MILAN PRODANOVIC B.E. PEng
TRAFFIC ENGINEERING & ROAD SAFETY

TRAFFIC IMPACT STATEMENT

PROPOSED

RESIDENTIAL SUBDIVISION DEVELOPMENT

52 RICHARDSONS ROAD

SANDFORD

REVISED
JULY 2020

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ATTACHMENTS

Attachment A: Drawings of proposed subdivision layout

REFERENCES:

- Australian Standard AS 1742.2-2009 – Manual of uniform traffic control devices Part 2: Traffic control devices for general use
- Road Traffic Authority NSW – Guide to Traffic Generating Developments, 2002
- Road and Maritime Services (Transport) - Guide to Traffic Generating Developments; Updated traffic surveys (August 2013)
- AUSTROADS – Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings (2019)
- AUSTROADS – Guide to Traffic Management Part 12: Traffic Impacts of Developments (2019)
- Clarence Interim Planning Scheme 2015

1. INTRODUCTION

A development proposal is to be submitted to the Clarence City Council for the rezoning of the property at 52 Richardsons Road, Sandford to allow the subdivision of the land and create 154 residential lots.

This Traffic Impact Assessment (TIA) report has been prepared to support the subdivision proposal. The report considers the existing road and traffic characteristics along Forest Hill Road, Richardsons Road and Bayview Road as well as intersections that will be most affected by the proposal, including junctions onto the South Arm Secondary Road.

An evaluation has been made of the potential future traffic activity that the proposed residential lots are expected to generate and the effect that this traffic would have on these roads and intersections.

A detailed assessment has also been undertaken of the subdivisional roads and their junction with Richardsons Road -Bayview Road, including intersection sight distances, traffic activity and road design standards.

The TIA report is based on the Department of State Growth (DSG) Traffic Impact Assessment Guidelines with regard also given to Austroads: Guide to Traffic Management Part 12.

The techniques used in the investigation and assessment incorporate best practice road safety and traffic management principles.

2. SITE DESCRIPTION

The land which is to be subdivided lies to the east of the South Arm Secondary Road and generally between Sandford and Lauderdale.

It lies to the north of Richardsons Road and extends to the north-east via a land corridor which connects to Bayview Drive and the existing residential development along this road within Lauderdale.

The land currently lies in the Rural Resource Zone and Environmental Living Zone.

The land is to be rezoned to General Residential with a part also to Rural Living.

The property to be rezoned and to be subdivided is highlighted in Figure 2.1.



Figure 2.1: Area map showing location of proposed subdivision development

3. DEVELOPMENT PROPOSAL

The development application proposes to rezone the development property and then subdivide the site into 154 residential lots.

There will be 147 lots with an area between around 540m^2 and 1,000m^2, but with most between 550m^2 and 600m^2.

Seven of the lots will be have an area between 2.0ha and 3.3ha.

All the lots will have direct frontage access to a continuous subdivisional road which will connect Richardsons Road to Bayview Road or a short side subdivision road off this main subdivisional road.

The main subdivisional road will have a length of around 1.55km.

The proposed layout of the new subdivisional roads and the residential lots is shown on the drawings included as Attachment A to this report.

4. EXISTING ROAD AND TRAFFIC ENVIRONMENT

4.1 Road Characteristics

In considering the proposed rezoning and subdivision development, the roads of relevance are Richardsons Road and Forest Hill Road in Sandford and Bayview Road in Lauderdale, together with their junction at South Arm Secondary Road.

Richardsons Road, Forest Hill Road and Bayview Road are council roads while South Arm Secondary Road is a state government road.

South Arm Secondary Road, locally known as South Arm Road, is classified as a Category 4 road to the north of Lauderdale and a Category 5 road to the south of Lauderdale.

Richardsons Road is a 740m long gravel road which junctions with Forest Hill Road at its western end and terminates at a number of property driveways at the eastern end. Richardsons Road junctions with Forest Hill Road at an angle of around 60 degrees.

The trafficable width of Richardsons Road is around 6.0m along the western half of the road and around 4.3m along the eastern end of the road. It is sealed to a width of around 5.5m for a distance of 20m back from Forest Hill Road.

Forest Hill Road is a local access road for this part of Sandford. It is a sealed road from around 800m to the east of Richardsons Road through to the South Arm Secondary Road junction which is around 490m to the northwest of Richardsons Road.

Forest Hill Road is sealed to a width of 5.5m, widening to around 5.6m on the bend near South Arm Secondary Road and to around 7.3m just before its junction with South Arm Secondary Road.

Both Richardsons Road and Forest Hill Road have a fairly flat grade and straight alignment apart from a reverse horizontal curve on Forest Hill Road over the 150m length to the east of South Arm Secondary Road.

There are intermittent property driveways along both roads to larger land holdings.

Views of the character along both roads are seen in Photographs 4.1 to 4.6.

Bayview Road is a long residential collector road serving the Lauderdale area. It has a length of 2.0km from its junction with South Arm Secondary Road to its southern end with frontage property driveways along both sides of the road for its full length as well as a number of side roads.

The road is sealed and has a width between kerb faces along both sides of the road which is generally 8.3m. There are two separate intermediate short

sections that have a width of 8.5- 8.6m and the southern 200m length of the road has a width of 7.9m.

The road has a generally flat and straight alignment with a right angled bend around 750m east of the South Arm Secondary Road, a continuous slight curve along the foreshore and then an upgrade on a horizontal curve to the southern end of the road.

Photographs 4.7 to 4.10 provide views along Bayview Road.



Photograph 4.1: View to west along Richardsons Road from near its eastern end



Photograph 4.2: View to west Richardsons Road from near midway



Photograph 4.3: View of Richardsons Road approach to Forest Hill Road



Photograph 4.4: View to west along Forest Hill Road with Richardsons Road on right



Photograph 4.5: View to west along Forest Hill Road at start of reverse curve before South Arm Secondary Road



Photograph 4.6: View of Forest Hill Road approach to South Arm Secondary Road



Photograph 4.7: View to west along Bayview Road at point around 100m west of South Arm Secondary Road



Photograph 4.8: View to west along Bayview Road at point around 50m west of Icy Creek Lane



Photograph 4.9: View to south along Bayview Road at point around No.102 Bayview Road



Photograph 4.10: View to north along Bayview Road from southern end of the road

4.2 Traffic Activity

Traffic volume data that was received from DSG for South Arm Secondary Road at a point 290m to the south of Donna Road. The survey was undertaken in early June 2019.

The data shows the following:

Average Weekday Traffic:	- 7,728 vehicles/day
Morning Weekday Peak Hour Traffic (7-8am):	- 646 vehicles to north - 128 vehicles to south
Afternoon Weekday Peak Hour Traffic (4-5pm):	- 214 vehicles to north - 536 vehicles to south

Weekend traffic volumes are less on Saturday and on Sunday.

The average hourly traffic distributions for each direction of travel as well as the two-way traffic on weekdays, Saturday and Sunday are shown graphically in Figures 4.1 to 4.3.

Around 7.9% of the traffic is commercial vehicles.

The traffic growth along South Arm Secondary Road has been around 2.3% p.a. (compound) over the last 30 years.

