



Traffic Impact Assessment

**St Brigid's College Early Learning Centre
200 Lesmurdie Road, Lesmurdie WA 6076**

October 2017



APEX ENGINEERS

Type of Assessment: Traffic Impact Assessment

Site Location: 200 Lesmurdie Road, Lesmurdie WA 6076

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1. Introduction

APEX Engineers were engaged by Saleeba Adams Architects to provide a traffic impact assessment as a part of the proposed St Brigid's College Early Learning Centre development at 200 Lesmurdie Road in Lesmurdie. This report will address the potential traffic impacts, within the immediate surroundings of the subject site, resulting from the above-mentioned proposal. In addition, this report will also provide a provision and design compliance assessment for the proposed on-site car parking spaces. In particular, this report has been structured into the following sections:

- **Section 2** Provides the details of the subject proposal and a review of existing transport conditions within the site vicinity (including the results of a traffic survey undertaken at the key intersection and SIDRA assessment results for the existing operations);
- **Section 3** Establishes the net additional traffic levels anticipated to be experienced by the key intersection due to the current proposal and provides the SIDRA intersection assessment results for the anticipated post development operations;
- **Section 4** Provides the statutory parking provision requirements applicable to the proposed development along with a compliance assessment of the proposed car parking spaces against the Australian Standard requirements; and
- **Section 5** Provides conclusions of the study.

During preparation of this traffic impact statement, the following documents and plans have been referenced;

- Local Planning Scheme No. 3 (Shire of Kalamunda, 2007);
- Australian Standards (AS 2890.1 and AS 2890.6);
- Guide to Traffic Generating Developments (RMS, 2002); and
- Overall Site Plan of St Brigid's College (DWG No: SK.01 (b), Saleeba Adams Architects).

2. Background and Existing Conditions

The subject proposal relates to relocation of the existing Early Learning Centre at St Brigid's College to further south within 200 Lesmurdie Road in Lesmurdie ('subject site'), by alterations and additions to the existing building (known as the Lesmurdie House). The following figure illustrates the existing and proposed locations of the Early Learning Centre (ELC).

