

APPENDIX I: Planning and Traffic Engineering Report
TPS 25 February 2022

**Proposed School (Secondary Education) Development
NE Corner Ocean Drive & Bonny View Drive, Bonny Hills**

Transport Planning and Traffic Engineering Report

Prepared by

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Issue Doc.No.	Prepared By	Issue Date	Signature
TPS271Rep3	Glen R Holdsworth (RPEQ 4152)	25 th Feb 2022	

This report has been prepared with an expectation that any review of, and response to the contents of the report will be prepared by or checked and verified by a professional engineer having qualifications and experience relevant to those matters to which the report refers.

1. Background

St Agnes Catholic Parish (Port Macquarie) propose to develop land situated to the immediate north-east of the Ocean Drive / Bonny Hills Dr intersection at Bonny Hills. The location of the subject land is shown in Fig 1.1.

The proposal is to provide a school providing education for up to 1,200 students.

The purpose of this report is to describe the transport and traffic engineering character and requirements of the proposed development to assist authorities responding to an Application to appropriately rezone the subject land.



Fig 1.1 Location of the Subject Site

2. The Need for the School Development

The following explanation regarding the demand and need for the school development was provided to TfNSW in a letter from King & Campbell to TfNSW dated 25th March 2021.

- *The need for the proposed catholic high school campus within the Lake Cathie/Bonny Hills Urban Release Area is in response to school population pressures in existing high School campuses in Port Macquarie (MacKillop College and St Joseph's Regional College). Both of these campuses are currently near their capacity of 1200 students.*
- *Approximately 400 students currently travel from Lake Cathie/Bonny Hills and the Camden Haven region each day to attend catholic high schools in Port Macquarie.*
- *St Agnes Catholic Parish have undertaken a comprehensive master planning review of all of their current campuses. The education master plan has identified the establishment of the Bonny Hills high school campus as one of their three top priorities along with the establishment of a primary school campus in Thrumster and improvements at Newman Senior College.*
- *The development of the Lake Cathie/Bonny Hills Urban Release Area will ultimately result in almost a doubling of the existing population to approximately 10,000 – 11,000 persons. The development of the Camden Haven Urban release area (Area 15) will result in a further population increase of approximately 2000 people.*
- *The provision of a local high school campus within the Lake Cathie/Bonny Hills URA will:*
 - a. *Provide high school educational facilities within the second largest population centre in the PMHC LGA thereby reducing the need for high school students to travel to Port Macquarie. This reduces travel times for students and existing and future traffic pressures in Port Macquarie.*
 - b. *Reduce existing pressures on catholic high School campuses in Port Macquarie thereby creating capacity for the increase in population in Port Macquarie itself.*

3. The Proposed School Development

The proposed school development plan is shown in Fig 3.1.

3.1 School Capacity and Student Profile

The school is being planned to accommodate up to 1,200 students in years 7 to 12.

3.3 The Development Design & Content

The proposed development will consist of the following elements.

- Parking 200 spaces in 90 degree format for Staff, Students and Pick-up
 22 (approx.) spaces in parallel format for Drop-off & Pick-up
- Bus pick-up & drop-off facility with bus only access to and from Ocean Drive.
- Pedestrian overpass giving access across Ocean Drive
- New Roundabout at Ocean Dr / Bonny View Dr to facilitate school traffic movements.

3.2 Staging

It is expected that the first stage of the development will be completed in 2025. This stage will include

- the construction of a roundabout at the Ocean Dr / Bonny View Dr intersection, and
- the construction of a pedestrian overpass of Ocean Drive to provide safe pedestrian and cyclist access to and from residential areas to the north-east and south-east of the school.

Subsequent stages are expected to occur over a period of approximately 5 years, depending on market demands.

Development staging will be the subject of future Development Applications.

3.4 Development Assessment Context

This report has been prepared in the context of the development being completed and operating at capacity (1,200 students) by approximately 2030.

Consequently, the assessment described in this report has been undertaken in the context of transport and traffic engineering requirements over the period to 2040, being 10 years following completion of the development.

In view of 2040 being nearly 20 years from the date of this Application. TPS encourages the reader to interpret transport and traffic estimates etc. as being indicative for the purposes of assessing whether the development can be satisfactorily interfaced with, and incorporated into the local transport network.

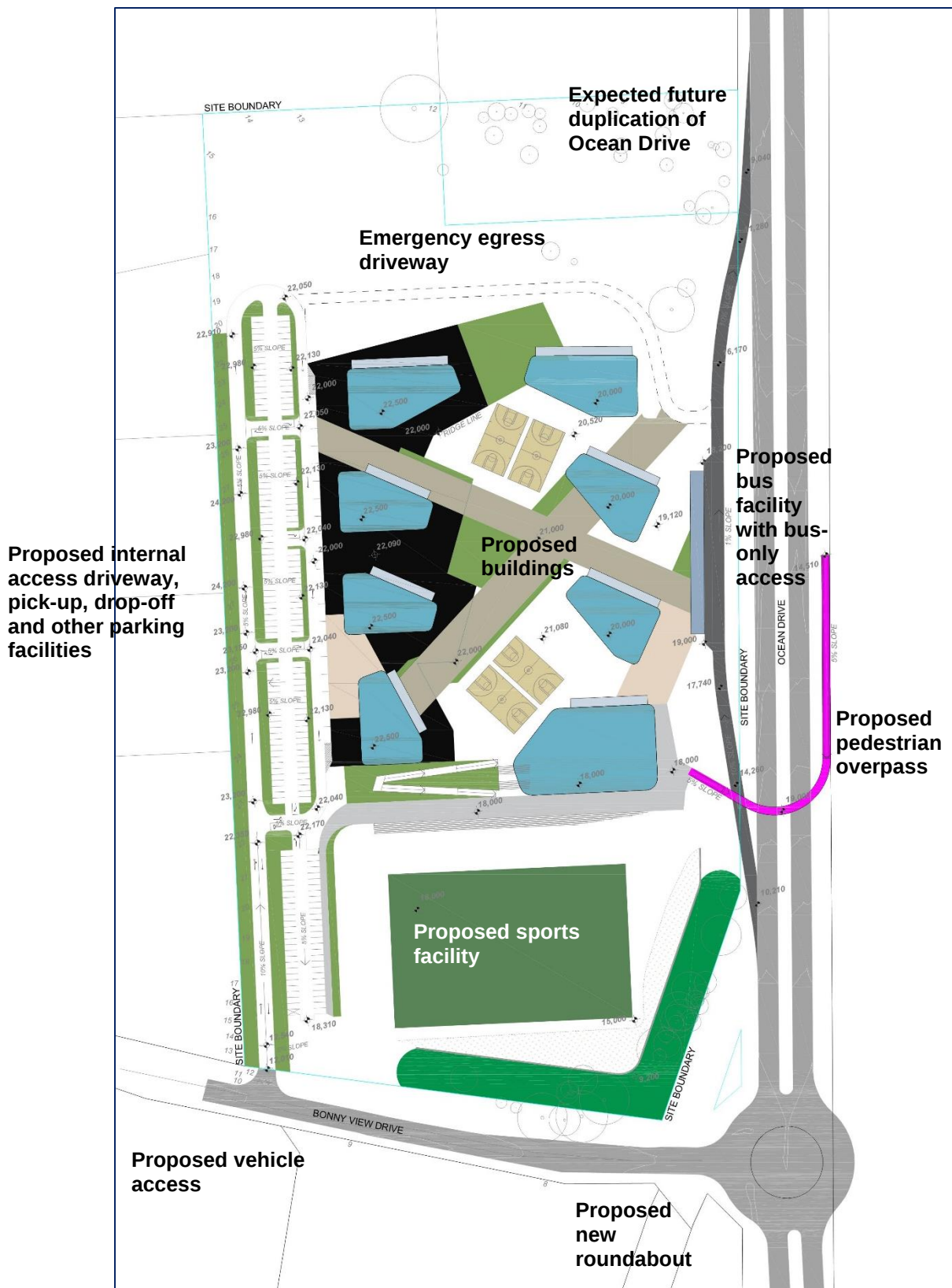


Fig 3.1 The Proposed School Development

4. Transport & Road Planning

4.1 Road Management Responsibilities

Ocean Drive (MR600) is a classified (Regional) Road and Bonny View Drive is a public (Local) road.

Port Macquarie Hastings Council is the Roads Authority for all public roads (other than freeways or Crown roads) in the local government area.

4.2 Planned Road Improvements

Figs 4.1 and 4.2 show extracts from the Lake Cathie – Bonny Hills DCP.

The DCP refers to the following relevant matters.

- The future management of the Ocean Dr / Bonny View Dr intersection is to be a matter for “future” investigation. This Application serves to introduce the need to investigate how the intersection should be managed and when improved management will be required.
- The site to the immediate east of the above intersection is marked as a future school site. That site is owned by St Vincent’s Foundation who propose to develop the site for residential purposes permitted in the zone. Appendix S of the Planning Proposal confirms that the site is too small for a high school.
- The cross section of Ocean Drive is expected to consist of a duplicated 4 lane cross section in a 40m wide road reserve. This is the width of the existing Ocean Drive road reserve across the subject site frontage. Consequently, TPS has assumed that there will be no future road reserve widening requirement affecting the site.

Other than is implied in the DCP there are no significant road or intersection improvements planned in the immediate vicinity of the subject site.

However, the following road upgrades were recommended in the recent “Port Macquarie-Hastings Local Government Area Traffic Study, 2019”.

- Signalisation of the Ocean Dr / Abel Tasman Dr intersection
- Upgrading of the Houston Mitchell Dr interchange with Pacific Highway

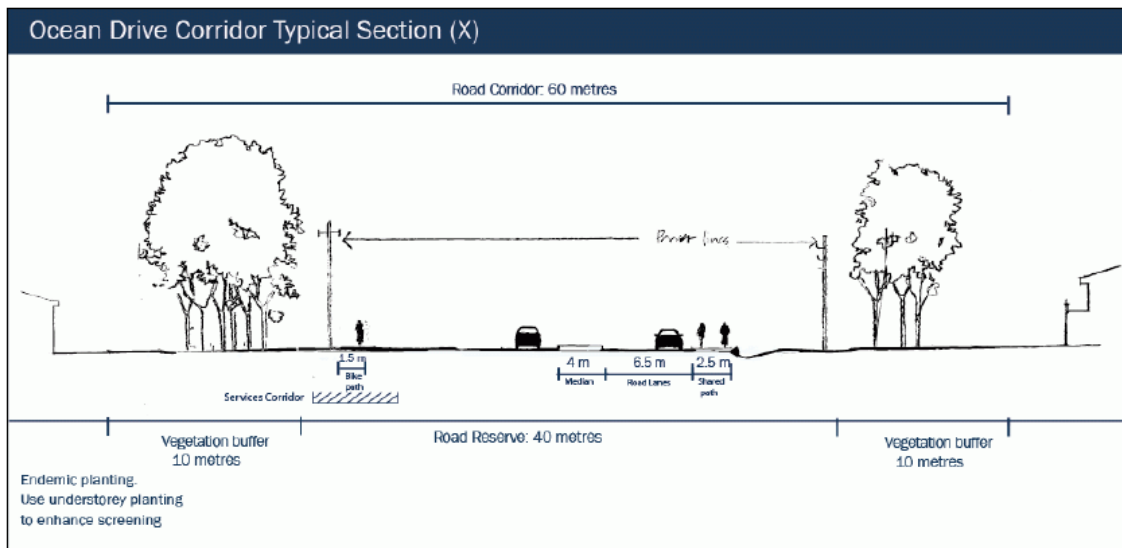
In the opinion of TPS neither of the above road upgrades would be likely to have a significant effect on future traffic demands at the subject site or the distribution of traffic movements to and from the subject site.

An earlier report by RoadNet/Bitzios in 2010 “Area 14 Urban Investigation Area” concluded the following.

- By 2029 (full development), the following road network improvements are required:
- Ocean Drive requires four lanes (two lanes in each direction) between Bonny View Drive and Abel Tasman Drive;
 - Houston Mitchell Drive / Ocean Drive intersection requires two right turn lanes from Ocean Drive north to Houston Mitchell Drive;
 - Houston Mitchell Drive requires four lanes (two lanes in each direction) between Forest Parkway and Ocean Drive;



Fig 4.1 Lake Cathie – Bonny Hills DCP
Transport & Movement Plan



**Fig 4.2 Lake Cathie – Bonny Hills DCP
Ocean Drive Cross Section Plan**

4.3 Draft Road Corridor Strategy

Council is currently developing a long-term road corridor strategy for Hastings River Drive, Ocean Drive and Kendall Road (MR538 and MR600). This 54km Regional classified road corridor links Port Macquarie to neighbouring local towns and villages along the coast, and then inland to Kew and Kendall.

The draft Road Corridor Strategy focuses on:

- Preserving the corridor
- Setting out a broad design framework for future upgrades
- Defining priorities for further road maintenance, operation and safety
- Considering the communities it serves and planned growth across the region (Bitzios 2021)

Council undertook a community consultation stage of the project in 2020 in which the public was invited to make submissions to assist the strategy development process.

