



# Transport Impact Statement

Project: Proposed Child Care Centre  
Cnr Indigo Parkway and Briggs Road, Byford

Client: Spagnolo Developments Pty Ltd

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## Contents

1	Introduction .....	1
1.1	Proponent .....	1
1.2	Site Location .....	1
2	Proposed Development.....	3
2.1	Land Use.....	3
3	Traffic Management on Frontage Streets.....	5
3.1	Road Network .....	5
3.1.1	Existing Road Layout and Hierarchy .....	5
3.1.2	Speed Limits.....	7
4	Vehicle Access and Parking.....	8
4.1	Access .....	8
4.2	Sight Distance.....	10
4.3	Car Parking .....	11
4.3.1	Current Planning Scheme Requirements .....	11
4.3.2	Draft Local Planning Scheme Requirements.....	11
4.4	Bicycle Parking .....	11
4.5	Parking Design.....	12
4.6	Provision for Service Vehicles.....	13
5	Traffic Impact .....	14
5.1	Traffic Generation .....	14
5.2	Adjacent Child Care Centre Proposal .....	14
5.3	Traffic Distribution .....	16
5.3.1	Interim Scenario.....	16
5.3.2	Long-term Scenario .....	18
6	Pedestrian and Cyclist Access.....	20
7	Public Transport Access .....	20



8	Site Specific Issues and Safety Issues.....	21
8.1	Crash History .....	21
9	Conclusion .....	22
	Appendix A – Swept Path Analysis .....	23

## Figures

Figure 1:	Site Location.....	2
Figure 2:	Aerial View (December 2022).....	2
Figure 3:	Site Plan .....	4
Figure 4:	Existing Road Network Hierarchy.....	5
Figure 5:	Local Structure Plan .....	6
Figure 6:	Speed Limits.....	7
Figure 7:	Vehicle Access Arrangement .....	8
Figure 8:	AS2890.1 Sight Distance Requirements .....	10
Figure 9:	Classification of Parking Facilities .....	12
Figure 10:	Austrroads Typical Mid-Block Capacities for Urban Roads .....	15
Figure 11:	Peak Hour Traffic Distribution – Interim Scenario .....	16
Figure 12:	Access Change .....	17
Figure 13:	Traffic Distribution – Long-Term Scenario.....	19
Figure 14:	Crash History January 2017 to December 2021 .....	21

## Tables

Table 1:	Car Parking Calculation – Town Planning Scheme No. 2 .....	11
Table 2:	Car Parking Calculation – Draft Local Planning Scheme No. 3.....	11
Table 3:	AS2890.1 Car Parking Compliance .....	12
Table 4:	Proposed Development Vehicle Trip Generation .....	14



# 1 Introduction

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## 1.1 Proponent

Shawmac has been engaged by Spagnolo Investments Pty Ltd to prepare a Transport Impact Statement (TIS) for a child care centre in Byford.

This TIS has been prepared in accordance with the Western Australian Planning Commission (WAPC) *Transport Impact Assessment Guidelines Volume 4 – Individual Developments*. The assessment considers the following key matters:

- Details of the proposed development.
- Vehicle access and parking.
- Provision for service vehicles.
- Daily traffic volumes and vehicle types.
- Traffic management on frontage streets.
- Public transport access.
- Pedestrian access.
- Cycle access
- Site specific and safety issues.

## 1.2 Site Location

The site includes proposed Lots 367 to 373 of Stage 7 of the Byford Meadows development which is located on the west side of Briggs Road between Indigo Parkway and Caspian Chase. The local authority is the Shire of Serpentine-Jarrahdale.

The general site location is shown in **Figure 1**. An aerial view of the existing site is shown in **Figure 2**.

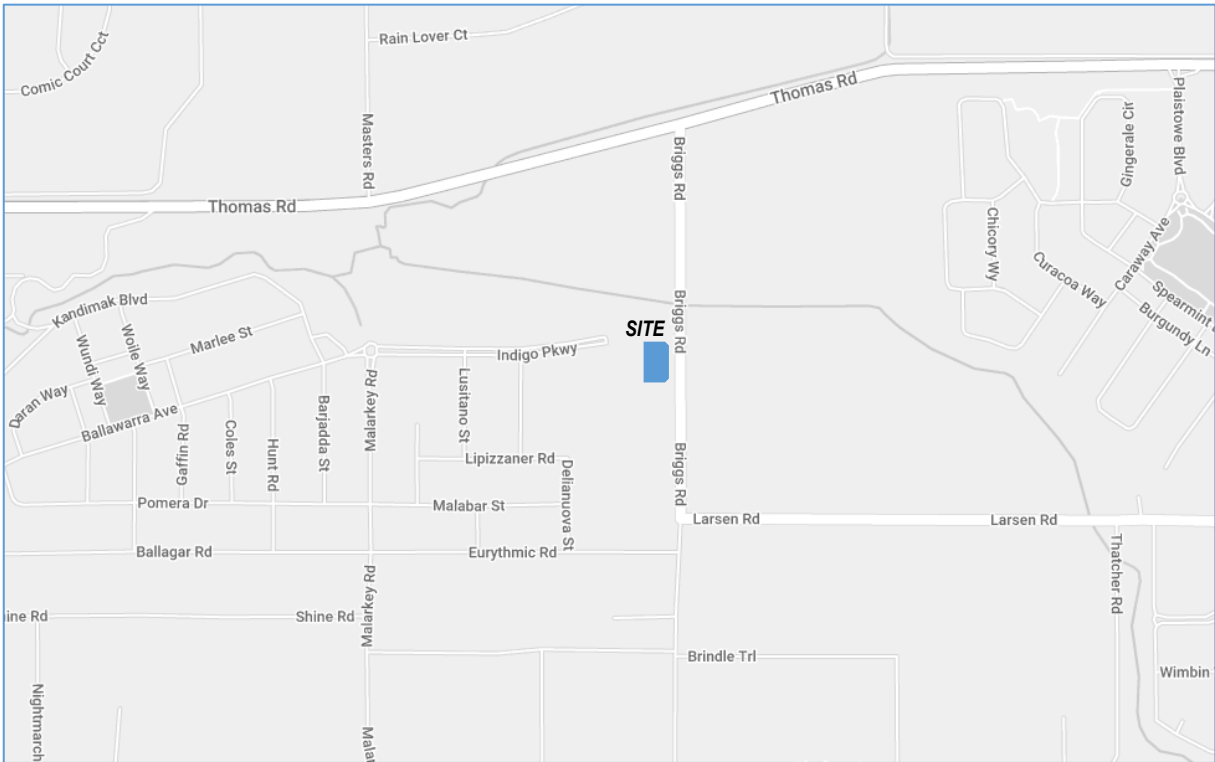


Figure 1: Site Location



Figure 2: Aerial View (December 2022)



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## 2 Proposed Development

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### 2.1 Land Use

The proposed development is a child care centre accommodating up to 110 children and approximately 20 staff. 31 parking spaces are proposed which includes 1 ACROD car bay.

The frontage sections of Indigo Parkway and Caspian Chase will be constructed by the developer of Byford Meadows.

The proposed site plan is shown in **Figure 3**.

