Sturt Highway, Darlington Point Industrial Subdivision

Traffic Impact Assessment Report

Client:

CAF Consulting Services Pty Ltd

Project No. 210724

FINAL Report – 30/09/22

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EXECUTIVE SUMMARY

CAF Consulting has engaged Trafficworks to undertake a traffic impact assessment of the proposed industrial subdivision at the corner of Kidman Way and the Sturt Highway, Darlington Point (Lot 149 of DP750908).

The proposed development will include a staged industrial subdivision consisting of varying lot sizes between 2,125 m^2 and 60,000 m^2 (6 Ha). Vehicular access to the development will be provided via direct access to Kidman Way.

The subject site is currently vacant and is located within an RU1: Primary Production zone.

This report outlines the estimated traffic volume the proposed development will generate and the anticipated impact on the surrounding road network and recommends appropriate remedial treatments.

A summary of the site and the proposed development is shown below.

Address	Lot 149 of DP750908, Stuart Highway, Darlington Point
Zoning	RU1: Primary Production Zone
Proposed development	Industrial Subdivision
Road Network	Kidman Way • State Road • 110km/h (80km/h for 400m south of the Sturt Highway) Sturt Highway • National Highway • 110km/h (80km/h in the vicinity of Kidman Way)
Recommendations	It is recommended that: • **Recommendation 1:** turn treatments consisting of a Rural Basic Left-turn Treatment [BAL] for left-turning vehicles and a Rural Basic Right-turn Treatment [BAR] for right-turn vehicles be implemented on Kidman Way at the development access intersection before the statement of compliance is issued for Stage 1 of the development. • **Recommendation 2:** turn treatments consisting of maintaining the Rural Basic Left [BAL] treatment for left-turn vehicles but upgrading the intersection to a short Rural Channelised Right [CHR(s)] turn treatment for right-turn vehicles on Kidman Way at the development access intersection before the statement of compliance is issued for Stage 2 of the development. • **Recommendation 3:** turn treatments consisting of maintaining the Rural Basic Left [BAL] for left-turn vehicles but upgrading the previous CHR(S) treatment to a full Rural Channelised Right [CHR] turn treatments for right-turn vehicles on Kidman Way at the development access intersection at Stage 4 (full development).

	• **Recommendation 4**: temporary industrial court bowl treatments to be constructed to facilitate turns by the design vehicle at the termination of the internal road through the development at each stage boundary. • Recommendation 5: the 80km/h speed zone along Kidman way to the south of Sturt Highway be extended further south to incorporate the proposed access.

Referenced documents

References used in the preparation of this report include the following:

- RTA Guide to Traffic Generating Developments, Version 2.2A, October 2002, for peak hour traffic generation rates
- Austroads Guide to Road Design, Part 4 (2021) – Intersecting and Crossings General (AGTRD4), for provision for right-turning vehicles at urban intersections
- Austroads Guide to Road Design, Part 4A (2017) – Unsignalised and Signalised Intersections (AGTRD4), for sight distance criteria and provision for left-turning vehicles at urban intersections
- Austroads Guide to Traffic Management, Part 6 (2020) – Intersections, Interchanges and Crossings for turning warrants assessment (referred to as AGTTM6 in this report)
- Austroads Guide to Traffic Management Part 8 (2020) – Local Area Traffic Management (AGTM8), for local area traffic management treatments
- Transport for NSW Centre for Road Safety, Interactive crash statistics for casualty crash history on roads in the vicinity of the proposed development
- Transport for NSW Traffic Volume Viewer for traffic volumes on arterial roads near the proposed development.

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1 INTRODUCTION

CAF Consulting has engaged Trafficworks to prepare a Traffic Impact Assessment Report (TIAR) for the proposed industrial subdivision at the corner of Kidman Way and the Sturt Highway, Darlington Point (Lot 149 of DP750908).

The TIAR will support a Development Application (DA) to the Murrumbidgee Shire Council (the Council) for the proposed industrial subdivision. It should be noted that a rezoning application will also be submitted in addition to the DA.

This report outlines the estimated traffic volume the proposed development will generate and the anticipated impact on the surrounding road network and recommends appropriate remedial treatments.

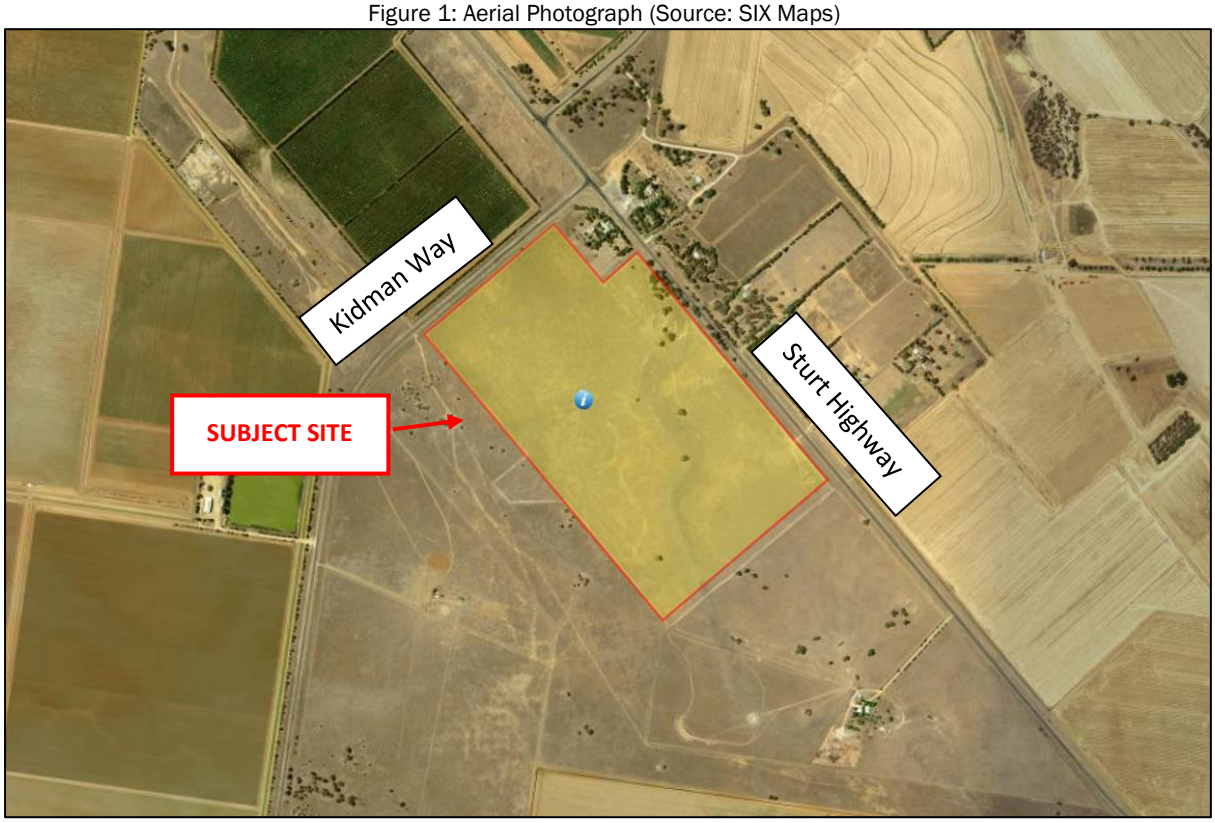
2 EXISTING CONDITIONS

2.1 Subject site

The subject site is located approximately 2.5 km south of the Darlington Point town centre on the southern corner of the intersection of the Sturt Highway and Kidman Way.