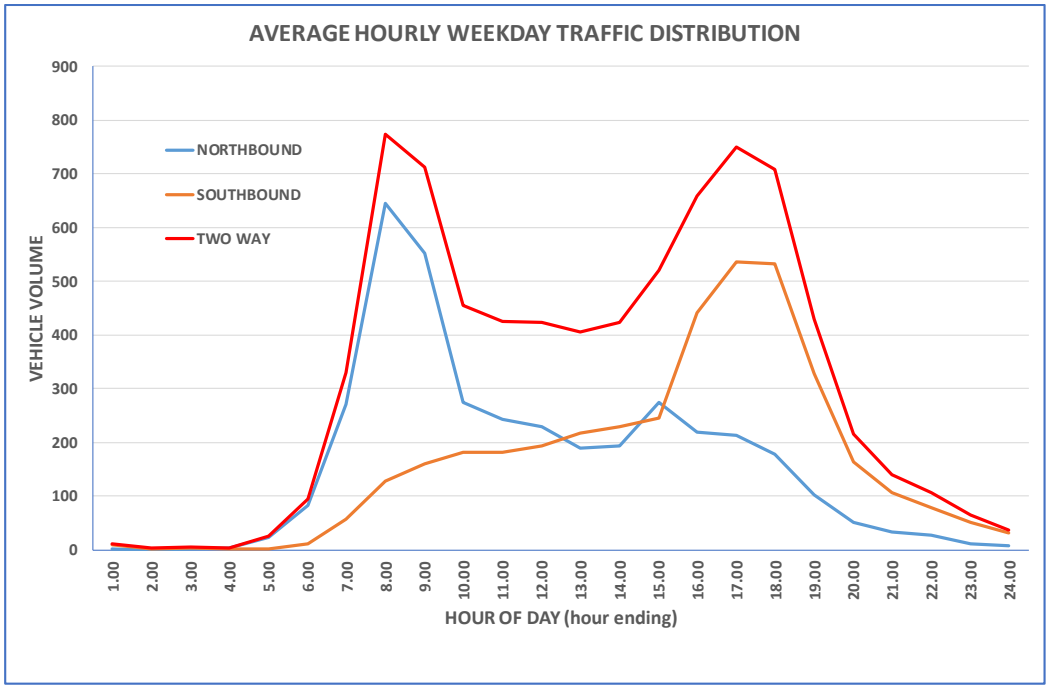


Figure 4.1: Average hourly weekday traffic distribution along South Arm Secondary Road south of Dona Road

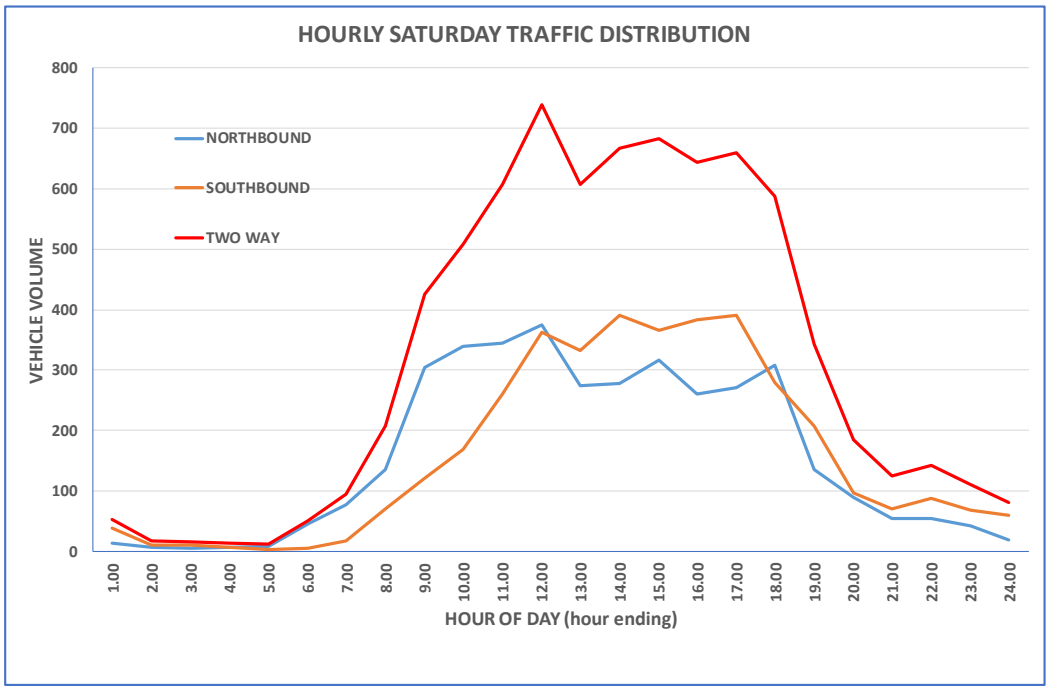


Figure 4.2: Average hourly Saturday traffic distribution along South Arm Secondary Road south of Dona Road

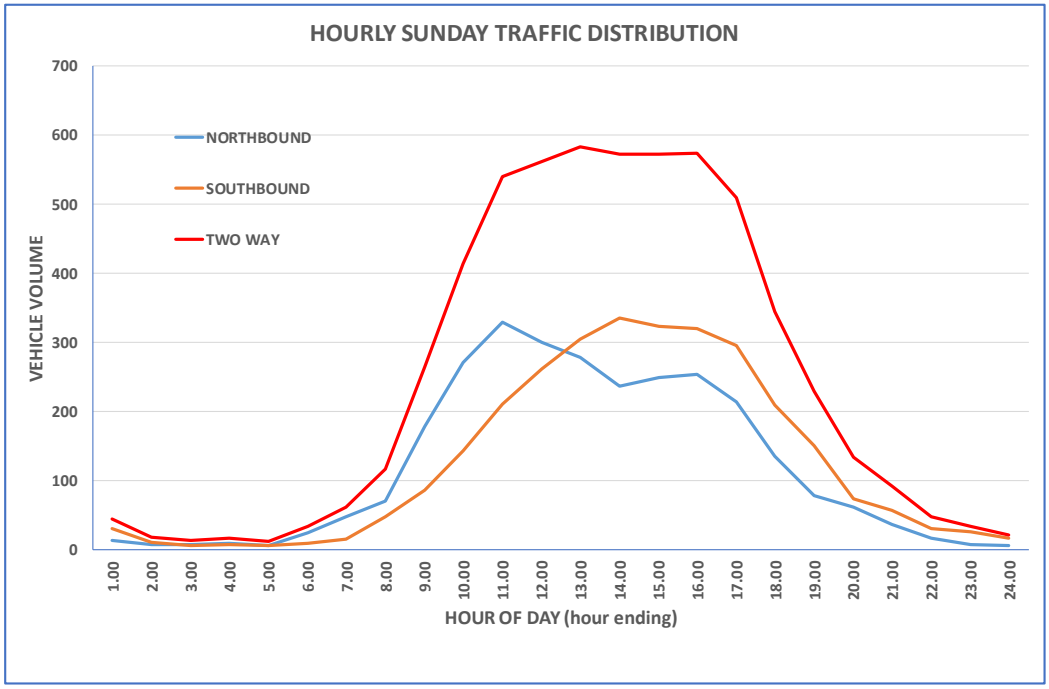


Figure 4.3: Average hourly Sunday traffic distribution along South Arm Secondary Road south of Dona Road

Traffic volume data has also been received from the Clarence City Council for Bayview Road and Forest Hill Road.

The survey on Bayview Road was undertaken in March 2010 at a point around 120m from South Arm Secondary Road and on Forest Hill Road in January 2010 at a point also around 120m from South Arm Secondary Road.

The daily two way and peak hour period directional traffic volumes were as follows:

- Bayview Road
  - 1,414 vehicles/day average weekday traffic;
  - 19-28 vehicles/hour eastbound 7:00 am - 8:00am/8:00am – 9:00am;
  - 102-108 vehicles/hour westbound 7:00am - 8:00am/8:00am – 9:00am;
  - 105 vehicles/hour eastbound 5:00pm – 6:00pm;
  - 45 vehicles/hour westbound 5:00pm – 6:00pm;
- Forest Hill Road
  - 326 vehicles/day average weekday traffic;
  - 8 vehicles/hour eastbound 8:00am – 9:00am (am peak hour is 11-12n);

- 11 vehicles/hour westbound 8:00am – 9:00am;
- 20 vehicles/hour eastbound 5:00pm – 6:00pm;
- 11 vehicles/hour westbound 5:00pm – 6:00pm;

The average hourly traffic distributions for each direction of travel as well as the two-way traffic on weekdays for each road is shown graphically in Figures 4.4 and 4.5.

