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LAKE NAGAMBIE RESORT - STAGE A TRAFFIC MANAGEMENT PLAN

June 2023

This docum

# 1. INTRODUCTION

The 'Lake Nagambie Resort Stage A Traffic Management Plan' has been prepared in accordance with the requirements of Schedule 1 of the Comprehensive Development Zone with the Strathbogie Planning Scheme (CDZ1).

In response to these requirements, the following documentation transmittal provides a comprehensive list of the plans and guidelines prepared by Hallmarc Developments Pty Ltd (Hallmarc) that form a part of the Lake Nagambie Resort Stage A Traffic Management Plan. The following documents are annexed to this Traffic ront Management Plan.

ID	DOCUMENT	CONTENTS
'LAKE NAG	GAMBIE RESORT STAGE A TRAFFIC	C MANAGEMENT PLAN'
A	"Traffic Impact Assessment Report", September 2023 prepared by Traffic Works	The 2023 Traffic Impact Assessment Report address changes in the design of the proposed development by comparing the 2010 TMP and 2020 TIAR with current data.
В	"Traffic Management Plan", May 2010 prepared by O'Brien Traffic	The 2010 Traffic Management Plan details the traffic management plans and documents in relation to the proposed development, and their parking impact.
С	"Traffic Impact Assessment Report", September 2020 prepared by Traffic Works	The 2020 Traffic Impact Assessment Report address changes in the design of the proposed development by comparing the 2010 TMP with current data.
2. DOC	UMENT SCOPE	be partition of that you will be the strate of the strate

# 2. DOCUMENT SCOPE

Hallmarc is proposing to develop the land as a residential village in accordance with the 2008 Lake Nagambie Resort Master Plan. This Traffic Management, Plan has been prepared in accordance with verbal agreements with the Responsible Authority that a new Traffic Impact Assessment Report ('TIAR') will support the proposed development pursuant to the CDZ1.

The 2023 Traffic Impact Assessment Report provides the basis for which the Lake Nagambie Stage A Development Plan is proposed. It provides a review of the 2010 Traffic Management Plan and assesses whether the proposed design changes impact the 2010 Report. The 2023 TIAR empirical data includes the residential development in Sullivan Drive within its assessment.

In conclusion, the 2023 TIAR found that the proposed residential village does not warrant changes to the traffic Sdocument nas peen coped and the service of the ser document nas been copied management treatment that previously approved by Council. The intormation must not be used to the intormation must not be used indt ine

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TRAFFICWO

Address 1st Floor 132 Upper Heidelberg Rd Ivanhoe Vic 3079 Postal PO Box 417 Ivanhoe Vic 3079 ABN 59 125 488 977 Phone (03) 9490 5900 Website www.trafficworks.com.au

Project no. 200039 Date 18/04/2023

Sean Brazzale Hallmarc 14/257 Collins Street Melbourne VIC 3000

Via email construction@hallmarc.com.au

Dear Sean,

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# 200039 — Elloura Resort, Nagambie – Traffic management plan review

as set out in the planning and Environment Act 1981. Trafficworks has been engaged to review the Traffic Management Plan<sup>1</sup> (TMP) prepared for the development at Elloura Resort, Nagambie, in September 2020. The development is currently under construction, with stages 2,4,5,9 and 10 complete.

This review aims to determine the impacts of the proposed changes to the approved development plan, which is under construction with stages 2, 5, 9 and 10 complete. The assessment will summarise the changes and any mitigating measures if required.

Condition 31 of the approved planning permit (P2017-046) requires a qualified engineer to undertake a Traffic Management Strategy (TMS), including an investigation.

(31)Prior to the commencement of works, a Traffic Management Strategy and investigation must be submitted as per Clause 9 of the IDM via a qualified engineer. The strategy including the traffic impact assessment report and professional recommendations will be considered as part of the design.

The original TMP and this review and comparison of the approved and proposed development plan are per a TMS's objectives and comply with the guidelines for an Integrated Transport Assessment for Developments<sup>2</sup>, also referred to as a Traffic Impact Assessment Report (TIAR). informa

<sup>&</sup>lt;sup>1</sup> The TMP is a requirement of Clause 37.02 of the Strathbogie Planning Scheme

<sup>&</sup>lt;sup>2</sup> Refer to Austroads Guide to Traffic Management Part 12 – Integrated Transport Assessments for development (2020)



# Approved development plan (2020)

An extract of the approved development plan is shown in Figure 1. The plan indicates one vehicular access point via Vickers Road. All traffic will utilise Vickers Road, with a 95% split to the east and a 5% split to the west.



Figure 1: Extract of the approved development plan



Table 1 indicates the total traffic generation estimated for the approved development plan for the Elloura Resort.

Table 1: Traffic generation f	or the approved	development	t plan			d. 190
Development Type	Quantity	Units	Trip Generat	tion Rate	Trip Generati vehicles)	on (No. of
			Peak Hour	Daily	Peak Hour	Daily
Retirement Village (120-150 units)	150	Units	0.4	2.1	eplantife and the pl	315
Residential lots	216	house / lot	0.85	5 58 10 Ut in	e docum	2,160
Lifestyle Village	246	units	0.4555 C	231 (111) .xed.	98	517
Total			planning that you	ohion	342	2,992
		50	115 31			

# Proposed development plan (2023)

An extract of the proposed development plan for the Elloura Resort is shown in Figure 2. The updated plan includes a channelised (type CHR) turn lane treatment for vehicular access on Vickers Road.