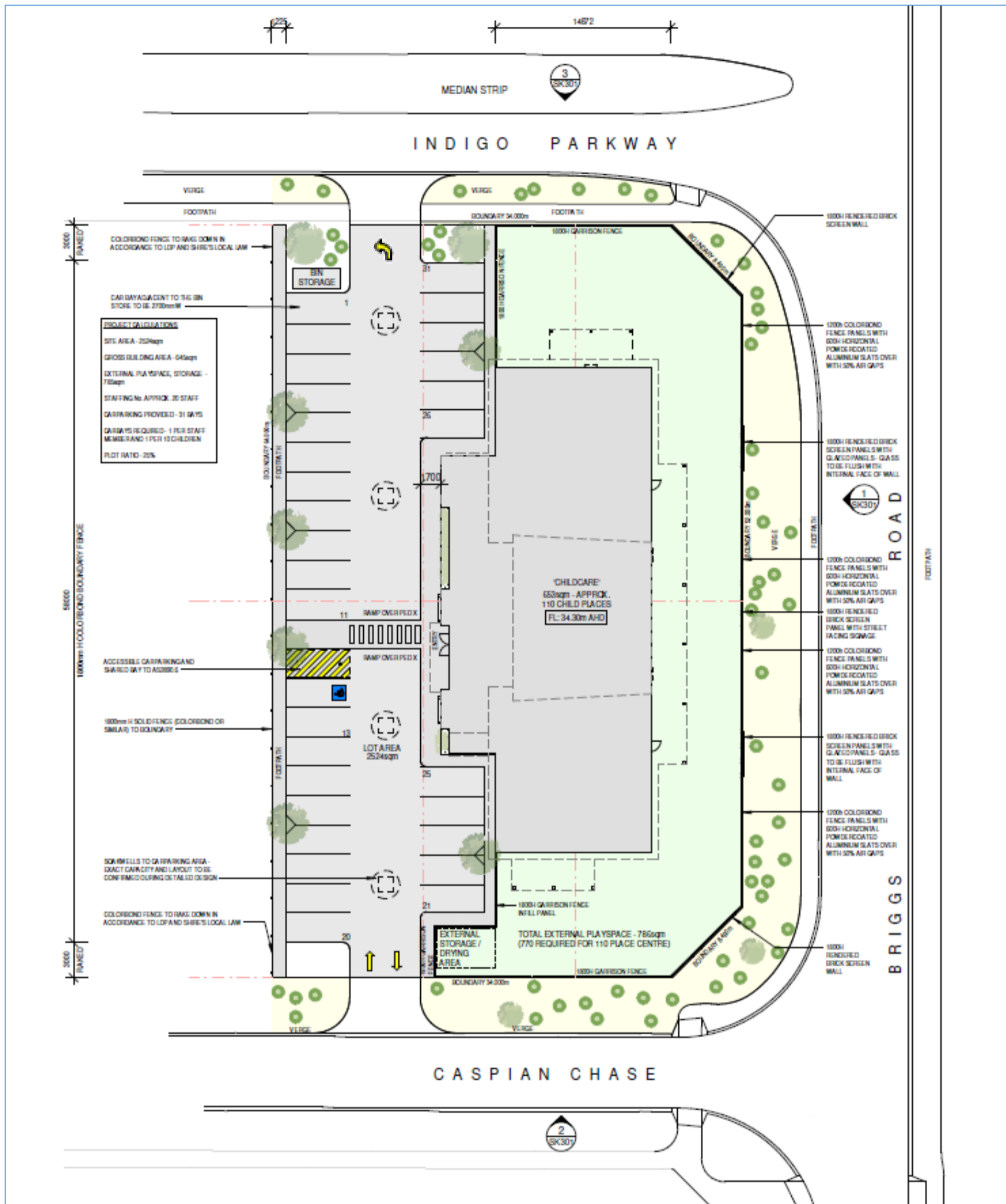


Figure 3: Site Plan





### 3 Traffic Management on Frontage Streets

#### 3.1 Road Network

##### 3.1.1 Existing Road Layout and Hierarchy

The layout and hierarchy of the existing local road network according to the Main Roads WA *Road Information Mapping System* is shown in **Figure 4**.



**Figure 4: Existing Road Network Hierarchy**

As shown, Briggs Road is a Local Distributor Road and Indigo Parkway is an Access Road. Based on the approved Local Structure Plan covering the site, Indigo Parkway will be upgraded to a Local Distributor and Caspian Chase will be an Access Road. The Local Structure plan is shown in **Figure 5**.

