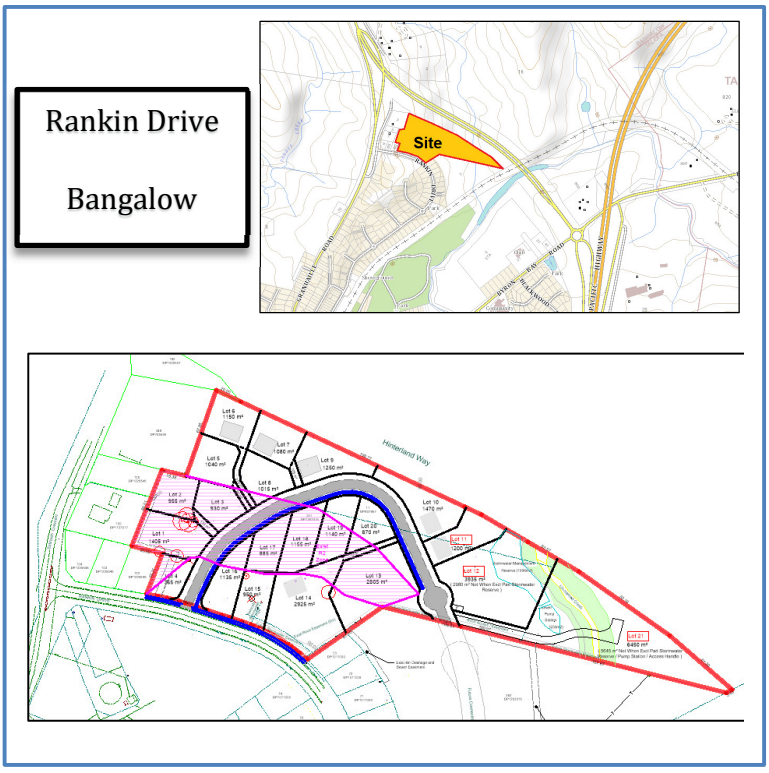
TRAFFIC IMPACT STATEMENT

FOR A

PLANNING PROPOSAL FOR RESIDENTIAL DEVELOPMENT



At
68 Rankin Drive
Bangalow NSW 2479

Upon
Land Titles
Lot 261 DP 1262316 &
Lot 11 DP 807867

Date: April 2023
(Rev -)

SDS CIVIL ENTERPRISES 461 Hinterland Way, NSW 2479
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Table of Contents

1 INTRODUCTION

This Traffic Impact Statement has been prepared to address traffic matters associated with the rezoning of lands for the purpose of residential development at 68 Rankin Drive, Bangalow. The site is identified as Lot 261 DP 1262316 and Lot 11 DP 807867 and has collector road frontage to Rankin Drive and boundaries also adjoin with existing residential lands. The common boundary to the north of the site is with the road corridor known as Hinterland Way (ie old Pacific Highway). Refer *Figure 1.0 – Site Location*.

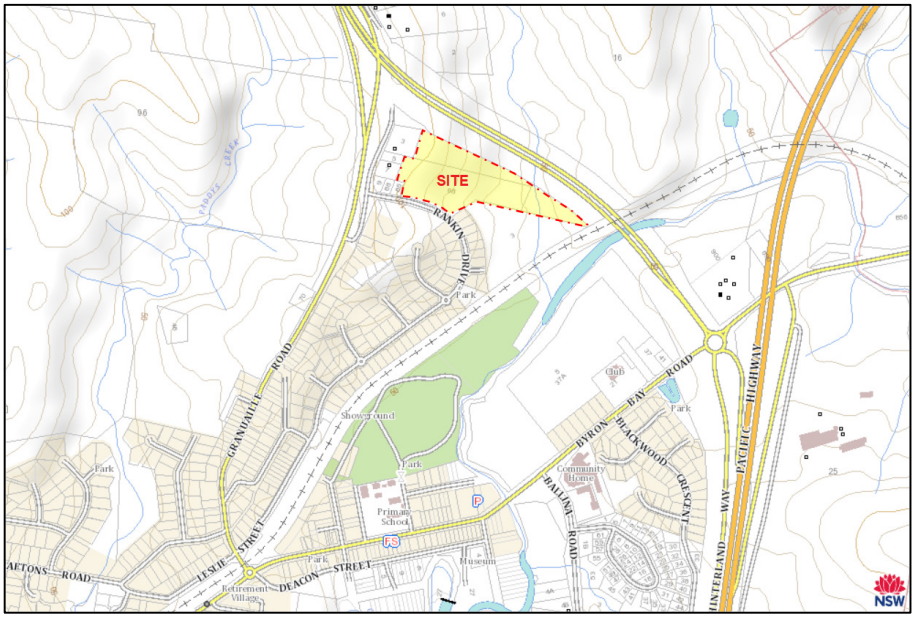

Figure 1.0 – Site Location (Source: SIXmaps.nsw.gov.au)

The subject land holding has an area of 4.014ha, being 2.332ha (Lot 261 DP 1262316) and 1.682ha (Lot 11 DP 807867) and already has 1.042Ha zoned R2 residential. There are existing Rous Water easements through the site, one of 5m width and one of 10m width which diagonally traverse the land containing trunk watermains to the nearby water reservoir which also fronts Rankin Drive.

1.1 Specific Proposal Details

The indicative residential development pattern is primarily driven by the need to enable road connectivity through the site so as to provide an inter-connection to the existing Corlis Crescent intersection south of the site. Refer to **Appendix 1** for subdivision configuration.