Community consultation identified future potential schools on the subject site and on a site to the immediate east of Ocean Drive.

The Draft Corridor Strategy was publicly exhibited in 2021. A submission dated 2nd August 2021 was made by King & Campbell Pty Ltd on behalf of St Agnes Catholic Parish. The submission referred to the proposed high school campus on the subject site. The submission advised Council as follows (shown boxed) with respect to the subject site.

The landowners are currently preparing a Planning Proposal for a change in the current zoning to permit a catholic high school on the subject property. The proposed catholic high school will ultimately have a capacity for 1200 students and will service the immediate catchment of the Lake Cathie Bonny Hills URA with a population of approximately 11,000 people and the Camden Haven region more broadly including the Area 15 URA at Kew.

The catholic high schools in Port Macquarie and Thrumster are currently nearing capacity had approximately 400 students travel from Lake Cathie and areas to the south to attend those schools in Port Macquarie.

The intersection at Bonny View Drive and Ocean Drive will be the primary vehicular access to the proposed catholic high school campus. The Planning Proposal being prepared will include a Concept Master Plan for the proposed catholic high school campus incorporating recommendations from the Traffic Impact Assessment Traffic Impact with respect to vehicular, pedestrian and bus access to and from the site.

PMHC's Area Based DCP provisions highlight the potential upgrade of the Bonny View Drive / Ocean Drive intersection to a roundabout which will ultimately cater for the proposed high school campus on the western side of Ocean Drive and development permissible in the residential zoned land on the eastern side of Ocean Drive.

The purpose of this submission is to ensure that future planning for Section 5 of the draft Road Corridor Strategy takes into account the planning proposal currently being prepared for the proposed catholic high school campus on the NW corner of Bonny View Drive/Ocean Drive and the likely improvements required at that intersection .

Section 5 of the draft Corridor Strategy identifies Ocean Drive as having a high movement function (defined as “4B”) connecting Lake Cathie and other coastal towns in Port Macquarie. This is shown in Fig 4.3 which is an extract from the Draft Road Corridor Strategy.

The draft Corridor Strategy also identifies an expected increase in the Place Function of Ocean Drive in the vicinity of the subject site due to the growth and development areas in Rainbow Beach.

The proposed development of the subject site for secondary school purposes is consistent with the transport and traffic management objectives of the draft Road Corridor Strategy as it:

- Preserves the Ocean Drive corridor with the primary vehicular access to the school via Bonny View Drive.
- Provides the proposed school with high quality, high capacity and safe bus, bicycle and pedestrian transport alternatives to private car travel.
- Identifies and quantifies the required upgrade to the Ocean Drive/ Bonny View Drive intersection aimed at satisfying school and other traffic growth over many years.
- Provides high quality bus access in a way that will not prejudice the future high traffic movement function of Ocean Drive across the site frontage.
- Identifies the need for the pedestrian overpass of Ocean Drive to safely link the proposed High School to residential areas, pathway/cycleway networks, playing fields, the Rainbow Beach town centre and the coast.

4.4 Public Transport Planning

As noted in the TfNSW letter referred to in Section 4.2 of this report, TfNSW has advised that :

- *A review and improvements of the Port Macquarie Bus Network will be undertaken as part of the 16 Regional Cities Services Improvement Program, with holistic planning expected to commence in early 2022.*

There are no other public transport studies or projects which TPS expects to affect public transport access for the subject site.

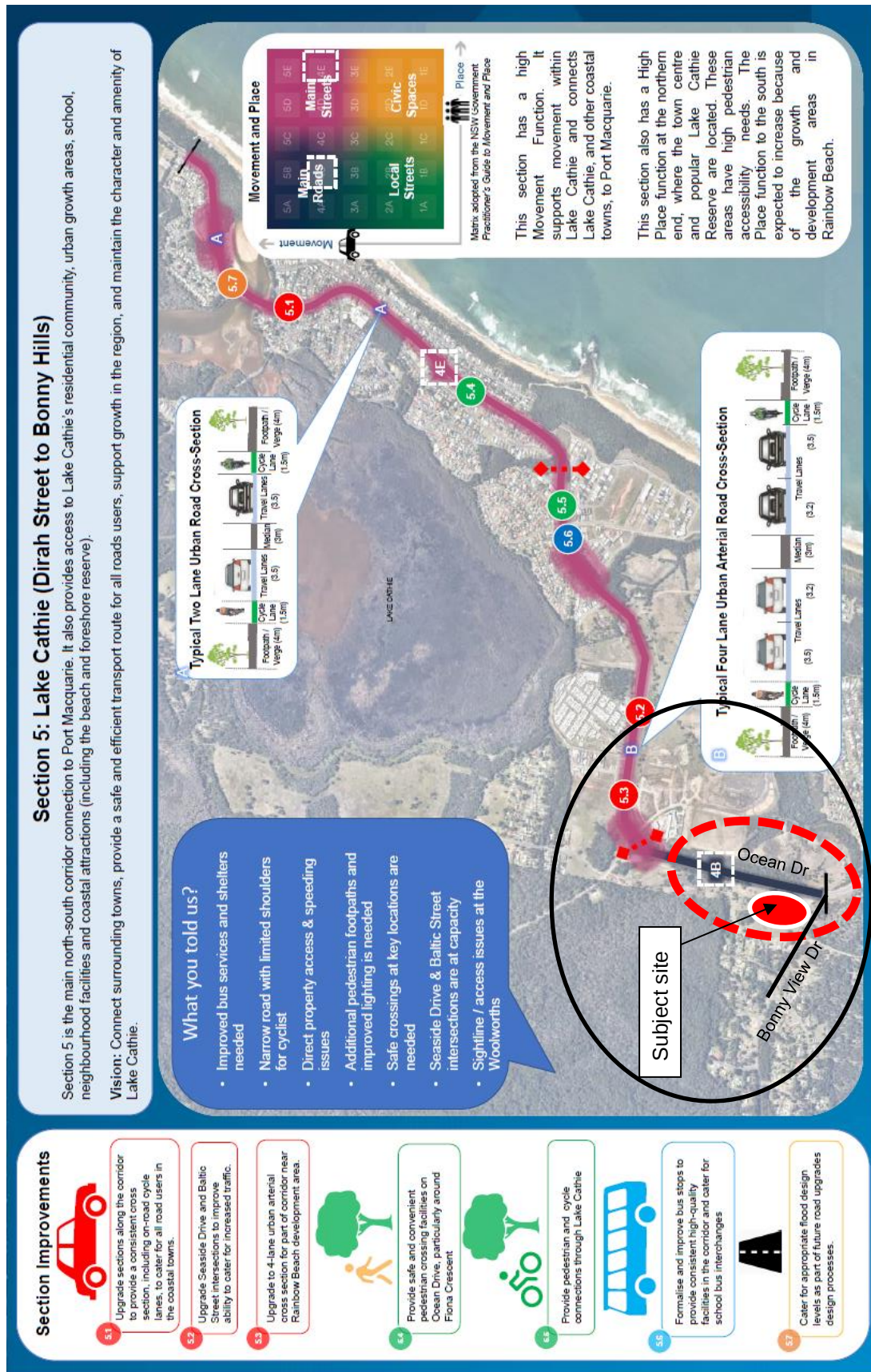


Fig 4.3 Extract From Draft Road Corridor Strategy Showing Location of Subject Site

4.4 Bicycle and Pedestrian Access and Route Planning

Fig 4.3 shows an extract from the Lake Cathie – Bonny Hills DCP.

The DCP refers to the following relevant matter.

- There is a comprehensive network of Bicycle and pedestrian paths planned (and largely constructed) as part of residential and sports ground developments on the eastern side of Ocean Drive.

The planned path system shown in the DCP extends comprehensively into residential areas to the north, south and east of the subject site.

These paths have the potential to contribute significantly to the accessibility of the subject school site provided that the path system can be interfaced with the subject development in a relatively seamless manner. It is in that context that the proposed development includes a pedestrian/cyclist overpass of Ocean Drive with path linkage to the DCP path network.



4. Pre-Lodgement Advice

4.1 Council Pre-Lodgement Advice

The following advice (shown in italics) was provided to the Applicant following a meeting with Council held on 19th January 2021.

- *Action 17 of the UGMS identifies the subject land for investigation for light industrial development or for use as a school. The investigation of the site will need to include consideration of the need for visual buffering to the main road - Ocean Drive.*
- *The Master Plan identified a location for a future high school on the eastern side of Ocean Drive which would be integrated into the planned residential community of Lake Cathie and Bonny Hills currently under development.*
- *It will be important for any PP to clearly articulate why the site on the eastern side of Ocean Drive is considered by the land owners to be no longer suitable for a future school site, what the land is now to be used for and the estimated development yield from this land. DCP 2013 Part D9.1 Rainbow Beach provides that Precinct C is anticipated to provide about 1,000 dwellings when fully developed.*
- *The development would be classified as a Traffic-generating development under Schedule 3 of iSEPP, and subsequently would need to be referred to TFNSW/RMS*
- *A Traffic, transport and accessibility study would be required to support the development, with consideration given to;*
 - a. *Study should be prepared by a qualified and/or experienced traffic consultant.*
 - b. *Prepared in accordance with guidelines contained in the Roads and Maritime Services Guide to Traffic Generating Developments (2002), and AUSTROADS Guide to Traffic Management, Part 12: Traffic Impacts of Development.*
 - c. *Study should use data obtained from an existing facility which operates in a similar manner to the proposed facility, and comment on any differences in operation.*
 - d. *The likely traffic generation should be quantified, in terms of the number of vehicle trips during peak hours, number of trips per day, and breakdown of the types of vehicle users (e.g. residents' cars, staff cars, service trucks).*
 - e. *The likely 85th percentile (time-weighted) parking demand is to be quantified.*
 - f. *Comment on the likely traffic and parking demand ten years after the development*
 - g. *Identify any new road, pedestrian, and cyclist infrastructure works required to service the proposed development, as well as any upgrades required to existing infrastructure. Consideration should also be given to public transport accessibility and servicing.*
 - h. *Provide more detail and demonstrate the feasibility of the underpass/overpass pedestrian link*
 - i. *Internal parking and manoeuvring should comply with AS289 Relevant to this report*
 - j. *Provide detail regarding the staging and timing of the works*

4.2 TfNSW Pre-Lodgement Advice

The following relevant advice (shown in italics) was communicated to the Applicant in a letter from TfNSW dated 23rd April 2021.

- *It is requested that the Planning Proposal identify any re-purposing of the former Southern School Site to inform analysis of the Ocean Drive and Bonny View Drive intersection.*
- *A well prepared Green Travel Plan / School Transport Plan can inform travel choices, influence travel patterns and reduce private car use by promoting active and public transport modes. Such plans need to be evidence based and adopts measurable targets.*
- *The proposed relocation of the future school campus to the opposite frontage of Ocean Drive will increase demand for active transport movements across the road corridor. Well-designed connections between the new campus and surrounding residential catchments will be integral to encouraging active transport and reducing car travel.*
- *TfNSW recommends that consultation be undertaken with relevant Bus Service Providers. A review and improvements of the Port Macquarie Bus Network will be undertaken as part of the 16 Regional Cities Services Improvement Program, with holistic planning expected to commence in early 2022.*

5. Existing Traffic Volumes

TPS conducted surveys of peak period traffic movements at the Ocean Drive intersections with Mitchell Houston Drive, Bonny View Drive and Seawind Chase on Thursday 19th November 2020 in the periods between 0730 – 09:00 and 15:00 – 16:30.

The surveys indicated that the peak hours of traffic movement across those intersection were 07:45 – 08:45 and 15:15 – 16:15.

Figs 5.1 and 5.2 show summaries of estimated 2020 peak hour traffic movements based on the TPS surveys plus an additional 10%. The 10% increase has been applied to all surveyed traffic movements in order to conservatively represent the potential effect of the Covid-19 pandemic on traffic increases between 2018 and 2020. The 10% increase was based on comparing the TPS survey data for Ocean Drive (north of Mitchell Houston DR) with 2018 traffic volume data provided by Council.

The surveys indicate that Ocean Drive is currently carrying approximately 9,000 vehicles per day at the property frontage whilst Bonny View Drive carries approximately 800 vehicles per day.

Nominally, Ocean Drive traffic volumes are approximately half of that which would justify duplication.

It is also apparent from the survey results that a significant increase in peak hour traffic demands to and from Bonny View Drive would be highly likely to require the introduction of more formal intersection management at the Ocean Drive/Bonny View Dr intersection such as signalisation or a roundabout in the near future.