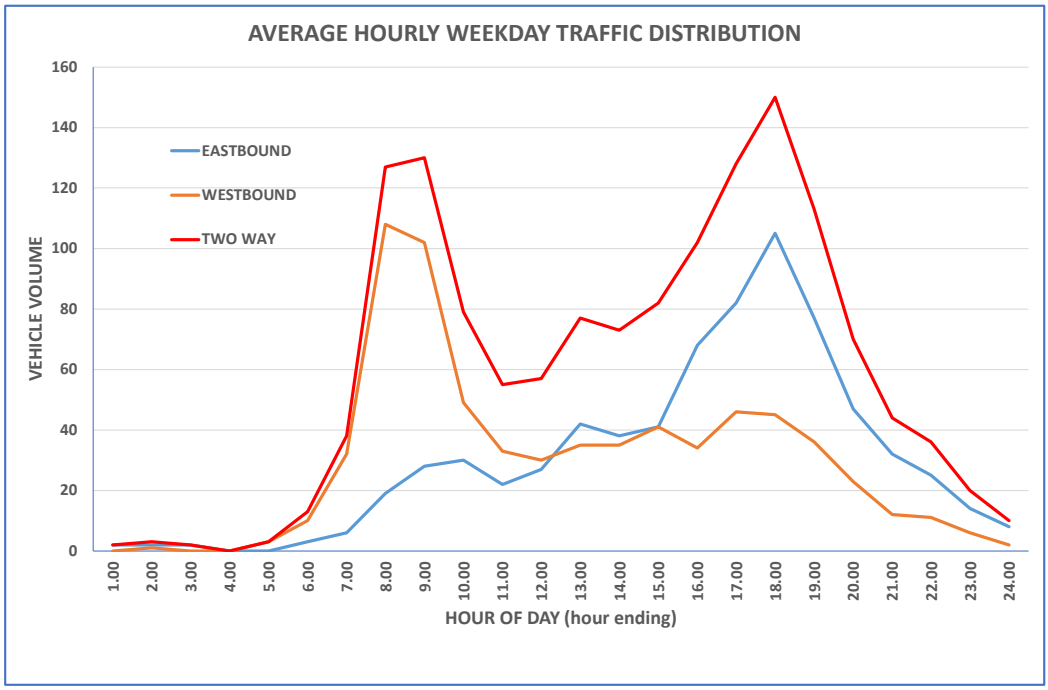


Figure 4.4: Average hourly weekday traffic distribution along Bayview Road east of South Arm Secondary Road

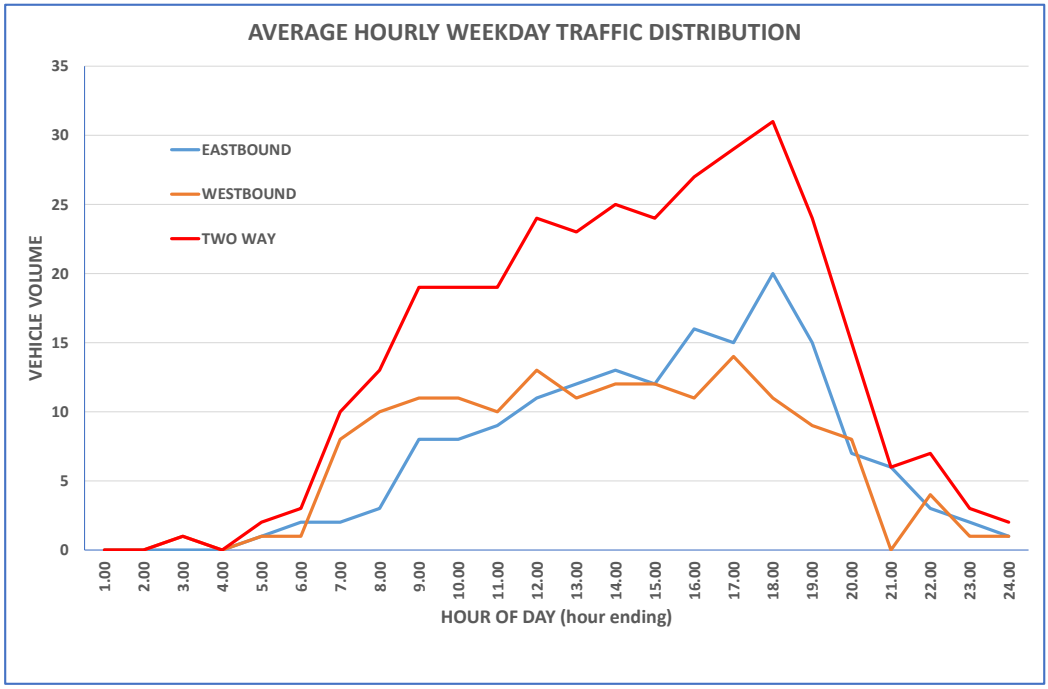


Figure 4.5: Average hourly weekday traffic distribution along Forest Hill Road east of South Arm Secondary Road

In order to have knowledge of the level of turning traffic activity at key intersections for this development application and to reconcile this data with the above automatic counter data, peak hour vehicle turning movement surveys were undertaken at the South Arm Secondary Road/Bayview Road junction between 7:00am - 8:00am, and at the South Arm Secondary Road//Forest Hill Road junction between 4:00pm - 5:00pm, both on Tuesday 12 May 2020.

The results from these surveys have been summarised in Figures 4.6 and 4.7.

The Council traffic volumes area are a little dated (10 years old) while the volumes in Figures 4.6 and 4.7 are less than normal due to the (Covid-19) travel restrictions.

In order to have a better record of current traffic volumes at the South Arm Secondary Road/Bayview Road junction and at the South Arm Secondary Road/Forest Hill Road junction, the above data has been combined and extrapolated to produce the turning traffic volumes in Figures 4.8 and 4.9, which is considered to be normal traffic volumes in May 2020.

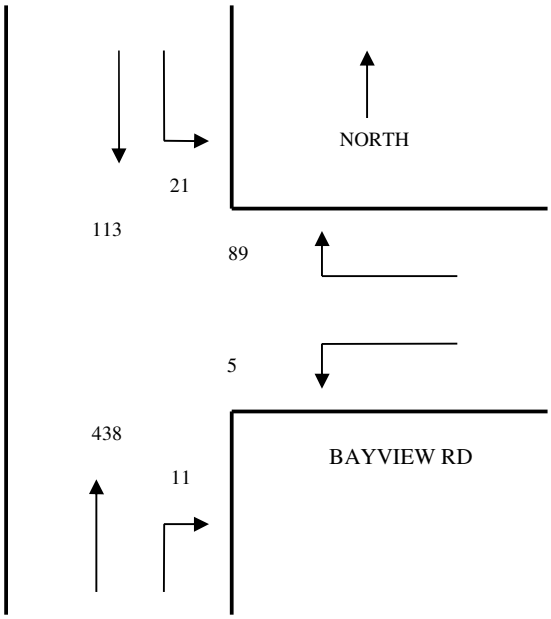


Figure 4.6: Turning traffic volumes at junction of South Arm Secondary Road with Bayview Road – 7:00am to 8:00am

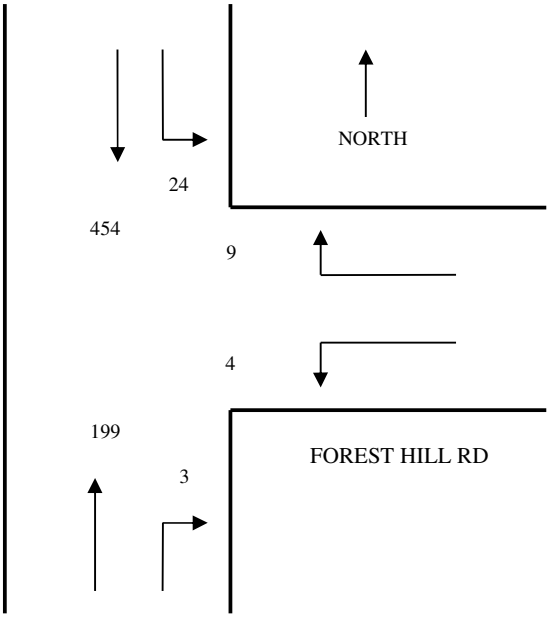


Figure 4.7: Turning traffic volumes at junction of South Arm Secondary Road with Forest Hill Road – 4:00pm to 5:00pm