The subject site is included in an RU1: Primary Production zone within the Council's LEP and currently consists of vacant land. An aerial photograph of the surrounding area is provided in Figure 1 below.

Figure 1: Aerial Photograph (Source: SIX Maps)



2.2 Road network

The Sturt Highway is a national highway (A20) under Transport for NSW (TfNSW) management that forms a vital road link between Sydney and Adelaide. The highway is located within an SP2 Classified Road zone. In the vicinity of the subject site, the Sturt Highway runs southeast to northwest and provides a single traffic lane in each direction with sealed shoulders on either side.

Whilst generally subject to a speed limit of 110 km/h, the Sturt Highway has a posted speed limit of 80 km/h in the vicinity of the intersection with Kidman Way and the subject site.

Kidman Way is a state road (B87) located within an SP2 Classified Road zone under the management of TfNSW that connects Griffith in the north to the Newell Highway in the south, forming a staggered intersection with the Sturt Highway near the subject site. Kidman Way provides a single traffic lane in each direction with sealed shoulders on either side.

Whilst generally subject to a speed limit of 110 km/h, Kidman Way has a posted speed limit of 80 km/h for approximately 400 m to the south of the intersection with Sturt Highway.

Photographs of Kidman Way in the vicinity of the proposed site access are shown in Figure 2 and Figure 3 below.

Figure 2: Kidman Way – View North

Figure 3: Kidman Way – View South

The intersection of the Sturt Highway with Kidman Way adjacent to the site provides a channelised right turn lane and an auxiliary left turn lane into Kidman Way. An aerial photograph of the intersection is shown below in Figure 4.

Figure 4: Sturt Highway / Kidman Way - Aerial Photograph (Source: Nearmap under licence)

2.3 Traffic volumes

Historical traffic counts within the surrounding road network have been extracted from the TfNSW Traffic Volume Viewer, as shown below.

Table 1: Historical Traffic Counts (Source: TfNSW Traffic Volume Viewer)

Location	Previous Counts			Current Volumes		
	North / East	South / West	Total	North / East	South / West	Total
Kidman Way South of the Sturt Highway	522 vpd (2010)	539 vpd (2010)	1,071 vpd (2010)	N/A	N/A	N/A
Sturt Highway East of Euroley	493 vpd (2012)	503 vpd (2012)	996 vpd (2012)	686 vpd (2022)	693 vpd (2022)	1,379 vpd (2022)
Newell Highway north of Jerilderie	888 vpd (2010)	922 vpd (2010)	1,810 vpd (2010)	980 vpd (2022)	969 vpd (2022)	1,949 vpd (2022)

Given that no recent counts are available along Kidman Way in the vicinity of the site, the 2010 counts will be scaled up using the general increases in the surrounding road network to estimate the 2022 counts.

The traffic counts to the south along Newell Highway were considered the most appropriate and resulted in a traffic increase of 0.62% per year, or 8%, since 2010. On this basis, the estimated 2022 traffic volumes along Kidman Way have been estimated as follows:

- Northbound: 564 vehicles per day
- Southbound: 582 vehicles per day
- **Total: 1,146 vehicles per day**

It has been assumed that the peak hour volumes are 10% of the daily volumes.

2.4 Crash history

The Transport for NSW Centre for Road Safety database details all injury crashes on roads throughout New South Wales. Scrutiny of these records indicates that there were no casualty crashes in the vicinity of the subject site in the last five-year period for which data is available, i.e. between 2016 and 2020.

Given that there is no history of casualty crashes on Kidman Way or the Sturt Highway in the vicinity of the development, it can be concluded that there are currently no traffic safety issues relating to these sections of the road that require urgent remedial action.

Conclusion 1: no safety issues have been identified in the surrounding road network.

2.5 Pedestrians and cyclists

There are currently no pedestrian footpaths or cyclist facilities in the vicinity of the subject site.

2.6 Public transport

There are no public transport services in the vicinity of the subject site.

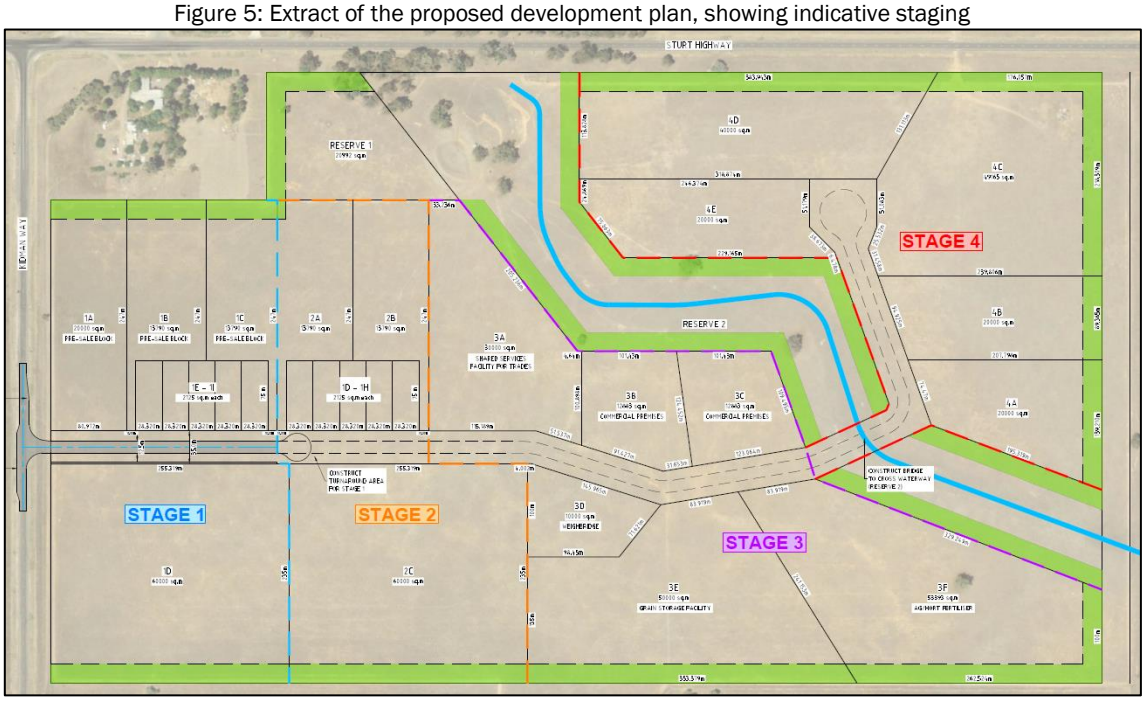
3 PROPOSED DEVELOPMENT

3.1 Proposed development summary

The proposed staged industrial subdivision development consists of varying lot sizes between 2,125 m² and 60,000 m² (6 Ha). Vehicular access to the development will be provided via direct access to Kidman Way.