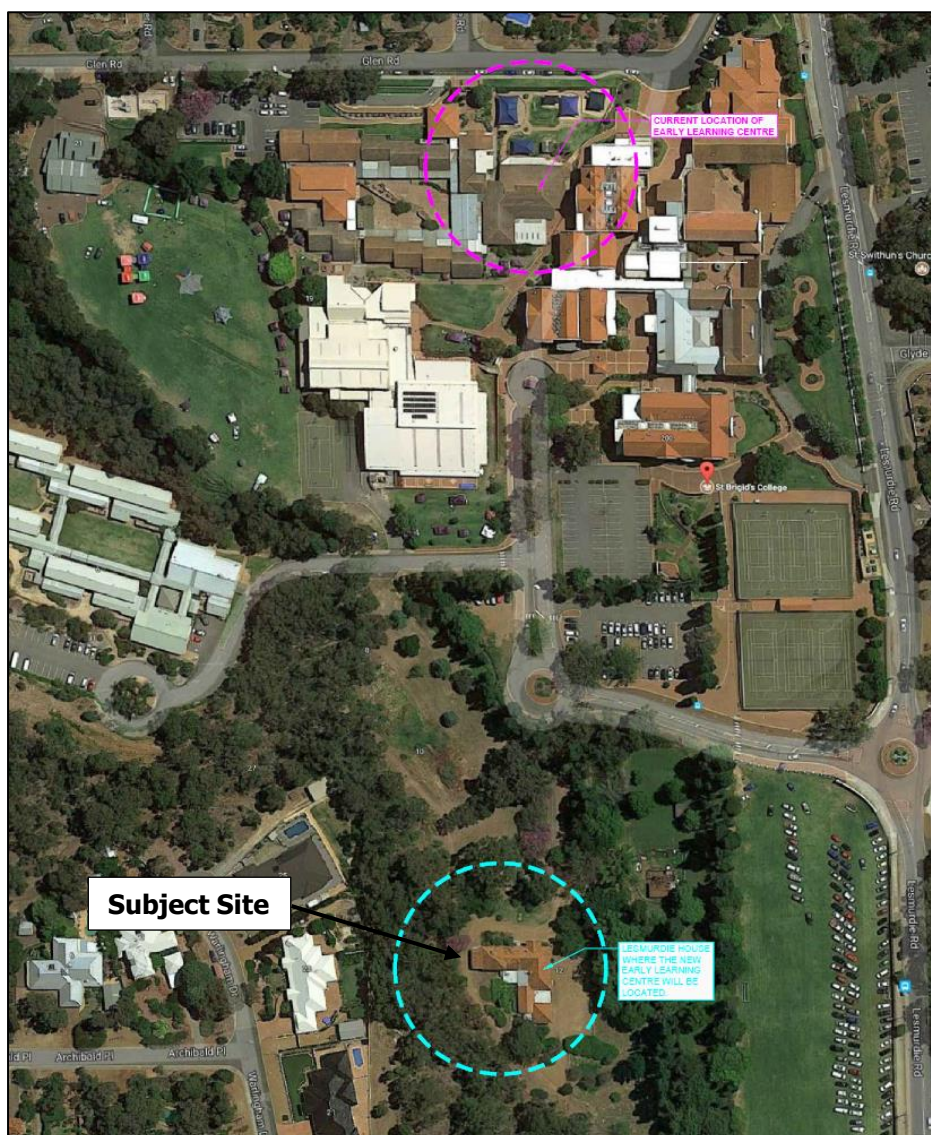


Figure 1: Existing and Proposed Location of the Early Learning Centre

2.1 Proposal Details

It is understood that at the current location, the existing ELC caters for 24 and 38 pre-kindergarten and kindergarten children on two and three days a week, respectively. The subject proposal seeks to relocate the ELC which is currently located within the St Brigid's College, further to the south at the subject site (indicated in **Figure 1** above). The relocated ELC will accommodate a maximum of 60 pre-kindergarten and kindergarten children at any time. In addition, there will be 6 staff members at the new ELC site at any one time (1 for every 10 children). The start and finish times for various components within the St Brigid's College are as follows;

- 3 and 4year olds (Pre-Kindergarten / Kindergarten) - proposed ELC:
8.55am Start - 3.00pm Finish
- Pre-Primary: 8.55am Start - 3.05pm Finish
- Years 1 – 6: 8.55am Start - 3.15pm Finish
- Years 7-12: 8.40am Start - 3.23pm Finish

2.2 Surrounding Road Network Characteristics

The two key roads which surround the subject site are St Brigid's Drive and Lesmurdie Road, which include the following features;

- St Brigid's Drive – is an access road, which runs in the east-west direction, and provides main access to the St Brigid's school and the boarding house car parks. It includes dead ends at the school and boarding house frontages. The carriageway of St Brigid's Drive includes a single traffic lane in each direction. A bus bay is located on the northern side of this road, between the first roundabout and the Lesmurdie Road intersection (a roundabout).
- Lesmurdie Road is a primary collector road which connects Welshpool Road East (arterial road at the south) with Canning Road (arterial road at the north). The carriageway of Lesmurdie Road includes one traffic lane in each direction with a posted speed limit of 60 km/hr (outside the school zone) and 40 km/hr (within the school zone). Bus routes 279, 283 and 297 operate along this road, with bus stops

located on either side.

2.3 Proposed Vehicle Access Configuration

The following figure illustrates the proposed vehicle access configuration for the subject site. As can be seen, access will be obtained off the section of St Brigid's Drive, which lies between Roundabout 1 and Roundabout 2. Vehicle access to and from the external road network will occur at the St Brigid's Drive and Lesmurdie Road intersection (roundabout).



Figure 2: Proposed Access to the Subject Site

2.4 Key Intersection and Existing Peak Hour Traffic Volumes

As outlined in the above section, vehicle access to and from the external road network is proposed to be off St Brigid's Drive and Lesmurdie Road intersection (roundabout). Accordingly, this intersection has been considered to be the key intersection, which is see the highest impact due to increase turning movements generated by the proposed development (prior to these vehicle movements spreading out further within the external road network).

In order to determine the existing performance, a traffic movement survey was undertaken at this intersection between 8-9am (AM peak based on the school opening time) and 3-4pm (PM peak based on the school closing time) on a weekday (when school is in operation). The following figures illustrate the vehicle movements obtained in the survey for AM and PM peak hour periods. **Appendix A** of this report presents the details survey results.