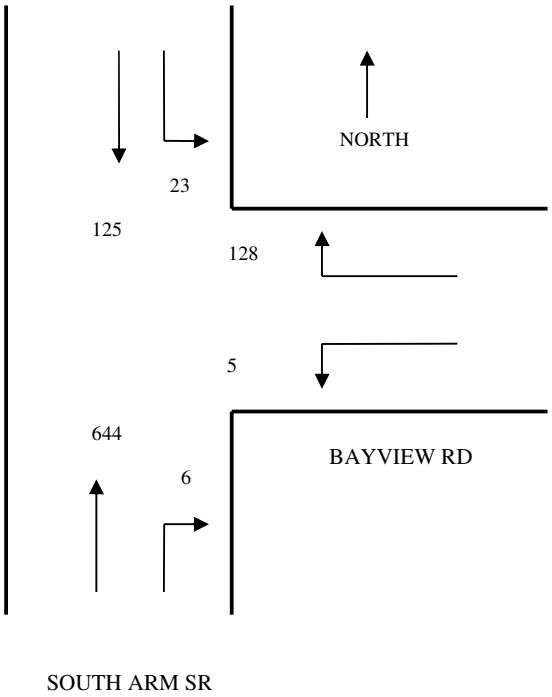


Figure 4.8: Turning traffic volumes at junction of South Arm Secondary Road with Bayview Road – 7:00am to 8:00am 2020

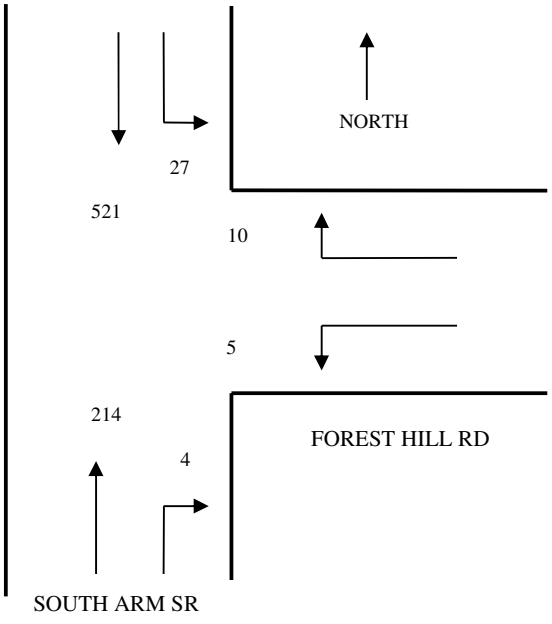


Figure 4.9: Turning traffic volumes at junction of South Arm Secondary Road with Forest Hill Road – 4:00pm to 5:00pm 2020

4.3 Crash Record

All crashes that result in personal injury are required to be reported to Tasmania Police. Tasmania Police record all crashes that they attend. Any crashes that result in property damage only, which are reported to Tasmania Police, are also recorded even though they may not visit the site.

Details of reported crashes are collated and recorded on a computerised database that is maintained by DSG.

Information was requested from DSG about any reported crashes along Forest Hill Road, Richardsons Road, Bayview Road and Bayview Drive.

Advice has been received that over the five and a quarter year period since January 2015, there have been no reported crashes along Forest Hill Road, Richardsons Road and Bayview Drive.

There have been three crashes along Bayview Road. Two of these crashes occurred at the Bayview Road/South Arm Secondary Road junction. Both crashes were angle collisions that occurred in 2016 and resulted in property damage only.

The other crash occurred on Bayview Road around midway along the road as it passes along the shoreline. This was a loss of control type incident in 2018, which also resulted in property damage only. Overall, the crash record is not of concern.

5. TRAFFIC GENERATION BY THE DEVELOPMENT

As outlined in Section 3 of this report, the proposed subdivision of the land at 52 Richardsons Road will create 154 residential lots.

In considering the traffic activity that dwellings on the lots will generate when occupied, guidance is often sought from the New South Wales, Road Traffic Authority document – Guide to Traffic Generating Developments. The RTA guide is a nationally well accepted document that provides advice on trip generation rates and vehicle parking requirements for new developments.

The updated 'Technical Direction' to the Guide dated August 2013 advises that the trip generation for residential dwellings in regional areas of New South Wales is 7.4 trips/dwelling/day.

This latter figure is more consistent with findings by this consultant for dwellings in Tasmania. Surveys in the built-up areas of Tasmania over a number of years have found that typically the trip generation rate for residential dwellings is 8.0 trips/dwelling/day with smaller residential units generating around 4 trips/unit/day and larger units generating around 6 trip/unit/day.

A traffic generation rate of 8 vehicles/day will be assumed for lots within the proposed subdivision with a single dwelling and 6 vehicles/day/unit on multiple dwelling lots.

It is understood that many of the lots could potentially be allowed to have more than one dwelling. Site constraints and other factors will limit this occurring on many lots; only a few lots in the general residential zone are likely to ultimately have multiple dwellings.

For the purpose of this assessment, it will be assumed that a high 20 such lots will have two dwellings

With the creation of 154 residential lots through the proposed subdivision and up to 20 of these lots each with two residential units, the total traffic generation from dwelling development on these lots would be around 1,312 vehicles/day.

Assuming the peak hour traffic will be the normal 10% of the daily traffic, as found in urban areas, the future residential development of the rezoned land is expected to generate around 131 vehicles/hour during the morning and afternoon peak hours.

All of this traffic will use either Richardsons Road or Bayview Road to access the South Arm Road.

In order to determine which road the traffic is likely to use, timed car travel runs were undertaken between the end of Bayview Road to the Bayview Road/South Arm Secondary Road junction and between the end of Richardsons Road to the Bayview Road/South Arm Secondary Road junction.

This determined the travel time is around 20 seconds longer via Richardsons Road. Assuming a travel speed of 45km/h along the subdivisional road and allowing for this travel time difference between the two routes, drivers will have around the same travel time via each of the two routes from a point at the proposed footway in the subdivision (Lot 202 -204). There are 77 lots to the south and also to the north of this location.

This assessment has determined that based on travel time there will be an equal split in which road motorists will use to/from this point.

The current traffic volume along Bayview Road is higher, travel speed along Richardsons Road may be slightly higher when it is sealed and future traffic delays will be less at the Forest Hill Road/South Arm Secondary Road junction compared to that at the Bayview Road/South Arm Secondary Road junction

For these reasons, it will be assumed the directional split in traffic will be more towards Richardsons Road.

It will be assumed that traffic from 84 lots will use Richardsons Road and traffic from 70 lots will use Bayview Road. This will result in:

- around 716 vehicles/day and around 72 vehicles/hour during the morning and afternoon peak hours using Richardsons Road;

- around 596 vehicles/day and around 60 vehicles/hour during the morning and afternoon peak hours using Bayview Road.

Assigning this traffic to the Forest Hill Road/South Arm Secondary Road junction and the Bayview Road/South Arm Secondary Road junction, the expected future turning traffic volumes at these junctions in Year 2030 will be as seen in Figures 5.1 to 5.4.

These volumes allow for a 2.3% p.a. growth along South Arm Secondary Road. The additional subdivisional traffic has been assigned to Forest Hill Road and Bayview Road with a 70/30 directional split in morning peak hour and 60/40 directional split in the afternoon peak hour (higher proportion in peak direction) and north/south traffic split along South Arm Secondary Road in proportion to the turning movement survey findings.

The volumes allow for an additional small movement of vehicles between existing dwellings at the southern end of Bayview Road and South Arm Secondary Road via Richardsons Road, to and from the South Arm direction.