Such connection provides a logical road and pedestrian linkage for the precinct. Infrastructure and development potential for the subject lands is summarised as:

Existing 2 Lots

- Lot 261 DP 1262316	2.332ha
- Lot 11 DP 807867	1.682ha
	4.014ha
- Area of site incl exist Zoned R2 Low Density Residential	1.042ha

Proposed Outcome

An indicative residential development upon the lands would enable:

- Residential allotments (R2) for 2.75ha	18 lots
- Medium density residential (R3) for 1.264ha of unit style housing (Net area of 0.9825ha)	3 lots
- New 7m wide road pavement within 16m reserve	298m long
- New 2m wide pathway	120m
- Drainage easements over existing stormwater pipes	Various
- Re-vegetation of buffer to un-named creek	10m wide
- New stormwater drainage reserve	1006m^2
- New sewer pump station site	230m^2

Assuming that 1/3 of allotments may contain secondary dwellings or dual occupancy and adopting a yield of 1 unit style housing per 300m^2 on the medium density lands, the traffic generation potential of the site is:

Rankin Drive - Total Project Traffic Generation

Land Use Description	No of Lots / Units	Traffic Generation Rate	Trips
Total Dwelling Lots	18	6.5 trips / dwelling	117
Secondary Dwellings or Dual Occupancy (on say 33% of Lots)	6	75% x 6.5 trips / dwelling	29.25
Units on Medium Density Lands (Nett area of 9,825m^2 and use say 1 unit per 300m^2)	33	75% x 6.5 trips / dwelling	160.875
		Total Daily Trips	307.125
		Say	**308 Trips**
		Peak Hour Trips (10%) Say	**31 Trips**

2 EXISTING ROAD NETWORK AND VOLUMES

The access to the development would be from the existing collector road Rankin Drive. A new public road would ultimately facilitate a connection to the existing Corlis Crescent stub located south of the site. Refer to Figure 2.0 below. The new road would be of a local street classification in accordance with the NRLG standard, being a 7m wide pavement within a 16m wide road reserve.

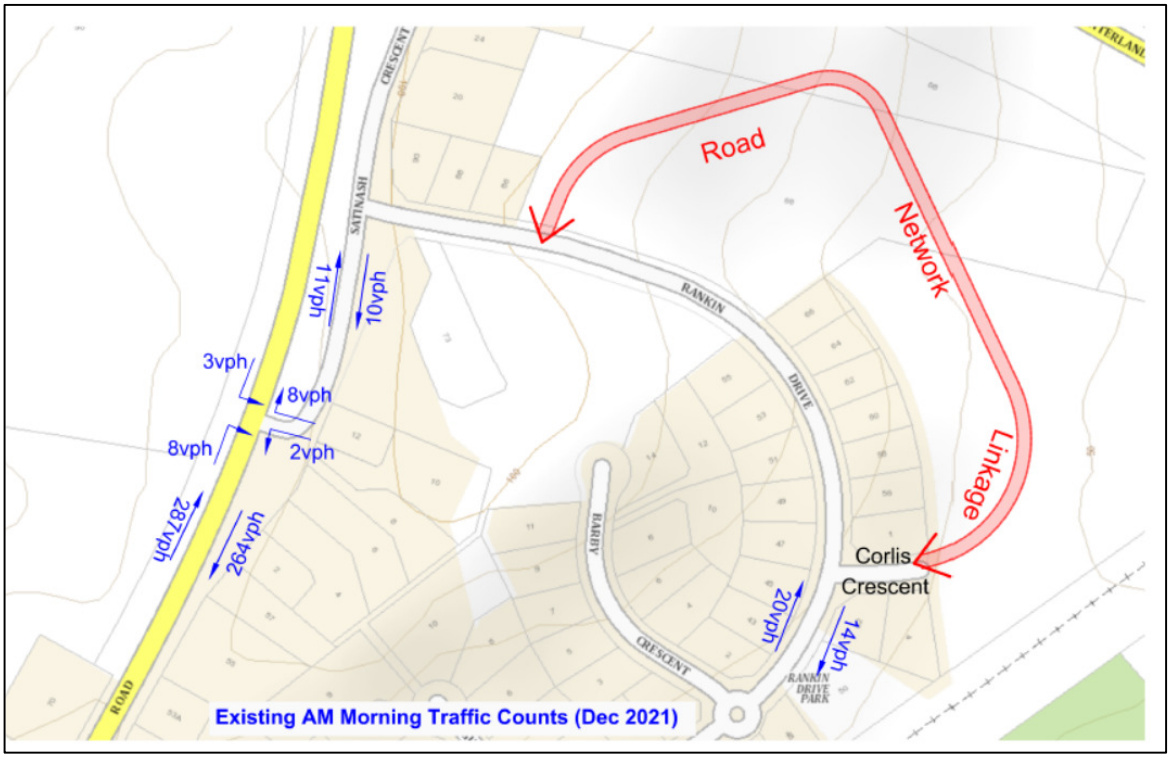

Figure 2.0 – Road Network Linkage

To facilitate staged construction of this new local road link, a temporary culdesac turning head can either be constructed on Lot 261 (if northern linkage proceeds first) or conversely on Lot 262 (if southern linkage proceeds first).

2.1 EXISTING TRAFFIC COUNTS

Morning intersection traffic counts (6.00am to 10.00am) were conducted on 9th December 2021 (Thursday) at Granuallie Road / Satinash Crescent and similarly for Barby Crescent

/ Rankin Drive on 10th December 2021 (Friday). Details of these traffic counts are included within **Appendix 2**.