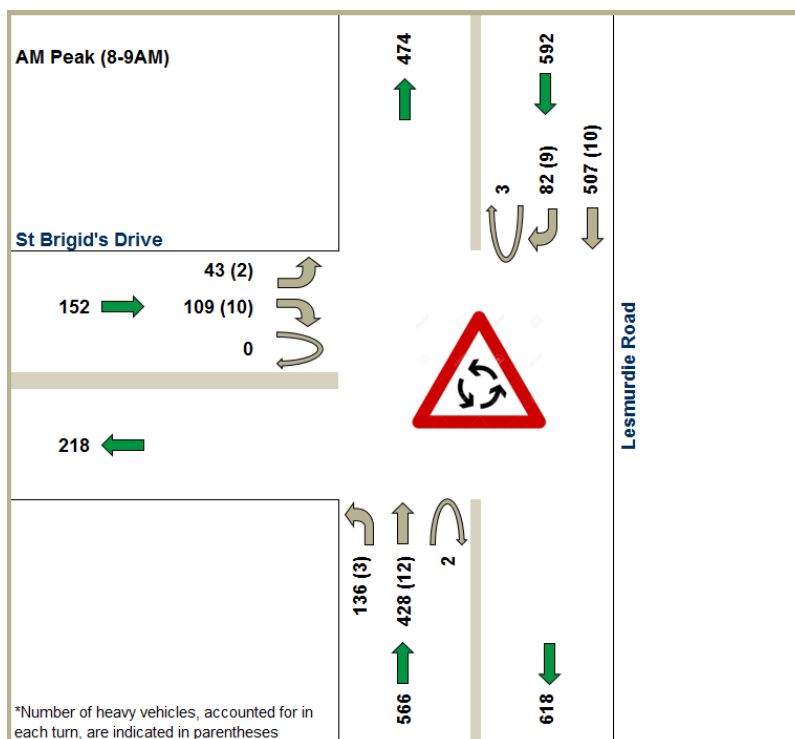


Figure 3: Existing AM Peak Hour Traffic Volumes at the Key Intersection

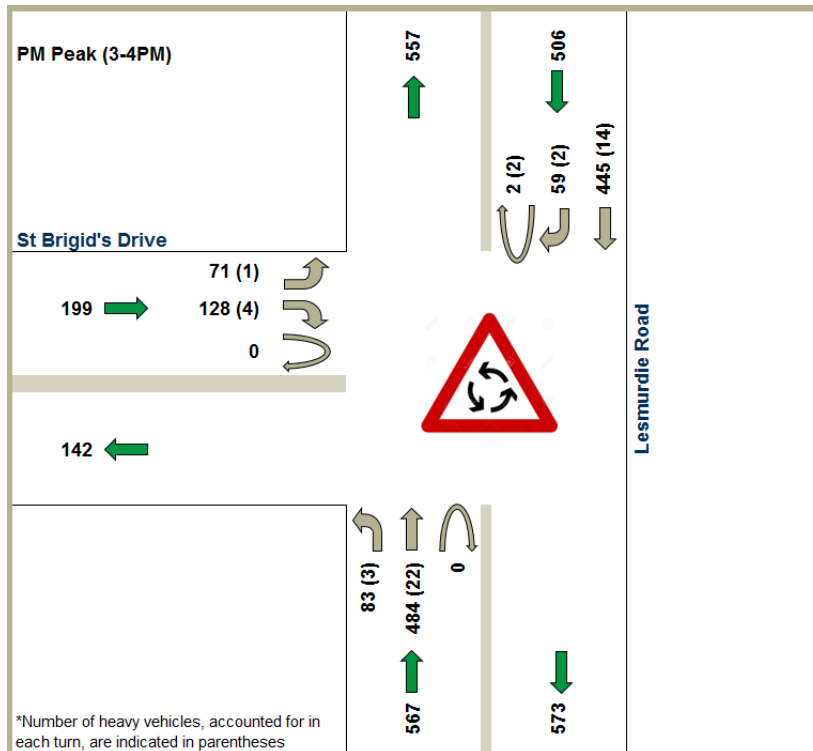


Figure 4: Existing PM Peak Hour Traffic Volumes at the Key Intersection

2.5 Current Performance of the Key Intersection

The key intersection for this study is St Brigid's Drive/Lesmurdie Road intersection – which is currently operating as a three-leg roundabout. The existing intersection operation has been assessed, using the SIDRA solution package (developed by the Akcelik & Associates).

The main criteria of average delay and respective levels of service (LoS) used for SIDRA intersection assessment are based on the Guide to Traffic Generating Developments (RMS, 2002). The following table illustrates the relationship between the average delay and the level of service for roundabouts.

Table 1: Performance Criteria for Roundabouts

Level of Service (LoS)	Average Delay (sec)	Roundabout
A	<14	Good Operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory operations
D	43 to 56	Operating near capacity
E	57 to 70	Operating at capacity – roundabouts require other control mode
F	>70	Operating over capacity, extra capacity required

Figure 5 below shows the modelled layout of St Brigid's Drive/Lesmurdie Road intersection in SIDRA.

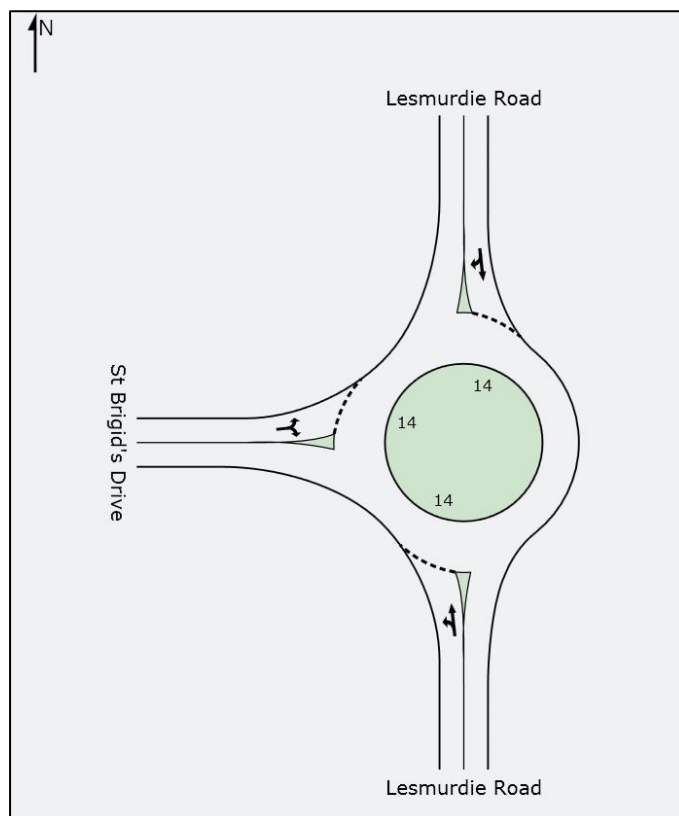


Figure 5: St Brigid's Drive/Lesmurdie Road Intersection Layout

Using the existing traffic flows (including heavy vehicle traffic), based on the survey results presented in **Figure 3** and **Figure 4**, as inputs, the current intersection performance results in both AM and PM peak hours were obtained from SIDRA (it is noted that in the SIDRA model, the vehicle speeds were set to the school zone speed limit of 40 km/hr, as applicable during each peak hour period). These results are summarised in the table below. **Appendix B** of this report includes the detailed SIDRA modelling outputs.