The majority of the amendments made to the approved plan are within the red shaded area illustrated in Figure 2. The retirement village (120 - 150 units) and lifestyle village (246 lots) in the previous plan were removed in place of:

- Stage A caravan park with 244 caravan sites
- Stage B 50 residential lots
- Stage C 68 townhouses.

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The plan includes a cross intersection at the accesses for Stages 13 and A.

2.





Figure 2: Extract of the proposed amended development plan



Table 2 indicates the total estimated traffic generation for the proposed (revised) development plan for the Elloura Resort.

evelopment Type	Quantity	Units	Trip Generat	tion Rate	Trip Generat vehicles)	ion (No. of
			Peak Hour	Daily	Peak Hour	Daily
esidential lots	216	house / lot	0.85	10	Janniv84 For the P	2,160
tage A: Caravan park	244	units	0.4	3 utin the	HOCUT 98	732
tage B: Residential ts	55 <sup>3</sup>	house / lots	0.85	50 10 USE THE	47	550
tage C: Townhouses	75 <sup>4</sup>	house / lots	0.65 <sup>9</sup>	nii 6.5	49	488
otal		Se of the	2010e 11 ich		378	3,930

A comparison of the estimated peak hour and daily traffic volumes generated by the approved and proposed plan is summarised in Table 3. Valla PUTP

Table 3: Comparison of the peak hour and daily traffic generation for the approved and proposed plan

Approved development	plan ji	Proposed develo	pment plan
Peak Hour	Daily	Peak hour	Daily
342 1125 114 0 115 8 million	2,992	378	3,930
the internation of that any			

<sup>3</sup> The number of lots in stages B and C have not been finalised and so the client has advised to increase the lot yield by a factor of 10% to account for any future changes.



Table 3 shows that the proposed plan will result in a peak hour and daily traffic volume increase of 36 vph and 938 vpd, respectively.

# **Traffic distribution**

Based on the surrounding network, it is assumed that the majority of the traffic generated by the development will be travelling east, towards the town centre of Nagambie.

Therefore, the following key distribution assumptions were applied for the traffic generated nt for the pur Jt in the Planning by the development:

- 95% of traffic will generate to/from the east
- 5% of traffic will generate to/from the west.

Peak hour traffic flow for the proposed development will generally be distributed as follows:

- AM peak 80% leaving / 20% entering
- PM peak 30% leaving / 70% entering.

The through traffic volumes along Vickers Road were sourced from the Department of Transport and Planning (DTP) open data portal. Scrutiny of the records indicates traffic volumes on Vickers Road in 2020 were in the order of:

- 641 vehicles per day (vpd) eastbound
- 654 vpd 🔬 westbound

The peak hour traffic volume is assumed to be 10% of the daily volume. It is therefore expected that during the AM and PM peak, the traffic volumes will be in the order of:

- 64 vehicles per hour (vph) eastbound
- westbound 65 vph

The data provided by DTP forecasts an annual compound growth rate of -0.4%. However, for a conservative assessment, the applicable growth rate for local roads of 1% was applied.

Peak hour traffic volumes along Vickers Road were projected to reflect the expected traffic volumes in 2033, coinciding with the development's estimated completion date. The anticipated peak hour traffic volumes at the Vickers Road / Elloura Drive intersection for the approved and proposed development plan are shown in Figure 3 and Figure 4. 200





Figure 4: Anticipated peak hour traffic volumes - proposed development plan



# **Turn provisions**

The traffic turning from major roads into minor roads should not delay through traffic.

Generally, turn treatments from major roads into minor roads at sign-controlled intersections are provided for safe and efficient intersection operation.

Figure 3 and Figure 4 represent the anticipated traffic generated from the approved and Environm proposed development plan, respectively.

Figure 5 shows the formulas determining the major road volume (QM).

To determine the turning treatments for the intersections, the results were then applied to Figure 3.26 (b)<sup>4</sup>, Austroads Guide to Traffic Management Part 6 (AGTM6), as Vickers Road is subject to an 80 km/h speed limit.



Figure 5: Formulas used to determine major road traffic (Source: Figure 3.26 from AGTM6)



<sup>4</sup> Figure 2.26(b) is used for the selection of treatment types at locations with a design speed between 70 km/h and 100 km/h



# Vickers Road / Elloura Drive intersection – approved development plan

To determine anticipated conditions at the intersection, traffic volumes from Figure 3 were used to determine the warrants shown in Table 4 and were applied in Figure 6.



Table 4: Peak hour turn parameters - based on the approved development plan traffic volumes

Figure 6: Turn warrants for the development access to Vickers Road (approved development plan) 19 COT that at torma

# Figure 6 indicates the:

right turn from Vickers Road into Elloura Drive meets the warrants for a BAR treatment in the AM peak and a CHR(s) in the PM peak

- left turn from Vickers Road into Elloura Drive meets the warrants for a BAL treatment in the AM and PM peaks.