These traffic counts show the existing AM peak hour traffic on Rankin Drive at the development frontage is very low and ranges between 21vph to 34vph. Rankin Drive is classified as a collector road which has capacities in the order of 300vph (ie 10% of collector road standard 3000vpd). Similarly, Satinash Crescent has very low traffic flows at 21vph.

The traffic on the nearby arterial Granuallie Road is moderately busy with 551vph (two way) which is well below a single lane capacity flow rate of 1500vph.

2.2 New Local Street Intersection – Traffic Generation

The new local street turning movements (morning AM) are shown below, with the major movement to be the right turn out onto Rankin Drive at 19vph.

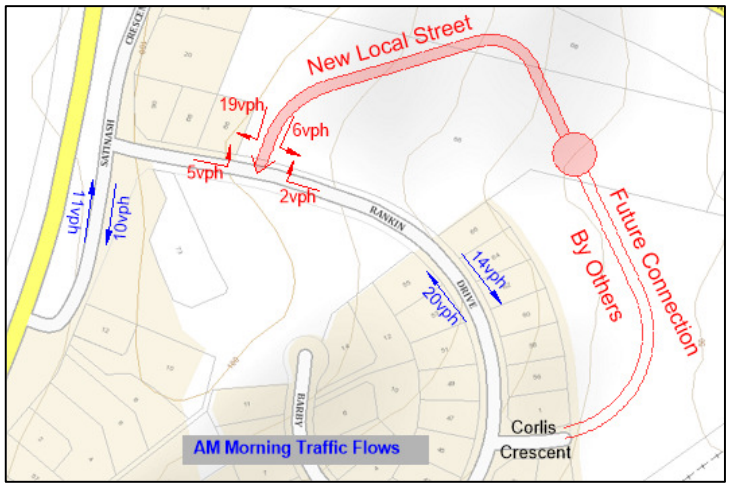

Figure 2.2 – Local Street Traffic Flow

Analysis for a 10year future scenario (say year 2034) of traffic volumes at Rankin Drive with a local 2% per annum increase, the existing 34vph (year 2021) would compound by 13years to be: $1.02^{13} \times 34 = 44$vph.

For turning movements, refer to **Appendix 3** for tabulation assessment of the AM and PM peak volume turning movements.

As per *Austroads Part 6: Intersections, Interchanges and Crossings* the new intersection turn movements are well below the warrant thresholds that would require any localised widening or turn lane treatments and ample traffic capacity exists within Rankin Drive. Refer below.

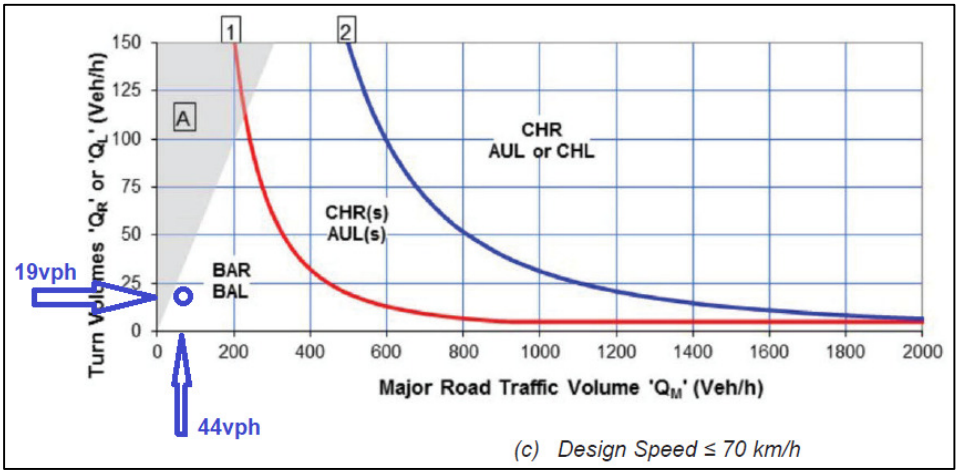

Figure 2.2.1 – New Intersection (Extract Austroads Part 6: Figure 2.26)

In recognising that the intersection traffic volumes are so low, no further analysis of PM peak volume warrants are assessed as being required on the local roads.

2.3 Granuaille Road Intersection

The existing Granuaille Road / Satinash Crescent intersection consists of a dedicated right turn pocket which will provide access to the development from the south along Granuaille Road. This intersection location is within a 50kph speed environment.

Analysis for a 10year future scenario (say year 2034) of traffic volumes at Granuaille Road / Satinash Crescent, with 2% per annum increase, the existing 551vph (year 2021) would compound by 13years to be: $1.02^{\wedge 13}$ x 551 = 712vph.

For the right turn pocket movement, the turning traffic would be 11vph (exist) plus 19vph (new) = 30vph.

As per *Austroads Part 6: Intersections, Interchanges and Crossings* the right turn movements are within the warrant thresholds for a short turn lane treatment. Refer below. The existing right turn pocket has an overall length of 70m (via Google Earth) which exceeds the minimum requirement of Austroads Fig 7.8 standard urban CHR right turn treatment of 58m. No upgrade works are required.