Table 2: Current Performance of the Key Intersection

Peak Period	Average Delay	LoS	95% Queue Length
AM Peak (8-9am)	3.9 seconds (critical delay of 9.3 seconds occurs for right turns off St Brigid's Drive)	A	26.4m (critical queue experienced on the northern leg of Lesmurdie Road)
PM Peak (3-4pm)	3.9 seconds (critical delay of 9.6 seconds occurs for right turns off St Brigid's Drive)	A	21.6m (critical queue experienced on the northern leg of Lesmurdie Road)

The results in the above tables demonstrate that the St Brigid's Drive/Lesmurdie Road roundabout is currently operating well within capacity, with a level of service of A during both peak hour periods, which indicates good operations.

3. Traffic Impact Assessment

It is noted that the Guide to Traffic Generating Developments (RMS, 2002), does not prescribe any specific trip rates for schools or ELCs. Accordingly, the anticipated trip generation potential of the subject proposal has been determined through a first principles approach.

Based on a recent travel survey undertaken by St Brigid's College, it is evident that none of the pre-kindergarten or kindergarten children or the associated staff members utilize school bus or public transport services. Therefore, it can be reasonably assumed that all the children (total of 60) and the staff members (total of 6) use private transport modes. In particular, each child will generate 2 trips during each peak hour (entry and exit trips pertaining to drop-offs and pick-ups by private vehicles) while each staff member will generate 1 trip during each peak hour (entry during AM peak and exit during PM peak, assuming staff park their vehicles on-site thus leading to no drop-offs and pick-ups). The following table summarizes the anticipated trip generation levels during each peak hour period by children and staff at the proposed ELC.

Table 3: Anticipated Trip Generation Levels from the Subject Proposal

Peak Period	Trips (Children)		Trips (Staff)	
	In	Out	In	Out
AM Peak (8-9am)	60	60	6	0
PM Peak (3-4pm)	60	60	0	6

It is important to note that the traffic which are currently being generated by the existing ELC (since the existing ELC caters for 24 and 38 pre-kindergarten and kindergarten children on two and three days a week, respectively) will be redirected to the subject site in future. However, for conservative assessment purposes, these trips have not been removed from the model.

The peak hour trips established in **Table 2**, have been added onto the existing traffic at the key intersection on a proportional ratio basis. In particular, during each peak period, the following have been assumed;

- The trips entering the subject site will be distributed at the St Brigid's Drive/Lesmurdie Road intersection based on the existing right and left turns from the north and south legs of Lesmurdie Road, respectively, on a proportional ratio basis.
- The trips exiting the subject site will be distributed at the St Brigid's Drive/Lesmurdie Road intersection based on the existing right and left turns from the St Brigid's Drive, on a proportional ratio basis.

Figure 6 and **Figure 7** below illustrate the distribution of the additional traffic generated by the subject proposal at the key intersection during AM and PM peak hours, respectively. Note that in and out trips have been colored in Red and Blue, respectively.

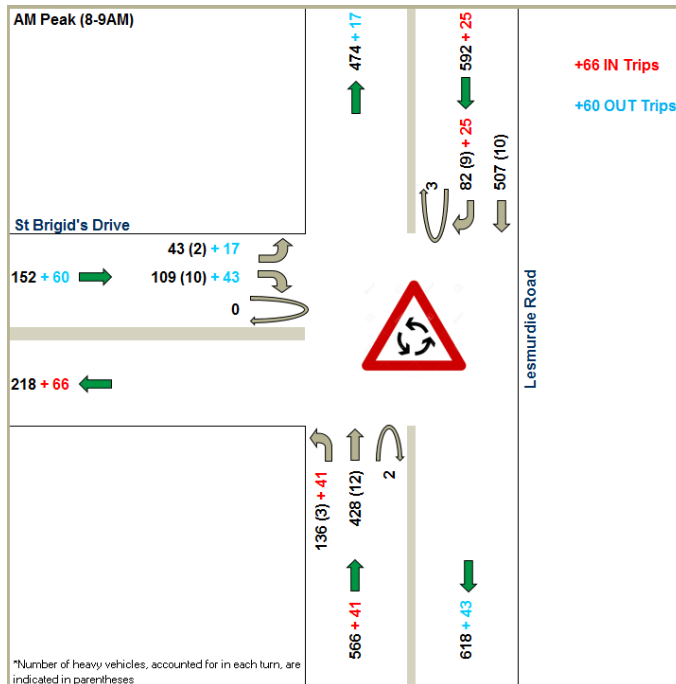


Figure 6: Post Development Traffic at the Key Intersection (AM)