# Vickers Road / Elloura Drive intersection – proposed (revised) development plan

To determine anticipated conditions at the intersection, traffic volumes from Figure 4 were used to determine the warrants shown in Table 5 and were applied in Figure 7.

Table 5: Peak hour turn parameters - based on the proposed development plan traffic volumes





Figure 7: Turn warrants for the development access to Vickers Road (proposed development plan)

Figure 7 indicates the:

- right turn from Vickers Road into Elloura Drive meets the warrants for a BAR treatment in the AM peak and a CHR(s) in the PM peak
- left turn from Vickers Road into Elloura Drive meets the warrants for a BAL treatment in the AM and PM peaks.



# Summary

The proposed (revised) development plan will result in a peak hour and daily traffic volume increase of 36 vph and 938 vpd, respectively. However, this increase will **not** warrant changes to the required turn treatments required by the approved development plan, as the turn lane assessment represents.

Therefore, it can be concluded that the existing channelised right turn (type CHR) treatment constructed satisfies the turn lane warrants for the development access / Vickers Road intersection for the proposed (revised) development plan. No further upgrades are required for the additional traffic from the revised development plan.

# Provision of vehicular access between Stage 13 and Stage A

The proposed plan (as shown in Figure 2) will incorporate access from Stage 13 to Stage A, forming a cross-intersection with Elloura Drive. To avoid safety and operational issues arising, the proposed plan was updated. The layout now incorporates a right-left stagger at the intersection of Elloura Drive / Stage A access / Stage 13 access by shifting the approach from Stage A, 6 m to the south.

Figure 8 is an extract of the updated intersection layout incorporating the right-left stagger.



Figure 8: Updated plans incorporating right-left stagger at the intersection of Elloura Drive / Stage A access / Stage 13 access.



10 The stagger in the side roads will separate the opposing right-turn movements on Elloura Drive. This will improve operation and reduce safety risks, particularly since the intersection



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1st Floor 132 Upper Heidelberg Rd Ivanhoe Vic 3079 PO Box 417 Ivanhoe Vic 3079 ABN: 59 125 488 977 Ph: (03) 9490 5900 www.trafficworks.com.au

Project No. 200039

11 September 2020

Sean Brazzale Hallmarc 14/257 Collins Street Melbourne VIC 3000

Via email: construction@hallmarc.com.au

Dear Sean.

### RE: Elloura Resort, Nagambie - Traffic Management Plan

Set out in the planning and Environment Act 196 Set out in the planning and Environment pose specified Driginal Tra-noie, + Trafficworks has been engaged to undertake a review of the original Traffic Management Plan<sup>1</sup> (TMP) prepared for the development at Elloura Resort, in Nagambie, to determine the impact of the proposed changes to the approved development plan. This assessment provides a summary of the changes to the traffic generation resulting from the proposed amended development plan for the Elloura Resort.

The original Traffic Management Plan for the development was prepared by O'Brien Traffic, dated May 2010. This comparison of the traffic impact of the proposed changes to the approved development plan includes an assessment of the O'Brien Traffic generation rates and those currently used by Trafficworks for similar developments.

Condition 31 of the approved planning permit (P2017-046) requires that a Traffic Management Strategy<sup>2</sup> (TMS), including an investigation, is undertaken by a qualified engineer.

(31)Prior to the commencement of works, a Traffic Management Strategy and investigation must be submitted as per Clause 9 of the IDM via a qualified engineer. The strategy including the traffic impact assessment report and professional recommendations will be considered as part of the design.

It should be noted that the original TMP (undertaken by O'Brien Traffic) and this review of the approved and proposed amended development plan are in accordance with the objectives of a TMS and also comply with the guidelines for a Integrated Transport Assessment for Developments<sup>3</sup>, also referred to as a Traffic Impact Assessment Report (TIAR).

# Traffic generation

# APPROVED DEVELOPMENT PLAN (2010)

An extract of the approved development plan used in the TMP prepared by O'Brien Traffic is shown in Figure 1. As stated in the O'Brien Traffic report the approved development plan proposed three

<sup>&</sup>lt;sup>1</sup> The TMP is a requirement of Clause 37.02 of the Strathbogie Planning Scheme

<sup>&</sup>lt;sup>2</sup> The requirements for a TMS is detailed in Strathbogie Shire Council's Infrastructure Design Manual (IDM)

<sup>&</sup>lt;sup>3</sup> Refer to Austroads Guide to Traffic Management Part 12 – Integrated Transport Assessments for development (2020)



vehicular access points. The main access to the Elloura Resort was proposed via Vickers Road, with Blayney Lane north access and south access being the secondary access points.



Figure 1: Extract of the previously approved development plan

Table 1 indicates the total traffic generation for the approved development plan for the Elloura Resort.