The proposed development plan, with indicative staging, is shown in Figure 5, and the development plan is in Attachment A.

Figure 5: Extract of the proposed development plan, showing indicative staging



The following indicative staging is proposed within the subject development, with the approximate land area for each stage:

- Stage 1 – 11.8 Ha
- Stage 2 – 9.8 Ha
- Stage 3 – 16.9 Ha
- Stage 4 – 14.9 Ha
- TOTAL – 53.4 Ha

A temporary turnaround area/court bowl is proposed to be constructed during Stage 1 of the development to accommodate forward egress from the subject site.

3.2 Trip generation and distribution

3.2.1 Traffic generation

Industrial uses

Traffic generation volumes from the industrial subdivision can be established using the rates suggested in Section 3.10.1 of the *RTA Guide to Traffic Generating Developments,* 2002 (the RTA Guide) and additional information contained in the TfNSW Update, 2013 (the TfNSW update).

The RTA Guide indicates that, for strategic planning purposes, where the gross floor area (GFA) of industrial premises is unknown, an indicative value of 28 employees/ha developed can be assumed.

Additionally, the RTA Guide indicates that the average gross floor area per employee is 50 m^2. The average daily traffic generation rate of 7.83 trips / 100 m^2 GFA (Gross Floor Area) is shown in the TFNSW Update for regional areas.

Based on these factors, the daily traffic generation rate for regional industrial development is estimated to be 110 vpd/ha; refer to the calculation below.

$$\frac{28\ employees}{ha} \times \frac{783\ trips}{ha} \times \frac{0.005\ ha}{employee} = \frac{109.62\ trips}{ha}$$

The TFNSW Update indicates that the average peak hour traffic generation is 0.74 vph/100 m^2 of gross floor area (GFA). The GFA is estimated to be 1,400 m^2/ha (28 employees/ha x 50 m^2/employee). Therefore, the peak hour traffic generation rate for industrial development is estimated to be 10.4 vph/ha; refer to the calculation below.

$$\frac{0.74\ vph}{100\ m^2} \times \frac{1{,}400\ m^2}{ha} = \frac{10.4\ vph}{ha}$$

Based on the above-calculated traffic generation rates, the proposed industrial estate will likely generate 5,874 vpd with a peak hour traffic volume of 555 vph at full development.

The following table provides a cumulative assessment of the traffic generated by the proposed development at each stage.

Table 2: Cumulative Traffic Generation

Lots	Stage Area (Ha)	Cumulative Area (Ha)	Derived Generation Rate			Cumulative Traffic Generation	
			Daily	Peak	Unit	Daily (vpd)	Peak (vph)
Stage 1	11.8	11.8	110	10.4	per hectare	1,298	123
Stage 2	9.8	21.6				2,376	225
Stage 3	16.9	38.5				4,235	400
Stage 4	14.9	53.4				5,874	555
TOTAL	**53.4**	**53.4**				**5,874**	**555**

3.2.2 Traffic distribution

Peak hour traffic flow for the proposed industrial development would be distributed as follows:

- AM peak = 30% leaving / 70% entering
- PM peak = 70% leaving / 30% entering

For this assessment, it has been assumed that the development traffic accessing the subject site via Kidman Way is:

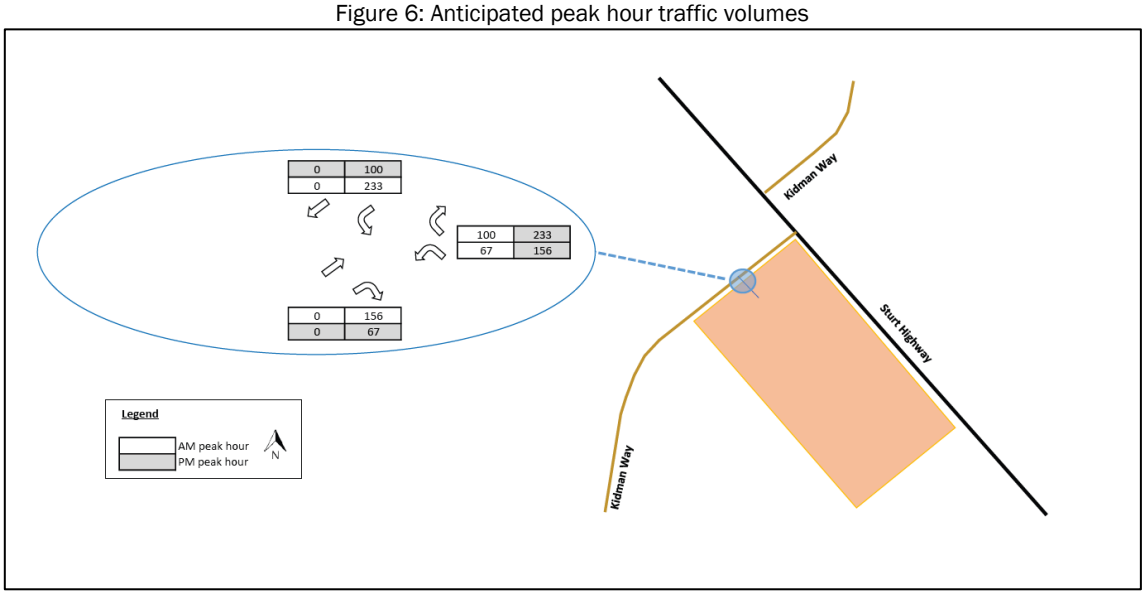
- 60% from the northeast
- 40% from the south.

This is based on a review of the nearby population centres and likely destinations and origins of the traffic.

3.2.3 Anticipated traffic volumes

Figure 6 shows the proposed development's anticipated peak hour traffic volumes.