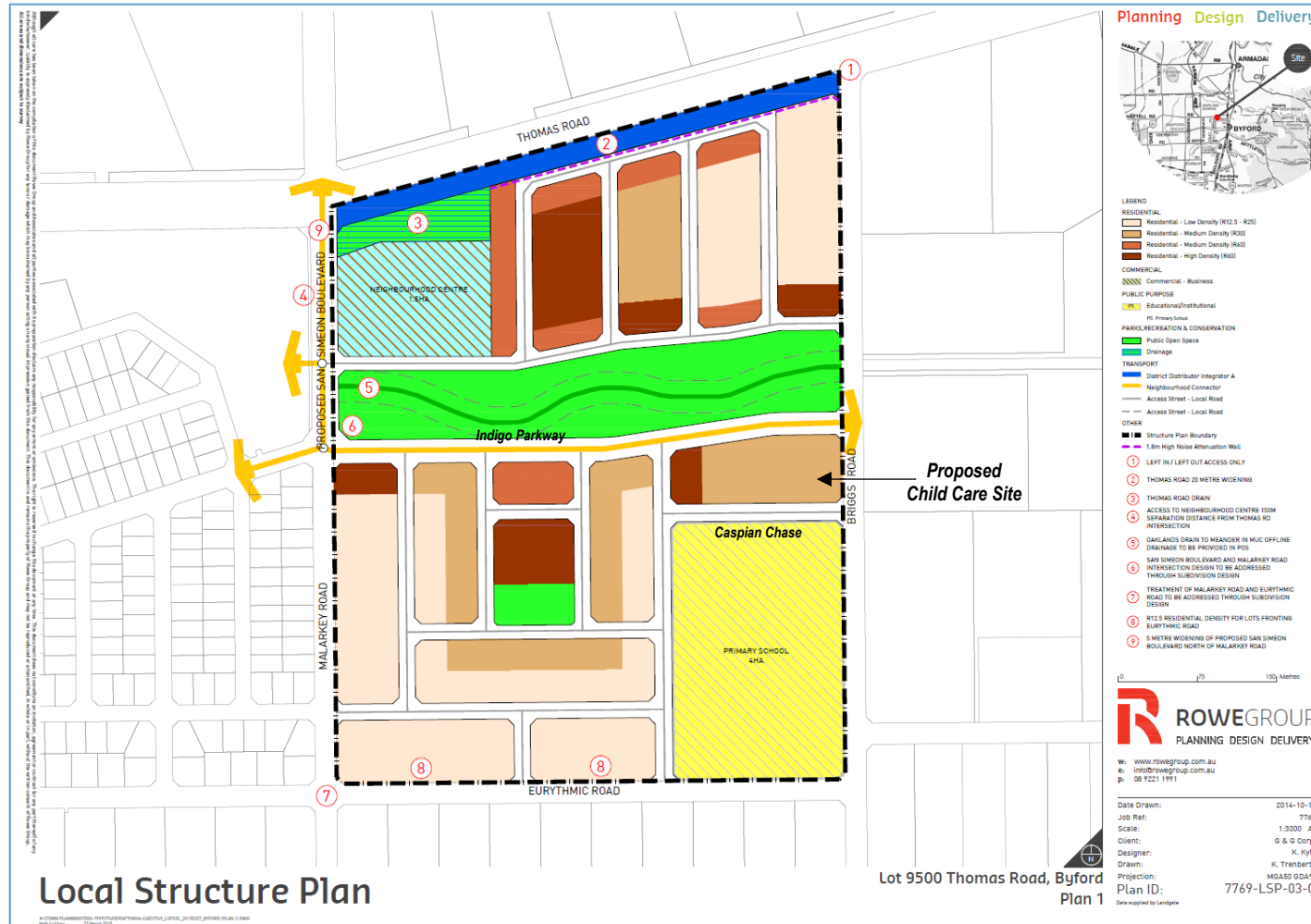
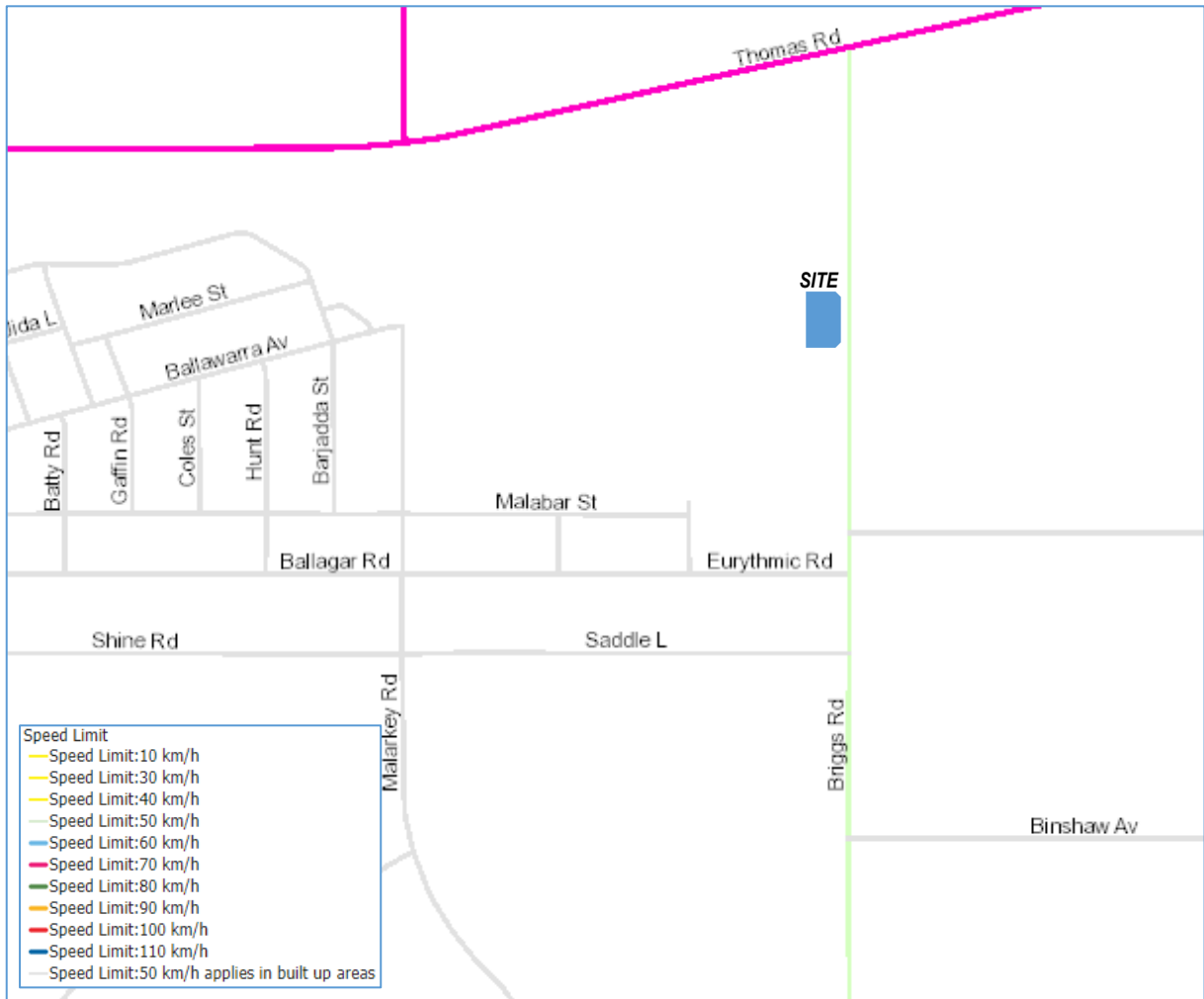


Figure 5: Local Structure Plan



### 3.1.2 Speed Limits

The speed limits are shown in **Figure 6**. It is assumed that the default 50km/h speed limit for built-up areas will apply once Indigo Parkway and Caspian Chase are completed.



**Figure 6: Speed Limits**



## 4 Vehicle Access and Parking

### 4.1 Access

Vehicle access is proposed via new crossovers on Indigo Parkway and Caspian Chase as shown in **Figure 7**. As mentioned, the frontage sections of these roads will be constructed by the developer. Due to the proposed central median along Indigo Parkway, the crossover on this road will be restricted to left-out movements only.