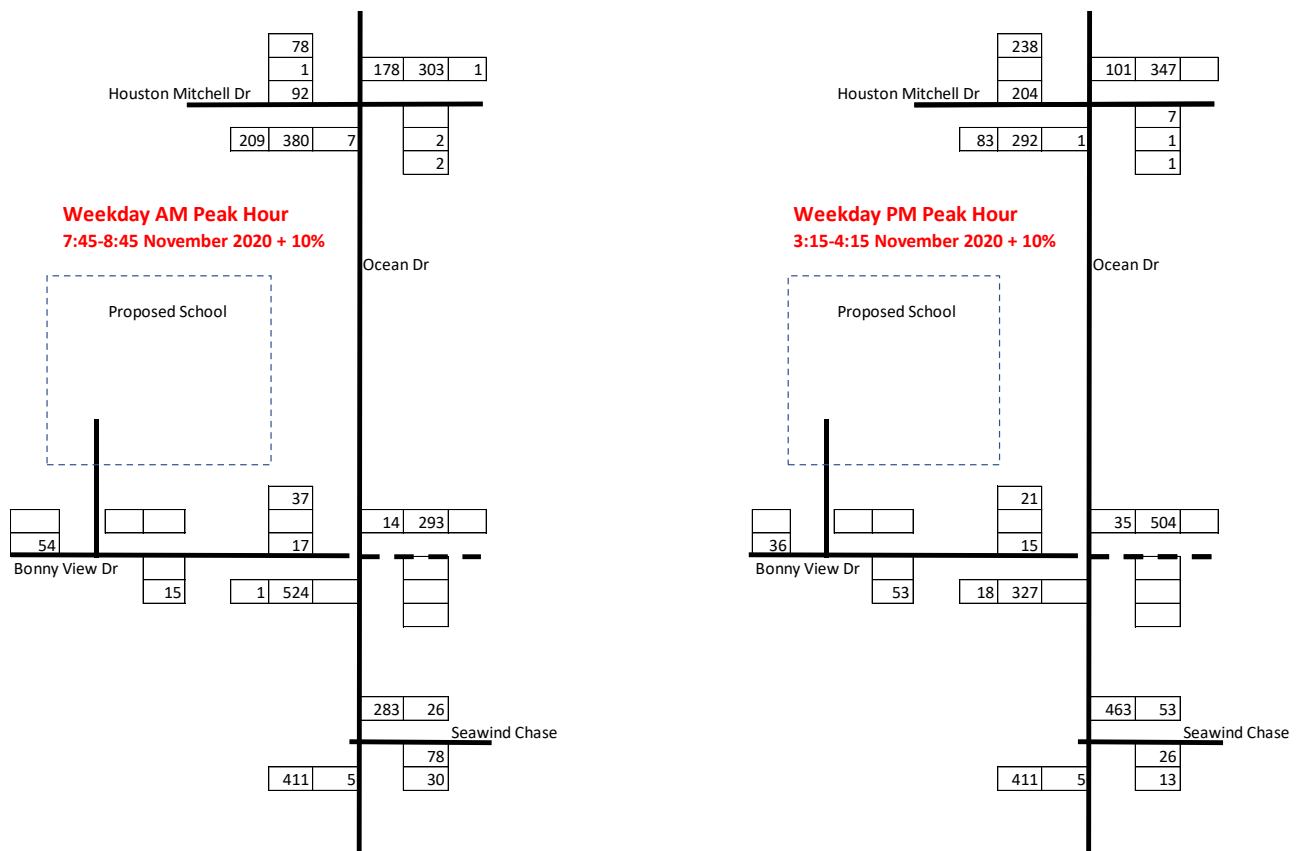


Fig 5.1 Surveyed Peak Hour Intersection Movements
19th November 2020 + 10%

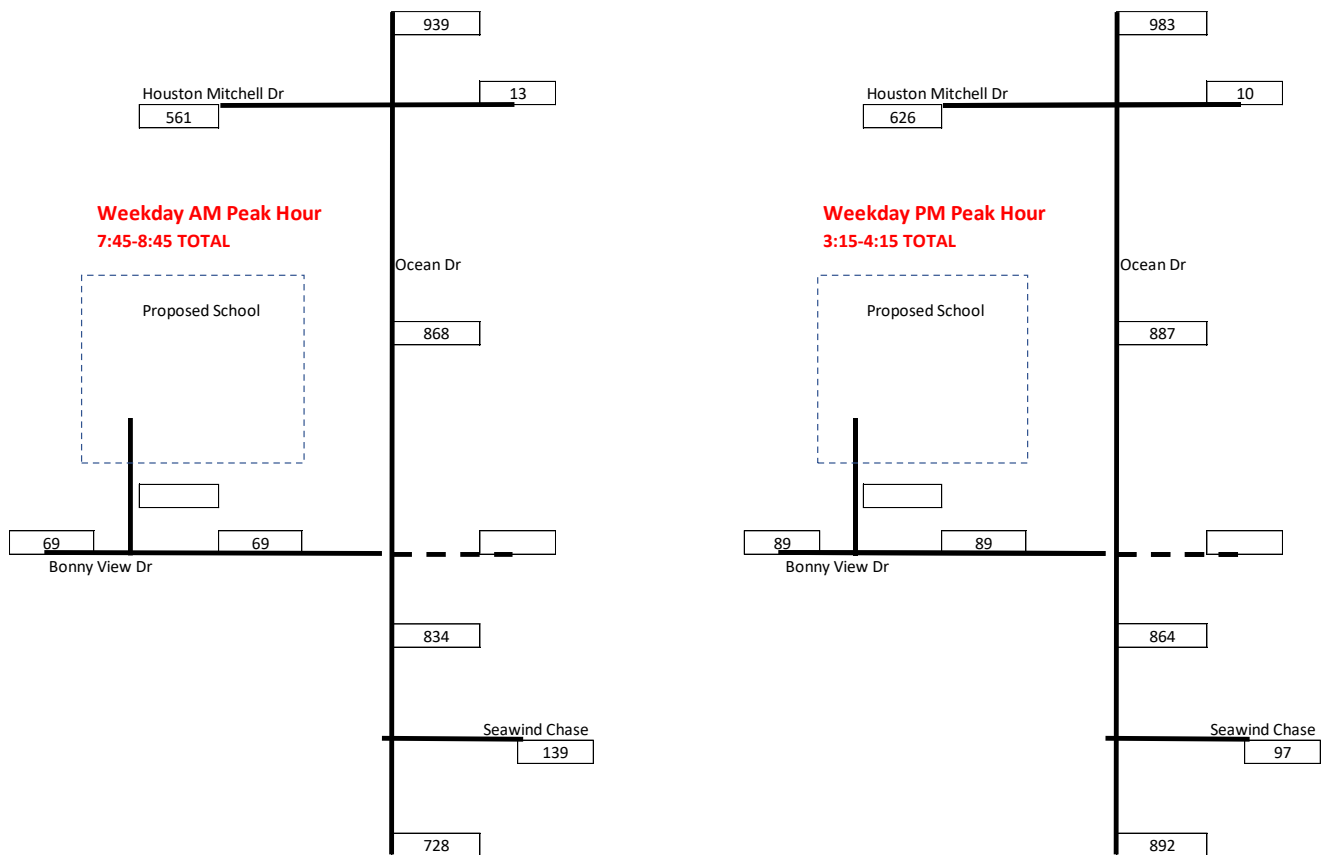


Fig 5.2 Surveyed Peak Hour Intersection Movements (2-Way)
19th November 2020 + 10%



Fig 5.3 Surveyed Daily Traffic in 2018
Ref : Council

6. Estimated Future Development Transport Demands

6.1 St Joseph's Regional Catholic High School Survey

Under TPS direction, a survey was conducted in the last week of November 2020 at the above school to establish the transport mode etc. characteristics of students. The school was chosen on the understanding that it represents the type of school student and student attendance likely to occur for the subject development.

The survey sample (393 students) represented approximately one-third of all students.

The results from the survey are shown in Table 6.1.

**Table 6.1 Survey of Student Travel x Transport Mode TO and FROM School
St Joseph's Regional Catholic High School Survey**

No. of Students x Mode

TO	Year	Bus	Car	Taxi	Walk	Bike	Total
	7	57	22	1	2	0	82
	8	53	27	0	2	1	83
	9	59	35	0	1	0	95
	10	44	24	0	0	0	68
	11	10	22	0	0	0	32
	12	8	18	0	0	0	26
	0	5	2	0	0	0	7
	All	236	150	1	5	1	393

FROM	Year	Bus	Car	Taxi	Walk	Bike	Total
	7	67	12	1	2	0	82
	8	60	21	0	1	1	83
	9	72	20	0	2	1	95
	10	56	10	0	2	0	68
	11	10	21	0	1	0	32
	12	10	16	0	0	0	26
	0	6	1	0	0	0	7
	All	281	101	1	8	2	393

% of Students x Mode

TO	Year	Bus	Car	Taxi	Walk	Bike	Total
	7	70%	27%	1%	2%	0%	100%
	8	64%	33%	0%	2%	1%	100%
	9	62%	37%	0%	1%	0%	100%
	10	65%	35%	0%	0%	0%	100%
	11	31%	69%	0%	0%	0%	100%
	12	31%	69%	0%	0%	0%	100%
	0	71%	29%	0%	0%	0%	100%
	All	60%	38%	0%	1%	0%	100%

FROM	Year	Bus	Car	Taxi	Walk	Bike	Total
	7	82%	15%	1%	2%	0%	100%
	8	72%	25%	0%	1%	1%	100%
	9	76%	21%	0%	2%	1%	100%
	10	82%	15%	0%	3%	0%	100%
	11	31%	66%	0%	3%	0%	100%
	12	38%	62%	0%	0%	0%	100%
	0	86%	14%	0%	0%	0%	100%
	All	72%	26%	0%	2%	1%	100%

6.2 RMS Research

In August 2014 GTA Consultants reported the results of comprehensive research into school student transport demands. The published research was undertaken for RMS, NSW.

The GTA report contained the relevant summaries shown in Tables 6.2 and 6.4.

Table 6.2

Table 4.4: Secondary School Peak Vehicle Trip Generation per Student Summary					
Secondary School Location	Period	Average	Minimum	Maximum	Range
All	AM	0.47	0.16	0.83	0.67
	PM	0.27	0.11	0.51	0.40
Sydney Metropolitan	AM	0.51	0.16	0.83	0.67
	PM	0.28	0.15	0.51	0.36
Regional	AM	0.35	0.22	0.52	0.30
	PM	0.24	0.11	0.42	0.31

Table 4.4 shows that metropolitan schools on average have slightly higher AM vehicle traffic generation.

Table 6.3

Table 4.9: Secondary School Average Mode Split Summary				
School Type	Period	Car	Bus	Walk
All	AM	46%	26%	29%
	PM	34%	36%	30%
Sydney Metropolitan	AM	46%	21%	33%
	PM	34%	31%	35%
Regional	AM	45%	30%	26%
	PM	30%	39%	30%

Rounding to nearest 1%

Table 6.4

Table 4.5: Average Vehicle Directional Split			
School Type	Period	Vehicle Trip In %	Vehicle Trip Out %
All	AM	55%	45%
	PM	43%	57%
Primary	AM	51%	49%
	PM	49%	51%
Secondary	AM	59%	41%
	PM	39%	61%

6.3 Estimated Development Transport Demand Generation

Based on inspection of the St Joseph's school survey and the RMS research, TPS has made estimates of likely development transport demand generation shown in Table 6.5 for the ultimate development (1200 students).

The primary difference between the St Joseph's survey result and the modal splits assumed by TPS is associated with the walk/bike and bus modes. The walk/bike mode was relatively insignificant in the St Joseph's survey result. Based on the RMS research and after having regard to the proximity of surrounding residential development etc. to the proposed school, TPS is of the view that walk, and bicycle modes will be significantly higher than the St Joseph's survey result at the expense of the bus mode which will reduce due to the effect of the school in requiring students to reduce long distance travel to and from other Catholic schools in the Port Macquarie area.

Table 6.5
Estimated Development Transport Demand Generation (1200 students)
Person Trips TO and FROM School x Mode

TO	No Students	Bus	Car	Taxi	Walk/Bike
	200	110	54	6	30
	200	99	65	6	30
	200	90	74	6	30
	200	93	71	6	30
	200	27	138	6	30
	200	26	138	6	30
	1200	445	539	36	180
		37%	45%	3%	15%

FROM	No Students	Bus	Car	Taxi	Walk/Bike
	200	135	29	6	30
	200	113	51	6	30
	200	122	42	6	30
	200	135	29	6	30
	200	33	131	6	30
	200	41	123	6	30
	1200	578	406	36	180
		48%	34%	3%	15%

Table 6.5
Estimated Development Vehicle Demand Generation (1200 students)
Vehicle Trips TO and FROM School x Mode

AM	Bus	Car	Taxi	Walk/Bike
In	15	360	18	180
Out	15	295	18	0
Tot	30	655	36	180

PM	Bus	Car	Taxi	Walk/Bike
In	15	317	18	0
Out	15	239	18	180
Tot	30	556	36	180

Occ AM	30	1.5	2	1
Occ PM	40	1.7		

The above estimates assume vehicle occupancies shown at the bottom of the table.