Figure 6: Anticipated peak hour traffic volumes

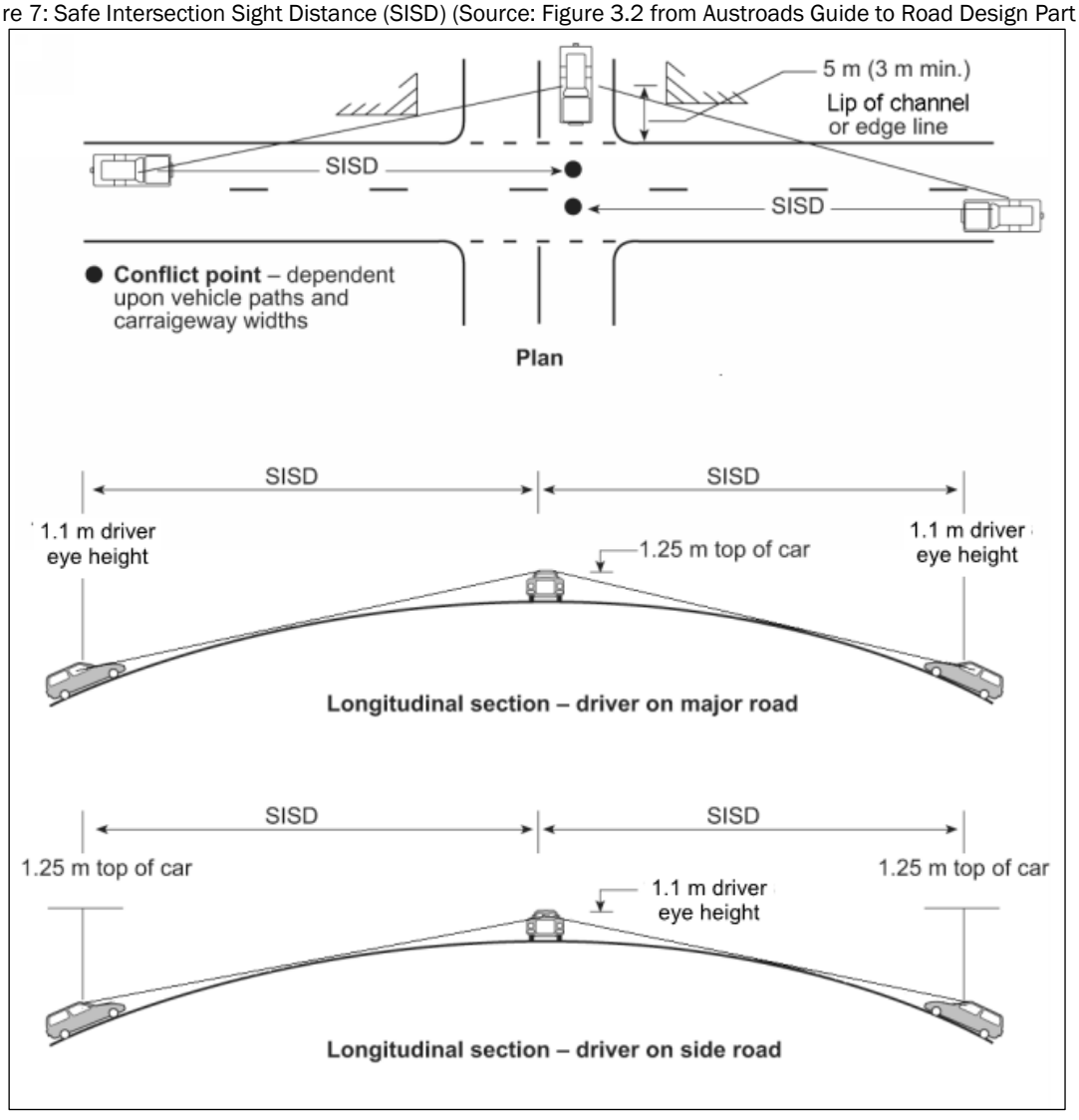


4 ASSESSMENT

4.1 Sight distance

The visibility criterion commonly applied to intersections is Safe Intersection Sight Distance (SISD). This is nominated in the Austroads Guide to Road Design, Part 4A (AGRD4) as the minimum distance which should be provided on the major road at any intersection (refer to Section 3.2.2 in AGRD4A) and provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle from the minor access approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point (refer Figure 7).

Figure 7: Safe Intersection Sight Distance (SISD) (Source: Figure 3.2 from Austroads Guide to Road Design Part 4A)



The minimum SISD criterion specified in Table 3.2 of the Austroads Guide requires clear visibility for a desirable minimum distance of 285 m, relating to the general reaction time RT of 2 seconds and a posted speed of 110 km/h. No grade corrections are required at the proposed access to the existing road network, although there is a speed change to 80 km/h, approximately 50 m to the north of the access.

The visibility requirement of 285 m measured at 5.0 m from the edge of the traffic lane is satisfied at the proposed access location on Kidman Way, and no further treatment is required in this regard. It should be noted that the speed reduction along Kidman Way to 80 km/h to the north of the access is proposed to be extended to the south, resulting in this being a conservative assessment.

Photographs demonstrating the sight lines at the proposed access are shown below.

Figure 8: Proposed Access Sight Distance - View South

Figure 9: Proposed Access Sight Distance - View North

Conclusion 2: relevant Austroads Safe Intersection Sight Distance criteria are satisfied at the development's proposed access that connects to Kidman Way.

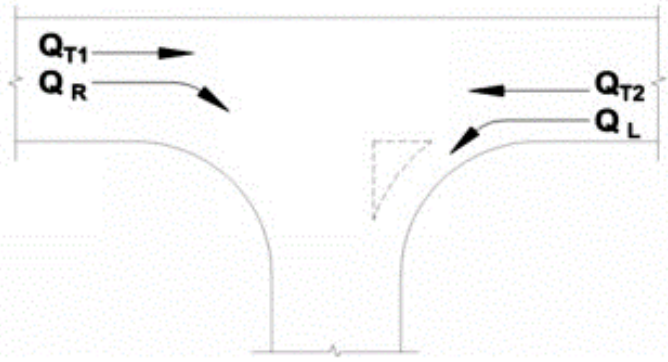
4.2 Turn provisions

The traffic turning from major roads into minor roads should not delay through traffic. Turn treatments from major roads into minor roads at sign-controlled intersections are provided for safe and efficient intersection operation.

The anticipated traffic volumes during the peak hour were used to determine the turning warrants at the subject site entry. The formulae shown in Figure 3.26 of the Austroads Guide to Traffic *Management Part 6* (AGTM6), reproduced in Figure 10, were used to determine the major road volume (Q_M). The results were then applied to Figure 3.25 of AGTM6 to resolve the turning warrants for the intersection (refer to Figure 11 to Figure 14).