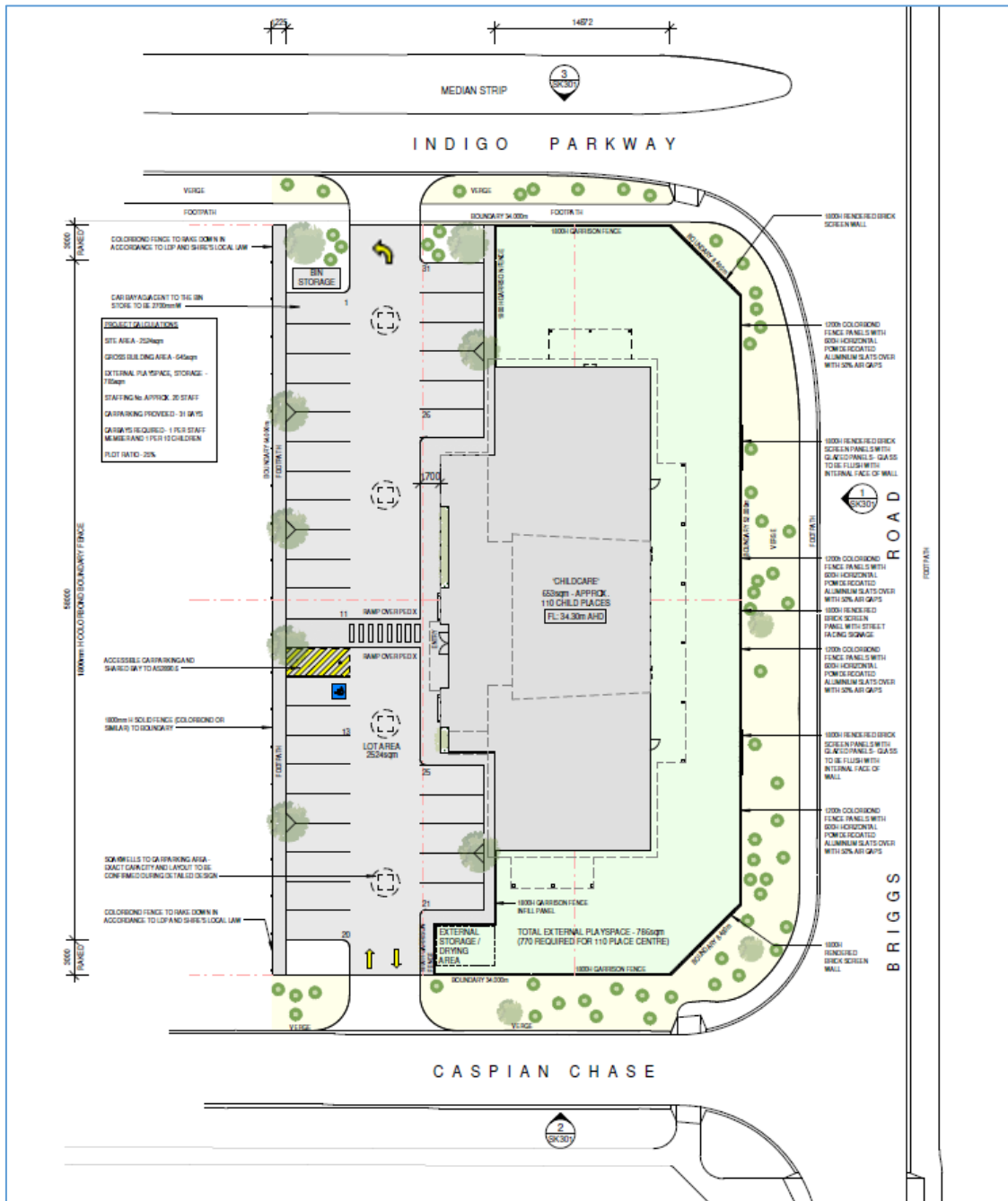


Figure 7: Vehicle Access Arrangement



According to the Shire's vehicle crossover specifications, crossovers are to be between 2.5m and 9m wide. Both proposed crossovers are 6m wide which is compliant. The layout is also compliant with the provisions of the Shire's Local Planning Policy 4.24 – Child Minding Centres which requires that internal driveways allow two-way movement.

The crossovers have been located as far from the future intersections along Briggs Road as possible to minimise conflicts. According to the Local Structure Plan covering the site, the land to the south of the child care centre will be a future primary school. The proposed access configuration of the school has not yet been determined and will be subject to future review and design. The proposed child care centre crossover to Caspian Chase is unlikely to preclude the provision of suitable access to the school as the school will have four road frontages and so there are numerous options to provide access away from the child care centre crossover. By comparison, the proposed child care centre site is much smaller and has fewer options for locating vehicle access.

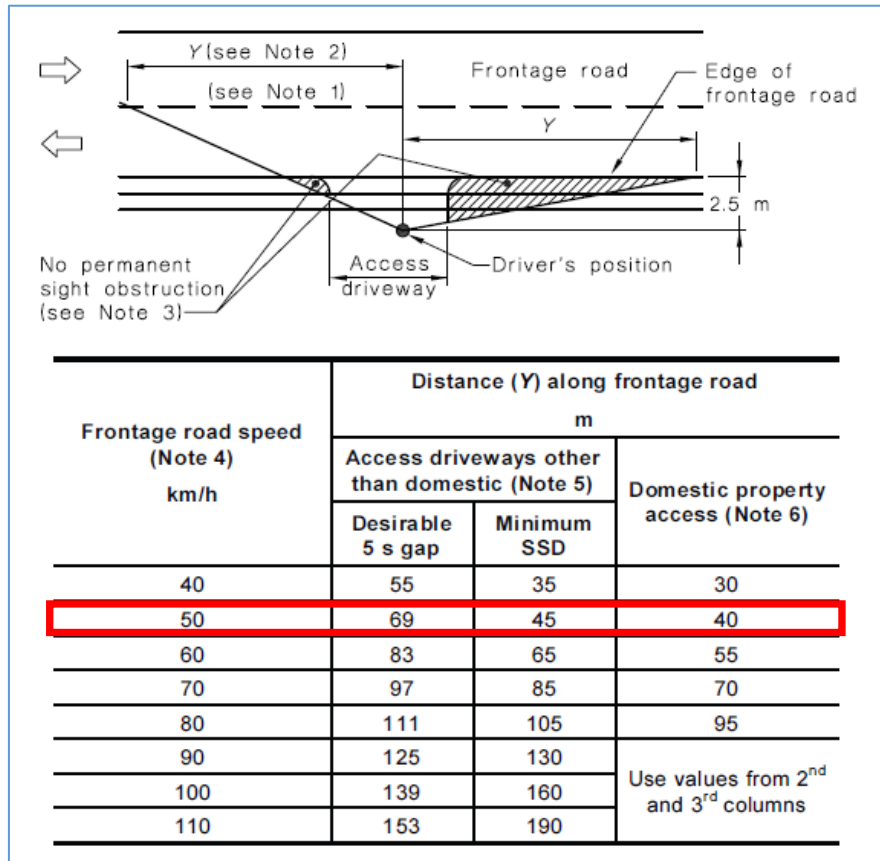
If the school required vehicle access to Caspian Chase, the frontage is over 150m wide and so it is unlikely that the access would coincide with the child care centre crossover.

Overall, the location and layout of the proposed vehicle access is considered to be appropriate from a traffic and safety perspective.



## 4.2 Sight Distance

Sight distance requirements from vehicle exit points are defined in Figure 3.2 of Australian Standard AS2890.1-2004 *Parking facilities Part 1: Off street car parking* (AS2890.1) which is shown in **Figure 8**.



**Figure 8: AS2890.1 Sight Distance Requirements**

Based on the assumed 50km/h speed limit along Indigo Parkway and Caspian Chase, the minimum required sight distance is 45m (desirable 69m). The frontage sections of these two roads have not been completed and so the actual sight distance cannot be measured. However, a preliminary review indicates that the required sight distance will be achievable. It is also noted that vehicles turning from Briggs Road will have slowed down while turning and so the approach speed and sight distance requirement in this direction will be reduced. Briggs Road is located approximately 40m from the proposed crossovers.



### 4.3 Car Parking

It is proposed to provide a total of 31 car parking bays on the site.

#### 4.3.1 Current Planning Scheme Requirements

The car parking requirements calculated in accordance with the Shire's Town Planning Scheme (TPS) No. 2 are outlined in **Table 1**.

**Table 1: Car Parking Calculation – Town Planning Scheme No. 2**

Land Use	Requirement	Quantum	Bays Required
Childcare	1 space per 5 children accommodated	110 children	22

As shown, the proposed development is required to provide 22 car bays. The proposed 31 bays exceed the calculated requirement.

#### 4.3.2 Draft Local Planning Scheme Requirements

A Draft Local Planning Scheme (LPS) No. 3 has been prepared developed to replace the existing TPS. The revised car parking requirements are outlined in **Table 2**.

**Table 2: Car Parking Calculation – Draft Local Planning Scheme No. 3**

Land Use	Requirement	Quantum	Bays Required
Childcare	1 space per 10 children accommodated and 1 space per employee	110 children 20 staff	31

Under the Draft LPS requirements, the proposed development is required to provide 31 car bays. The proposed 31 car parking bays complies with the requirements of the Draft LPS.

### 4.4 Bicycle Parking

The Shire's current TPS does not appear to specify requirements for bicycle parking. The Draft LPS does specify bicycle parking ratios but does not include child care centres. The demand for bicycle parking is expected to be low and limited to staff only.

Child care centres are typically well secured sites and so staff could potentially park within the site where there is room to do so.



## 4.5 Parking Design

The parking layout will need to comply with the requirements of Australian Standard AS2890.1. The user class will depend on the purpose of the bay as detailed in **Figure 9**.