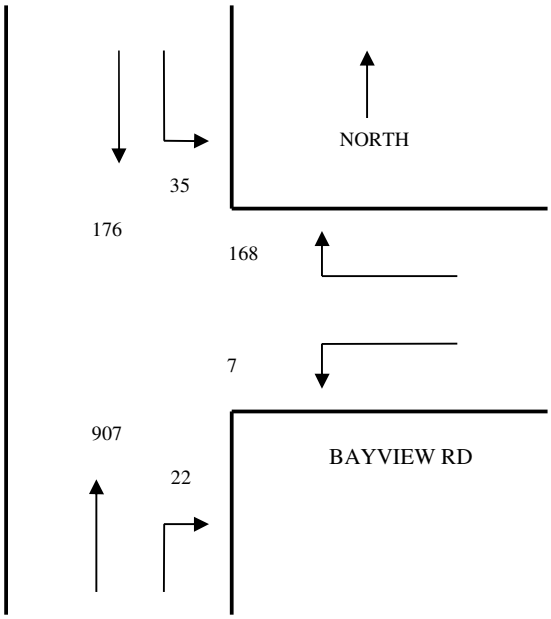


Figure 5.1: Turning traffic volumes at junction of South Arm Secondary Road with Bayview Road – 7:00am to 8:00am 2030

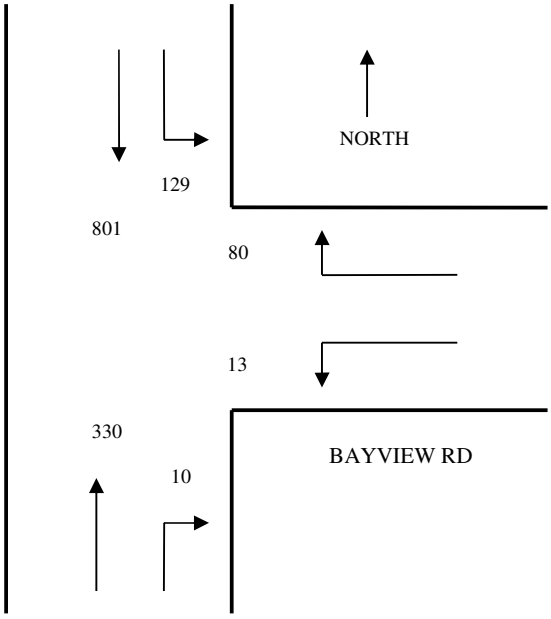


Figure 5.2: Turning traffic volumes at junction of South Arm Secondary Road with Bayview Road – 4:00pm to 5:00pm 2030

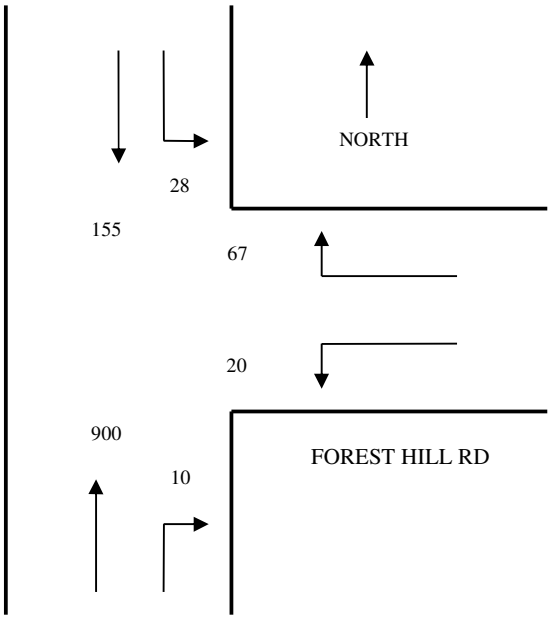


Figure 5.3: Turning traffic volumes at junction of South Arm Secondary Road with Forest Hill Road – 7:00am to 8:00am 2030

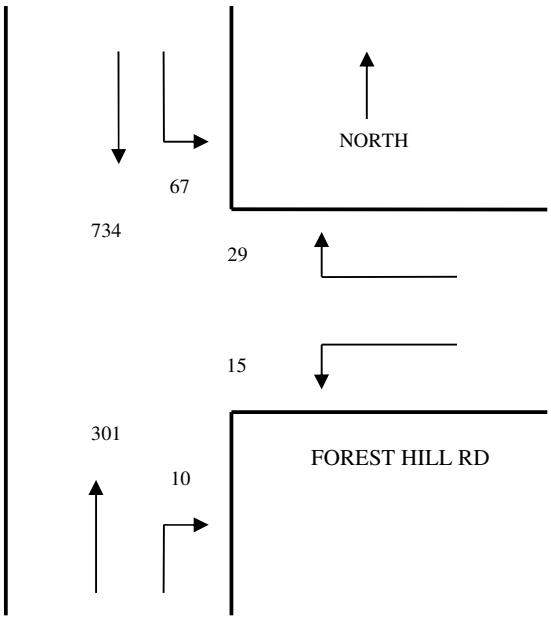


Figure 5.4: Turning traffic volumes at junction of South Arm Secondary Road with Forest Hill Road – 4:00pm to 5:00pm 2030

6. TRAFFIC ASSESSMENT AND IMPACT

This section of the report considers the impact from the traffic expected to be generated by the proposed subdivision of 52 Richardsons Road on the road network to South Arm Secondary Road.

Consideration is given to the road upgrading works on the local roads as well as the construction standard for the internal roads within the subdivision and the management of the proposed subdivisional road junctions.

6.1 Operational Impact of Increased Traffic Activity

It has been determined the subdivision development along Richardsons Road once it is rezoned, subdivided, and has full dwelling development will generate:

- around 716 vehicles/day and around 72 vehicles/hour during the morning and afternoon peak hours via Richardsons Road;

- around 596 vehicles/day and around 60 vehicles/hour during the morning and afternoon peak hours via Bayview Road.

It has been determined that by Year 2030 this will result in:

- around 1,200 vehicles/day at the western end of Forest Hill Road;

- around 740 vehicles/day at the western end of Richardsons Road; and

- around 2,300 vehicles/day at the western end of Bayview Road.

These traffic volumes will not create any operational issues along each of the three roads including junctions along the road.

The conflicting traffic volumes at the Forest Hill Road/South Arm Secondary Road junction and Bayview Road/South Arm Secondary junction will be quite high in Year 2030.

In order to assess the future operational efficiency at these junctions, a SIDRA analysis of the junction performance was undertaken by applying the traffic volumes in Figures 5.1 to 5.4 to the program.

SIDRA is a nationally recognised intersection computer modelling tool that is known as Traffic **S**ignalised and Unsignalised **I**ntersection **D**esign and **R**esearch **A**id.

In using the SIDRA program and interpreting the output results there is a need to understand the package in terms of the analysis process and the basis of reporting the outputs which can vary depending on the chosen parameters. Of particular relevance is the presentation of the Level of Service outputs that

range from Level of Service A to F and the basis on which the Level of Service is determined.

For the purpose of this assessment the Level of Service based on the **Delay** and **Degree of Saturation** performance measures has been applied in the SIDRA analysis. A Level of Service (LoS) up to Level D is generally regarded as quite acceptable, as seen in Figure 6.1.

Level of Service for v/c ≤ 1.0	Average delay per vehicle in seconds (d)			Level of Service for v/c > 1.0
	Signals	"SIDRA Roundabout LOS" method (1)	Sign Control *(Default for roundabouts)* (1)	All Intersection Types
A	d ≤ 10	d ≤ 10	d ≤ 10	**F**
B	10 < d ≤ 20	10 < d ≤ 20	10 < d ≤ 15	**F**
C	20 < d ≤ 35	20 < d ≤ 35	15 < d ≤ 25	**F**
D	35 < d ≤ **55**	35 < d ≤ **50**	25 < d ≤ **35**	**F**
E	**55** < d ≤ 80	**50** < d ≤ 70	**35** < d ≤ 50	**F**
F	80 < d	70 < d	50 < d	**F**

v/c (demand volume / capacity) ratio, or degree of saturation: v/c > 1.0 represents oversaturated conditions. Level of Service Target = LOS D is indicated by the table.

Figure 6.1: Extract from SIDRA User Guide

The results of the SIDRA analysis have been summarised in Table 6.1.

The analysis has found the Forest Hill Road/South Arm Secondary Road junction will continue to operate at an acceptable level of service beyond Year 2030 during both peak hour traffic periods. This will also be the case at the Bayview Road/South Arm Secondary Road junction during the afternoon peak hour.

No improvements will be required at the Forest Hill Road/South Arm Secondary Road junction for operational efficiency.

During the morning peak hour, the Bayview Road/South Arm Secondary Road junction will operate at a level of service F in Year 2030 if the traffic volume along the South Arm Secondary Road continues to increase at a compound rate of 2.3% for the next 10 years.

At current normal traffic volumes (Figure 4.8) the Bayview Road/South Arm Secondary Road junction is operating at an acceptable level of service C for Bayview Road and level of service A for South Arm Secondary Road.

On this basis, DSG will need to plan for the upgrading of the traffic management at the Bayview Road/South Arm Secondary Road junction with the installation of a roundabout.