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			0'	'Brien Traffic (	Generation Ra	ite	Developm	ent Traffic	
Development Type	Quantity	Unit	Da	aily	Pe	ak	Gene	ration	, 98 <sup>7</sup>
			Vehicle trips	Units	Vehicle trips	Units	Daily Vehicle Trips	Peak Vehicle Trips	scified
Residential	300	lots / house	5	house	10%	of daily traffic	1,500	0 <sup>11</sup> 150	
Commercial - retail and wine	350	m²	30	trips per 100 m²	0.075	ULI ME PO	5UM 105	26	
Commercial - restaurants	450	m²	40	trips per 100 m <sup>2</sup>	0.07\$ 	NUS <sup>m<sup>2</sup></sup>	180	34	
Hotel	100	rooms	3	trips per room	0.4 <sup>1110</sup>	per room	300	40	
Recreation Centre			Sec. Sec. Sec. Sec. Sec. Sec. Sec. Sec.	the P. aller	Strictly F		150	20	
Caravan Park	303	sites/ units	e purper a led	trips per site/unit	10%	of the daily traffic	909	91	
Retirement Village	208	units	N N N N	trips per unit	10%	of the daily traffic	624	62	
d and the	30, 00	buttion of	0			Total	3,768	423	

Table 1: Traffic generation of each development (approved development plan) – using O'Brien Traffic TMP rates

# PROPOSED AMENDED DEVELOPMENT PLAN (2020)

An extract of the proposed amended development plan of the Elloura Resort is shown in Figure 2. The proposed amended development plan indicates only one vehicular access point via Vickers Road (i.e. direct access to Blayney Lane is no longer proposed). Therefore, all traffic will utilise Vickers Road, with the 95% to 5% east/west directional distribution split retained as above.





Figure 2: Extract of the proposed amended development plan

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				RTA Traffic Ge	eneration Rate	•	Developm	ent Traffic	
Development Type	uantity	Unit	Da	aily	Pe	ak	Gene	ration	2
	ð		Vehicle trips	Units	Vehicle trips	Units	Daily Vehicle Trips	Peak Vehicle Trips	5. <sup>00</sup>
Retirement Village (120-150 units)	150	units	2.1	per dwelling	0.4	per dwelling	315	60	cified
Residential lots (replacing the commercial facility)	22	house / lot	10	per house	0.85	per house	220	19.0	
Residential lots (balance of the approved development plan)	194	house / lot	10	per house	0.85	per house	1,940 ()	165	
Lifestyle Village	246	units	2.1	per dwelling	0.4	per dwelling	JIN 517	98	
					, gồ	Total	2,992	342	

Table 2: Traffic generation of each development (proposed amended development plan) - using Trafficworks rates<sup>4</sup>

# Comparison of traffic generation

As mentioned previously the assessment has been undertaken using the generation rates used in the O'Brien Traffic TMP (for the approved plan) and the higher generation rates used by Trafficworks for similar developments (for the proposed amended plan). The comparison between the peak hour generation trips are summarised in Table 3.

labi	e 3: Comparison between traπic genera	ition
	Peak nour ven	licie trips (vpn)
Rates used	Approved development plan	Proposed amended development plan
O'Brien Traffic rates	423	251
Trafficworks rates	535	342
AN THE AND		

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The increase in the generation rates, as a result of using the Trafficworks rates is as follows:

1.25 Dee Approved Development Plan = 112 vph (535 - 423)

However, for this assessment the net change in traffic generation between the approved development plan (using O'Brien Traffic) and the proposed amended development. Trafficworks) is a reduction of 94 withe traffic impact on the development access to Vickers Road.

<sup>&</sup>lt;sup>4</sup> from the RTA Guide for Traffic Generating Developments



# **Traffic distribution**

The O'Brien Traffic report applied a 60% - 70% split for traffic to / from Vickers Road. Based on the surrounding network, it is assumed that the majority of the traffic generated by the development will be travelling east, towards the town centre of Nagambie.

Therefore, the following key distribution assumptions were applied for the traffic generated by the

95% of traffic will generate to/from the east
5% of traffic will generate to/from the west.
Furthermore, peak hour traffic flow for the proposed development would generally be distributed as follows: , y be Je put in the plann

- AM peak 80% leaving / 20% entering
- PM peak 30% leaving / 70% entering.

This assumes that all traffic generated will be to and from the proposed development with no allowance for the low level of internal trips that may occur once the ultimate development is completed. The anticipated peak hour traffic volumes at the Vickers Road / Elloura Drive intersection for the approved development plan are shown in Figure 3.





# Turn provisions

Turn lane assessments were carried out based on the through and turning traffic volumes. This assessment was carried out for the traffic volumes associated with the approved development plan. Base level traffic volumes were obtained from the anticipated traffic volumes, shown in Figure 3.

Using Figure A 11 from the AGRD4 (see Figure 4) the major road traffic parameters QM can be established, as set out in Table 4, that reflect the conditions exhibiting the highest volume of turning movements on Vickers Road during the AM and PM peaks<sup>5</sup>. The values from Table 4 have then been applied to the graph in Austroads Guide to Traffic Management Part 6, Figure 2.26(b)<sup>6</sup> (Figure 5) to determine the turn treatments required at the proposed intersection.