Figure 10: Formulas used to determine the major road traffic

Figure 3.26: Calculation of the major road traffic volume Q_M



Road type	Turn type	Splitter island	Q_M (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$

Turn provision assessments at the Kidman Way/development access intersection were undertaken for each stage of the development to identify the turn treatment warrants.

Detailed analysis of the turn treatments triggered by entering traffic at the Kidman Way/development access intersection at each stage of the development is discussed below.

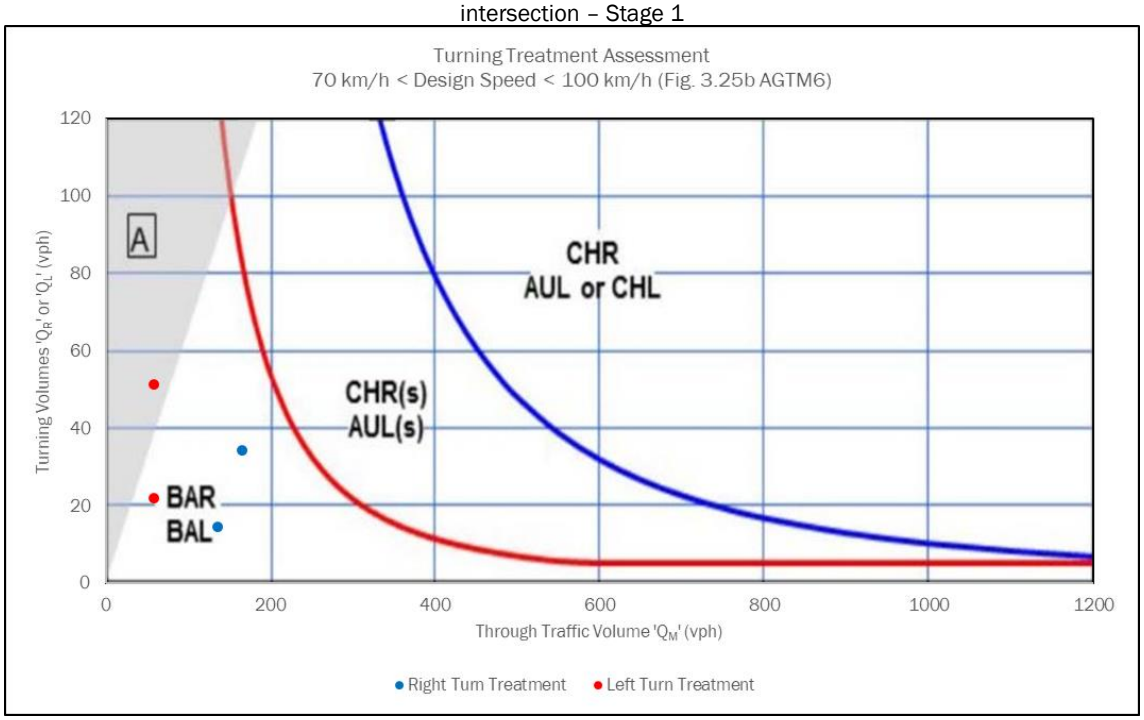
4.2.1 Turn provisions – Stage 1

Table 3 summarises the traffic volumes at the Kidman Way/development access intersection and Figure 8 shows the turning warrants for the intersection during Stage 1 of the development.

Table 3: Turn warrants at the Kidman Way/development access intersection: Stage 1

Major	Minor Road	Peak Period	Left Turn Q_L (vph)	Right Turn Q_R (vph)	Through Q_T (vph)		Q_M Left Turn	Q_M Right Turn
Kidman Way	Development Access	AM	52	34	Q_{T1}	56	58	166
					Q_{T2}	58		
		PM	22	15	Q_{T1}	56	58	136
					Q_{T2}	58		

Figure 11: Graph used to determine the warrants for the turn treatments at the Kidman Way/development access intersection – Stage 1



Turning warrants assessment revealed that after Stage 1 of the development, the Kidman Way/development access intersection warrants a Rural Basic Left-turn Treatment [BAL] and a Rural Basic Right-turn Treatment [BAR].

Conclusion 3: the Kidman Way/development access intersection warrants a Rural Basic Left-turn Treatment [BAL] and a Rural Basic Right-turn Treatment [BAR] before the statement of compliance is issued for Stage 1 of the proposed development.

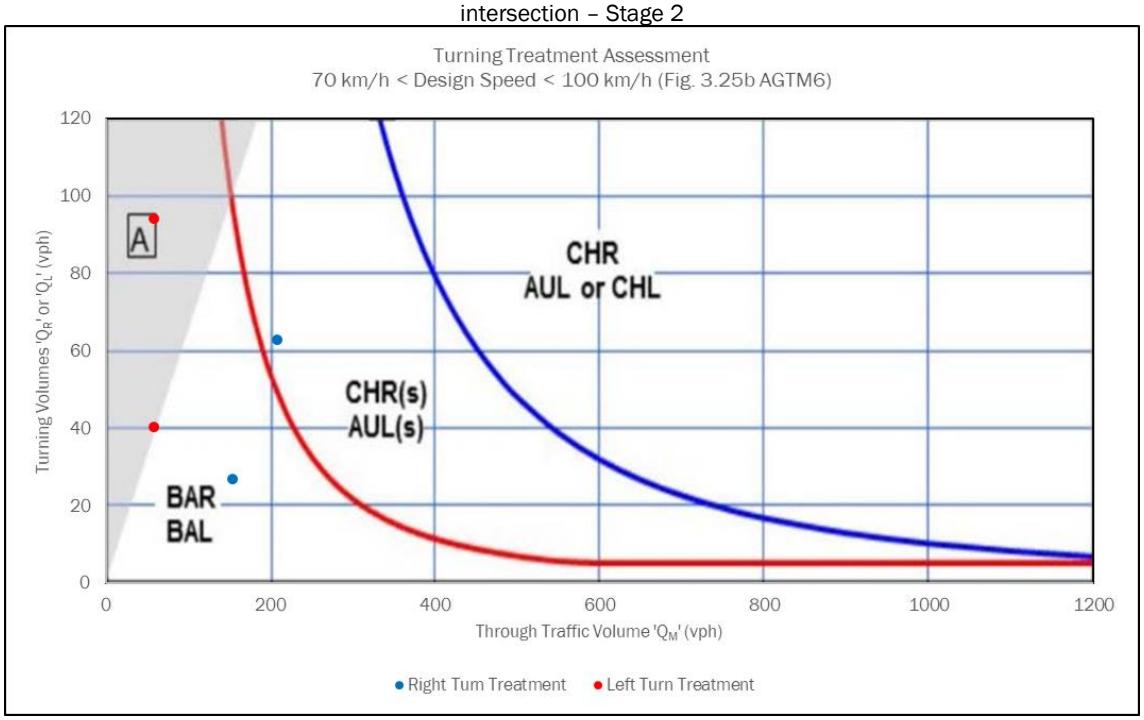
4.2.2 Turn provisions – Stage 2

Table 4 summarises the traffic volumes at the Kidman Way/development access intersection and Figure 9 shows the turning warrants for the intersection during Stage 2 of the development.