9		AS/NZS 2890.1:2004	
TABLE 1.1 CLASSIFICATION OF OFF-STREET CAR PARKING FACILITIES			
User class	Required door opening	Required aisle width	Examples of uses (Note 1)
1	Front door, first stop	Minimum for single manoeuvre entry and exit	Employee and commuter parking (generally, all-day parking)
1A	Front door, first stop	Three-point turn entry and exit into 90° parking spaces only, otherwise as for User Class 1	Residential, domestic and employee parking
2	Full opening, all doors	Minimum for single manoeuvre entry and exit	Long-term city and town centre parking, sports facilities, entertainment centres, hotels, motels, airport visitors (generally medium-term parking)
3	Full opening, all doors	Minimum for single manoeuvre entry and exit	Short-term city and town centre parking, parking stations, hospital and medical centres
3A	Full opening, all doors	Additional allowance above minimum single manoeuvre width to facilitate entry and exit	Short term, high turnover parking at shopping centres
4	Size requirements are specified in AS/NZS 2890.6 (Note 2)		Parking for people with disabilities

**Figure 9: Classification of Parking Facilities**

Staff parking (long-term parking) would be classified as User Class 1. Pick-up and drop-off parking (short-term parking) would most likely be classified as User Class 3. A summary of the key parking requirements of AS2890.1 is detailed in **Table 3**.

**Table 3: AS2890.1 Car Parking Compliance**

Dimension	Requirement
<b>90 degree parking – Class 1 – Long Term Parking (Staff)</b>	
Car Bay Width	2.4m
Car Bay Length	5.4m
Parking Aisle Width	5.8m
<b>90 degree parking – Class 3 – Short Term Parking (Pick-up / Drop-off)</b>	
Car Bay Width	2.6m
Car Bay Length	5.4m
Parking Aisle Width	5.8m

All bays are proposed to be 2.5m wide, 5.4m long and the parking aisle is 6m wide. The design complies with the User Class 1 standards but the width of the bays are 100mm narrower than the User Class 3 standards. It is recommended to consider widening some bays to 2.6m to provide for high turnover pick-up and drop-off parking.





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#### 4.6 Provision for Service Vehicles

It is assumed that waste will be collected either from the verge or on-site and conducted outside typical business hours. Waste collection on site will involve a waste collection vehicle entering from Indigo Parkway and exiting to Caspian Chase as shown in **Appendix A: Swept Path Analysis**. It is expected that all service and delivery vehicles would be light vehicles and vans which can be accommodated within the on-site parking bays.



## 5 Traffic Impact

### 5.1 Traffic Generation

The volume of traffic generated by the proposed development has been estimated using trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation*.

The traffic generation is detailed in **Table 4**.

**Table 4: Proposed Development Vehicle Trip Generation**

Land Use	Units	Quantity	Generation Rate			Number of Trips		
			Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak
Child Care / Day Care Centre	students	110	4.09	0.78	0.79	450	86	87

As shown above, the development is estimated to generate 450 daily vehicle trips including 86 (46 in / 40 out) during the AM peak hour and 87 (41 in / 46 out) vehicle trips during the PM peak hour.

According to the WAPC TIA guidelines, an increase of between 10 to 100 peak hour vehicles is considered to have a low to moderate impact and is generally deemed acceptable without requiring detailed capacity analysis. The estimated 86 to 87 vehicles per hour is at the higher end of this range and so the development traffic is considered to have a moderate impact and can be accommodated within the existing capacity of the road network.

### 5.2 Adjacent Child Care Centre Proposal

The Shire has recently received an application for another proposed child care centre to be located on the opposite side of Briggs Road directly adjacent to the proposed centre. The Shire has requested an assessment of the cumulative impact of both child care centre proposals and to demonstrate whether Briggs Road is capable of accommodating the additional traffic generated by both proposals.

The adjacent development is estimated to generate 452 daily vehicles trips, including 73 trips during the AM peak and 83 trips during the PM peak. The cumulative increase in traffic is therefore 902 daily vehicles trips, including 159 during the AM peak and 179 during the PM peak.

The latest (2022) traffic counts along Briggs Road (south of Thomas Road) were obtained from Main Roads WA *Traffic Map* as summarised below:

- Daily 3,829 vpd (1,898 NB / 1,931 SB)
- AM Peak 449 vph (254 NB / 195 SB)
- PM Peak 411 vph (209 NB / 202 SB)



With the addition of the traffic generated by both child care centres, the resulting traffic volumes along Briggs Road are estimated to be:

- Daily 4,731 vpd
- AM Peak 608 vph
- PM Peak 590 vph

Under Main Roads WA *Functional Road Hierarchy*, Briggs Road is classified as a Local Distributor Road with a target maximum daily traffic volume of 6,000vpd. As above, the resulting daily traffic volume is within the target threshold.

The typical hourly mid-block capacities for urban roads (per traffic lane) according to Austroads *Guide to Traffic Management Part 3: Traffic Studies and Analysis* are detailed in **Figure 10**.

**Table 6.1: Typical mid-block capacities for urban roads with interrupted flow**

Type of lane	One-way mid-block capacity (pc/h)
<b>Median or inner lane</b>	
Divided road	1000
Undivided road	900
<b>Middle lane (of a 3 lane carriageway)</b>	
Divided road	900
Undivided road	1000
<b>Kerb lane</b>	
Adjacent to parking lane	900
Occasional parked vehicles	600
Clearway conditions	900

**Figure 10: Austroads Typical Mid-Block Capacities for Urban Roads**

As there is no parking, the hourly lane capacity of Briggs Road would be approximately 900 vph or 1,800 vph for both directions.

The resulting daily and peak hour traffic volumes along Briggs Road are well below 900 vph in each direction and there appears to be spare mid-block capacity to accommodate increased traffic volumes.

It is also noted that some of the existing traffic along Briggs Road will be redistributed to Malarkey Road once Malarkey Road is connected between Thomas Road and Indigo Parkway. This will be reduced further once the Thomas Road / Briggs Road intersection is upgraded and restricted to left turn movements only. The future road network upgrades are discussed in **Section 5.3.2**.