Resultant Car Travel Characteristics

Vehicle Generation (in+out)
AM 0.55/student PM 0.46/student

Percent by Car
AM 45% PM 34%

Directional Split (in:out)
AM 55:45 PM 43:57

7. Estimated Future Traffic Volumes (2040)

7.1 Estimated Future Development Traffic Distribution

Estimated 2040 development traffic distribution is shown in Fig 7.1.

The estimates are based on the following assumptions.

- Proposed school traffic generation described in Section 6.3.
- Residential development in the area to the immediate east of the Ocean Dr / Bonny View Dr intersection amounting to no more than 200 dwellings, generating a peak hour traffic volume of approximately 150vph.
- All future access for the Camden Haven Anglican Church concentrated to the Ocean Dr / Houston Mitchell Dr intersection.
- Based on surveyed traffic volumes, traffic distributions to and from the proposed school and all other future developments as shown in yellow in Fig 7.1.
- Drop-in traffic movements to and from the proposed new school at the rate of 35% and 25% for the AM and PM peak hours respectively. That is, traffic that would be passing the school site even if the development was not to occur. The effect of drop-in traffic is shown as negative numbers in Fig 7.1, only affecting volumes at the Ocean Dr / Bonny View Dr intersection.

7.2 Estimated Future (2040) Peak Hour Traffic Volumes

Estimated future traffic volumes are shown in Fig 7.2.

The estimates are based on the following assumptions.

- 2020 “base” traffic as surveyed in Nov 2020, increased by 10% to compensate for the potential effects of the Covid-19 pandemic.
- An average annual increase in “base” traffic volumes of 2% per annum, resulting in a 49% increase in “base” traffic in the period between 2020 and 2040. This assumption was based on estimates described in the “Area 14 Urban Investigation Area” traffic study conducted by RoadNet & Bitzios for Council in 2010. The effect of the assumed “base” rate of increase is to give an overall annual increase of 3.4% in Ocean Drive traffic volumes between Houston Mitchell Dr and Bonny View Dr when school traffic is included. This compares with an estimate of approximately 2.4% described in the RoadNet/Bitzios report.

It is important to note that the estimates shown in Fig 7.2 are hourly traffic volumes and do not reflect the characteristically “peaked” nature of school traffic generation whereby traffic demands are concentrated into a period of approximately 30 to 40 minutes in the morning and afternoon peak hours.

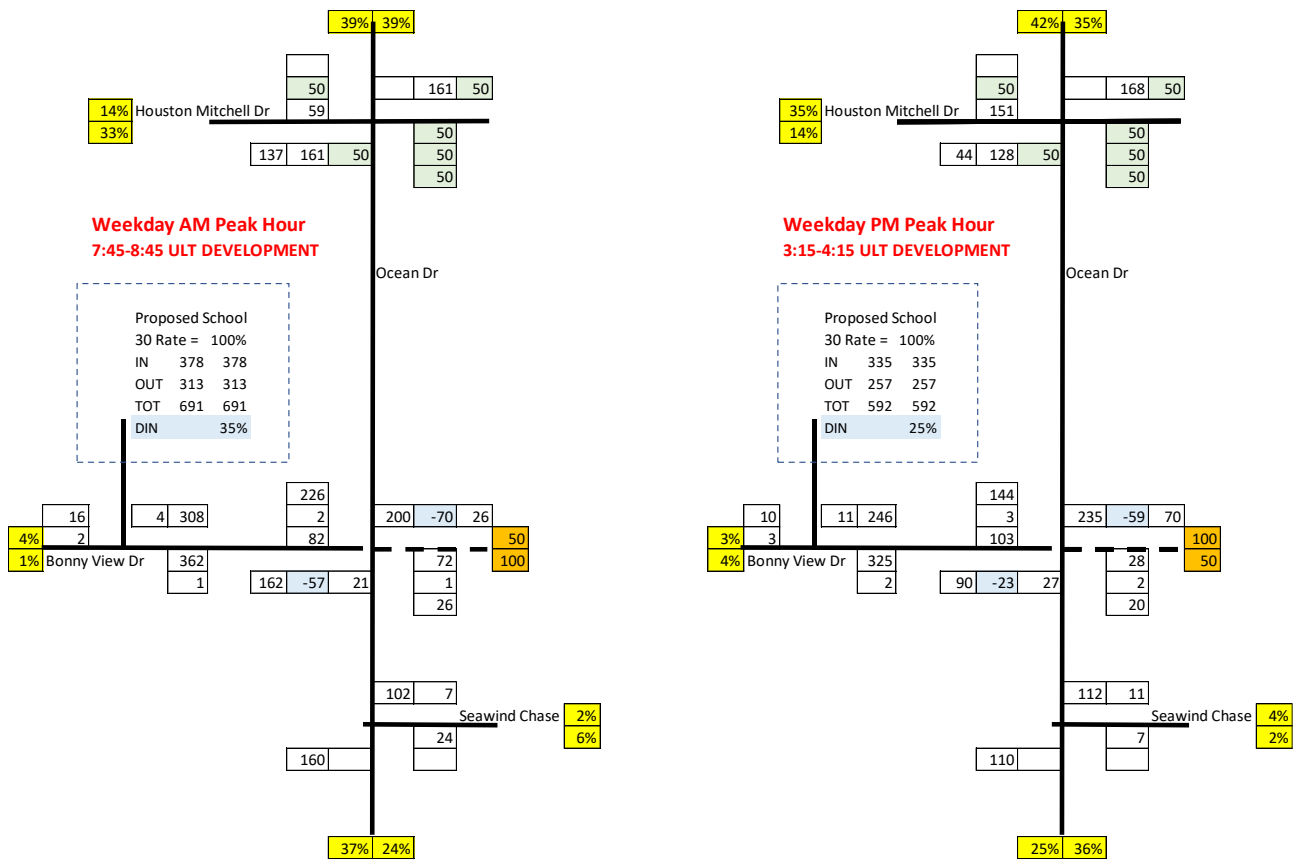


Fig 7.1 Estimated 2040 Development Traffic Generation and Distribution

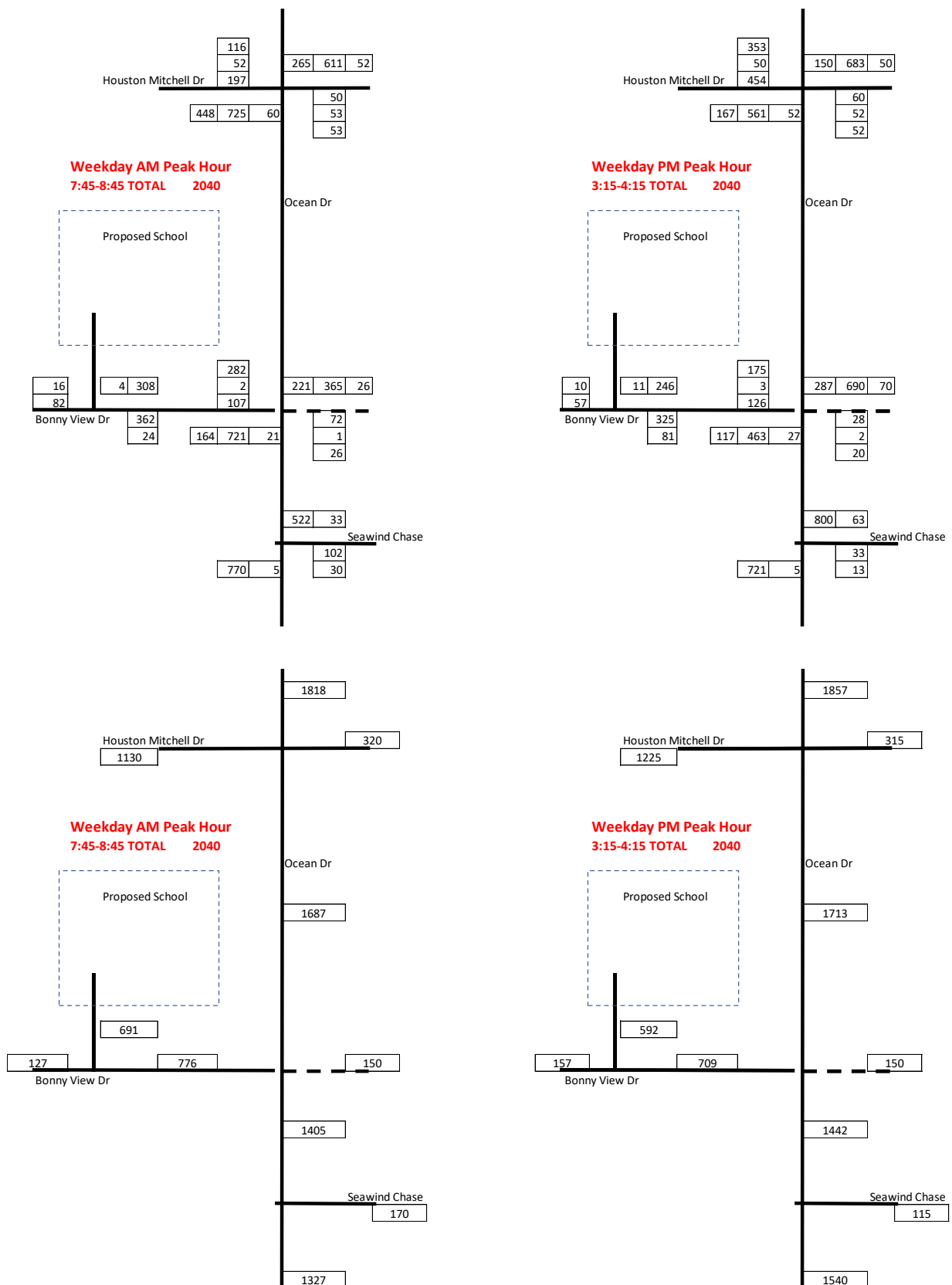


Fig 7.2 Estimated 2040 Peak Hour Traffic Volumes

7.3 Estimated Peak Rate of 2040 Peak Hour Traffic Volumes

As previously described, school traffic generation is characteristically concentrated into 30 to 40 minute periods in the AM and pm peak hours. Consequently, in order to more realistically assess future intersection operations, TPS increased the proposed school traffic generation rate by 50% before applying the estimates into SIDRA analysis.

The 2040 future traffic volumes on which TPS intersection analysis is based are shown in Fig 7.3.

7.4 Future Road Requirements Evident in 2040 Peak Hour Volume Estimates

The following future road requirement is evident in the future traffic estimates.

- Ocean Drive will need to be duplicated to the north of Bonny View Drive at or before 2040. This finding is consistent with the finding from the RoadNet/Bitzios traffic study in 2010.

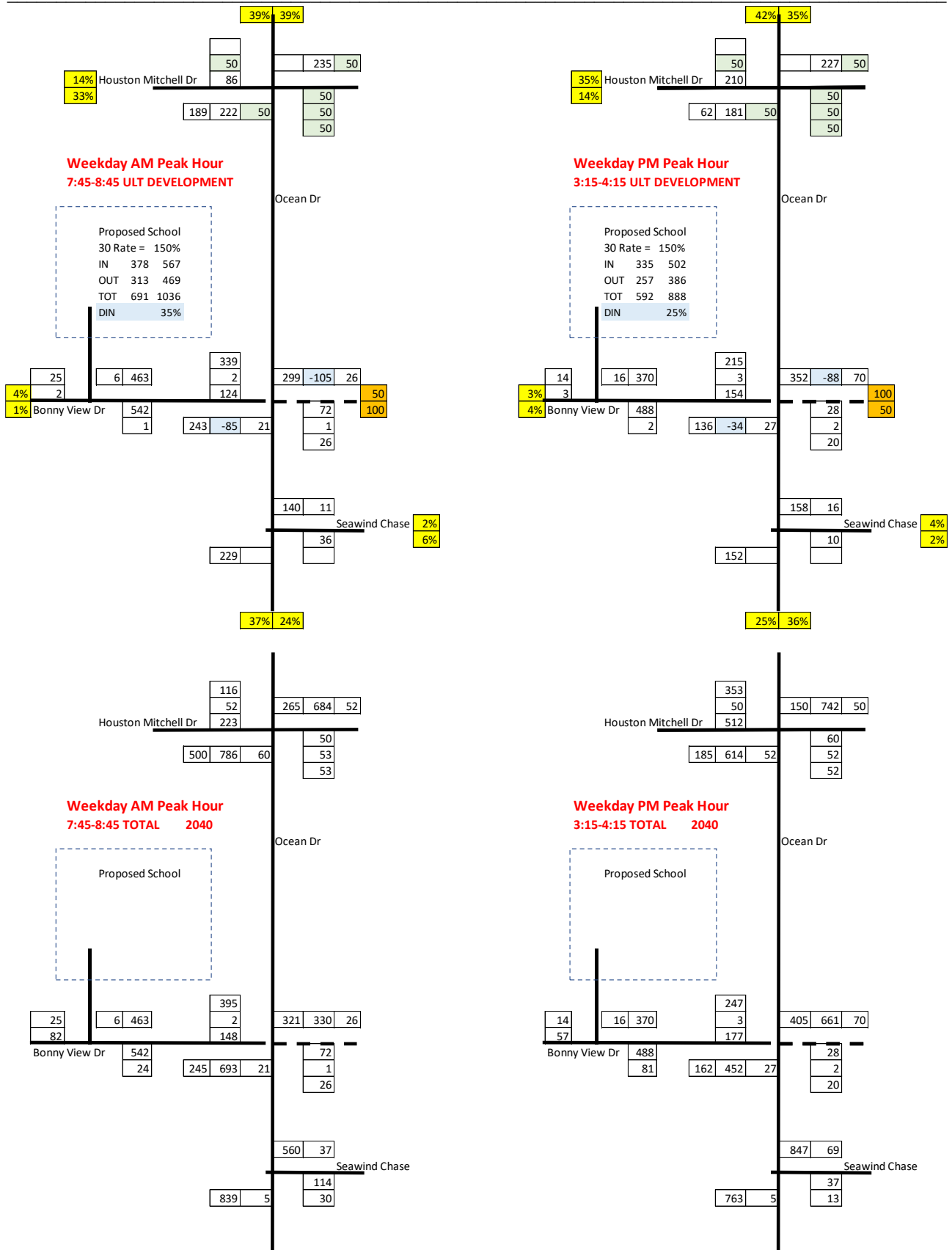


Fig 7.3 Estimated 2040 Peak Rate Traffic Volumes

Note : The estimates are not “peak hour” volumes but reflect the characteristic concentration of school traffic into 30 – 40 minutes.