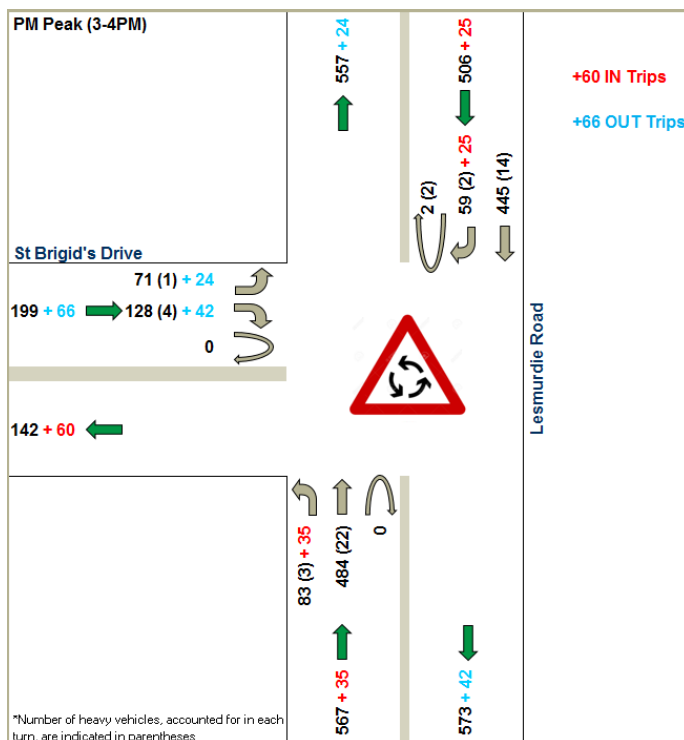


Figure 7: Post Development Traffic at the Key Intersection (PM)

Using the anticipated future traffic flows, based on the trip figures presented in **Figure 6** and **Figure 7**, as inputs, the post development scenario intersection performance results in both AM and PM peak hours were obtained from SIDRA (it is noted that in the SIDRA model, the vehicle speeds were set to the school zone speed limit of 40 km/hr, as applicable during each peak hour period). These results are summarised in the table below. **Appendix C** of this report includes the detailed SIDRA modelling outputs.

Table 4: Anticipated Future Performance of the Key Intersection

Peak Period	Average Delay	LoS	95% Queue Length
AM Peak (8-9am)	4.4 seconds (critical delay of 9.3 seconds occurs for right turns off St Brigid's Drive)	A	30m (critical queue experienced on the northern leg of Lesmurdie Road)
PM Peak (3-4pm)	4.4 seconds (critical delay of 9.7 seconds occurs for right turns off St Brigid's Drive)	A	25.2m (critical queue experienced on the southern leg of Lesmurdie Road)

As can be seen from the above table, the St Brigid's Drive/Lesmurdie Road roundabout will operate well within capacity during the post development scenario (with additional traffic generated by the proposal). Only slight increases in average delay and 95th percentile queue length are observed in each peak hour period in the post-development scenario, compared to the existing operations. During both AM and PM peak hour periods, the roundabout will continue to operate at level of service A, which indicates good operations.

4. Parking Assessment

4.1 Parking Provision Assessment

Table 3 of Shire of Kalamunda Local Planning Scheme No. 3 stipulates the statutory parking provision requirements for educational establishments – this is illustrated in **Figure 8** below.

Educational Establishment	
Pre Primary	1 bay for every staff member, plus 1 bay for every 3 students.
Primary School	1 bay for every staff member, plus 14 drop off bays for every 100 students.
Secondary School	1 bay for every staff member, plus 7 drop off bays for every 100 students.

Figure 8: Statutory Parking Rates Applicable to the Proposal

Applying the Pre-Primary parking provision rate for the proposed development which includes a maximum of 60 students and 6 staff members at any one time, a total parking provision requirement of 26 car spaces (20 for student drop-offs and pick-ups + 6 for staff members) is obtained. The proposed site plans indicate provision of 27 on-site car parking spaces (including one disability accessible parking space, as shown in **Figure 9**), which satisfies the relevant statutory parking provision requirement.

4.2 Parking Design Review

Figure 9 illustrates the key components of the proposed on-site car parking area.

Staff Parking Spaces

The proposed car parking area includes 6 staff parking spaces. The staff car spaces are categorised as user class 1A (employee parking) under AS 2890.1:2004. These car spaces are required to be designed at 2.4m width by 5.4m length, with an aisle width of 5.8m behind the car spaces. All the proposed staff car spaces comply with the above dimensional requirements.