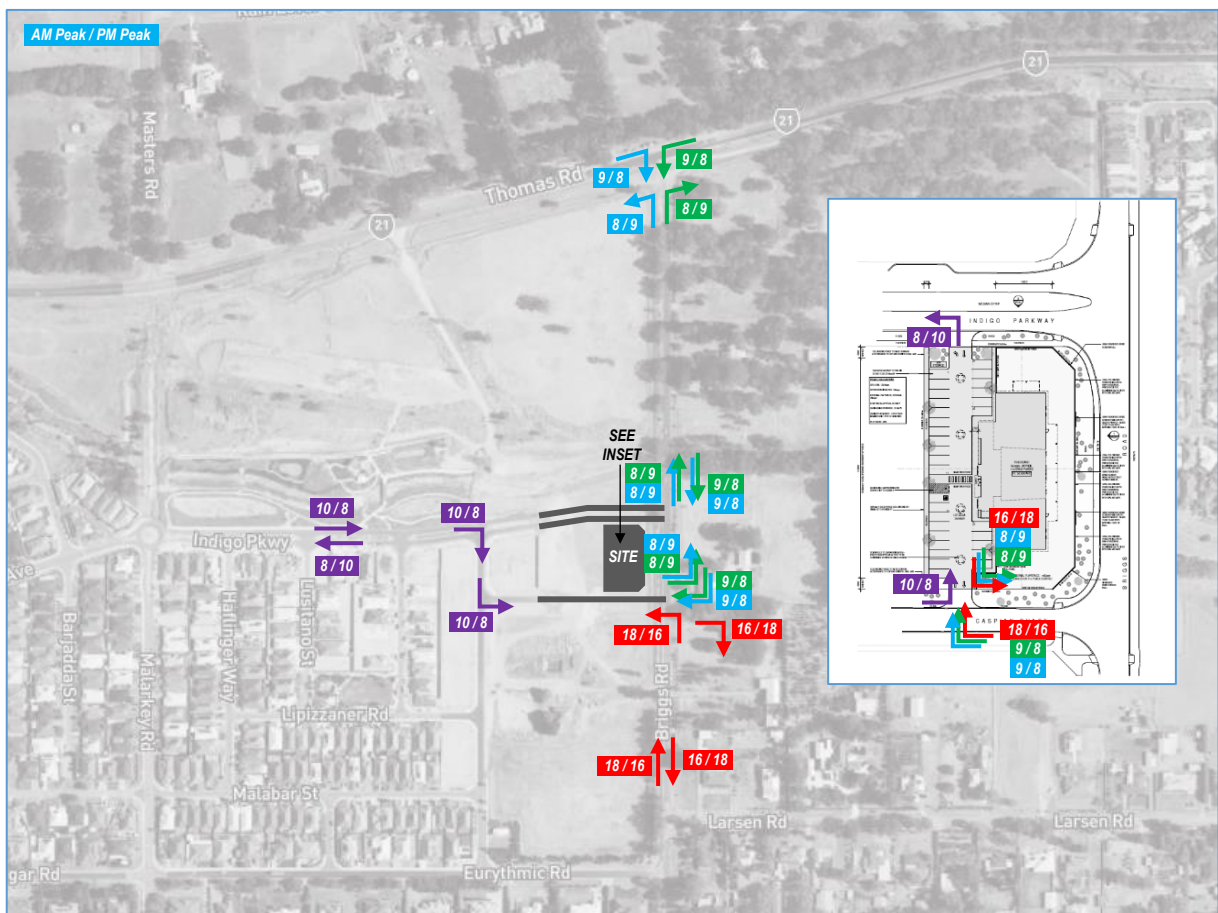
### 5.3 Traffic Distribution

#### 5.3.1 Interim Scenario

Child care centres typically serve a relatively local catchment of traffic and so the development traffic is assumed to be distributed as follows:

- 40% north along Briggs Road split evenly in both direction along Thomas Road
- 40% south along Briggs Road / Larsen Road / Eurythmic Road
- 20% west along Indigo Parkway

The traffic generated by the proposed centre has been distributed onto the adjacent road network based on the above split as shown in **Figure 11**.



**Figure 11: Peak Hour Traffic Distribution – Interim Scenario**

According to the WAPC TIA guidelines, an increase of less than 10% of capacity, approximately 100 vehicles per hour, would not normally be likely to have a material impact on any particular section of road. As shown, the proposed development will not increase the traffic volume on any particular section of road by more than 100 vehicles per hour and is therefore unlikely to have a material impact on the adjacent road network.



It is understood that the proposed child care centre on the adjacent site will require a temporary access on Briggs Road, opposite Indigo Parkway which will effectively function as a four-way intersection. The Shire has also requested confirmation that the cumulative traffic generated by the two centres will not create queueing issues affecting the Indigo Parkway / Briggs Road intersection in the interim scenario.

To address these concerns, the proposed access arrangement has been modified from the original proposal by removing entry movements at the proposed crossover on Indigo Parkway. This modification will remove any right turns from the Briggs Road onto Indigo Parkway and into the development where the adjacent child care centre is proposed to have access. Therefore the development will only generate through movements along Briggs Road past this intersection and there is no risk of queueing from the Indigo Parkway crossover back towards Briggs Road and the interim access for the adjacent proposed child care centre. The impact of this change is demonstrated in **Figure 12**.

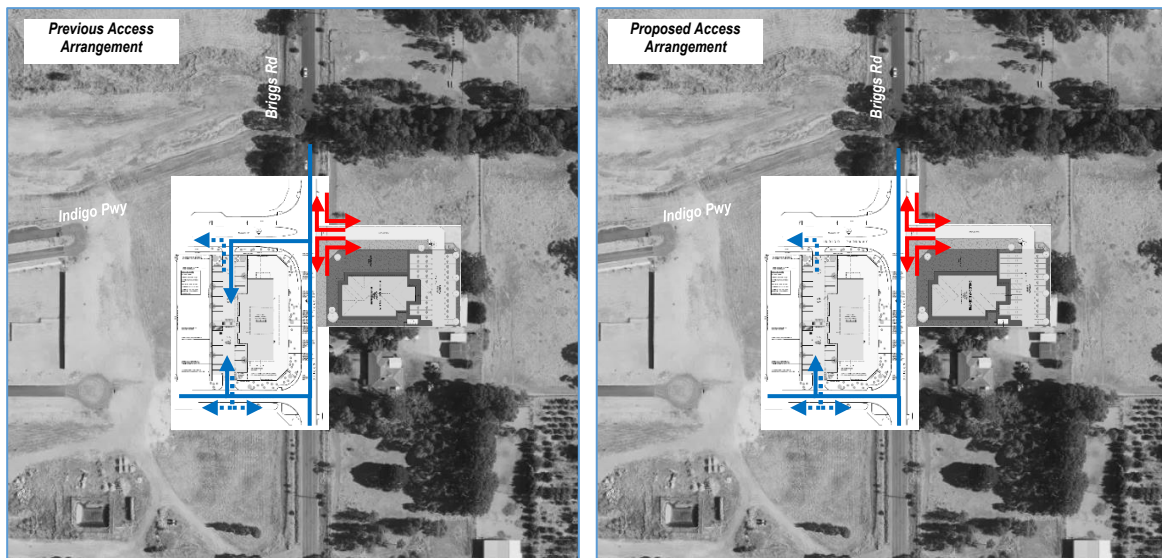


Figure 12: Access Change



### 5.3.2 Long-term Scenario

In the longer term, various proposed changes to the surrounding road network will redistribute the child care centre traffic as well as background traffic. The Shire has advised that the following changes are proposed which are ultimately planned to reduce the number of vehicles using Briggs Road:

- The Thomas Road / Briggs Road intersection will be modified to only allow left turns.
- Malarkey Road will be extended north Thomas Road and new roundabouts will be constructed on Thomas Road at Malarkey Road and Kardan Boulevard.
- The Thomas Road / Plaistowe Boulevard intersection will be signalised.
- The median strip along Indigo Parkway will be extended across Briggs Road to block right turns and through movements along Briggs Road.

The estimated distribution over the long term transport network is shown in **Figure 13**.

As shown, the proposed development will not increase the traffic volume on any particular section of road by more than 100 vehicles per hour and is therefore unlikely to have a material impact on the adjacent road network.