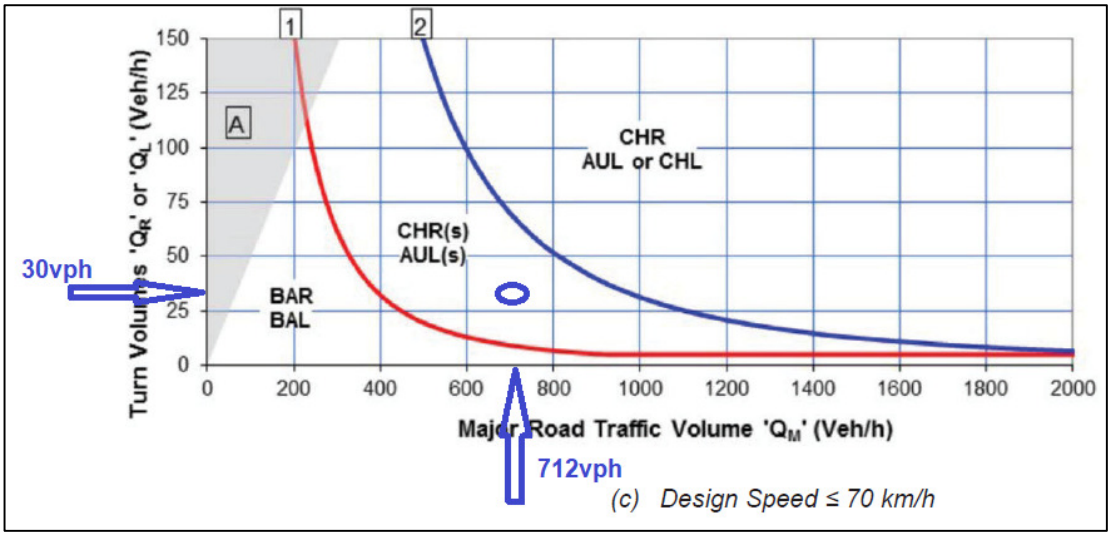

Figure 2.3 – Right Turn Pocket (Extract Austroads Part 6: Figure 2.26)

It can be concluded that the impact of this planning proposal upon traffic capacity of the local road network would be minimal and no infrastructure upgrades are required.

3 NEW INTERSECTION LOCATION AND SIGHT LINE DISTANCES

The intersection location for the development has been previously considered via DA2021.84 (4 Lot subdivision). This DA2021.84 sought to locate the intersection further westward (ie closer to crest) however that road alignment would have required removal of a Forest Red Gum (which was refused by Council) and a road gradient up to 20%. A site meeting was held with Council's engineer and an agreed location was reached which is as per this planning submission. Refer to **Appendix 4** for details of site meeting notes.

This intersection location has a sight distance of 71m (west) and 120m (east) which meet minimum requirements as per below.