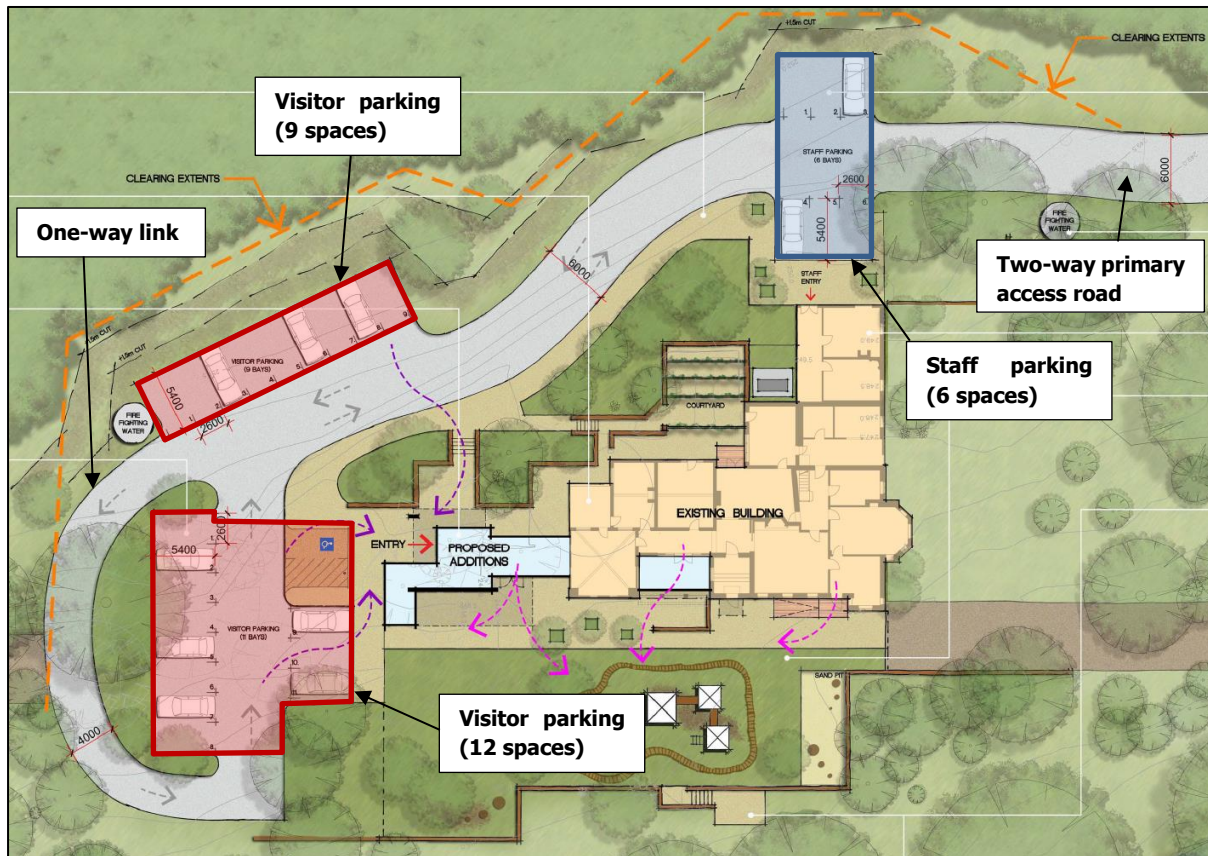


Figure 9: Proposed On-Site Parking Design

Visitor Parking Spaces

The proposed car parking area includes 20 visitor parking spaces (excluding the disability accessible car space). The visitor car spaces are categorised as user class 3 (short term parking) under AS 2890.1:2004. These car spaces are required to be designed at 2.6m width by 5.4m length, with an aisle width of 5.8m behind the car spaces. All the proposed visitor car spaces comply with the above dimensional requirements.

Disability Accessible Parking Space

One disability accessible space is provided within the proposed car parking area. According to AS 2890.6:2009, disability accessible parking spaces shall be designed with minimum dimensions of 2.4m width and 5.4m length and an aisle width of 5.8m. The accessible car space shall be accompanied by a shared space (with a bollard

installed), located adjacent to it, possessing equal dimensions. The proposed disability accessible car space has been designed to satisfy the above requirements.

Gradients within Parking Modules

AS 2890.1 stipulates that parking modules, at maximum, should have a maximum grade of 1 in 16 (measured in any direction other than parallel to the angle of parking) and 1 in 20 (measured parallel to the angle of parking). The proposed parking modules are at grade and are therefore compliant with the above requirement.

In addition, AS 2890.6 stipulates that the disability accessible car parking spaces and the shared areas shall not exceed the grade of 1:40 in any direction. The proposed disability accessible car parking space is at grade with no gradients.

One-Way Link

In relation to one-way driveways, AS 2890.1 stipulates a minimum width requirement of 3m (with 300mm clearance from obstructions which are higher than 150mm). The proposed one-way link is designed to satisfy the minimum width requirement of 3m.

Two-Way Primary Access Road

In relation to two-way driveways, AS 2890.1 stipulates a minimum width requirement of 5.5m (with 300mm clearance from obstructions which are higher than 150mm). The proposed two-way driveway is designed to satisfy the minimum width requirement of 5.5m.

5. Conclusions

APEX Engineers were engaged by Saleeba Adams Architects to provide a traffic impact assessment as a part of the proposed St Brigid's College Early Learning Centre development at 200 Lesmurdie Road in Lesmurdie. It is understood the subject proposal involves relocation of the existing Early Learning Centre (ELC) at St Brigid's College (which currently caters for 24 and 38 pre-kindergarten and kindergarten children on two and three days a week, respectively) to further south within 200 Lesmurdie Road in Lesmurdie ('subject site'), by alterations and additions to the existing building (known as the Lesmurdie House). The relocated ELC will accommodate a maximum of 60 pre-kindergarten and kindergarten children at any time. In addition, there will be 6 staff members at the new ELC site at any one time (1 for every 10 children).