Table 4: Peak hour turn parameters for use in Figure 4 – based on the approved development plan traffic volumes

Major	Minor Road	Peak Period	Left Turn Q∟(vph)	Right Turn Q <sub>R</sub> (vph)	Throu (vr	igh Q <sub>T</sub> oh)	Qм Left Turn	Q <sub>M</sub> Right Turn
Deer of De	No ation.	<b>^ \</b>	2	56	QT1	65	64	120
Vickers 5	Development	AM	5	50	Q <sub>T2</sub>	64	04	132
Road	Access	DM	10	107	QT1	65	64	140
6 that		L INI	10	191	Q <sub>T2</sub>	64	04	140

The turn treatment at the development access to Vickers Road is shown in Figure 5. The approved development plan traffic generation and access arrangements are shown to require a channelised right turn short (CHR(s)) and basic left turn (BAL).

<sup>&</sup>lt;sup>5</sup> The through traffic volumes shown for Vickers Road is sourced from the Department of Transport open data web portal.

 $<sup>^{6}</sup>$  Figure 2.26(b) is used for the selection of treatment types at locations with a design speed between 70 km/h and 100 km/h





# Summary

As noted earlier in the assessment, the net change in traffic generation between the approved development plan (using O'Brien Traffic) and the proposed amended development plan (using Trafficworks) is a reduction of 81 vph (423 - 342) in the peak hour. This results in a reduction in the traffic impact on the development access to Vickers Road.

Therefore, it can be concluded that the existing Channelised Right Turn treatment that was constructed would satisfy the turn lane warrants for the development access / Vickers Road intersection (i.e. no further upgrades are required).

Please contact me on (03) 9490 5900 if you would like to discuss this further.

Yours sincerely

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UNIO2011 Stuart Redman Associate Encl. Detail Plan 3 – Channelised Right Turn Treatment his entrona color







# CONTENTS 1. 2. 2.1 2.2 SURROUNDING ROAD NETWORK 2.3 3. 3.1 3.2 4. 4.1 4.2 4.3

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O'Brien Traffic has been engaged by Glencairn Nagambie Pty Ltd to prepare a Traffic entry of Management Plan (TMP) for the proposed development known as Elloura Resort. As the land lies within a *Comprehensive Development Zone 1* (CDZ1), a TMP is required by the strathbogie Planning Scheme.

relation to the proposed development have been examined and the traffic and parking impact of the development has been assessed.

# BACKGROUND

### 2.1 **Subject Site**

2.

The subject site is located on the southern side of Lake Nagambie as highlighted in ind. Figure 1 below.



Figure 1: Location of the Subject Site



The site is bounded to the north by Lake Nagambie, to the east by Blayney Lane and existing residential and commercial development and to the west and south by farm land.

### **Previous Planning Approvals** 2.2

Environment Act 1's and aose specified d that Planning Permits have been issued for the development of a caravan park and a lifestyle village on that part of the site that fronts Vickers Road. It is understood that the caravan park will contain 303 sites/units and the lifestyle village 208 units.

Vehicle access to both these developments will be via a single internal access road that connects to Vickers Road. This internal road will also provide the main access to the remainder of the site.

### 2.3 Surrounding Road Network

Vickers Road (Heathcote - Nagambie Road) is a Road Zone 1 and extends to the west past the subject site from the Goulburn Valley Highway to Heathcote some 53 kilometres away. Adjacent to the subject site it has a road reservation of 20 metres with a two-way, single carriageway approximately 7 metres wide with gravel shoulders of up to 1 metre either side.

Based on observations of traffic flows along the road, it is anticipated Vickers Road carries less than 2,000 vehicles per day in the vicinity of the subject site. It has a posted speed limit of 80km/h adjacent to the subject site. Photographs 1 and 2 provide views of Vickers Road adjacent to the subject site.







Photograph 2: View of Vickers Road facing west (subject site on right)

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Blayney Lane is a local road that runs in a north-south orientation from Vickers Road in the south to the Lake Nagambie foreshore in the north. Adjacent to the subject site

Based on the number of properties that it serves, it is anticipated to carry less than 500 vehicles per day in the vicinity of the subject site. Blayney Lane has an unposted speed limit of 50km/h in the vicinity of the subject site. Photographs 3 and 4 provide views of Blayney Lane adjacent to the subject site.



Photograph 3: View of Blayney Lane facing sug south (subject site on right)



Photograph 4: View of Blayney Lane facing north (subject site on left)





Photograph 5: View of Glencairn Lane facing west towards the subject site



Photograph 6: View of Glencairn Lane facing east

Goulburn Valley Highway is a Road Zone 1 that runs in a north-south orientation approximately 200m to the east of the subject site. In the vicinity of the subject site it provides one traffic lane in each direction with additional turn lanes typically provided at intersections.

The intersections of Goulburn Valley Highway and Vickers Road and Goulburn Valley Highway and Glencairn Lane are shown in Photographs 7, 8, 9 and 10. Note that at Vickers Road, exclusive left and right-turn lanes from the Highway are provided. At the Glencairn Lane intersection a passing lane has been provided next to a shared through and right-turn lane on the northern Highway approach and a wider pavement on the southern approach.