8. Future 2040 Intersection Operations

Future intersection operations have been assessed based on the highest likely rate of traffic demand shown in Fig 7.3.

Note : The traffic demand on which the assessments are based are not estimated “peak hour” traffic volumes. Rather, they are estimates which reflect the characteristic concentration of school traffic demands into 30- 40 minute periods in the peak hour.

Tables 8.1 to 8.6 show the results from SIDRA analysis of 2040 peak hour intersection operations for the Ocean Dr intersections with Houston Mitchell Dr, Bonny View Dr and Seawind Chase.

Table 8.7 shows a summary of the 2040 intersection operation estimates.

Table 8.7

Estimated 2040 Peak Hour Intersection Operations

Note : Proposed school traffic generation increased by 50% to reflect demand concentrations

Ocean Drive Intersection	AM Peak Hour			PM Peak Hour		
	DoS	Avg.Delay (sec)	LoS	DoS	Avg.Delay (sec)	LoS
Houston Mitchell Dr	61%	7.3	A	56%	8.2	A
Bonny View Dr	44%	6.9	A	45%	6.7	A
Seawind Chase	112%	29.8	F	82%	4.4	F

The above estimates indicate the following.

- In 2040 the Houston Mitchell Dr and Bonny View Dr intersections will operate efficiently with existing roundabout configurations.
- Before 2040, the Seawind Chase intersection will need to be upgraded. The most appropriate upgrade would be to install signals.

Table 8.1

LANE SUMMARY

 Site: 101 [Houston Mitchell AM 2040 (Site Folder: General)]

With School Demand Rate x 150%

Site Category: (None)

Roundabout

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	FLOWS HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	QUEUE Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Ocean DR													
Lane 1 	716	5.0	1174	0.610	100	6.4	LOS A	5.3	38.4	Full	500	0.0	0.0
Lane 2 	630	5.0	1033	0.610	100	7.5	LOS A	5.2	38.0	Full	500	0.0	0.0
Approach	1346	5.0		0.610		6.9	LOS A	5.3	38.4				
East: RoadName													
Lane 1 	156	5.0	635	0.246	100	9.3	LOS A	1.1	8.2	Full	500	0.0	0.0
Approach	156	5.0		0.246		9.3	LOS A	1.1	8.2				
North: RoadName													
Lane 1 	530	5.0	1190	0.446	100	4.9	LOS A	2.8	20.2	Full	500	0.0	0.0
Lane 2 	471	5.0	1056	0.446	100	8.4	LOS A	2.7	19.6	Full	500	0.0	0.0
Approach	1001	5.0		0.446		6.6	LOS A	2.8	20.2				
West: RoadName													
Lane 1 	116	5.0	619	0.187	58.5	7.4	LOS A	0.9	6.5	Full	500	0.0	0.0
Lane 2 	275	5.0	856	0.321	100	11.1	LOS A	1.8	13.2	Full	500	0.0	0.0
Approach	391	5.0		0.321		10.0	LOS A	1.8	13.2				
Intersection	2894	5.0		0.610		7.3	LOS A	5.3	38.4				

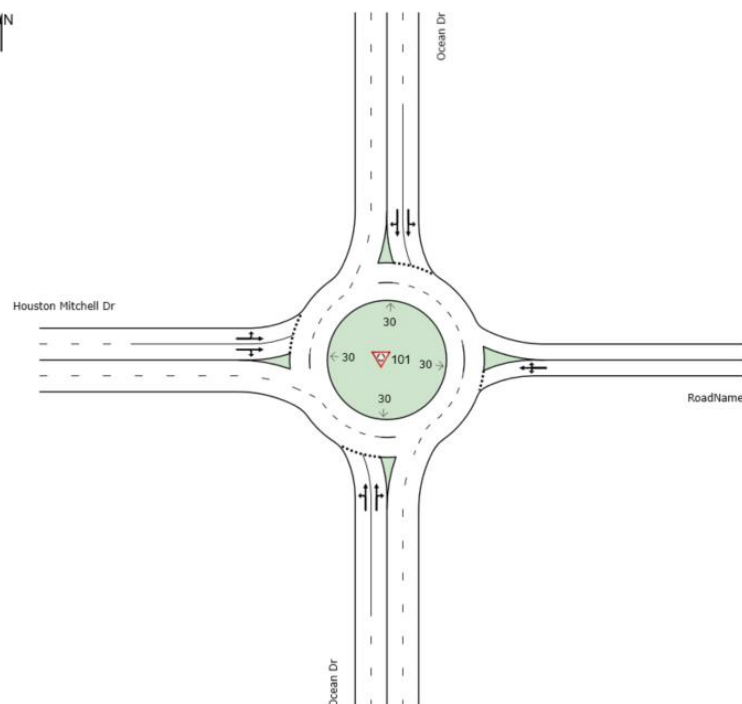


Table 8.2

LANE SUMMARY

 Site: 101 [Houston Mitchell PM 2040 (Site Folder: General)]

With School Demand Rate x 150%
Site Category: (None)
Roundabout

Lane Use and Performance													
	DEMAND FLOWS [Total HV] veh/h %		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Ocean DR													
Lane 1 	449	5.0	1250	0.359	100	4.7	LOS A	2.1	15.6	Full	500	0.0	0.0
Lane 2	402	5.0	1121	0.359	100	5.6	LOS A	2.1	15.2	Full	500	0.0	0.0
Approach	851	5.0		0.359		5.2	LOS A	2.1	15.6				
East: RoadName													
Lane 1 	164	5.0	519	0.316	100	11.6	LOS A	1.6	11.9	Full	500	0.0	0.0
Approach	164	5.0		0.316		11.6	LOS A	1.6	11.9				
North: RoadName													
Lane 1 	508	5.0	960	0.530	100	7.0	LOS A	4.1	29.7	Full	500	0.0	0.0
Lane 2	434	5.0	819	0.530	100	9.7	LOS A	3.9	28.4	Full	500	0.0	0.0
Approach	942	5.0		0.530		8.2	LOS A	4.1	29.7				
West: RoadName													
Lane 1	353	5.0	800	0.441	79 	7.3	LOS A	2.4	17.5	Full	500	0.0	0.0
Lane 2 	562	5.0	1006	0.558	100	12.2	LOS A	3.8	27.8	Full	500	0.0	0.0
Approach	915	5.0		0.558		10.3	LOS A	3.8	27.8				
Intersection	2872	5.0		0.558		8.2	LOS A	4.1	29.7				

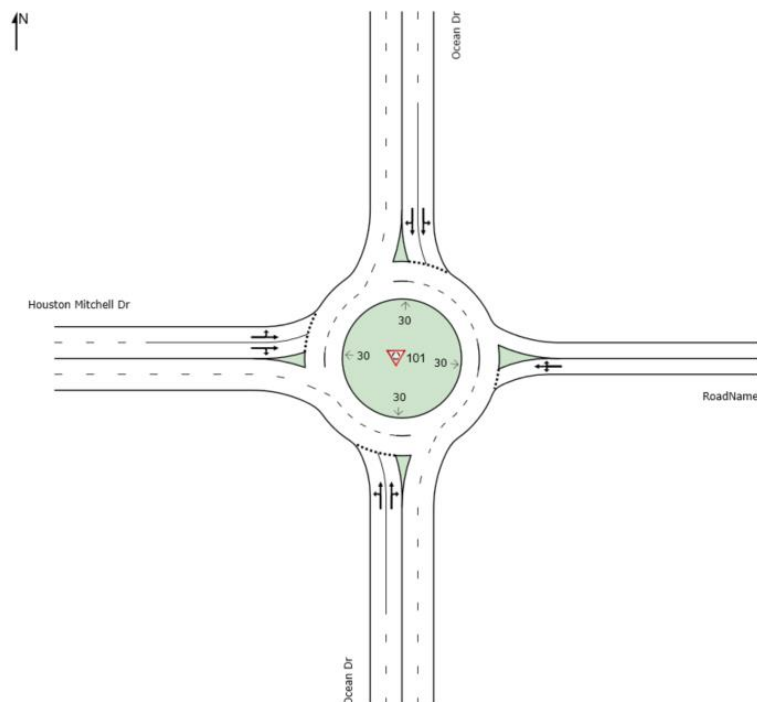


Table 8.3

LANE SUMMARY

Site: 101 [Bonny View AM 2040 (Site Folder: General)]

With School Demand Rate x 150%

Site Category: (None)

Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total HV]		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh]	95% BACK OF QUEUE Dist]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Ocean DR													
Lane 1 	509	5.0	1151	0.442	100	5.6	LOS A	2.8	20.4	Full	500	0.0	0.0
Lane 2	450	5.0	1019	0.442	100	6.1	LOS A	2.7	19.7	Full	500	0.0	0.0
Approach	959	5.0		0.442		5.8	LOS A	2.8	20.4				
East: RoadName													
Lane 1 	99	5.0	801	0.124	100	10.2	LOS A	0.5	3.6	Full	500	0.0	0.0
Approach	99	5.0		0.124		10.2	LOS A	0.5	3.6				
North: RoadName													
Lane 1 	355	5.0	1334	0.266	100	4.2	LOS A	1.5	10.9	Full	500	0.0	0.0
Lane 2	322	5.0	1208	0.266	100	10.0	LOS A	1.5	10.7	Full	500	0.0	0.0
Approach	677	5.0		0.266		7.0	LOS A	1.5	10.9				
West: RoadName													
Lane 1 	395	5.0	957	0.413	100	6.4	LOS A	2.4	17.2	Full	500	0.0	0.0
Lane 2	150	5.0	676	0.222	100	12.5	LOS A	1.0	7.2	Full	500	0.0	0.0
Approach	545	5.0		0.413		8.1	LOS A	2.4	17.2				
Intersection	2280	5.0		0.442		6.9	LOS A	2.8	20.4				

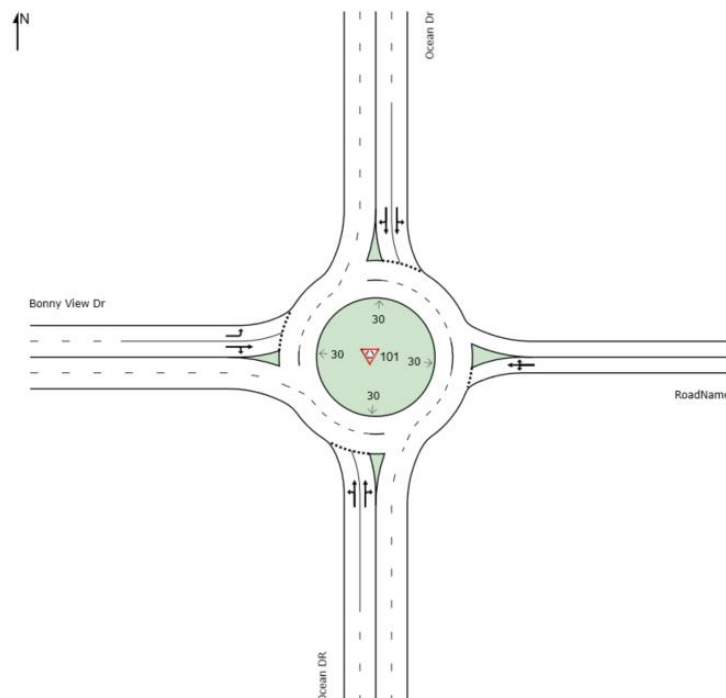


Table 8.4

LANE SUMMARY

Site: 101 [Bonny View PM 2040 (Site Folder: General)]