Table 4: Turn warrants at the Kidman Way/development access intersection: Stage 2

Major	Minor Road	Peak Period	Left Turn Q_L (vph)	Right Turn Q_R (vph)	Through Q_T (vph)		Q_M Left Turn	Q_M Right Turn
Kidman Way	Development Access	AM	94	63	Q_{T1}	56	58	208
					Q_{T2}	58		
		PM	40	27	Q_{T1}	56	58	154
					Q_{T2}	58		

Figure 12: Graph used to determine the warrants for the turn treatments at the Kidman Way/development access intersection – Stage 2



Turning warrants assessment revealed that after Stage 2, the Kidman Way/development access intersection warrants for a Rural Basic Left [BAL] and a short Rural Channelised Right [CHR(s)] turn lane treatment.

Conclusion 4: the Kidman Way/development access intersection warrants a Rural Basic Left [BAL] and a short Rural Channelised Right [CHR(s)] turn lane treatment before the statement of compliance are issued for Stage 2 of the proposed development.

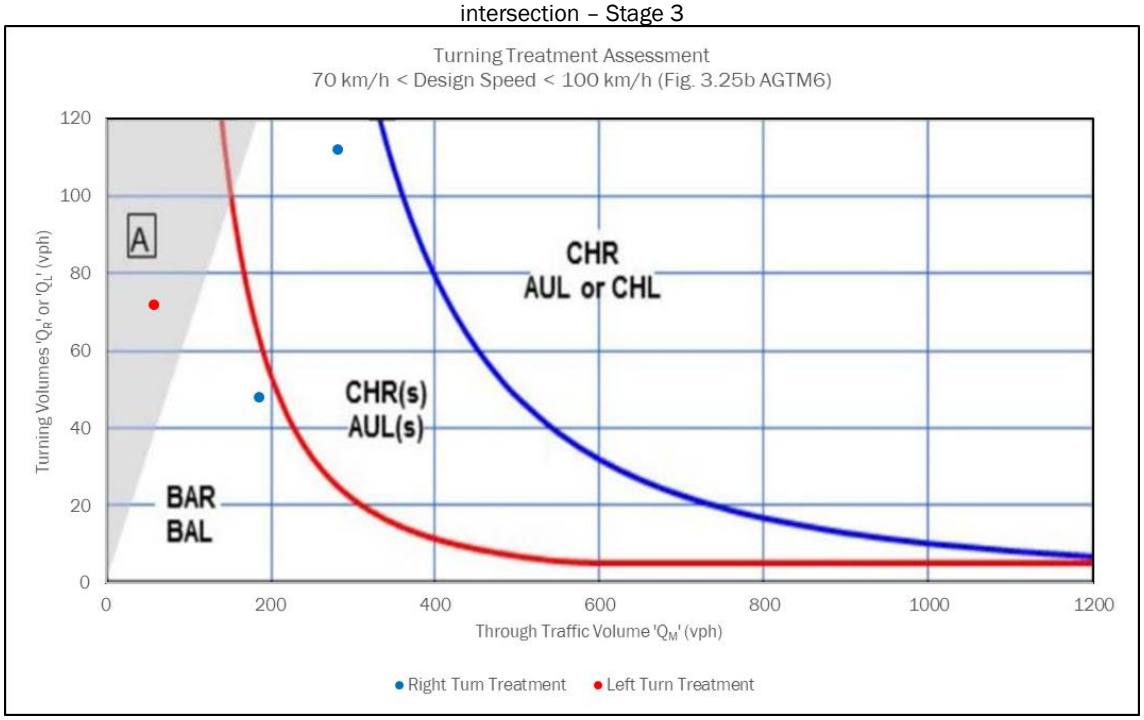
4.2.3 Turn provisions – Stage 3

Table 5 summarises the traffic volumes at the Kidman Way/development access intersection, and Figure 13 shows the turning warrants for the intersection during Stage 3 of the development.

Table 5: Turn warrants at the Kidman Way/development access intersection: Stage 3

Major	Minor Road	Peak Period	Left Turn Q_L (vph)	Right Turn Q_R (vph)	Through Q_T (vph)		Q_M Left Turn	Q_M Right Turn
Kidman Way	Development Access	AM	168	112	Q_{T1}	56	58	282
					Q_{T2}	58		
		PM	72	48	Q_{T1}	56	58	186
					Q_{T2}	58		

Figure 13: Graph used to determine the warrants for the turn treatments at the Kidman Way/development access intersection – Stage 3



Turning warrants assessment revealed that at the Kidman Way/development access intersection warrants for a Rural Basic Left [BAL] (although noting that the AM left turn value is beyond the scope of the graph) and a short Rural Channelised Right [CHR(s)] turn lane treatment.

Conclusion 5: the Kidman Way/development access intersection warrants a Rural Basic Left [BAL] and a short Rural Channelised Right [CHR(s)] turn lane treatment implemented for Stage 2 to offer satisfactory service for Stage 3 of the proposed development, and no change is required.

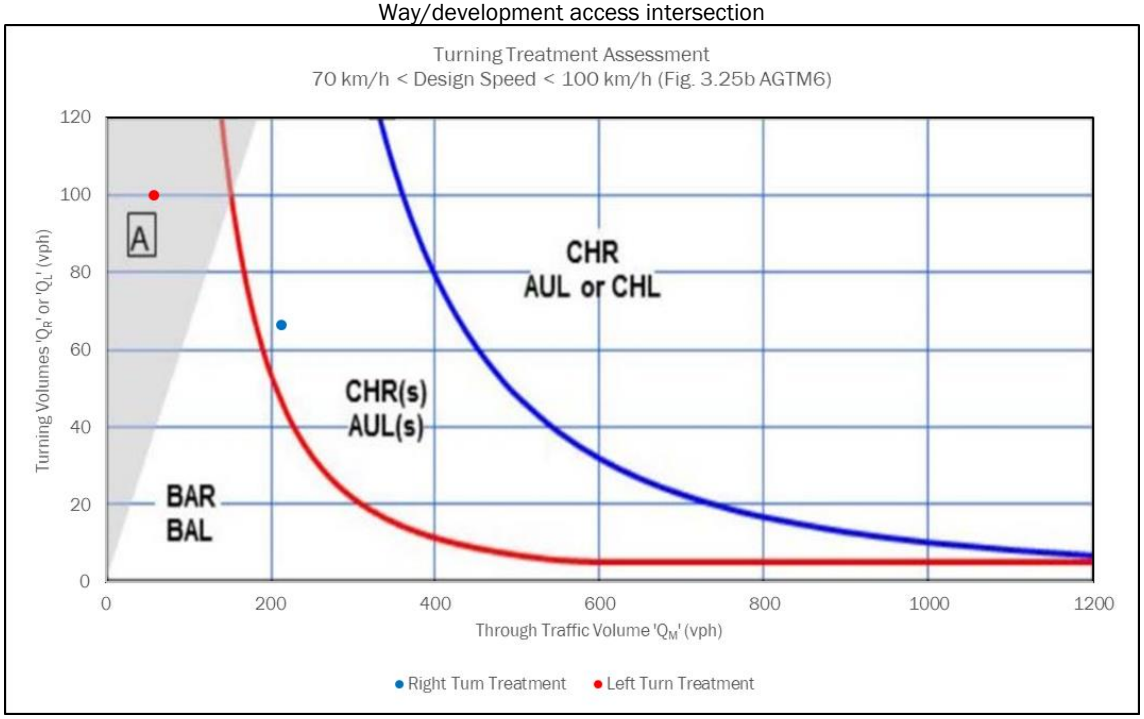
4.2.4 Turn provisions – Stage 4 (Full development)