Vehicle access to the proposed site, off the public road network, is proposed to be obtained off St Brigid's Drive/Lesmurdie Road roundabout. Traffic movement surveys have been undertaken at this roundabout during existing AM (8-9am) and PM (3-4pm) peak hour periods, based on school start and finish times. SIDRA intersection modelling has confirmed that the St Brigid's Drive/Lesmurdie Road roundabout is currently operating well within capacity, with a level of service of A during both peak hour periods, which indicates good operations.

Anticipated traffic generation level from the subject proposal was derived through a first principles approach. In particular, it was determined that the proposed development will generate some 66 in and 60 out trips during the AM peak hour, and 60 in and 66 out trips during the PM peak hour. These additional trips were added onto the existing traffic levels at the St Brigid's Drive/Lesmurdie Road roundabout, on a proportional ratio basis. It is noted that the traffic which are currently being generated by the existing ELC (since the existing ELC caters for 24 and 38 pre-kindergarten and kindergarten children on two and three days a week, respectively) will be redirected to the subject site in future. However, for conservative assessment

purposes, these trips have not been removed from the model. The SIDRA intersection modelling results for the post-development scenario indicate that the St Brigid's Drive/Lesmurdie Road roundabout will operate well within capacity (with additional traffic generated by the proposal). Only slight increases in average delay and 95th percentile queue length are observed in each peak hour period in the post-development scenario, compared to the existing operations. During both AM and PM peak hour periods, the roundabout will operate at a level of service A, which indicates good operations.

Based on the above results, it is concluded that the additional trips generated by the subject proposal will have negligible/minimal impacts on the existing traffic operations within the site vicinity.

A parking provision assessment for the proposed development was undertaken based on the parking rates prescribed in Table 3 of Shire of Kalamunda Local Planning Scheme No. 3, for educational establishments. Applying the Pre-Primary parking provision rate for the proposed development which includes a maximum of 60 students and 6 staff members at any one time, a total parking provision requirement of 26 car spaces (20 for student drop-offs and pick-ups + 6 for staff members) is obtained. The proposed site plans include provision of 27 on-site car parking spaces, which satisfies the relevant statutory parking provision requirement.

The proposed on-site car park design was also assessed with reference to the AS 2890.1:2004 and AS 2890.6:2009. It was found that the overall design were in compliance with the relevant design standards.

In light of the above, the proposed development is expected to accommodate its own parking demand with no impacts on the existing on-street public parking in the area and will impose negligible traffic impacts to the local road network.

Appendix A: Results of the Intersection Traffic Survey

Job No. : W197
Client : APEX Engineers
Suburb : St Bridget's College Lesmurdie
Location : 1. Lesmurdie Rd / St Brigid's Dr

Day/Date : Thur, 24th August 2017
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

MATRIX
Traffic and Transport Data

Approach		Lesmurdie Rd					Lesmurdie Rd					St Brigid's Dr					Grand Total
Time Period		Cars	Trucks	Buses	Cyclists	Total	Cars	Trucks	Buses	Cyclists	Total	Cars	Trucks	Buses	Cyclists	Total	
AM	8:00 to 9:00	551	6	9	0	566	572	10	9	1	592	140	0	12	0	152	1,310
PM	15:00 to 16:00	542	10	15	0	567	488	6	12	0	506	194	0	5	0	199	1,272

Approach		Lesmurdie Rd					Lesmurdie Rd					St Brigid's Dr					Grand Total
Time Period		Cars	Trucks	Buses	Cyclists	Total	Cars	Trucks	Buses	Cyclists	Total	Cars	Trucks	Buses	Cyclists	Total	
8:00 to 9:00		551	6	9	0	566	572	10	9	1	592	140	0	12	0	152	1,310
AM Totals		551	6	9	0	566	572	10	9	1	592	140	0	12	0	152	1,310
15:00 to 16:00		542	10	15	0	567	488	6	12	0	506	194	0	5	0	199	1,272
PM Totals		542	10	15	0	567	488	6	12	0	506	194	0	5	0	199	1,272

Appendix B: SIDRA Results for Existing Operations

AM Peak

MOVEMENT SUMMARY

**Site: Lesmurdie Road/St
Brigid's Drive (Existing AM)**

Lesmurdie Road/St Brigid's Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed	
		veh/h	%	v/c	sec	veh	m		per veh	km/h	
South: Lesmurdie Road											
1	L	136	2.2	0.418	3.8	LOS A	3.1	22.3	0.34	0.46	36.6
2	T	430	2.8	0.418	2.8	LOS A	3.1	22.3	0.34	0.35	37.0
Approach		566	2.7	0.418	3.0	LOS A	3.1	22.3	0.34	0.37	36.9
North: Lesmurdie Road											
8	T	507	2.0	0.459	3.0	LOS A	3.7	26.4	0.42	0.38	36.6
9	R	85	10.6	0.459	7.5	LOS A	3.7	26.4	0.42	0.74	35.2
Approach		592	3.2	0.459	3.6	LOS A	3.7	26.4	0.42	0.44	36.4
West: St Brigid's Drive											
10	L	43	4.7	0.172	5.8	LOS A	1.0	7.1	0.58	0.60	35.5
12	R	109	9.2	0.172	9.3	LOS A	1.0	7.1	0.58	0.73	34.1
Approach		152	7.9	0.172	8.3	LOS A	1.0	7.1	0.58	0.69	34.4
All Vehicles		1310	3.5	0.459	3.9	LOS A	3.7	26.4	0.40	0.44	36.4