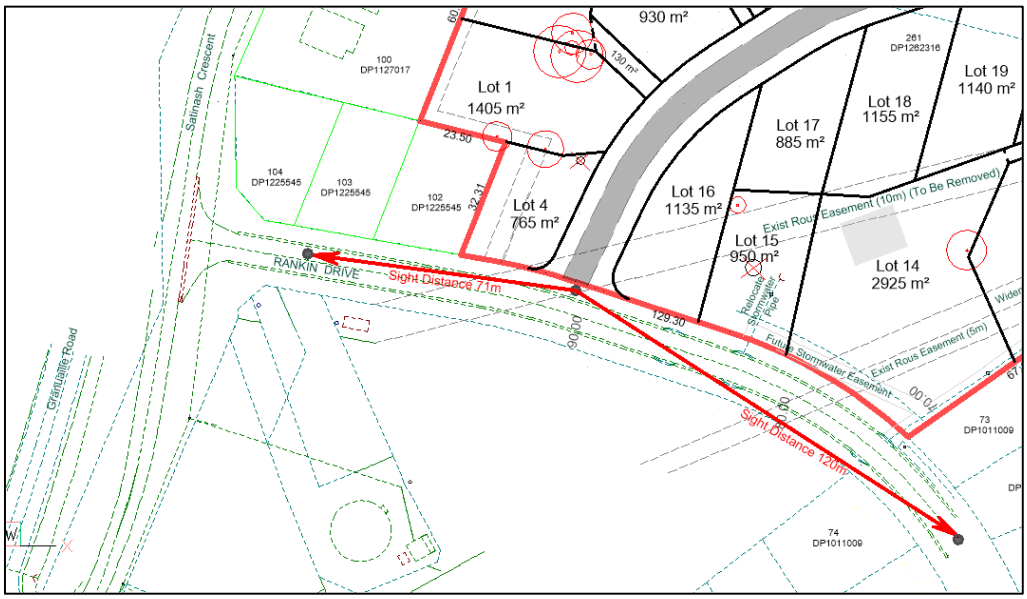

Figure 3.0 – Sight Lines New Local Road Intersection

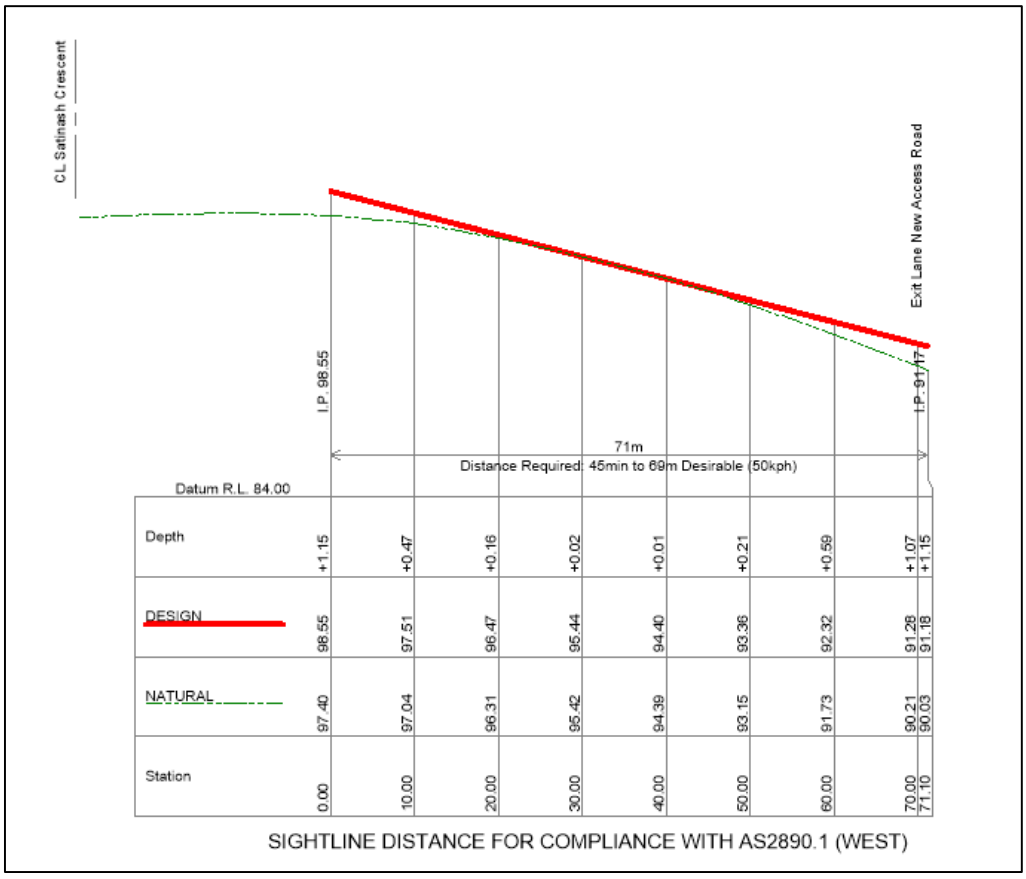

Figure 3.1 – Sight Lines To West Longsection

4 CRASH DATA

Crash data published by Centre of Road Safety, Tansport NSW (TfNSW) shows that there have been no intersection accidents at nearby intersections (ie Granuaille Road / Satinash Crescent / Barby Crescent) within the past 5 years.

An incident was recorded on Rankin Drive (Crash ID 1196205 – RUM87) in 2019 whereby a non-casualty single vehicle accident occurred with vehicle veering off carriageway. Copy of crash review below.

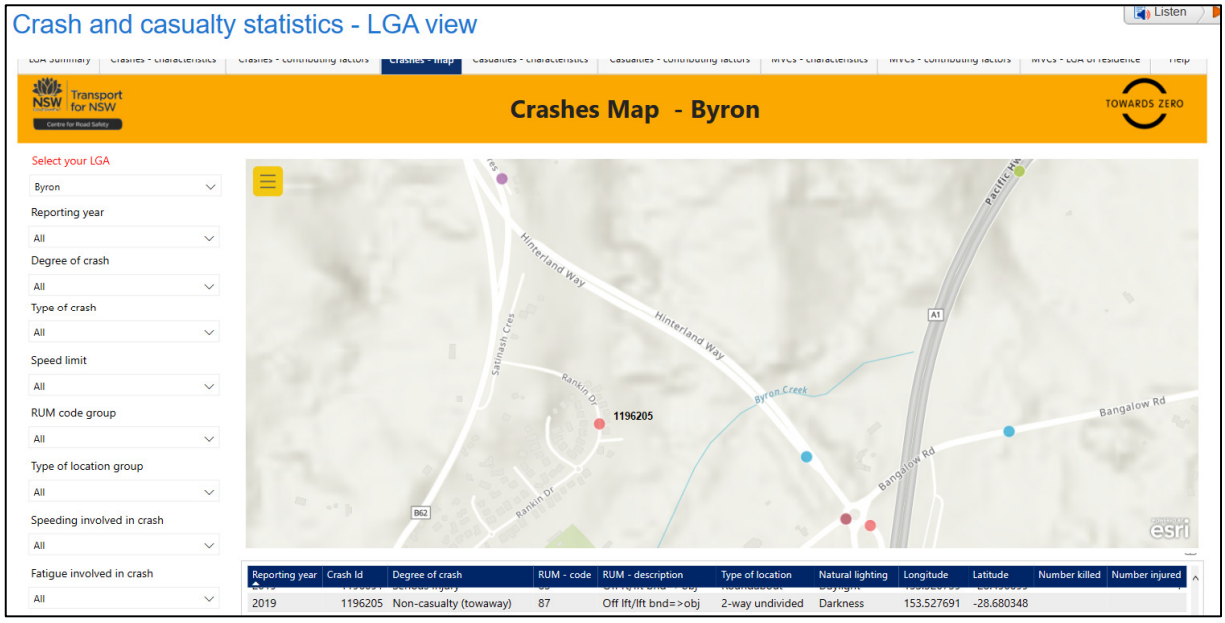

Figure 4.0 – Crash Data from TfNSW Statistics

In noting the:

- low traffic volumes
- local urban street system being within a 50kph speed zoning environment
- no significant traffic generators (ie school / shops / medical) within the immediate area
- no history of regular or significant accident history;

it is concluded that a Road Safety Audit is not warranted for this proposal.

5 PEDESTRIAN ACCESS AND CONNECTIVITY

It is proposed to extend the existing Rankin Drive 2m shared pathway from the south of site up to the most western frontage being 120m in length. This existing shared path connects to the Bangalow town centre precinct. The new internal roadway will have a 1.2m wide pedestrian path for its length.