Photograph 7: View of Goulburn Valley Highway facing north at Vickers Road



Photograph 8: View of Goulburn Valley Highway facing north at Vickers Road

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Photograph 9: View of Goulburn Valley Highway facing north at Glencairn Lane



Photograph 10: View of Goulburn Valley Highway facing north at Glencairn Lane

# THE PROPOSAL

### 3.1 Description

It is proposed to develop a tourist resort and residential facility (to be known as Elloura Resort) located within the northern portion of the site. The resort in total will include no more than 300 residential lots (each containing a single dwelling), a commercial centre, residential hotel and a recreation centre.

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The final designs for the latter three uses above are yet to be determined. However, it is understood that the commercial centre will contain restaurants, retail outlets, conference rooms and a chapel. The hotel will be incorporated into the commercial centre and contain in the order of 56 rooms. The make up of the recreation centre is yet to be determined but it is intended that it mostly serve residents, and consist of a 25m pool, tennis courts and an indoor facility.

The proposed development also includes a parks and gardens compound, the details of which have yet to be finalised.

# Parking and Access

For each of the dwellings it is proposed to provide two car spaces on-site with at least one space in a garage or car port. One car space would be provided for each hotel room. For the commercial development it is proposed to provide a 70 space car park (excluding parking for the hotel which would be provided in addition).

A small number of indented on-street car spaces would be provided for the recreation centre (<10 car spaces). The maintenance compound would provide in the order of 10 car spaces for staff.

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Vehicle access for all properties is proposed via the internal roads, with the exception of 16 properties which would be accessed directly from Blayney Lane. Vehicle access to the new development is proposed via the main site access to Vickers

### 4.1 **Dwellings**

For the dwellings, it is proposed to provide parking fully in accordance with the Planning Scheme requirements, that is, two car spaces per dwelling. This will be more than sufficient to cater for the peak parking demands of residents.

### 4.2 **Commercial Centre**

The final design of the commercial centre is yet to be completed. Based on the Planning Scheme parameters there is proposed to be a mix of uses including restaurants, retail, conference facilities and a chapel. The maximum floor areas of these uses are anticipated to be as follows:

- Restaurants 450m<sup>2</sup>
- Retail tenancies 200m2; and
- Wine exhibition & tasting tenancy 150m<sup>2</sup>;

For the restaurants, adopting an area of 1.75m<sup>2</sup> per seat, this is potentially a capacity of around 260 seats. Assuming firstly (and unrealistically) that all diners arrive by car at a peak parking rate at lunchtimes of 0.15 spaces per seat, this equates to a requirement for around 39 spaces and at dinner time at a rate of 0.35 spaces per seat is a requirement for around 91 seats. In reality, given the characteristics of the proposed development, it is anticipated that many diners would in fact walk to the aurinon independent of the second restaurants from the surrounding area.

For the retail component (conservatively including the wine exhibition & tasting tenancy as retail), a peak parking rate of 3 spaces per 100 m<sup>2</sup> is anticipated. This equates to a peak requirement for 11 spaces. It has been assumed that only half of the retail component would be open at the same time as the restaurants in the evening, giving an evening parking demand for the retail component of 5 spaces.

Based on this assessment, the proposed provision of 70 spaces with additional parking areas (on-street) for particularly busy holiday periods (i.e. summer school holidays and Easter) will be more than adequate to cater for the peak parking demands generated.

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It is recommended that one or two bus parking bays be included in the final design. It is also recommended that in the order of 10 bicycle parking rails be included within the final design.

### 4.3 **Residential Hotel**

Environment ith c It is intended at the detailed design stage that each hotel room be provided with one car space, which would satisfactorily accommodate the parking demands of occupants. nt for th

### 4.4 **Recreation Centre**

The recreation centre is intended for use by residents only. Therefore, car parking demands will be minimal as residents can conveniently walk or ride to the site, or utilise the commercial centre parking.

The provision of some car spaces may be appropriate and can be dealt with in the detailed design to be submitted to Council for approval at a later date.

### **TRAFFIC GENERATION** 5.

### 5.1 Lake Nagambie Resort

The Internation of the service of the service of the service and the service of t - 5 trips per house would be generated. This equates to a total daily generation of 1,200 to 1,500 trips. Typically in the order of 10 percent of these trips would occur in

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the AM and PM peak periods (i.e. 120 to 150 trips in the peak hours). However, for the type of development proposed it is anticipated that the AM peak period would be late morning, say 10am to 11am and the PM peak period would be mid afternoon say, 2pm to 3pm. These peaks are typical of holiday facilities as well as retirement Id Environt villages comprised of individual houses.

The traffic generation of the commercial centre is anticipated to be lower than for a typical commercial centre. This is because a proportion of customercial within the second s that either live within the residential development or are staying at the hotel (i.e. they will walk rather than drive to the commercial facilities).

Based on these factors it is anticipated that a daily generation of 40 trips per 100m<sup>2</sup> would be generated by the restaurants and 30 trips per  $100m^2$  by the retail / wine exhibition area. This equates to a total daily generation of 285 trips. For the peak period, around lunchtime, this is antic pated to equate to 60 trips per hour equally divided between entering and leaving trips.