TIME OF DAY/ SITUATION	APPROACH	WORST LEVEL OF SERVICE	DEGREE OF SAT	LONGEST 95% QUEUE LENGTH (m)	HIGHEST APPROACH DELAY (sec)
SOUTH ARM SR & BAYVIEW RD 7:00-8:00AM PEAK HOUR 2030	South Arm SR north	A	0.12	0	6.4
	South Arm SR south	A	0.51	0	6.9
	Bayview Rd	F	0.94	57	4.9
SOUTH ARM SR & BAYVIEW RD 4:00-5:00PM PEAK HOUR 2030	South Arm SR north	A	0.52	0	6.5
	South Arm SR south	B	0.19	1	13.3
	Bayview Rd	D	0.54	15	34.0
SOUTH ARM SR FOREST HILL RD 7:00-8:00AM PEAK HOUR 2030	South Arm SR north	A	0.10	0	6.4
	South Arm SR south	A	0.51	1	7.5
	Forest Hill Rd	C	0.28	7	18.1
SOUTH ARM SR FOREST HILL RD 4:00-5:00PM PEAK HOUR 2030	South Arm SR north	A	0.45	0	6.4
	South Arm SR south	B	0.19	2	12.7
	Forest Hill Rd	C	0.12	3	15.0

Table 6.1: Outputs from SIDRA analysis for 2030 traffic volumes

6.2 Layout of South Arm Secondary Road Junctions

The current design of the Forest Hill Road/South Arm Secondary Road and the Bayview Road/South Arm Secondary Road junctions need to be considered with respect to the safe movement of future traffic volumes through the junctions and in particular the provision of passing or auxiliary lanes.

In order to determine whether there may be a need for such treatments with the expected future level of through and turning traffic activity, consideration has been given to the advice in the Austroads Guide to Traffic Management – Part 6. Reference is made to Figure 6.2 and 6.3 below, which are extracts from the Guide. They provide a warrant for the turn lane requirements at road intersections and junctions.

The Guide states that the warrants provide guidance on preferred minimum turn treatments for major roads and they focus on safety performance outcomes.

The warrants are based on the construction of intersections on new roads (i.e. Greenfield sites). Therefore, their most appropriate application is to the selection of turn types for intersections on new roads. However, the warrants may also be used:

- as a reference for the construction of new intersections on existing roads;
- as a reference for intervention levels when upgrading existing intersection turn treatments.

The expected turning traffic volumes at Forest Hill Road/South Arm Secondary Road and the Bayview Road/South Arm Secondary Road junctions in Year 2030 have been applied to Figures 6.2 and 6.3.

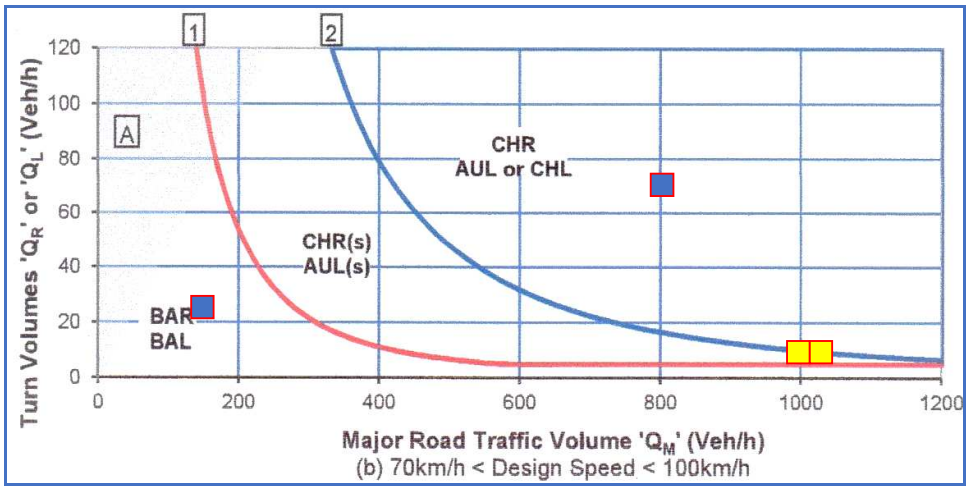


Figure 6.2: Warrant for turn treatment at junction of Forest Hill Road/South Arm Secondary Road

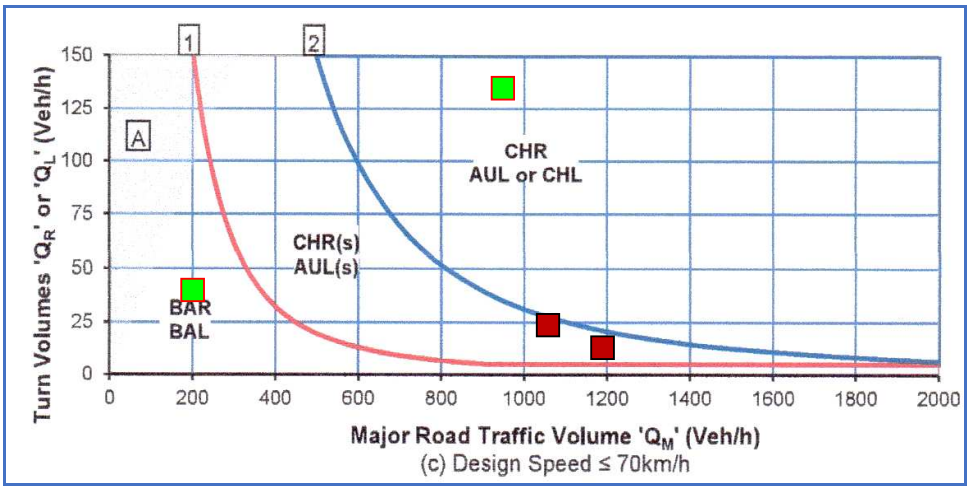


Figure 6.3: Warrant for turn treatment at junction of Bayview Road/South Arm Secondary Road

Note:

AUL is a left turn deceleration lane from a major road where there is no left-turn traffic island;

CHL is a left turn deceleration lane from a major road where there is a left-turn traffic island

BAR is a pavement widening to provide sufficient width for the design through vehicle to pass a vehicle waiting to turn right.

Figure 6.2 indicates consideration should be given to the installation of an AUL left turn lane treatment and a BAR left hand passing treatment on South Arm Secondary Road at the Forest Hill Road junction.

Figure 6.3 indicates consideration should be given to the installation of an AUL left turn lane treatment on South Arm Secondary Road at the Bayview Road junction. There is an existing CHR right turn lane treatment at this junction.

However, in such situations the Austroads Guide states the preferred treatment is a CHL treatment instead of an AUL treatment, for better safety outcomes.

It is important to note that in applying the current Year 2020 through and turning traffic volumes at these two junctions to Figures 6.2 and 6.3, the traffic volumes are already at levels which indicate consideration should be given to the above CHL and BAR treatments.

When considering the impact of future traffic growth along South Arm Secondary Road plus the increased traffic activity due to the subdivision development on resultant traffic conflicts at the junctions, it has been

determined that if the subdivision is fully completed and all lots are occupied by Year 2030:

- subdivision traffic will contribute around 16% to the increased traffic conflict with respect to the need for a CHL treatment at the South Arm Secondary Road/Forest Hill Road junction;

- subdivision traffic will contribute around 2% to the increased traffic conflict with respect to the need for a BAR treatment at the South Arm Secondary Road/Forest Hill Road junction;

- subdivision traffic will contribute around 12% to the increased traffic conflict with respect to the need for a CHL treatment at the South Arm Secondary Road/Bayview Road junction.

If the full completion and occupancy of the subdivision will be 15 to 20 years into the future, these percentages will be lower.

As outlined above, the provision of these turn facilities is related only to safety, not traffic efficiency. There have been no reported crashes at the two junction in recent years, which indicates there is no cause for concern about the safety related to the current turn movements. This was also confirmed during observations of driver behaviour at the junctions during the one hour survey at each site.

There are many junctions across the greater Hobart area and also within the Lauderdale area where the left and right turning volumes are currently much higher than they will be at the Forest Hill Road/South Arm Secondary Road and the Bayview Road/South Arm Secondary Road junctions in Year 2030, which are operating quite safety, with no crash record involving the above turn movements.

These include Acton Road/South Arm Secondary Road and Ringwood Road/South Arm Secondary Road junctions in Lauderdale, where the left turn movement from South Arm Secondary Road in Year 2015 was 180 vehicles/hour and 200 vehicles/hour, respectively at each junction during peak hour periods.