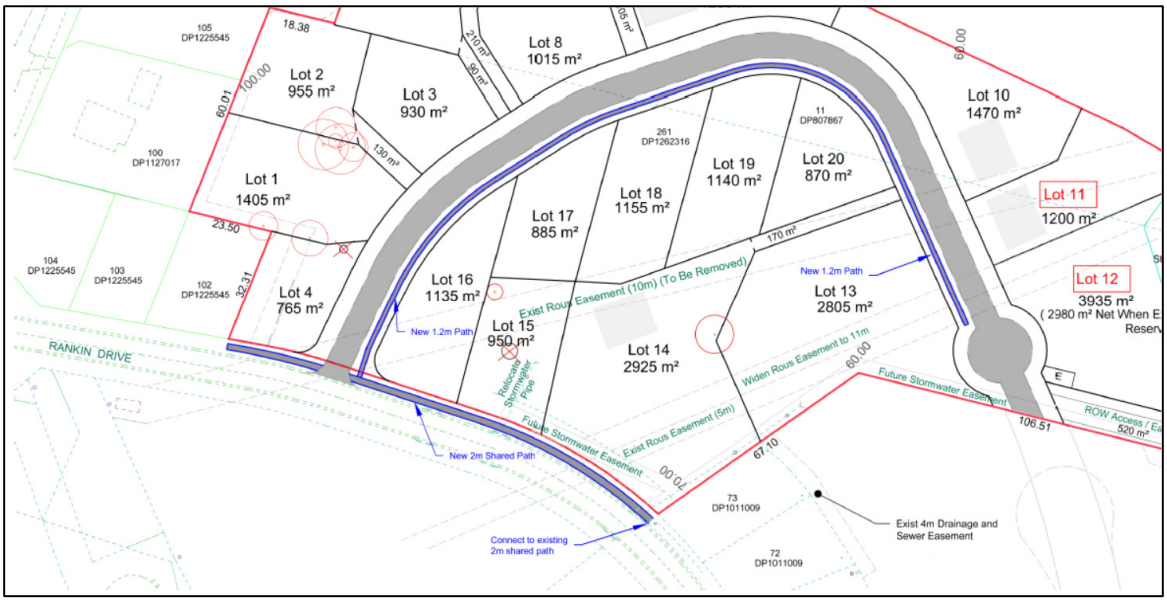

Figure 5.0 – New Pathway Locations (Shown in BLUE)

6 PUBLIC TRANSPORT

The closest bus stop is a hail and ride service along Granuaille Road known as route 641 (Blanch's). This bus service route is 215m west of the proposed new road entry (off Rankin Drive) and operates 6 services during the day. No evening bus services are available. Bangalow also has access to Uber and Byron Bay Taxi personal transport services.

Whilst the level of public transport available to this planning proposal is not high, it is very much consistant with that which services the Bangalow community.

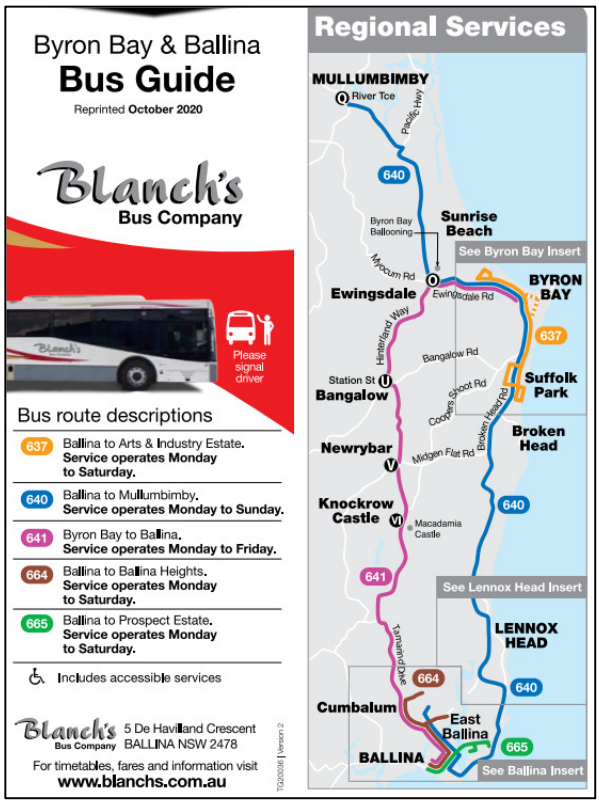

Figure 6.0 – Bus Route 641

7 SUMMARY AND CONCLUSIONS

The development footprint for the planning proposal also incorporates 1.04ha of existing residential R2 lands. The combined dwelling outcome would generate up to 308 extra daily trips (ie 31 peak hour trips) upon the local road network.

Traffic counts demonstrate the existing traffic demands are low to moderate and this additional increase of 31 peak hour trips can be safely catered for within the local road network in accordance with Austroads design standards.

The key transport element to the planning proposal is to facilitate future connectivity to neighbouring lands to ensure an orderly and functional street network is provided for.

Based upon the assessment as documented, SDS Civil advocates that there are no traffic engineering reasons why the planning proposal should not proceed.