Any traffic generated by one-off events (such as exhibitions, weddings or conferences) would not be additional to the above as it can be factored into the above traffic generation.

# **Residential Hotel**

Although at this time it is anticipated that 56 hotel rooms be constructed, up to 100 hotel rooms are permitted to be constructed on the site. To be conservative the latter figure is adopted for the purpose of estimating traffic generation.

The hotel is anticipated to generate up to 3 trips per unit per day or a total of 300 trips per day assuming 100 percent occupancy. In any hour this is anticipated to equate to 40 trips per hour.

Line is intended to serve residents, and it can therefore be assumed would generate very little traffic external to the subject site. For the purposes of assessing traffic impact it is very conservatively assumed that the recreation centre would generate no more than 150 vehicle trips per day, including 20 vehicle trips in the peak hour/s.

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## Summary

A summary of the anticipated daily and peak hour traffic generation of each development use is presented in Table 1.

mary of the anticipment use is present	ipated daily and pe red in <b>Table 1</b> .	ak hour traffic gene	ration of each not 1981.
USE	DAILY TRIPS GENERATED	PEAK HOUR TRIPS GENERATED	A ENVIOL SE SPECI
Residential	1,200 – 1,500	120 – 150	allo ullo
Commercial	285	60	Mr.S well
Hotel	300	40 210	40 <sup>1</sup>
Recreation Centre	150	20 10	
Total	1,935 – 2,235 trips	240 - 270 trips	

Table 1: Anticipated	Traffic Generation	of Elloura Resort
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The total figure of 240 - 280 peak hour trips is very conservative as it assumes the peak hour traffic generation for each use occurs at the same time, around lunchtime. While this may not be the exact case for some of the uses such as residential or the recreation centre, these figures have been conservatively adopted for the analysis of traffic impact.

# 5.2

Caravan Park & Retirement Villages The approved caravan park and retirement village within the subject site are anticipated to generate traffic at a rate of 3 trips per unit/site per day, with 10% of trips occurring in the peak hours

A summary of the traffic generation is presented in Table 2.

avall put you wines	-	
USE OTOMONTO	DAILY TRIPS GENERATED	PEAK HOUR TRIPS GENERATED
Caravan Park (303 sites/units)	910	91
Retirement Village (208 units)	620	62
Total	1,530 trips	153 trips

Table 2: Traffic Generation (Caravan Park & Retirement Village)

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### **Total Traffic Generation** 5.3

A summary of the total traffic generation of the subject site is presented in Table 3.

ISE	GENERATED	PEAK HOUR TRIPS GENERATED	WITOM
All	3,465 – 3,765	393 – 423	and Ellinge

### TRAFFIC DISTRIBUTION AND IMPACT 6

### 6.1 **Traffic Distribution**

10, 00° 10° 10°

The main access to the site is via Vickers Road and it is the intention to promote this access as the sole entrance for visitors and new arrivals. While other vehicle access points will be provided to Blayney Lane, these will serve as minor access points mostly serving residents who live close to these points or residents who wish to drive to the main street instead of walking.

Therefore, it is anticipated that the majority of vehicle trips to and from the site will be via Vickers Road.

The anticipated traffic distribution will be in the order of 60 to 70 percent via Vickers Road, 5 percent via the southern-most access to Blayney Lane and 25 to 35 percent via the northern-most access to Blayney Lare.

Equating these percentages to daily and peak hour traffic volumes and applying them to the largest of the estimated traffic generation figures, the movements at each access point would be as outlined in Table 4.

CODIE	Access Point	Daily Traffic Generation*	Peak Hour Traffic Generation* (IN & OUT combined)
25 Dest 10	Vickers Road (Main Access)	2,210 – 2,580 movements	250 – 290 movements
unent his nul of or dis	Blayney Lane (North Access)	920 – 1,290 movements	104 – 145 movements
bocc mo a that a	Blayney Lane (South Access)	185 movements	20 movements
State all	* Excluding traffic generated Table 4:	by the 16 properties accessed directly via Traffic Generation at Subject Site	Blayney Lane Access Points

# **Table 4: Traffic Generation at Subject Site Access Points**

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At the Blayney Lane north access, opposite Glencairn Lane, it is anticipated that the Blayney Lane south access it is anticipated to Glencairn.

right in and left out but the actual peak hour volume is very low.

roposil It should be recognised that this level of trip generation and therefore trip distribution) would only apply at peak times of the year. At other times much lower numbers of trips would be generated.

### 6.2 **Traffic Impact**

# Vickers Road

At the main access point on Vickers Road it is proposed to widen the road to provide dedicated right-turn and left-turn lanes into the site. These lanes and the maintained through lanes will be a minimum of 35m in width and the lengths of the turn lanes will be 112m, including the taper lengths. All these dimensions are in accordance with the Austroads Guide to Traffic Engineering Practice Part 5 - Intersections at Grade for an 80km/h speed zone as used by VicRoads. A copy of the intersection design is attached in Appendix A.