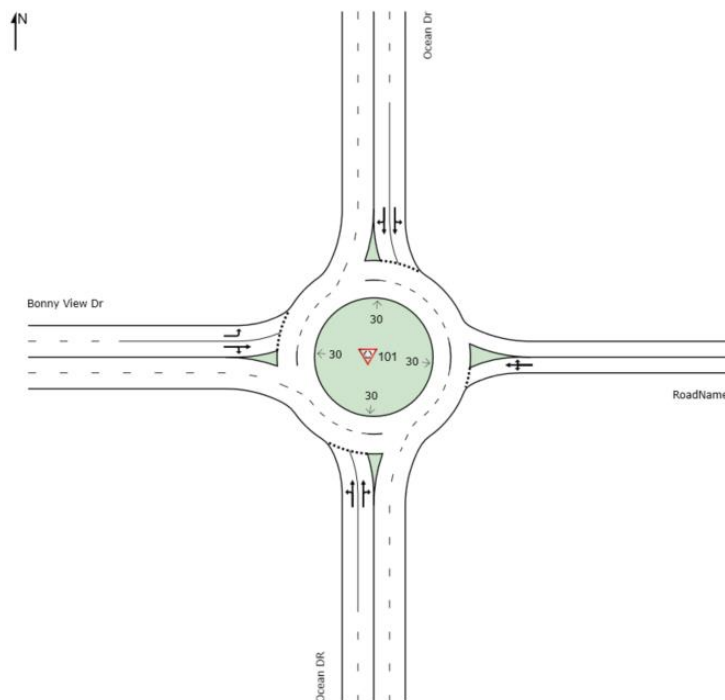
With School Demand Rate x 150%

Site Category: (None)

Roundabout

Lane Use and Performance

	DEMAND FLOWS [Total HV]		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh]	95% BACK OF QUEUE Dist]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Ocean DR													
Lane 1 	341	5.0	1099	0.310	100	5.5	LOS A	1.8	13.4	Full	500	0.0	0.0
Lane 2	300	5.0	968	0.310	100	6.3	LOS A	1.8	12.8	Full	500	0.0	0.0
Approach	641	5.0		0.310		5.9	LOS A	1.8	13.4				
East: RoadName													
Lane 1 	50	5.0	632	0.079	100	10.4	LOS A	0.3	2.4	Full	500	0.0	0.0
Approach	50	5.0		0.079		10.4	LOS A	0.3	2.4				
North: RoadName													
Lane 1 	600	5.0	1323	0.453	100	4.6	LOS A	3.0	22.0	Full	500	0.0	0.0
Lane 2	536	5.0	1183	0.453	100	9.0	LOS A	2.9	21.5	Full	500	0.0	0.0
Approach	1136	5.0		0.453		6.7	LOS A	3.0	22.0				
West: RoadName													
Lane 1 	247	5.0	1094	0.226	100	5.1	LOS A	1.1	7.8	Full	500	0.0	0.0
Lane 2	180	5.0	921	0.195	100	11.0	LOS A	0.9	6.4	Full	500	0.0	0.0
Approach	427	5.0		0.226		7.6	LOS A	1.1	7.8				
Intersection	2254	5.0		0.453		6.7	LOS A	3.0	22.0				



LANE SUMMARY

▽ Site: 101 [Seawind Chase AM 2040 (Site Folder: General)]

With School Demand Rate x 150%

Site Category: (None)

Give-Way (Two-Way)

Lane Use and Performance

	DEMAND FLOWS [Total HV]		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh	Dist]	Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
South: Ocean Dr													
Lane 1	839	5.0	1889	0.444	100	0.2	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	5	5.0	894	0.006	100	8.2	LOS A	0.0	0.2	Short	105	0.0	NA
Approach	844	5.0		0.444		0.2	NA	0.0	0.2				
East: Seawind Chase													
Lane 1	144	5.0	129	1.120	100	325.0	LOS F	26.6	194.2	Full	500	0.0	0.0
Approach	144	5.0		1.120		325.0	LOS F	26.6	194.2				
North: Ocean Dr													
Lane 1	597	5.0	1882	0.317	100	0.4	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	597	5.0		0.317		0.4	NA	0.0	0.0				
Intersection	1585	5.0		1.120		29.8	NA	26.6	194.2				

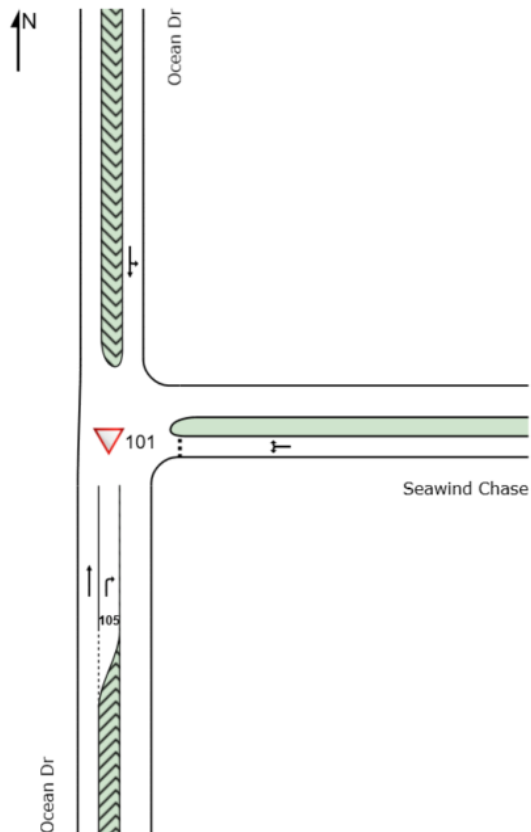


Table 8.6

LANE SUMMARY

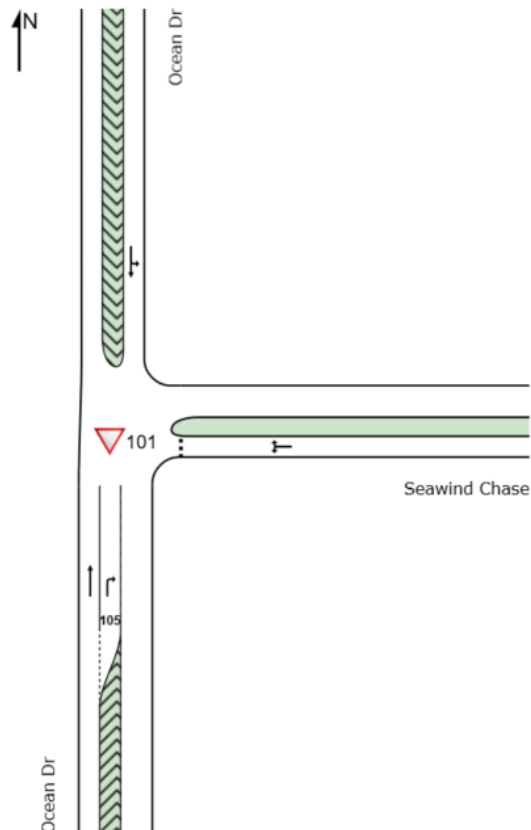
▽ Site: 101 [Seawind Chase PM 2040 (Site Folder: General)]

With School Demand Rate x 150%

Site Category: (None)

Give-Way (Two-Way)

Lane Use and Performance													
	DEMAND FLOWS [Total veh/h	FLOWS HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh	95% BACK OF QUEUE Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Ocean Dr													
Lane 1	803	5.0	1889	0.425	100	0.2	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	5	5.0	458	0.011	100	12.5	LOS A	0.0	0.3	Short	105	0.0	NA
Approach	808	5.0		0.425		0.2	NA	0.0	0.3				
East: Seawind Chase													
Lane 1	53	5.0	65	0.815	100	138.8	LOS F	3.2	23.6	Full	500	0.0	0.0
Approach	53	5.0		0.815		138.8	LOS F	3.2	23.6				
North: Ocean Dr													
Lane 1	964	5.0	1881	0.513	100	0.6	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	964	5.0		0.513		0.6	NA	0.0	0.0				
Intersection	1825	5.0		0.815		4.4	NA	3.2	23.6				



9. Development Parking Requirements

9.1 RMS Research

In August 2014 GTA Consultants reported the results of comprehensive research into school student transport demands and school parking demands. The published research was undertaken for RMS, NSW.

The GTA report contained the summary shown in Table 9.1.

Table 9.1
Surveyed Peak Parking Demands at Schools
(Extract from GTA report for RMS, 2014)

Table 4.13: Peak Parking Demand per Student			
School Type	Average	Minimum	Maximum
All	0.10	0.03	0.21
Primary	0.10	0.03	0.21
Secondary	0.11	0.06	0.21

9.2 Estimated Development Parking Demands

Table 9.2 shows estimates of likely maximum and minimum parking demands based on a range of assumptions described in the Table.

Table 9.2

Estimated Maximum Likely Peak Parking Requirements (1200 students)

Category	MAX Students/Space	MIN Students/Space	MIN. Spaces	MAX. Spaces	Basis of Min. Estimate	Basis of Max. Estimate
Staff	12.5	10.0	96	120	1 EFT / 12.5 students	1 EFT / 10 students
Visitors			5	12	5% of above	10% of above
Students yr 11&12	30.0	20.0	40	60	Based on RMS	Based on Applicant advice
Drop-Off (kerbside)			19	28	Based on 2min avg Drop-Off and 15veh 95% queue	Based on 2min avg Drop-Off and 5veh 95% queue
Pick-Up (Parking Area)			61	90	Based on 10min avg WET Pick-up and 15veh 95% queue	Based on 10min avg WET Pick-up and 5veh 95% queue
Total			221	310	Resultant spaces/student = 0.18	Resultant spaces/student = 0.26
Disabled (PWD)	240	171	5	7	2% of total	2% of total

As indicated in the Table, the minimum likely parking requirement is for approximately 220 spaces. This coincides with the amount of parking proposed in the development.

However, in the 'worst' case scenario, it is possible that demands could be as high as 310 spaces, depending on the degree to which student travel to and from the site can be constrained and the acceptability of extensive queuing during afternoon pick-up times, particularly on wet days.

As is evident in the above Tables, the proposed 220 space parking supply is equivalent to a rate of 0.18 spaces/student which is slightly less than the maximum rate revealed in the RMS research.

The primary difference between estimates based on the RMS research and the estimates shown in table 9.2 is the amount of long term parking within the school which should be allocated to students in years 11 and 12. The RMS research did not identify parking requirements associated with the "student" long term parking category other than to have identified that students driving to school could potentially represent up to 6% of students.

The estimates indicate the desirability of planning the school development based on the minimum parking supply shown in Table 9.2. However, that should occur with some consideration to how additional parking might be provided in the site in the event that higher parking demands were to occur to the extent shown in Table 9.2 as the maximum likely demand.

9.3 Council Parking Requirements

Council requires parking for schools to be provided at the following rates.

1 per staff member + 1 per 8 students [Year 12 students] + 1/30 students for visitors.

At the above rates, Council requires the following parking to be provided in the proposed development.

Table 9.3
Council Parking Requirements

Category	Rate	Spaces	Comment
Staff	1/10 students	120 spaces	Based on 1200 students
Yr 12 Students	1/8 yr12 students	25 spaces	Based on 200 students
Other Students	1/30 students	40 spaces	Based on 1200 students
Total		185 spaces (0.15/student)	

In our opinion the Council parking requirement for the proposed development is substantially lower than the likely minimum demand for parking. This is evidenced in the RMS research and in the survey results from the St Joseph's Regional Catholic High School survey of travel demand.

10. Provision for Bus Parking/Standing

The transport demand estimates shown in Table 6.5 indicate that up to 15 buses can be expected to attend the school during morning and afternoon peak hours.

The proposed development plan shows a bus parking facility on the Ocean Drive frontage of approximately 80m length. That length is adequate to park up to 5 buses in a tandem arrangement or 3 buses in an independent parking format whereby any bus could move in or out of a parking bay without being obstructed by another bus.

Notwithstanding the length of the bus parking/standing zone, there is a further 95m of traffic lane in advance of the bus zone which would allow at least an additional 5 buses to stand clear of the Ocean Drive northbound carriageway in the unlikely event that the bus facility was to become congested.

The proposed bus facility has been planned on the following assumptions.

Buses in zone at start of loading period = 5
Remaining 10 buses arrive over 30 minutes (0.33 per minute)
Avg Loading time/bus = 5min. giving a capacity for $5 \times 6 = 30$ buses/30 minutes
Demand/Capacity = $10/30 = 0.33$
 $95\%ile\ queue = LN(0.05)/LN(0.33) = 2.7$ (say 3)

Based on the following assumptions, there is only a 5% chance that the number of buses wanting to stand in the bus zone at any time will exceed 3 buses, following the initial loading of 5 buses.

In addition to the above estimates, it should be noted that there is considerable potential for bus operators to adjust bus schedules in response to any bus zone capacity issues which might arise.