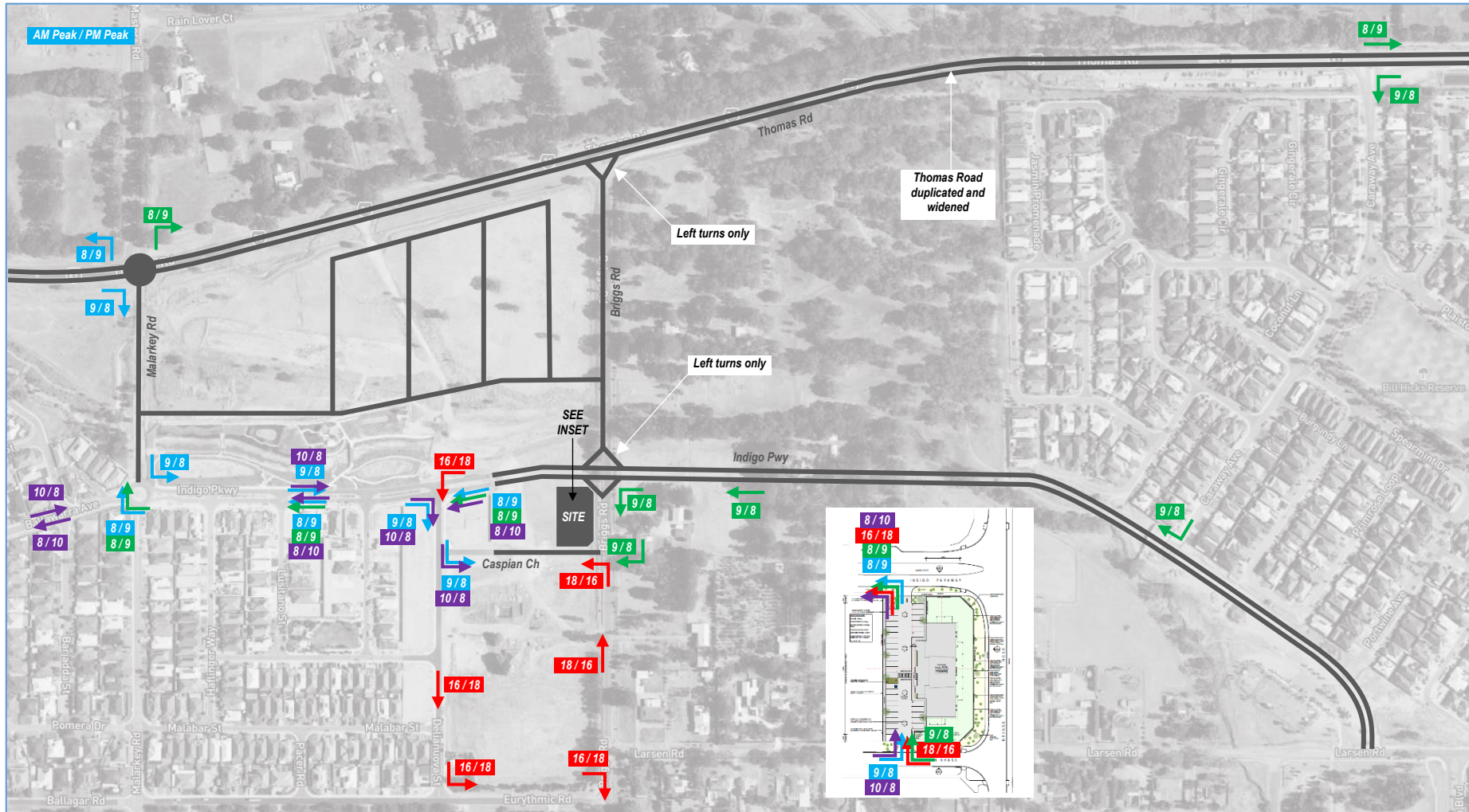


Figure 13: Traffic Distribution – Long-Term Scenario



## 6 Pedestrian and Cyclist Access

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There are no paths along Briggs Road in the vicinity of the site. Towards the west, footpaths have been constructed along at least one side of all roads. The approved Local Structure Plan report recommends that:

- Footpaths should be provided on at least one side of all access streets except laneways.
- A footpath on Briggs Road should extend from Eurythmic Road to San Simon Boulevard (now called Indigo Parkway) on the western side of the Briggs Road.

It is assumed that the adjacent path network will be completed as the area is subdivided and developed.

Internally, a raised walkway is provided within the car park for pedestrians to cross the driveway and a footpath connection along the western perimeter of the building between Indigo Parkway and Caspian Chase is proposed.

The existing and planned path network is considered to be adequate for the movement of pedestrians and cyclists to and from the development.

## 7 Public Transport Access

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The following public transport services currently operate within 1km walking distance of the site:

- Transperth Bus Route 254 which operates between Armadale Station and Byford via Kardan Boulevard. The closest stops are on Eurythmic Boulevard west of Briggs Road, approximately 350m walking distance from the site.

The demand for public transport is expected to be low and the existing services are considered to be adequate to meet the likely demand. It is also likely that additional services will be introduced in the area as the surrounding development progresses.





## 8 Site Specific Issues and Safety Issues

### 8.1 Crash History

The crash history of the adjacent road network was obtained from Main Roads WA's *Reporting Centre*. The search included the length of Briggs Road between Thomas Road and Larsen Road. A summary of the crashes recorded over the five-year period from January 2017 to December 2021 is shown in **Figure 14**.

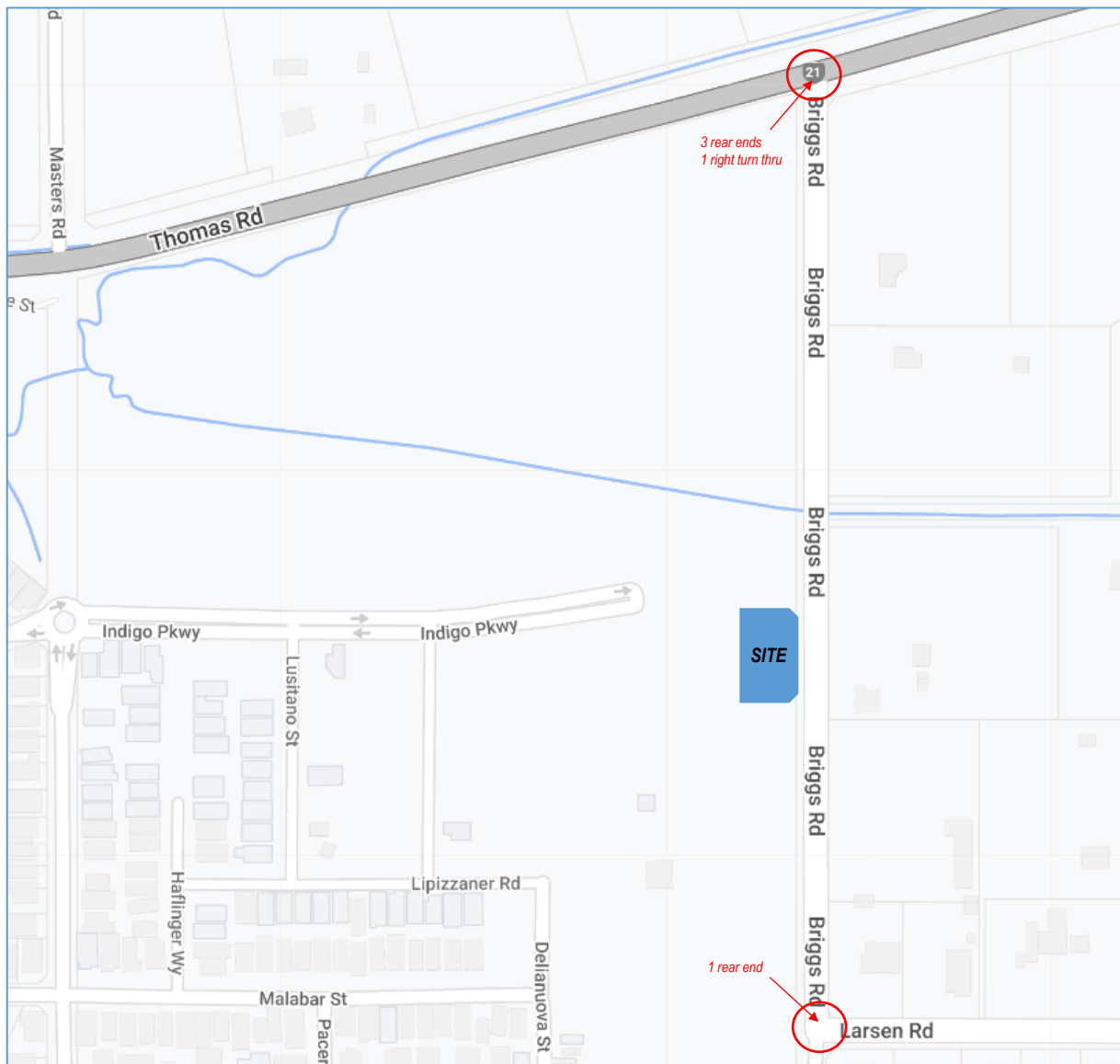


Figure 14: Crash History January 2017 to December 2021

The number, type and location of the crashes appear to be typical and do not appear to indicate a major safety issue on the road network. There is also no indication that the proposed development will increase the risk of crashes to an unacceptable level.