This design will ensure safe and convenient access is provided to the subject site for the proposed development as well as the approved caravan park and retirement village.

# Blayney Lane

At the southern-most access to Blayney Lane, the proposed T-intersection will operate satisfactorily with a Give Way sign facing the western approach to Blayney Lane.

At the northern-most access to Blayney Lane, directly opposite to Glencairn Lane, a cross-intersection will be created. It is anticipated that the highest peak hour and daily traffic movements will be the through movements from the east and west.

this ocument has been copie NE HUUINAUUI IIUSI IOLOE Therefore, it is recommended that the priority of this intersection be changed and that *Give way* signs be placed on the northern and southern approaches. This will ensure that the minor volume legs of this intersection have to ensure that it is safe to proceed through the intersection and the higher volume movements get priority. It is anticipated that this proposed cross intersection would operate satisfactorily based on the future traffic volumes using this intersection without the need for a roundabout or traffic signals.

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To allow vehicles at the proposed *Give way* approaches (north and south) to have adequate sightlines to the west into the proposed development, it is recommended that adequate sight lines be provided at the intersection in accordance with Environment AustRoads Guide to Traffic Engineering Practice - Part 5: Intersections at Grade.

## Goulburn Valley Highway

At the Goulburn Valley Highway intersections with Vickers Road and with Glencairn Lane there are already turn lane facilities in place. At the Vickers Road intersection this includes exclusive left and right-turn lanes from the Highway. At the Glencairn Lane intersection this includes a passing lane next to a shared through and right-turn lane on the northern Highway approach and a wider pavement on the southern approach.

It is anticipated that these existing facilities will be able to safely cater for the increased traffic generated by the proposed development.

# INTERNAL DESIGN

### 7.1 Street Network

Clause 56.06-8 of the Strathbogie Planning Scheme details requirements for the design of roads and neighbourhood streets.

Based on the anticipated traffic volumes and distribution, the recommended street hierarchy is presented in Figure 2. Note that the majority of streets can be classified as Access Places with the two main north-south and east-west streets classified as Access Streets - Level 2.

enternation nust not be used for an electrication distribution distrib The recommended carriageway widths and other associated design criteria for these street classifications are presented in Table 5.





Figure 2: Street Hierarchy

Street Type	Target Volume	Target Speed	Carriageway Width	Verge Width	Kerbs	Parking Provision	
Access Street -	2,000 – 3,000 vpd	40 km/h	7.0 – 7.5m	4.5m min each side	Semi- mountable roll over	Both sides of carriageway	
Access Place	300 – 1,000 vpd	15 km/h	5.5m	Minimum of 3.5m on one side and 2.5m on other	Semi- mountable roll over	Restricted to one side of carriageway	
Table 5: Recommended Street Design Criteria							



Blayney Lane is proposed to be reconstructed with the cross-section as shown in Figure 3 below.



# Figure 3: Proposed Blayr ey Lane Cross-Section

In order to control vehicle speeds within the subdivision it is recommended in Figure 4 below. In order to accommodate garbage trucks it is recommended that the cul-de-sac located closest the site of the commercial building be constructed with either a court bowl or hammerhead type treatment at the end of the street All other cul-de-sacs are of shorter length and it is envisaged this will not cause problems for waste collection.

hie connent has been of being and that any diservine any diservine and that any diservine any diserv In order to control vehicle speeds within the subdivision it is recommended that

![](_page_42_Picture_1.jpeg)

![](_page_42_Figure_2.jpeg)

![](_page_43_Picture_1.jpeg)

### 7.2 Pedestrian and Bicycle Networks

The proposed footpath and shared path network is shown in Figure 4.

![](_page_43_Figure_4.jpeg)

Figure 4: Proposed Footpath and Shared Path Network

The proposed network would provide extensive links for pedestrians and cyclists to travel both within the subject site and tc/from the town centre. ning

# 3 Maintenance

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![](_page_44_Picture_1.jpeg)

# CONCLUSIONS

Based on the above considerations, we are of the opinion that:

- The proposed development is conservatively anticipated to generate up to 3,765 vehicle trips per day and up to 423 peak hour vehicle trips (only at times of peak activity);
- The proposed widening of Vickers Road to provide dedicated right-turn and leftturn lanes into the site would ensure safe and convenient access is provided to the subject site;
- The proposed cross intersection at Blayney Lane/Glencairn Lane would operate satisfactorily subject to *Give Way* signs being placed on the northern and southern approaches and ensuring appropriate sight lines are provided;
- The recommended street design criteria would ensure that the expected traffic volumes in each street are adequately catered for;
- The street network would adequately accommodate waste collection vehicles subject to providing a court bowl or hammerhead treatment at the end of a single cul-de-sac;
- The recommended traffic pacifier locations shown in Figure 4 would ensure that vehicle speeds are adequately controlled; and
- The development would provide suitable bicycle and pedestrian networks.

the balance and the an avtaking a copy of or downloading the document of the document of the downloading the document of the document We therefore see no traffic related grounds to prevent the proposed development Jing Job Job Contrastion must not be used for any other purp

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