Therefore, when considering all of the above and having regard to the advice in the Austroads Guide, it will desirable that the turn lane and passing facilities are implemented at some stage in the future, mainly due to the increasing traffic volume along South Arm Secondary Road. The subdivision development and its residential occupancy will have a minor effect on the traffic conflict which determines the need for these facilities.

Based on the situation at the Acton Road and Ringwood Road junction, the necessity for the installation of the turn lane facilities will be many year ahead, possibly even beyond the completion and occupancy of the subdivision.

It is therefore proposed that the Department of State Growth should monitor the safety performance of South Arm Secondary Road through this area and

determine when the implementation of the turn lane facilities, including the possible installation of a roundabout at some stage will be necessary.

6.3 Design Standard of Existing Local Roads

The increased traffic volume along Bayview Road resulting from the proposed subdivision will not require any changes or road upgrade works along Bayview Road. The current road design standard is sufficient to carry the expected 620 vehicles/day at the existing southern of the road and the 2,300 vehicles/day at the western end of this road, at South Arm Secondary Road.

The increased traffic volume along Forest Hill Road and the existing section of Richardsons Road will require these roads to be upgraded.

It is expected these roads will retain a sealed rural road standard, as detailed in the IPWEA standard drawings.

With an expected traffic volume of around 760 vehicles/day along Richardsons Road and 1,200 vehicles/day along Forest Hill Road, both roads will need to be upgraded to have a sealed width of 6.0m with 0.5m gravel shoulders (Code S4), as indicated on drawing TSD-R02-v1.

It is also recommended the Richardsons Road approach to Forest Hill Road be realigned so that it junctions at right angles with Forest Hill Road.

6.4 Junction Sight Distances

The proposed subdivision development will not result in any new junctions along existing roads. Therefore, there are no locations requiring assessment of intersection sight distances.

The one location that was examined in detail was the Richardsons Road/Forest Hill Road junction.

Sight distances along Forest Hill Road are:

- more than 200m to/from the west, provided vegetation along the fence line is kept low; and

- around 130m to the east, provided vegetation on the inside of the bend, seen in Photograph 6.1, is kept near ground level (less than 0.5m).



Photograph 6.1: View to east along Forest Hill Road from Richardsons Road

These sight distances are more than sufficient for the speed environment. The approach speed of vehicles from the east has been estimated at around 55km/h from test runs in a car, requiring a sight distance of 110m based on current Austroads guidelines.

6.5 Design of Internal Subdivisional Roads and Junctions

Consideration has been given to the proposed design of the subdivision layout and subdivisional roads.

There are no particular concerns with the proposed layout of the roads and lots within the subdivision.

The two new internal junctions are proposed as right angled junctions in locations where sight distances will be sufficient for expected approach speeds. They will not require any regulatory controls.

It is expected the northward extension of Richardsons Road, up to just before the first new internal junction will be to the same construction standard as detailed above, a sealed width of 6.0m with 0.5m gravel shoulders (Code S4) as indicated on drawing TSD-R02-v1.

Beyond this to Bayview Road, the subdivisional road should be constructed with kerb and gutter both sides and a footpath along one side, preferably the eastern side.

Having regard to the width of seal to the south (6.0m) and the width of the existing southern end of Bayview Road at 7.9m, plus the fact that this road will carry well less than 1,000 vehicles/day, a width between kerb faces of 7.4m is recommended (for a traffic flow of around 1 vehicle/minute).

It is recommended the second subdivisional road also be constructed to this same standard.

7. SUMMARY AND RECOMMENDATIONS

An application to the Tasmanian Planning Commission will propose the rezoning and subdivision of land that lies along the northern side of Richardsons Road and to the south of Bayview Road to create 154 residential lots.

The roads of relevance are Richardsons Road and Forest Hill Road in Sandford and Bayview Road in Lauderdale.

Richardsons Road is a 740m long gravel road which junctions with Forest Hill Road while Forest Hill Road is a local access road for this part of Sandford. It is a sealed road from around 800m to the east of Richardsons Road through to the South Arm Secondary Road junction, which is around 490m to the northwest of Richardsons Road.

Bayview Road is a 2.0km long residential collector road length from its junction with South Arm Secondary Road to its southern end.

The speed limit along these roads is 50km/h.

The average weekday traffic volume along the South Arm Secondary Road in this area was 7,728 vehicles/day in June 2019.

Older survey data from Council indicates the average weekday traffic volume in 2010 was 1,414 vehicles/day on Bayview Road and 326 vehicles/day on Forest Hill Road, both just east of South Arm Secondary Road

Advice has been received that over the five and a quarter year period since January 2015, there have been no reported crashes along Forest Hill Road, Richardsons Road and Bayview Drive and three crashes along Bayview Road. Two of these crashes were at the South Arm Secondary Road junction.

Overall, the crash record is not of concern.

The total traffic generation from dwelling development on 154 residential lots will be around 1,312 vehicles/day. This will result in:

- around 716 vehicles/day and around 72 vehicles/hour during the morning and afternoon peak hours using Richardsons Road;

- around 596 vehicles/day and around 60 vehicles/hour during the morning and afternoon peak hours using Bayview Road.

It has been determined that by Year 2030 this will result in:

- around 1,200 vehicles/day at the western end of Forest Hill Road;

- around 740 vehicles/day at the western end of Richardsons Road; and

- around 2,300 vehicles/day at the western end of Bayview Road.

These traffic volumes will not create any operational issues along each of the three roads including junctions along Forest Hill Road, Richardsons Road and Bayview Road.

A SIDRA analysis of the future traffic conflicts at the Forest Hill Road/South Arm Secondary Road junction has found traffic will continue to operate at an acceptable level of service beyond Year 2030 during both peak hour traffic periods and at the Bayview Road/South Arm Secondary Road junction during the afternoon peak hour.

Traffic at the Bayview Road/South Arm Secondary Road junction during the morning peak hour in Year 2030 will operate at a level of service F. DSG will need to plan for the upgrading of the traffic management at this junction with the installation of a roundabout at some stage before Year 2030.

Based on the analysis of future traffic conflicts at the Forest Hill Road/South Arm Secondary Road junction and the Bayview Road/South Arm Secondary Road junction, the Austroads Guide indicates consideration should be given to the installation of an CHL left turn lane treatment and a BAR left hand passing treatment on South Arm Secondary Road at the Forest Hill Road junction and also the installation of an CHL left turn lane treatment on South Arm Secondary Road at the Bayview Road junction.

The current Year 2020 through and turning traffic volumes at the Forest Hill Road/South Arm Secondary Road junction and the Bayview Road/South Arm Secondary Road junction are already at levels which indicate consideration should be given to the above CHL and BAR treatments.

However, the turning traffic volumes will be much lower, even in 10 years' time with the completion and occupancy of the proposed subdivision than they currently are at the Acton Road/South Arm Secondary Road and Ringwood Road/South Arm Secondary Road junctions in Lauderdale where there is no safety concern.

Therefore, the necessity for the installation of the turn lane facilities will be many year ahead, possibly even beyond the completion and occupancy of the subdivision.

It is therefore proposed that the Department of State Growth should monitor the safety performance of South Arm Secondary Road through this area and determine when the implementation of the turn lane facilities, including the possible installation of a roundabout at some stage will be necessary.

Forest Hill Road and the existing section of Richardsons Road will need to be upgraded to a sealed width of 6.0m with 0.5m gravel shoulders (Code S4), as indicated on drawing TSD-R02-v1. The Richardsons Road approach to Forest Hill Road will also need to be realigned so that it meets Forest Hill Road at right angles.

There are no particular concerns with the proposed layout of the roads and lots within the subdivision.

The northward extension of Richardsons Road, up to just before the first new internal junction should be constructed to the same standard as detailed above, a sealed width of 6.0m with 0.5m gravel shoulders (Code S4) as indicated on drawing TSD-R02-v1.