PM Peak

MOVEMENT SUMMARY

**Site: Lesmurdie Road/St
Brigid's Drive (Existing PM)**

Lesmurdie Road/St Brigid's Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg. Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed	
		veh/h	%	v/c	sec	veh	m		per veh	km/h	
South: Lesmurdie Road											
1	L	83	3.6	0.400	3.6	LOS A	3.0	21.5	0.27	0.44	36.8
2	T	484	4.5	0.400	2.6	LOS A	3.0	21.5	0.27	0.32	37.2
Approach		567	4.4	0.400	2.7	LOS A	3.0	21.5	0.27	0.33	37.2
North: Lesmurdie Road											
8	T	445	3.1	0.402	3.0	LOS A	3.0	21.6	0.42	0.39	36.7
9	R	61	6.6	0.402	7.5	LOS A	3.0	21.6	0.42	0.75	35.3
Approach		506	3.6	0.402	3.6	LOS A	3.0	21.6	0.42	0.43	36.5
West: St Brigid's Drive											
10	L	71	1.4	0.225	6.1	LOS A	1.3	9.3	0.62	0.64	35.4
12	R	128	3.1	0.225	9.6	LOS A	1.3	9.3	0.62	0.76	33.9
Approach		199	2.5	0.225	8.3	LOS A	1.3	9.3	0.62	0.72	34.4
All Vehicles		1272	3.8	0.402	3.9	LOS A	3.0	21.6	0.38	0.43	36.4

Appendix C: SIDRA Results for Post Development Operations

AM Peak

MOVEMENT SUMMARY

Site: Lesmurdie Road/St
Brigid's Drive (Future AM)

Lesmurdie Road/St Brigid's Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg.	Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Lesmurdie Road											
1	L	177	1.7	0.465	4.0	LOS A	3.7	26.4	0.41	0.48	36.4
2	T	430	2.8	0.465	3.0	LOS A	3.7	26.4	0.41	0.38	36.7
Approach		607	2.5	0.465	3.3	LOS A	3.7	26.4	0.41	0.41	36.6
North: Lesmurdie Road											
8	T	507	2.0	0.504	3.3	LOS A	4.2	30.0	0.51	0.44	36.3
9	R	110	8.2	0.504	7.9	LOS A	4.2	30.0	0.51	0.74	35.1
Approach		617	3.1	0.504	4.1	LOS A	4.2	30.0	0.51	0.49	36.0
West: St Brigid's Drive											
10	L	60	3.3	0.236	5.8	LOS A	1.4	10.2	0.61	0.63	35.4
12	R	152	6.6	0.236	9.3	LOS A	1.4	10.2	0.61	0.74	34.0
Approach		212	5.7	0.236	8.3	LOS A	1.4	10.2	0.61	0.71	34.4
All Vehicles		1436	3.2	0.504	4.4	LOS A	4.2	30.0	0.48	0.49	36.0

PM Peak

MOVEMENT SUMMARY

Site: Lesmurdie Road/St
Brigid's Drive (Future PM)

Lesmurdie Road/St Brigid's Drive
Roundabout

Movement Performance - Vehicles											
Mov ID	Turn	Demand Flow	HV Deg.	Satn	Average Delay	Level of Service	95% Back of Queue Vehicles	Queue Distance	Prop. Queued	Effective Stop Rate	Average Speed
		veh/h	%	v/c	sec		veh	m		per veh	km/h
South: Lesmurdie Road											
1	L	118	2.5	0.442	3.8	LOS A	3.5	25.2	0.35	0.46	36.6
2	T	484	4.5	0.442	2.8	LOS A	3.5	25.2	0.35	0.35	36.9
Approach		602	4.2	0.442	3.0	LOS A	3.5	25.2	0.35	0.37	36.9
North: Lesmurdie Road											
8	T	445	3.1	0.445	3.4	LOS A	3.4	24.7	0.50	0.44	36.3
9	R	86	4.7	0.445	7.8	LOS A	3.4	24.7	0.50	0.75	35.2
Approach		531	3.4	0.445	4.1	LOS A	3.4	24.7	0.50	0.49	36.1
West: St Brigid's Drive											
10	L	95	1.1	0.302	6.3	LOS A	1.9	13.2	0.66	0.68	35.2
12	R	170	2.4	0.302	9.7	LOS A	1.9	13.2	0.66	0.78	33.8
Approach		265	1.9	0.302	8.5	LOS A	1.9	13.2	0.66	0.74	34.3
All Vehicles		1398	3.4	0.445	4.4	LOS A	3.5	25.2	0.46	0.49	36.1