APPENDICES

Appendix 1 Indicative Subdivision Layout With Lot Areas
Drg: 1910-RZ300 (Areas) Rev H

Appendix 2 Traffic Count Data at Intersections
(Granuaille Rd / Satinash Cr)
(Rankin Dve / Barby Cr)

Appendix 3 Total Project Traffic Generation Spreadsheet
Rankin Drive New Street Intersection (AM & PM Peak) Spreadsheet

Appendix 4 Site Meeting Notes (6 October 2021)

Appendix 1

Indicative Subdivision Layout With Lot Areas

Drg No: 1910-RZ300 (Areas) Rev H (by *SDS Civil Enterprises*)

LEGEND

Revegetation Management Areas
(Refer to Peter Parker Environmental Consultants for Details)

Trees Nominated For Removal

Example of 15m x 12m Dwelling Envelopes on Constrained Lots

Contours (10m Interval)

Proposed R3 Medium Density Zoned Lots (Lot 11, Lot 12 & 21)

Existing Residential Zoned Lands (R2)

New 1.2m Pathway or 2m Shared Path

Drawing notes
1. The steep nature of the site will require the installation of some retaining walls associated with the creation of the new road. Such walls will typically be located upon and within future lots (ie not road reserve). Adjustment to lot boundaries to accomodate retaining wall design will be required.
3. Details contained within this drawing are not to be relied upon for detailed design purposes and boundaries are subject to adjustment.
4. The location of service easements for general infrastructure servicing have not been determined.
5. Any areas shown are subject to change once final survey boundaries are defined.

North Point

Scale at A3: 0 7.5 15 30 45

Date: Feb 2023 Datum: AHD Survey: Lidar & Canty's

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Indicative Subdivision Layout (With Lot Areas)

Project Lands

Lot 261 DP1262316 &
Lot 11 DP807867

Rankin Drive, Bangalow

Drawing No 1910 - RZ-300 (Areas) Revision H

Rev	Date	Amendment
B	Aug 2020	Fire Truck Access / Hose Length / Buffer Dims Removed
C	Oct 2020	Bushfire Buffers Updated / Bdrys Lot 1 & 2
D	Oct 2020	Strata Lot Bdrys Amended & Lot 10 / General Drg Presentation
E	Nov 2020	Bushfire Buffer and Truck Details Removed
F	June 2022	Access Road Moved South, Rous Watermain Relocated
G	June 2022	Lot 12 and 21 R3 Medium Density & Satinash Crescent
H	Feb 2023	Lot 11 1200m2 and R3 Medium Density

Appendix 2

Traffic Count Data at Intersections
(Granuaille Rd / Satinash Cr)
(Rankin Drive / Barby Cr)

SDS CIVIL ENTERPRISES 461 Hinterland Way, Knockrow NSW 2479
m 0438 725 414 **e** peterw@sdscivil.com.au

Project Name: **Granuallie Road / Satinash Crescent** **Date:** …… ….Thurs 9th Dec 2021……

Weather: Fine, No rain

Traffic Surveyor Name:
…… Mr M Campbell ……. ……

Time	Granuaille Road (Nth Bound)		Granuaille Road (Sth Bound)		Satinash Crescent (Exit)		Totals
	Movement 1 (Straight)	Movement 2 (Right)	Movement 3 (Straight)	Movement 4 (Left)	Movement 5 (Right Turn)	Movement 6 (Left Turn)	
6.00 - 6.15am	25		18				43
Trucks	3						3
6.15 - 6.30am	62		28	3	2	1	96
Trucks	2		2				4
6.30 - 6.45am	69	2	31		2		104
Trucks	0	1	2				3
6.45 - 7.00am	40		48		2	1	91
Trucks	8		3				11
7.00 - 7.15am	39		63		2		104
Trucks	4		5				9
7.15 - 7.30am	34		64		3		101
Trucks	1		2				3
7.30 - 7.45am	51		80		1		132
Trucks	2		2				4
7.45 - 8.00am	62		69	1	2	5	139
Trucks	3		11				14
8.00 - 8.15am	51	3	55	2	4	3	118
	3		2				5
8.15 - 8.30am	70	1	63		3		137
Trucks	2		3				5
8.30 - 8.45am	68	1	61	1			131
Trucks	3		1				4
8.45 - 9.00am	66	2	52	1	2	1	124
Trucks	3						3
9.00 - 9.15am	68	3	77	1	3	1	153
Trucks	7	1	7				15
9.15 - 9.30am	56	1	57	3	2		119
Trucks	6	1	7				14
9.30 - 9.45am	63	1	44	2	2		112
Trucks	2		2	1			5
9.45 - 10.00am	57	2	49	3	3		114
Trucks	6		2				8

All Vehicles							
Cars	881	16	859	17	33	12	1818
Trucks	55	3	51	1	0	0	110

NOTE: Assume all traffic using Satinash Crescent may use Rankin Drive (Shown in RED text) **Rankin Dve Peak Hour Trips =** **21** **Total**

Project Name: **Rankin Drive / Barby Crescent** **Date:** ....Fri 9 December 2021.....

Weather:
.....Cloudy but fine (no rain).....

Traffic Surveyor Name:
.....Mr M Campbell..... .....