11. Provision for Taxis

It is intended that taxis and similar hire vehicles will drop-off and pick-up passengers in the kerbside drop-off zone.

12. Provision for Bicycles

Estimates of probable transport mode choice shown in Table 6.3 indicate that up to 180 students may travel to and from the proposed school by bicycle or walk modes. Based on that estimate, it can reasonably be expected that at least half (90) will travel by bicycle generating a requirement for at least 100 bicycle parking spaces in the development.

The above provision would be equivalent to a rate of approximately 1 bicycle space / 12 students.

13. Proposed Development Access

Development plans are at this only conceptual. However, TPS has provided advice to the Applicant regarding access standards and requirements to ensure that the proposed plan is practical and can be made compliant with traffic engineering standards.

The following comments and descriptions are provided in the context of providing confidence that the development access design can be made compliant with standards.

13.1 The Bonny View Dr Vehicle Access

The development plan is based on the following standards being provided at the development access.

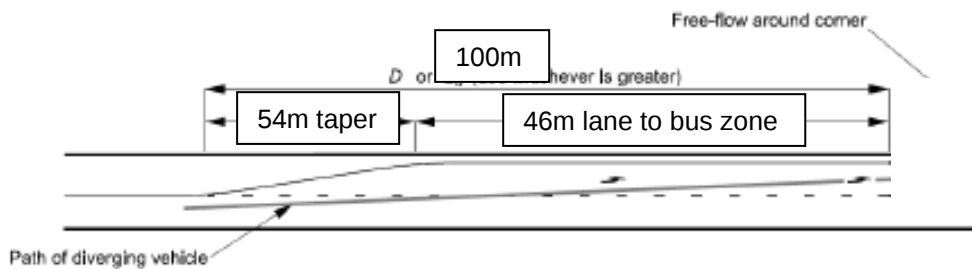
- The access being located as far to the west along Bonny View Dr as is practical (220m west of Ocean Dr), in order to eliminate any potential for vehicle queues to extend back to the Ocean Drive intersection.
- A 2 lane/2 way driveway having a width of 6.5m, consistent with providing for the passage of large vehicles engaged in refuse collection, furniture deliveries, and occasional buses.
- The development driveway grade being no greater than 5% for the first 10m inside the property boundary.
- Maximum driveway grades of 10% within the site (other than in parking areas).
- Grade transitions within the site driveway to satisfy AS/NZ2890.1.

13.2 The Ocean Drive Bus Access

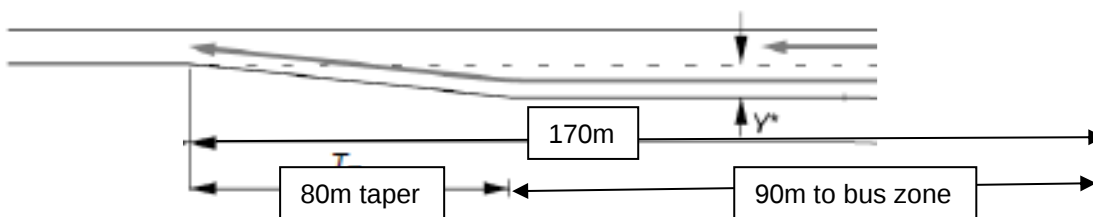
The development plan does not depict the geometric nature of the proposed Ocean Drive exit and entry for the bus facility. This is due to the plan being preliminary.

The development plan is based on the following assumptions and standards.

- The proposed access being designed to facilitate ultimate interface with a duplicated Ocean Dr cross section.
- Ocean Drive design speeds of 80kph.
- Commencement of the exit lane taper no less than 60m downstream of the exit from the proposed Bonny View Dr roundabout.
- 5.0m wide bus lanes to and from Ocean Drive (ie. 3.5m lane + 1.5m shoulder)
- 54m diverge taper on exit from Ocean Dr + 46m lane in advance of bus zone.
- (no reduction in lane length applied to reflect up grade)



- 90m lane downstream of bus zone + 80m diverge taper on entry to Ocean Dr
- (no reduction in lane length applied to reflect down grade)



- Above lane lengths based in Sections 5.3 and 5.4 of AustRoads Part 4A.

13.3 Pedestrian and Cyclist Access

The proposed development plan reflects a considerable effort to facilitate the safe movement of pedestrians and cyclist across Ocean Drive through a proposal to construct a significant pedestrian/cyclist overpass structure as shown located in Fig 13.1.

The proposed overpass will provide path connections to existing and planned pedestrian and bicycle paths to residential areas to the north (to Rainbow Beach) and south (to Bonny Hills). This matter is discussed in a later section of this report.

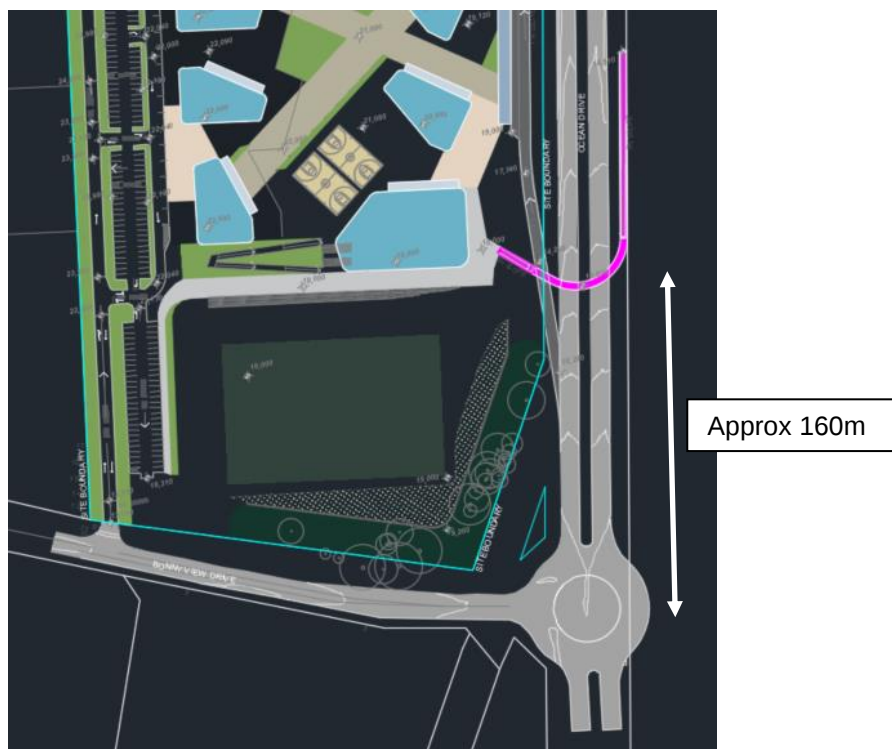


Fig 13.1 Proposed Pedestrian/Bicycle Overpass

13.4 Other Access

Access for refuse and other commercial vehicles will be via the primary access at the west boundary of the site in Bonny View Drive.

14. The Development Design

14.1 The Entry Driveway

The entry driveway between Bonny View Drive and the most northern part of the access system is designed to be 6.5m in width, satisfying the width specified in AS/NZ2890.2 for large vehicle movements such as trucks and buses.

Whilst the entry driveway along the western boundary of the development may be operated as a one-way northbound lane in the early stages of development, the design of the driveway preserves the opportunity to convert to two-way movement should the need arise in later stages.

The need to operate the entry driveway along the western boundary in a two-way format is most likely to arise from a longer term need to manage traffic congestion and queueing in the drop-off zone by providing opportunities for motorists to “escape” the drop-off zone through car parking area breaks and head south to the Bonny View Dr exit.

14.2 The Kerbside Drop-Off Zone

The drop-off zone is designed as a kerbside parking/standing area having a parking lane width of 3.0m and an adjacent travel lane width of 4.0m. These widths have been adopted in order to provide adequate width to facilitate movements to and from kerb parking with relative ease. Also, the design has been conscious of the need to not provide such extravagant width as to encourage double parking and dangerous passing manoeuvres in the lane adjacent to the drop-off lane.

14.3 Car Parking Areas

Whilst car parking areas and associated access has not been designed in detail, the concept design has been prepared based on the need to comply with AS/NZ2890.1.

In the above respect, all parking areas and access routes are designed with crossfalls and grades of no greater than 5%.

14.4 Parking for Persons with Disabilities (PWD spaces)

There are currently no PWD spaces shown in the development plan.

Ultimately there will be a need for no less than 10 PWD spaces, designed in accordance with the requirements of AS2890.6.

At the detailed design stage these will need to be provided in an area having grades of no greater than 2%.

14.5 Provision for Refuse Trucks and other Commercial Vehicles

The development plan does not show any commercial vehicle parking facilities in the development. This is due to the location of these facilities being subject to detailed design and location of structures etc.

Ultimately there will be a need to provide a refuse storage area for storage of commercial bins and an associated refuse vehicle access and loading zone.

There will also be a need to provide for at least one heavy rigid vehicle to load/unload in a zone clear of other parking and access roads.

It is assumed that parking for small commercial vehicles such as courier vans etc. will occur in the drop-off kerb zone.

15. A Green Travel Plan

The pre-lodgement advice received from TfNSW made the following reference to the need for a “Green Travel Plan”

“A well prepared Green Travel Plan / School Transport Plan can inform travel choices, influence travel patterns and reduce private car use by promoting active and public transport modes. Such plans need to be evidence based and adopts measurable targets.”

Whilst we agree with TfNSW, we are of the view that it is premature at this stage to prepare a detailed School Travel Plan. However, we emphasise that the proposed development concept has been prepared with regard to the need to provide for all future transport options and the range of potential demands across various transport modes which might generate out of future School Transport Plans and/or social/economic and environmental circumstances.

In the above respect, the proposed development plan has been prepared with the objective to facilitate and incorporate a wide range of future transport options and variations in future demand between those options.

15.1 Provision for Private Vehicles – Parking and Drop-Off/Pick-Up Facilities

Proposed parking supply shown in the development plan is consistent with the lowest likely parking requirement based on RMS research and the Applicant’s experience.

In the event that more parking is ultimately required in the site, there is an opportunity for considerably more parking to be constructed in the northern part of the site.

In the event that less parking is ultimately required, this will become apparent in staged developments, noting that the Applicant will always have a financial incentive not to provide unnecessary parking in the site.

15.2 Bus Facilities

The proposed nature, extent and quality of proposed bus facilities for the development is equal to any comparable school development in the state of NSW.

Notwithstanding the above quality etc. of proposed bus facilities, it should be noted that the design of the internal vehicle access system is intentionally designed to accommodate bus movements and bus parking within the site, should demands expand to require that option to be exercised, albeit that this would require buses and other traffic to share the Bonny View Drive access.

It is also of significant to considering the quality and design of the proposed bus facility to recognise that regional and local bus services currently operate along Ocean Drive and will continue to do so with increased frequency as further development occurs along the Ocean Drive corridor (see Fig 15.1).

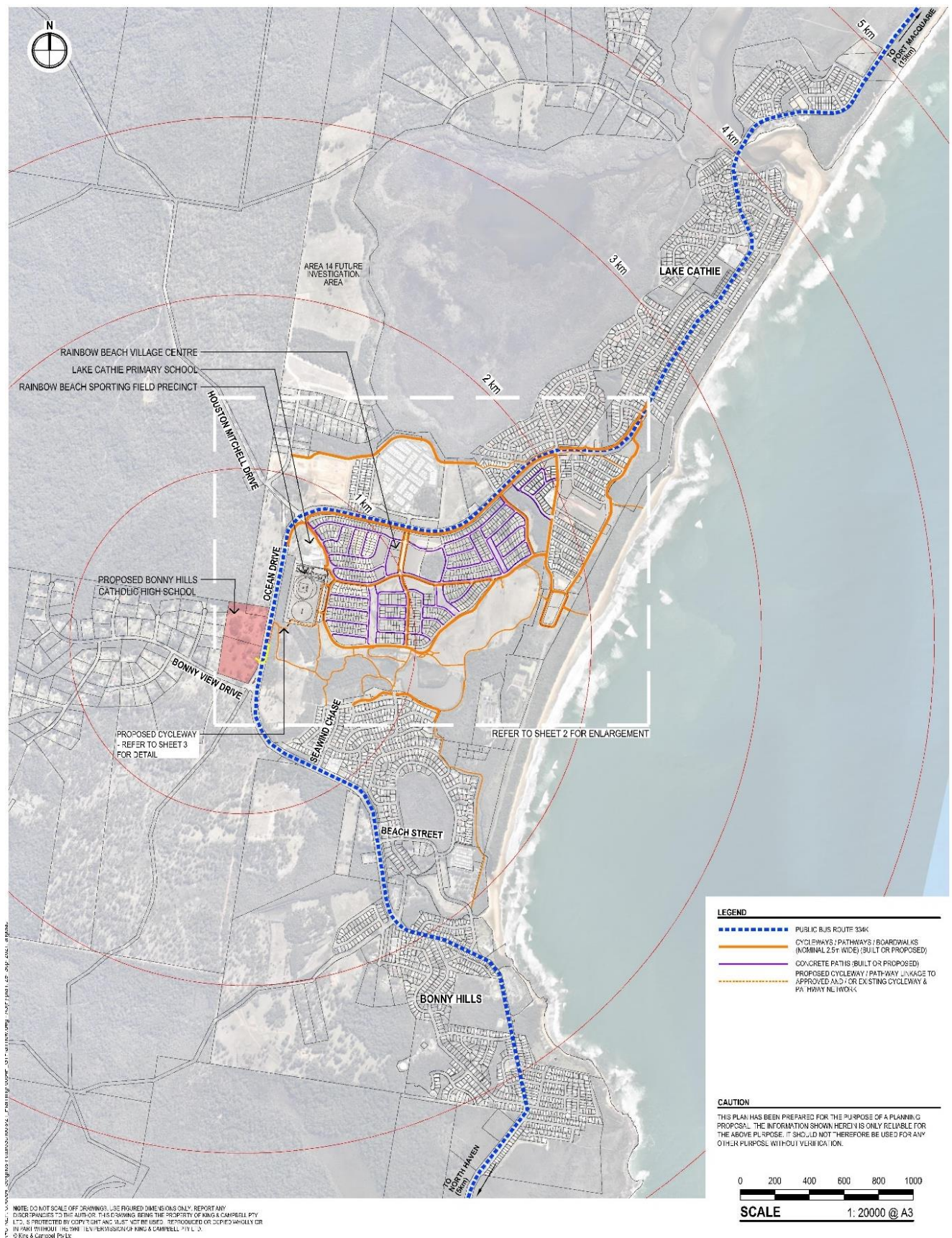


Fig 15.1 Ocean Drive Corridor Development and Associated Bus Services

15.3 Pedestrian & Cyclist Access

The proposed pedestrian/bicycle overpass of Ocean Drive is a significant element in the proposed development plan.

