure 4.9: Warrants for turn treatments on the major road at unsignalised intersections



AUSTROADS TYPE CHR(S) ACCESS



Note: The dimensions of the treatment are defined below and values of A, D, R and T are shown in Table 7.1:

W = Nominal through lane width (m) (including widening for curves). For a new intersection on an existing road, the width is to be in accordance with the current link strategy.

W_t = Nominal width of turn lane (m), including widening for curves based on the design turning vehicle = 3.0 m minimum.

B = Total length of auxiliary lane including taper, diverge/deceleration and storage (m).

E = Distance from start of taper to 2.0 m width (m) and is given by:

$$E = 2 \left(\frac{A}{W_t} \right)$$

T = Taper length (m) and is given by:

$$T = \frac{0.33 \times V \times W_t}{3.6}$$

S = Storage length to cater for one design turning vehicle (m).

V = Design speed of major road approach (km/h).

X = Distance based on design vehicle turning path, typically 10–15 m.

Source: QDMR (2006).

Figure 7.6: Channelised right-turn treatment with a short turn slot [CHR(S)] two-lane rural road

APPENDIX B

SITE PHOTOGRAPHS



Photo No. 1: Looking generally east from Seaham Road showing the approximate location of the access to the proposed subdivision.



Photo No. 2: Looking left (generally south) along Seaham Road from the showing the existing traffic environment and available sight distance.



Photo No. 3: Looking right (generally north) along Seaham Road from the showing the existing traffic environment and available sight distance.