Table 6 summarises the traffic volumes at the Kidman Way/development access intersection, and Figure 14 shows the turning warrants for the intersection at full development.

Table 6: Turn warrants at the Kidman Way/development access intersection: at full development

Major	Minor Road	Peak Period	Left Turn Q_L (vph)	Right Turn Q_R (vph)	Through Q_T (vph)		Q_M Left Turn	Q_M Right Turn
Kidman Way	Development Access	AM	233	156	Q_{T1}	56	58	347
					Q_{T2}	58		
		PM	100	67	Q_{T1}	56	58	214
					Q_{T2}	58		

Figure 14: Graph used to determine the warrants for the left turn and right turn treatments at the Kidman Way/development access intersection



Turning warrants assessment revealed that at full development, the Kidman Way/development access intersection warrants for a Rural Basic Left [BAL] and a full Rural Channelised Right [CHR] turn lane treatment.

Conclusion 6: the Kidman Way/development access intersection meets the warrants for a Rural Basic Left [BAL]. Still, it requires a full Rural Channelised Right [CHR] turn lane treatment before the statement of compliance is issued for Stage 4 at full development.

4.2.5 Turn Provisions - Summary

Table 7**Error! Reference source not found.** shows the left and right turn treatments triggered by each stage of development.

Table 7: Turn warrants triggered by each stage of the development

Stage development	Left turn treatment	Right turn treatment
Stage 1	Rural Basic Left Turn Treatment [BAL]	Basic Right Turn [BAR]
Stage 2	Rural Basic Left Turn Treatment [BAL]	Short Rural Channelised Right-turn Treatment [CHR(s)]
Stage 3	Rural Basic Left Turn Treatment [BAL]	Short Rural Channelised Right-turn Treatment [CHR(s)]
Stage 4 (Full Development)	Rural Basic Left Turn Treatment [BAL]	Rural Channelised Right-turn Treatment [CHR]

Based on the table above, the following recommendations are made:

Recommendation 1: turn treatments consisting of a Rural Basic Left-turn Treatment [BAL] for left-turning vehicles and a Rural Basic Right-turn Treatment [BAR] for right-turn vehicles be

implemented on Kidman Way at the development access intersection before the statement of compliance is issued for Stage 1 of the development.

Recommendation 2: turn treatments consisting of maintaining the Rural Basic Left [BAL] treatment for left-turn vehicles but upgrading the intersection to a short Rural Channelised Right [CHR(s)] turn treatment for right-turn vehicles on Kidman Way at the development access intersection before the statement of compliance is issued for Stage 2 of the development.

Recommendation 3: turn treatments consisting of maintaining the Rural Basic Left [BAL] for left-turn vehicles but upgrading the previous CHR(S) treatment to a full Rural Channelised Right [CHR] turn treatments for right-turn vehicles on Kidman Way at the development access intersection at Stage 4 (full development).

It should be noted that the turn lanes will have to be constructed to accommodate A-double vehicles, as Kidman Way and Sturt Highway are both road train routes.

4.3 Staging - Internal roads

The staging of the proposed subdivision will result in internal roads being temporarily terminated at the staging boundaries. The internal network will need to allow for service and emergency vehicles to travel in a forward direction at all times.

As such, a temporary court bowl treatment has been shown within the development where an internal road is truncated at Stage 1. This treatment should be repeated at Stages 2 and 3. The required radius for an industrial court bowl is 15.0 m, which will cater for 19.0 m semi-trailer and B-double vehicles. If larger vehicles are required, appropriate assessments will need to be undertaken to determine the appropriate court bowl radii.

Conclusion 7: temporary court bowl treatments will need to be constructed to accommodate the most likely design vehicles for the proposed development.

Recommendation 4: temporary industrial court bowl treatments to be constructed to facilitate turns by the design vehicle at the termination of the internal road through the development at each stage boundary.

4.4 Speed management

It should also be highlighted that currently, Kidman Way is subject to an 80 km/h speed restriction for approximately 400 m to the south of the Sturt Highway. Given that the proposed access is about 450 m south of the Sturt Highway, this speed zoning is recommended to be extended further south to incorporate the proposed access.

Recommendation 5: The 80km/h speed zone along Kidman way to the south of Sturt Highway be extended further south to incorporate the proposed access.

4.5 State Environmental Planning Policy (Infrastructure) Assessment

	Design Standard	Compliance	Notes
101. Development with frontage to a classified road			
(2) The consent authority must not grant consent to development on land that has a frontage to a classified road unless it is satisfied that:			
(a)	where practicable and safe, vehicular access to the land is provided by a road other than the classified road	Yes	An internal access road is to be provided that obviates individual access from lots to the abutting classified roads and accessed off Kidman Way, thus satisfying this requirement.
(b)	the safety, efficiency and ongoing operation of the classified road will not be adversely affected by the development as a result of:		
(i)	the design of the vehicular access to the land	Yes	Section 4 of this report indicates that the proposed access will not impact the classified road's safety, efficiency and ongoing operation by making separate right turn lane provisions at appropriate stages of the development. The analysis indicated a need for only Basic Left (BAL) turn provision at all stages.
(ii)	the emission of smoke or dust from the development	-Yes	The intersection and internal roads are to be constructed with a sealed surface. Dust emissions from vehicles will be minimal. Emissions from uses within the development will be managed through separate 'Development Approvals' for each site.
(iii)	the nature, volume or frequency of vehicles using the classified road to gain access to the land	Yes	The classified road is a state arterial road suitable for vehicle movements generated by land use.
(c)	the development is of a type that is not sensitive to traffic noise or vehicle emissions, is appropriately located and designed, or includes measures, to ameliorate potential traffic noise or vehicle emissions within the site of the development arising from the adjacent classified road	-	It is recommended that the speed limit along Kidman Way adjacent to the subject site be reduced to 80 km/h by extending the lower speed limit further south past the subject site. Sturt Highway is already 80 km/h in the vicinity of the subject site. In addition, the proposed uses are industrial and are not sensitive to traffic noise or vehicle emissions, and as such, the development complies with this design standard.