Time	Rankin Drive (South Bound)		Barby Crescent (West)		Rankin Drive (North Bound)		Totals	Pedestrians
	Movement 1 (Straight)	Movement 2 (Right Turn)	Movement 3 (Left Turn)	Movement 4 (Right Turn)	Movement 5 (Left Turn)	Movement 6 (Straight)		
6.00 - 6.15am	0	0	0	0	0	0	0	2
Trucks							0	
6.15 - 6.30am	0					1	1	1
Trucks							0	
6.30 - 6.45am	1					2	3	1
Trucks						1	1	
6.45 - 7.00am	4					2	6	2
Trucks							0	
7.00 - 7.15am	5			1		3	9	2
Trucks							0	
7.15 - 7.30am	4			2	1	2	9	4
Trucks							0	
7.30 - 7.45am	2					3	5	2
Trucks							0	
7.45 - 8.00am	5		1	1		7	14	2
Trucks		1		1			2	
8.00 - 8.15am	4			3		4	11	1
							0	
8.15 - 8.30am	2			2	1	4	9	1
Trucks						1	1	
8.30 - 8.45am	2			1		2	5	1
Trucks							0	
8.45 - 9.00am	2				3	3	8	4
Trucks							0	
9.00 - 9.15am	3		1	1	2	3	10	1
Trucks	1						1	
9.15 - 9.30am	2	1	2	1	1	4	11	
Trucks	1						1	
9.30 - 9.45am	2	1			1	3	7	
Trucks						1	1	
9.45 - 10.00am	1		1	1		2	5	1
Trucks							0	

All Vehicles							
Cars	39	2	5	13	9	45	113
Trucks	2	1	0	1	0	3	7

Peak Hour Trips Rankin Drive (Northbound) = **20**
Peak Hour Trips Rankin Drive (South bound) = **14**
Total **34**

Appendix 3

Total Project Traffic Generation Spreadsheet
Rankin Drive New Street Intersection (AM & PM Peak) Spreadsheet

Rankin Drive - Total Project Traffic Generation

Land Use Description	No of Lots / Units	Traffic Generation Rate	Trips
Total Dwelling Lots	18	6.5 trips / dwelling	117
Secondary Dwellings or Dual Occupancy (on say 33% of Lots)	6	75% x 6.5 trips / dwelling	29.25
Units on Medium Density Lands (Nett area of 9,825m^2 and use say 1 unit per 300m^2)	33	75% x 6.5 trips / dwelling	160.875

Total Daily Trips		307.125
	Say	**308 Trips**
Peak Hour Trips (10%)	Say	**31 Trips**

Rankin Drive - New Street Intersection (AM Peak)

Morning Peak Split - 80% exiting and 20% inbound	**Total =**	**31**	**Trips**
Estimated Trip Distribution - Left Turn Out (25%) (Toward Barby Crescent)	25% x 80% =	6.2	Trips
Estimated Trip Distribution - Right Turn Out (75%) (Toward Satinash Crescent)	75% x 80% =	18.6	Trips
Estimated Trip Distribution - Left Turn In (75%) (From Satinash Crescent)	75% x 20% =	4.65	Trips
Estimated Trip Distribution - Right Turn In (25%) (From Barby Crescent)	25% x 20% =	1.55	Trips

Rankin Drive - New Street Intersection (PM Peak)

Afternoon Peak Split - 80% inbound and 20% exiting	**Total =**	**31**	**Trips**
Estimated Trip Distribution - Left Turn In (75%) (From Satinash Crescent)	75% x 80% =	18.6	Trips
Estimated Trip Distribution - Right Turn In (25%) (From Barby Crescent)	25% x 80% =	6.2	Trips
Estimated Trip Distribution - Left Turn Out (25%) (Toward Barby Crescent)	25% x 20% =	1.55	Trips
Estimated Trip Distribution - Right Turn Out (75%) (Toward Satinash Crescent)	75% x 20% =	4.65	Trips

Appendix 4

Site Meeting Notes

(6 October 2021)

SDS Civil Enterprises
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Project Note

Project Details and Job No	68 Rankin Drive Future Subdivision Works Bangalow (DA10.2021.84.1) Page 1 of 1
Subject	Road Gradient and Intersection Location
Author	Peter Williams – Civil Engineer, SDS Civil Enterprises
Date	Weds 6 October 2021

Attendees: Renan Solatan (BSC), Peter Williams (SDS Civil), Max Campbell (Owner – Instant Steel)

Discussed issue of onsite constraints, being tree retention – 525 dia Rous watermain – deep gully landform – gradient of exist roads and general shape of the lands.

Way forward to reduce 20% gradient as per DA, would be to move new road approx 20m downhill on Rankin Dve would enable a 3m+ in reduced elevation. PW advised this reduction would give in the order of 18% gradient, but this 20m downhill move will require significant filling over Rous watermain. This needs to be resolved with Rous given the existing easement. RS confirmed desirable to obtain an agreement letter with Rous that they would not object, to accompany DA documentation / amendment. RS also raised possible need for restriction on downhill allotment (ie filled area) to limit works that may impact upon road embankment stability. PW raised that if rotate road 10 degrees from perpendicular may also achieve improved gradient outcome. PW to confirm NRLG document clause on intersection permissibility.

Measured road gradient with Bosch 2m Level and confirmed local road gradients of 17.1% Rankin Dve, 19% Corlis Circuit and 20.2% Barby Crescent. Given the general nature of area and these road slopes functioning well, the use of 18% gradient would be reasonable outcome for new road. RS advised that possible rigid pavement maybe required if constructability issues apply. PW to liaise with sealing contractors to obtain written confirmation of flexible pavement at 18% ok.

Other matters to be followed up upon would be management of stormwater collection within Rankin Dve (ie above intersection) and confirmation of sight lines available at the new downhill intersection location. Retaining walls to be on private property. If additional allotments likely to be created within existing zoned land, planning assessment as to the development being the same or needing to be relodged - requires input from others. PW to also send through 'old' info to RS that showed development footprint option that was being considered for Corlis Circuit lands for general info.

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