## 9 Conclusion

This Transport Impact Statement for the proposed child care centre in Byford concludes the following:

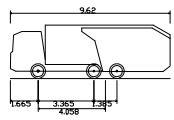
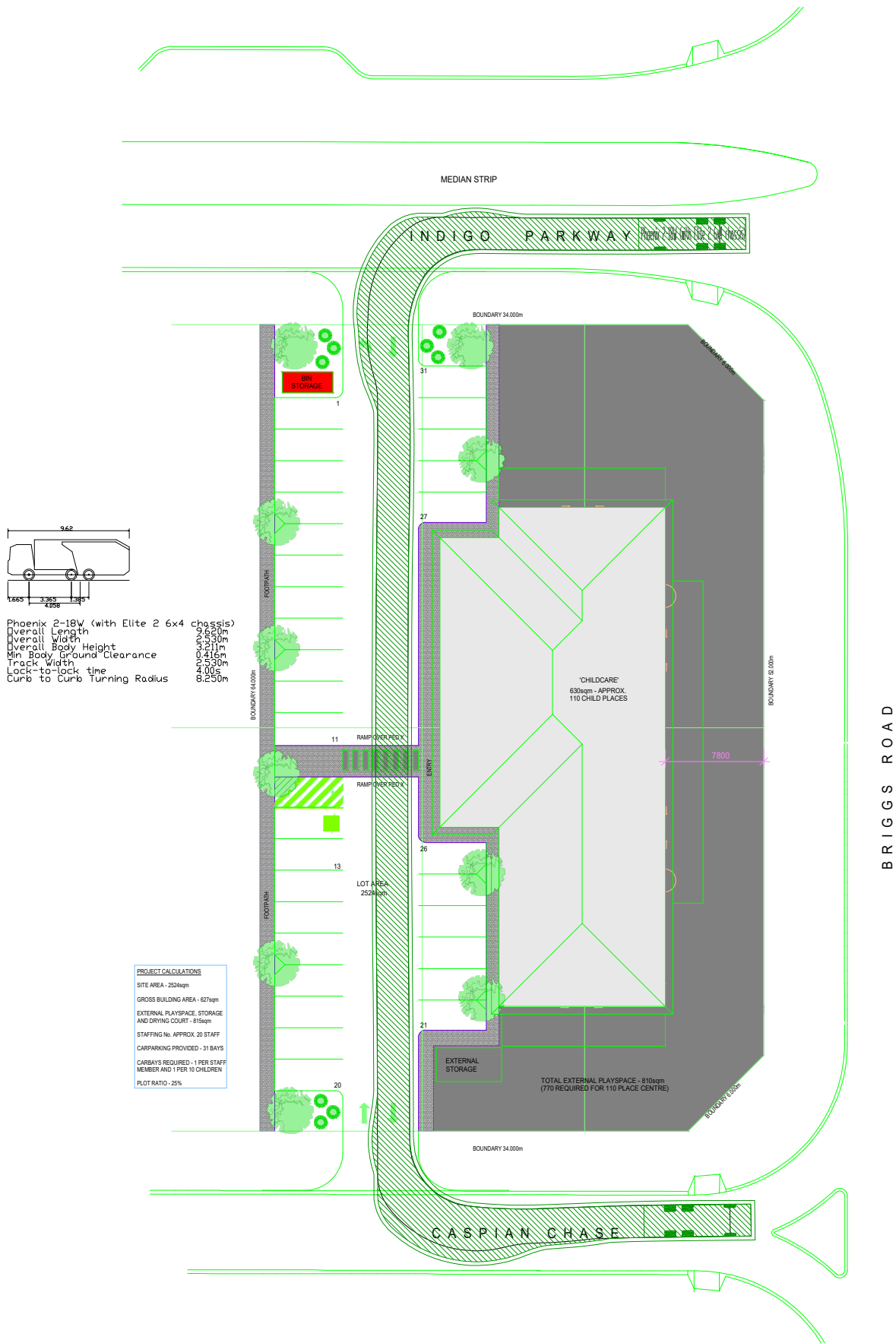
- The proposed development is predicted to generate approximately 450 vehicle trips per day including 86 trips during the morning peak hour and 87 during the afternoon peak hour. This volume of traffic is moderate and can be accommodated within the existing capacity of the road network with no modifications required.
- There is sufficient capacity along Briggs Road to accommodate the increased traffic generated by the two child care centre proposals on either side of Briggs Road. It is also noted that some of the existing traffic along Briggs Road will be redistributed to Malarkey Road once Malarkey Road is connected between Thomas Road and Indigo Parkway.
- The proposed access arrangement has been modified from the original proposal by removing entry movements at the proposed crossover on Indigo Parkway. Therefore the development will only generate through movements along Briggs Road past this intersection and there is no risk of queuing from the Indigo Parkway crossover back towards Briggs Road and the interim access for the adjacent proposed child care centre.
- The location and layout of the proposed vehicle access is considered to be appropriate from a traffic and safety perspective. A preliminary review indicates that the required sight distance will be achievable from both proposed vehicle accesses.
- The provision of 31 car parking bays exceeds the minimum requirements of the Shire's current Town Planning Scheme and complies with the requirements of the Draft Local Planning Scheme.
- The demand for bicycle parking is expected to be low and limited to staff only. Child care centres are typically well secured sites and so staff could potentially park within the site where there is room to do so.
- The parking layout complies with the User Class 1 standards of AS2890.1 for long term parking. However, the width of the bays are 100mm narrower than the User Class 3 standards. It is recommended to consider widening a number of bays to 2.6m to provide for higher turnover pick-up and drop-off parking.
- The existing and planned path network is considered to be adequate for the movement of pedestrians and cyclists to and from the development.
- The crash history of the adjacent road network did not indicate any safety issue on the adjacent road network and there is no indication that the development would increase the risk of crashes to an unacceptable level.
- The demand for public transport is likely to be relatively low based on the proposed uses and so the existing public transport services are considered to be adequate to meet the likely demand.



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## Appendix A – Swept Path Analysis

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Phoenix 2-18W (with Elite 2 6x4 chassis)  
 Overall Length 9.62m  
 Overall Width 2.550m  
 Overall Body Height 3.211m  
 Min Body Ground Clearance 0.415m  
 Track Width 2.550m  
 Lock-to-lock time 4.00s  
 Curb to Curb Turning Radius 8.250m

**PROJECT CALCULATIONS**  
 SITE AREA - 2524sqm  
 GROSS BUILDING AREA - 627sqm  
 EXTERNAL PLAYSPACE, STORAGE AND DRYING COURT - 816sqm  
 STAFFING No. APPROX. 20 STAFF  
 CARPARKING PROVIDED - 31 BAYS  
 CARBAYS REQUIRED - 1 PER STAFF MEMBER AND 1 PER 10 CHILDREN  
 PLOT RATIO - 25%

BRIGGS ROAD