5 CONCLUSIONS

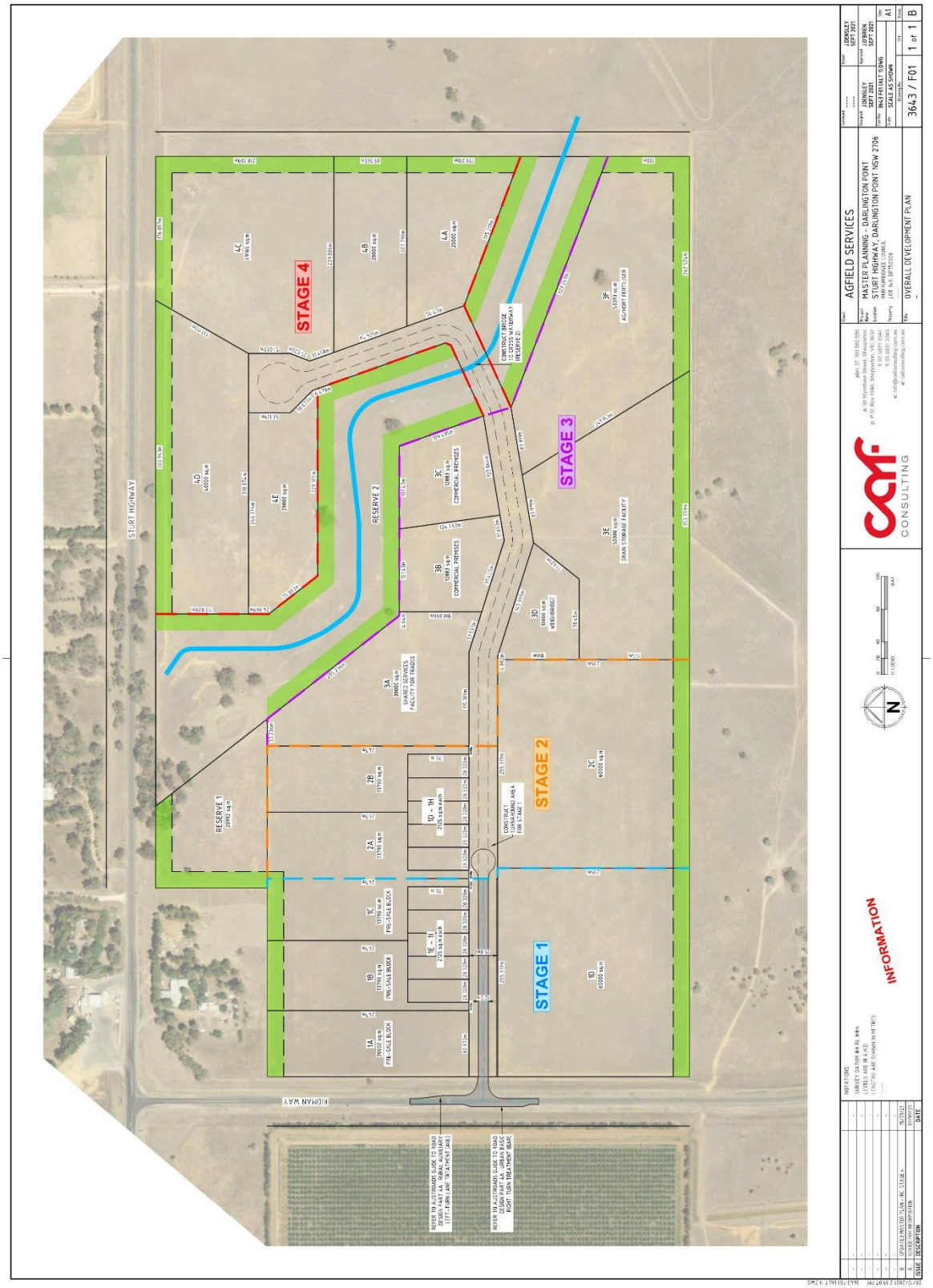
The following conclusions are drawn from the assessment of traffic impacts resulting from the proposed development of an industrial subdivision at Lot 149 of DP750908, Stuart Highway in Darlington Point:

- no safety issues have been identified in the surrounding road network
- relevant Austroads Safe Intersection Sight Distance criteria are satisfied at the development's proposed access that connects to Kidman Way
- the Kidman Way/development access intersection warrants:
    - a Rural Basic Left-turn Treatment [BAL] and a Rural Basic Right-turn Treatment [BAR] before the statement of compliance is issued for Stage 1
    - a short Rural Channelised Right [CHR(s)] turn lane treatment before the statement of compliance is issued for Stage 2
    - a full Rural Channelised Right [CHR] turn lane treatment before the statement of compliance is issued for Stage 4, at full development.
- temporary court bowl treatments will need to be constructed to accommodate the most likely design vehicles for the proposed development.

This Traffic Impact Assessment has identified several detailed design matters that require addressing in preparing plans to accompany the Development Application. Recommendations throughout the report in this regard are summarised below:

- **Recommendation 1:** turn treatments consisting of a Rural Basic Left-turn Treatment [BAL] for left-turning vehicles and a Rural Basic Right-turn Treatment [BAR] for right-turn vehicles be implemented on Kidman Way at the development access intersection before the statement of compliance is issued for Stage 1 of the development
- **Recommendation 2:** turn treatments consisting of maintaining the Rural Basic Left [BAL] treatment for left-turn vehicles but upgrading the intersection to a short Rural Channelised Right [CHR(s)] turn treatment for right-turn vehicles on Kidman Way at the development access intersection before the statement of compliance is issued for Stage 2 of the development
- **Recommendation 3:** turn treatments consisting of maintaining the Rural Basic Left [BAL] for left-turn vehicles but upgrading the previous CHR(S) treatment to a full Rural Channelised Right [CHR] turn treatments for right-turn vehicles on Kidman Way at the development access intersection at Stage 4 (full development)
- **Recommendation 4:** temporary industrial court bowl treatments to be constructed to facilitate turns by the design vehicle at the termination of the internal road through the development at each stage boundary
- **Recommendation 5:** the 80km/h speed zone along Kidman way to the south of Sturt Highway be extended further south to incorporate the proposed access

ATTACHMENT A – DEVELOPMENT PLAN



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