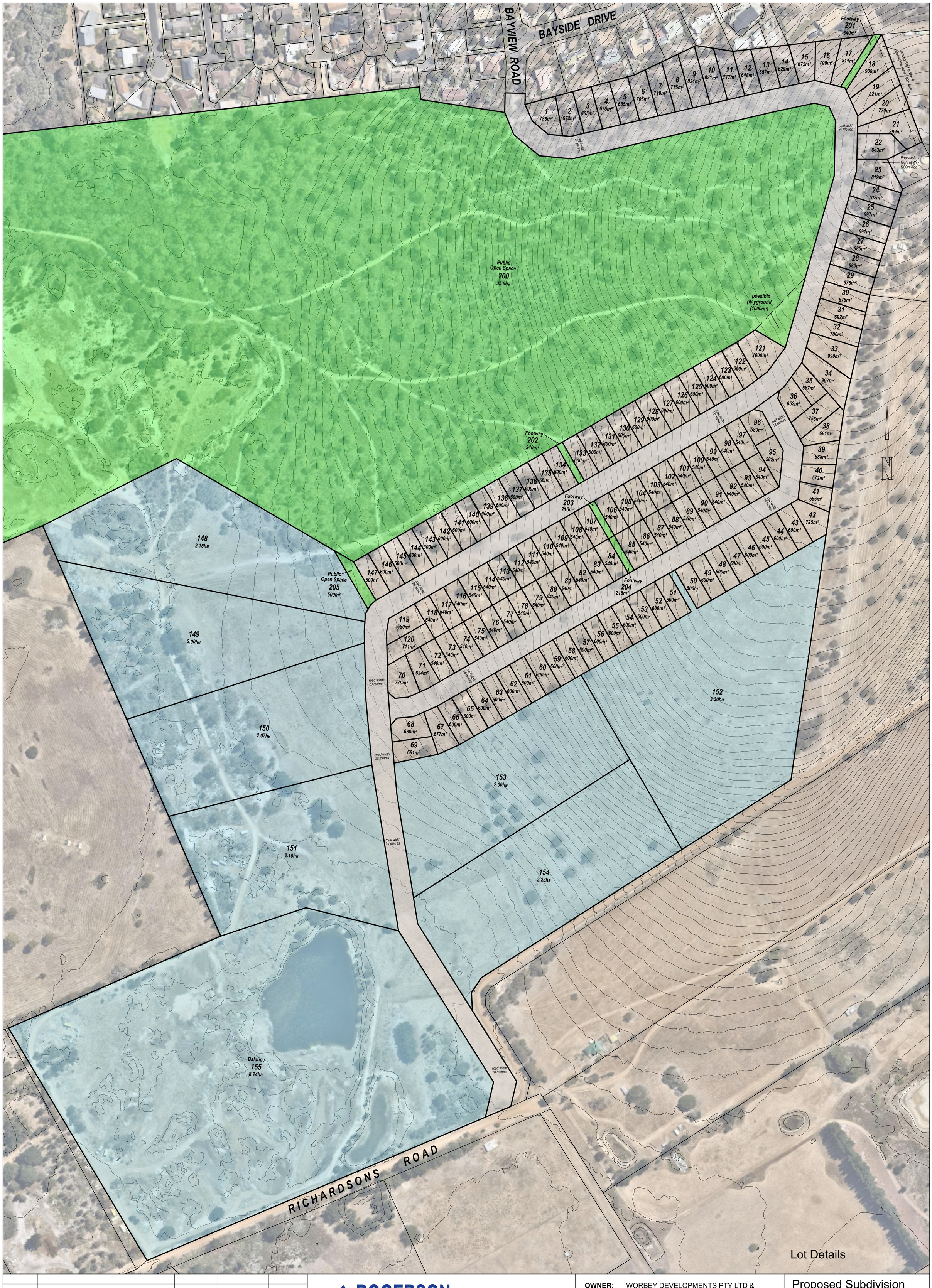
Beyond this to Bayview Road, the subdivisional road should be constructed with kerb and gutter both sides and a footpath along one side, preferably the eastern side and a width between kerb faces of 7.4m.

It is recommended the second subdivisional road also be constructed to this same standard.

Overall, with the implementation of the above recommendations, the proposed subdivision development is supported on traffic grounds.

ATTACHMENT A

Drawings of proposed subdivision layout



REV	AMENDMENTS	DRAWN	DATE	APPR.
C	adjust road width to 18m & change lot 205	AB	3-4-2020	AB
B	major lot changes	AB	2-4-2020	AB
A	major changes, richardsons road change	AB	24-3-2020	AB

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OWNER: WORBEY DEVELOPMENTS PTY LTD & JULIE ANN RICHARDS

TITLE REFERENCE: C.T.158742/9

LOCATION: 52 RICHARDSONS ROAD SANDFORD

Proposed Subdivision

Date: 3-4-2020	Reference: LADOP02 12336-05
Scale: 1:1500 (A1) 1:3000 (A3)	Municipality CLARENCE

BAYSIDE DRIVE

BAYVIEW ROAD

Footway 201 340m²

existing Right of Way & Pipeline Easement 10.00m wide

1 738m² | 2 674m² | 3 665m² | 4 675m² | 5 685m² | 6 705m² | 7 718m² | 8 775m² | 9 831m² | 10 821m² | 11 717m² | 12 648m² | 13 657m² | 14 629m² | 15 675m² | 16 706m² | 17 811m² | 18 909m² | 19 821m² | 20 770m² | 21 999m² | 22 853m² | 23 819m² | 24 702m² | 25 697m² | 26 691m² | 27 685m² | 28 680m² | 29 678m² | 30 675m² | 31 692m² | 32 706m² | 33 990m² | 34 997m² | 35 567m² | 36 652m² | 37 758m² | 38 681m² | 39 588m² | 40 572m² | 41 556m² | 42 725m² | 43 600m² | 44 600m² | 45 600m² | 46 600m² | 47 600m² | 48 600m² | 49 600m² | 50 600m² | 51 600m² | 52 600m² | 53 600m² | 54 600m² | 55 600m² | 56 600m² | 57 600m² | 58 600m² | 59 600m² | 60 600m² | 61 600m² | 62 600m² | 63 600m² | 64 600m² | 65 600m² | 66 600m² | 67 677m² | 68 680m² | 69 681m² | 70 779m² | 71 634m² | 72 540m² | 73 540m² | 74 540m² | 75 540m² | 76 540m² | 77 540m² | 78 540m² | 79 540m² | 80 540m² | 81 540m² | 82 540m² | 83 540m² | 84 540m² | 85 540m² | 86 540m² | 87 540m² | 88 540m² | 89 540m² | 90 540m² | 91 540m² | 92 540m² | 93 540m² | 94 540m² | 95 582m² | 96 580m² | 97 540m² | 98 540m² | 99 540m² | 100 540m² | 101 540m² | 102 540m² | 103 540m² | 104 540m² | 105 540m² | 106 540m² | 107 540m² | 108 540m² | 109 540m² | 110 540m² | 111 540m² | 112 540m² | 113 540m² | 114 540m² | 115 540m² | 116 540m² | 117 540m² | 118 540m² | 119 680m² | 120 711m² | 121 1000m² | 122 600m² | 123 600m² | 124 600m² | 125 600m² | 126 600m² | 127 600m² | 128 600m² | 129 600m² | 130 600m² | 131 600m² | 132 600m² | 133 600m² | 134 600m² | 135 600m² | 136 600m² | 137 600m² | 138 600m² | 139 600m² | 140 600m² | 141 600m² | 142 600m² | 143 600m² | 144 600m² | 145 600m² | 146 600m² | 147 600m²

road width 20 metres

Sd(1)

DVC

Public Open Space 200 35.6ha

DAC

possible playground (1000m²)

Proposed Right of Way 5.00m wide

road width 18 metres

road width 20 metres

Footway 202 240m²

5m wide firetrail

Footway 203 216m²

Footway 204 216m²

Public Open Space 205 500m²

FRG

3d(10)

FUM

148 2.15ha

149 2.00ha

150 2.07ha

151 2.10ha

152 3.30ha

153 2.00ha

154 2.23ha

OAQ

Balance 155 8.24ha

Unsurveyed

RICHARDSONS ROAD

Lot Details (North Barker image)

REV	AMENDMENTS	DRAWN	DATE	APPR.
C	adjust road width to 18m & change lot 205	AB	3-4-2020	AB
B	major lot changes	AB	2-4-2020	AB
A	major changes, richardsons road change	AB	24-3-2020	AB

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