The purpose of the proposed overpass is to provide a pedestrian/cyclist access connection to and from existing and planned pedestrian and bicycle paths serving residential developments on the east side of Ocean Drive. These paths are represented in the Lake Cathie – Bonny Hills DCP.

Fig 15.2 shows existing and proposed paths to the east of Ocean Drive with which it is proposed to connect the pedestrian overpass.

As reflected in the transport/traffic demand estimates described in this report, it is expected that a significant number of students (up to 180 of 1200 or 15%) will travel to and from the school via walking and/or bicycle.

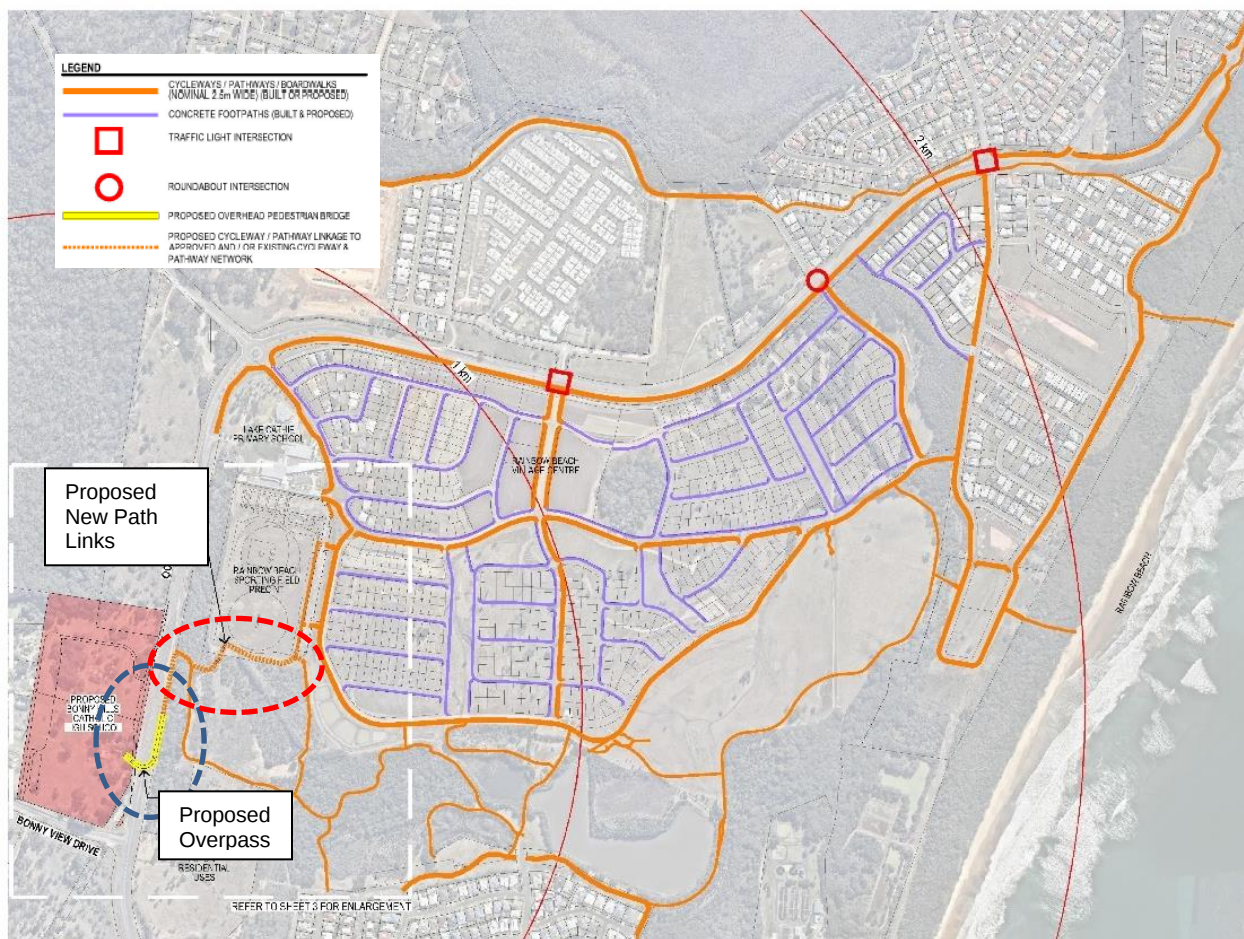


Fig 15.2 Proposed Interface with Existing and Future Pedestrian/Bicycle Path Network

16. Remarks & Conclusions

16.1 Response to Pre-Lodgement Advice

The following responses are made to each of the matters raised in the pre-lodgement advice provided by Council and TfNSW.

Response to Council

Study should be prepared by a qualified and/or experienced traffic consultant.

The study reported in this document has been prepared by an appropriately qualified and experienced consultant who is well known to Council.

Prepared in accordance with guidelines contained in the Roads and Maritime Services Guide to Traffic Generating Developments (2002), and AUSTRROADS Guide to Traffic Management, Part 12: Traffic Impacts of Development.

Insofar as it is practical given the concept planning stage of the development proposal, this report has been prepared in accordance with the said guidelines.

Study should use data obtained from an existing facility which operates in a similar manner to the proposed facility, and comment on any differences in operation.

This report refers to and applies transport survey data obtained from the Josephs Regional Catholic High School in Port Macquarie and makes comparisons with the results of recent RMS research.

The likely traffic generation should be quantified, in terms of the number of vehicle trips during peak hours, number of trips per day, and breakdown of the types of vehicle users (e.g. residents' cars, staff cars, service trucks).

This report contains estimates for each of the said categories, excepting that specific estimates relating to service trucks is not addressed explicitly due to the relatively low volumes which these movements will contribute.

The likely 85th percentile (time-weighted) parking demand is to be quantified.

Considerable effort is given in this report to identifying the range of probable parking demands and the capacity of the development to satisfy whatever level of parking demand occurs in the long term.

Comment on the likely traffic and parking demand ten years after the development

This report and the estimates contained herein have been prepared in the context of the development being completed and functioning to capacity by approximately 2030, thereby requiring an assessment relating to 2040.

Identify any new road, pedestrian, and cyclist infrastructure works required to service the proposed development, as well as any upgrades required to existing infrastructure. Consideration should also be given to public transport accessibility and servicing.

The proposed development plan is consistent with the objectives and strategies expressed in Council's Draft Road Corridor Strategy as it relates to the Ocean Drive corridor.

Linkages to existing and future pedestrian and cyclist paths to the east of Ocean Drive are proposed and identified in the development plan. This requires the construction of a pedestrian overpass over Ocean Drive to the north of Bonny View Drive.

It is proposed to construct a roundabout at the Ocean Drive / Bonny View Dr intersection as part of the first stage of the development.

The development plan contains a public transport facility (bus facility) on the Ocean Drive frontage which will be of very quality in terms of access, extent, conspicuity and functionality.

Provide more detail and demonstrate the feasibility of the underpass/overpass pedestrian link

The proposed pedestrian overpass has been investigated with respect to terrain and approach and structural grades and clearances over the proposed bus access. Further design detail will be provided following the current Application being approved.

Internal parking and manoeuvring should comply with AS2890 Relevant to this report

Insofar as the development plan is progressed with respect to detail, all parking and associated access design has been designed to comply with the AS/NZ2890 Standard Series.

Provide detail regarding the staging and timing of the works

TPS is advised that the first stage of the development will be completed in 2025. This stage will include

- the construction of a roundabout at the Ocean Dr / Bonny View Dr intersection, and
- the construction of a pedestrian overpass of Ocean Drive to provide safe pedestrian and cyclist access to and from residential areas to the north-east and south-east of the school.

Subsequent stages are expected to occur over a period of approximately 5 years, depending on market demands.

Response to TfNSW

It is requested that the Planning Proposal identify any re-purposing of the former Southern School Site to inform analysis of the Ocean Drive and Bonny View Drive intersection.

Based on advice from the Applicant, the land to the immediate east of the Ocean Dr/Bonny View Dr intersection (referred to as the former Southern School Site) is too small for a high school campus of the size required. Appendix S of the Planning Proposal Site Constraints Plan shows the site is 7.05ha with bushfire APZ and flood constraints limiting the area available for the placement of school buildings.

The landowner (St Vincent's Foundation) of the former Southern School Site has confirmed that it does not propose to retain or develop the site for Catholic school purposes. We are advised that the former southern school site will ultimately be developed for land use purposes that are permissible in the R1 General Residential zone.

All analysis and estimates described in this report have been based on an expectation that the former southern school site will be developed for residential purposes generating no more than approximately 150vph in peak hours. That is consistent with the area ultimately containing up to 200 dwellings.

A well prepared Green Travel Plan / School Transport Plan can inform travel choices, influence travel patterns and reduce private car use by promoting active and public transport modes. Such plans need to be evidence based and adopts measurable targets.

It is premature at this stage to prepare a detailed School Travel Plan. However, the proposed development concept has been prepared with regard to the need to provide for and retain all future transport options and the range of potential demands across various transport modes which might generate out of future School Transport Plans and/or social/economic and environmental circumstances.

The proposed relocation of the future school campus to the opposite frontage of Ocean Drive will increase demand for active transport movements across the road corridor. Well-designed connections between the new campus and surrounding residential catchments will be integral to encouraging active transport and reducing car travel.

A pedestrian/cyclist overpass is proposed over Ocean Drive in response to the need to provide access across the road corridor for cyclist and pedestrians.

TfNSW recommends that consultation be undertaken with relevant Bus Service Providers. A review and improvements of the Port Macquarie Bus Network will be undertaken as part of the 16 Regional Cities Services Improvement Program, with holistic planning expected to commence in early 2022.

This is a matter which will be the subject of further consideration when Applications are made for each stage of the development.

16.2 Conclusions

Based on the investigations, estimates described in this report we are of the opinion that the proposed development concept plan is appropriate, and sound having regard to relevant standards and should be approved with respect to transport planning and traffic engineering matters.



Traffic Impact Assessment Certification

CERTIFICATION OF TRAFFIC IMPACT ASSESSMENT REPORT

**Project title: Proposed School Development
Cnr Ocean Dr & Bonny View Dr, Bonny Hills**

As a professional engineer pursuant to the *Professional Engineers Act 2002* as competent in my areas of nominated expertise, I understand and recognise:

- the significant role of engineering as a profession, and that
- the community has a legitimate expectation that my certification affixed to this engineering work can be trusted, and that
- I am responsible for ensuring its preparation has satisfied all necessary standards, conduct and contemporary practice.

As the responsible Engineer, I certify:

- a. I am satisfied that all submitted components comprising this traffic impact assessment have been completed in accordance with the traffic engineering practices and relevant standards using sound engineering principles, and
- b. where specialised areas of work have not been under my direct supervision, I have reviewed the outcomes of the work and consider the work and its outcomes as suitable for the purposes of this traffic impact assessment, and that
- c. the outcomes of this traffic impact assessment are a true reflection of results of assessment, and that
- d. I believe the recommendations arising from this impact assessment embrace contemporary practice initiatives and will deliver the desired outcomes.

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Date	25 th February 2022