Child Care Centre Development

Lot 154 Viridian Boulevard, Eglinton
Transport Impact Statement

Prepared by: GTA Consultants (WA) Pty Ltd for Stockland

on 19/11/19

Reference: W182870

Issue #: A-Dr

GTAconsultants

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Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A-Dr	19/11/19	Draft	GS	RD/KC		

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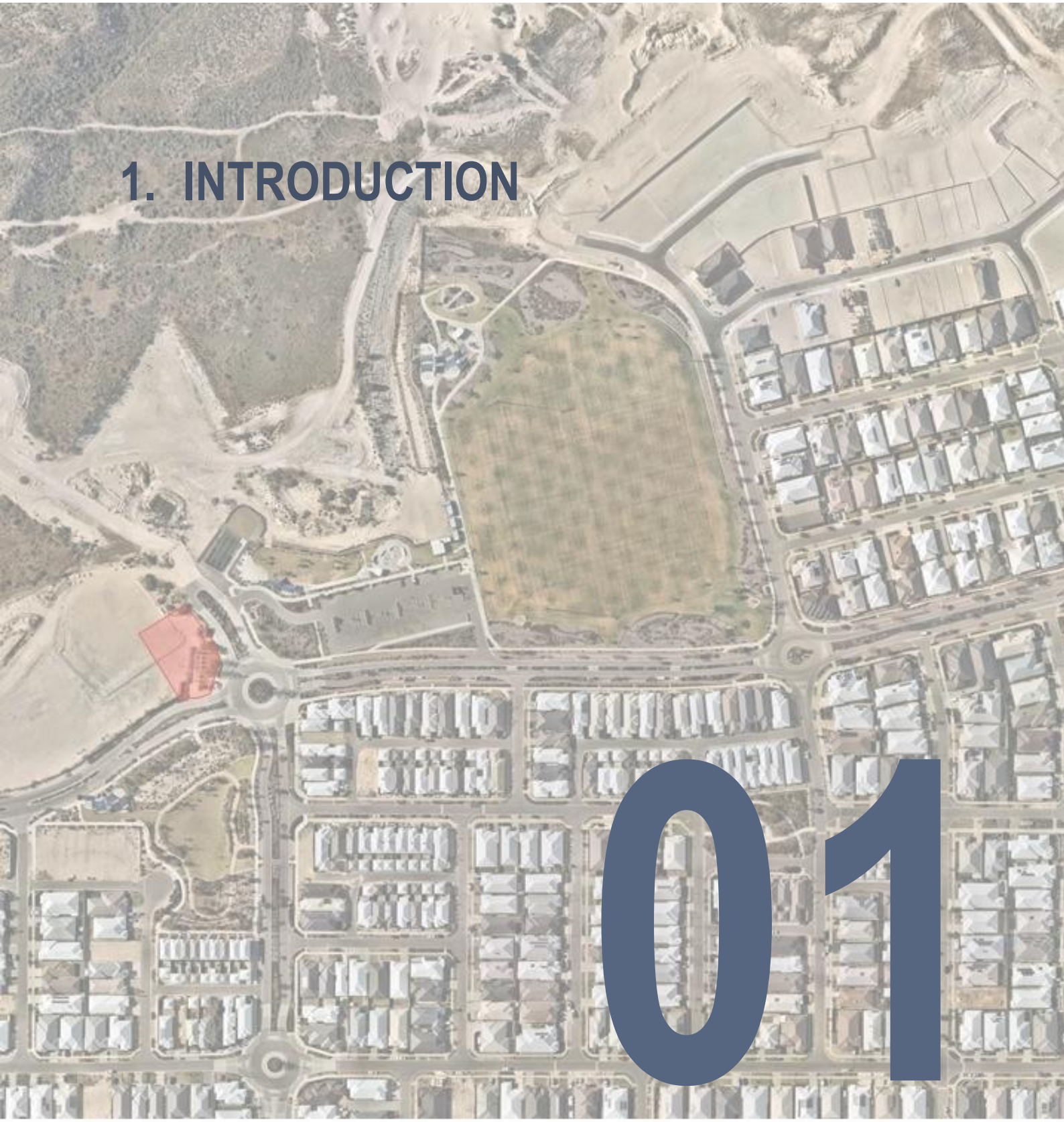


1. INTRODUCTION

01

1.1. Background

A development application is currently being sought for a proposed Child Care Centre on land located at Lot 154 Viridian Boulevard, Eglinton. The proposed Child Care Centre is to cater for a maximum of 104 children and 21 staff.

GTA Consultants was commissioned by Stockland in October 2019 to undertake a Transport Impact Statement (TIS) of the proposed development.

1.2. Purpose of this Report

Western Australian Planning Commission Transport Assessment Guidelines (WAPC Guidelines) provide direction on the level of assessment which is necessary to be carried out with respect to the likely traffic impact of a development proposal. Typically, any development which is expected to have a 'high' traffic impact, that is, generating more than 100 trips in any peak hour is satisfied by a Traffic Impact Assessment (TIA). Any development which is expected to generate less than 100 trips in any peak hour requires a Transport Impact Statement (TIS) to be undertaken. Both types of assessment consider the operation and layout of the site, but they differ in their assessment of external traffic impact.

In the context of this proposal, it is estimated there will be less than 100 trips generated in a given peak hour if applying 'typical' traffic generation rates. In this case a TIS is appropriate. This TIS briefly outlines the transport aspects surrounding the proposed amendment. The intent of a TIS, as per the WAPC Guidelines, is to provide the approving authority with sufficient transport information to confirm that the Applicant has adequately considered the transport aspects of the amendment and that it would not have an adverse transport impact on the surrounding area.

In accordance with the WAPC Guidelines, this TIS outlines:

- Existing transport conditions proximate to the site
- Suitability of the proposed parking provision within the site
- The adequacy of the proposed site layout
- The traffic generating characteristics of the proposed development
- The anticipated impact of the proposed development on the surrounding road network.

1.3. References

In preparing this report, reference has been made to the following:

- City of Wanneroo Town Planning Scheme No. 2
- City of Wanneroo Planning and Sustainability, Local Planning Policy Framework, Local Planning Policy 2.3: Child Care Centres
- Liveable Neighbourhoods Guidelines
- WAPC Transport Assessment Guidelines for Development
- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Australian Standard, Parking Facilities, Part 2: Off-Street Commercial Vehicle Facilities AS 2890.2:2002
- Australian Standard / New Zealand Standard, Parking Facilities, Part 6: Off-Street Parking for People with Disabilities AS/NZS 2890.6:2009
- plans for the proposed development prepared by Christopher Senior & Associates Architects dated September 2019
- various technical data as referenced in this report

- an inspection of the site and its surrounds
- other documents as nominated.

2. PROPOSED DEVELOPMENT

02

2.1. Subject Site and Surrounding Context

The subject site is located at Lot 154 Viridian Boulevard Eglinton, which is part of the Amberton Neighbourhood Centre site. The site of 2,940m^2 has a frontage of approximately 70m to Heath Avenue to the east and approximately 22m to Viridian Boulevard to the south.

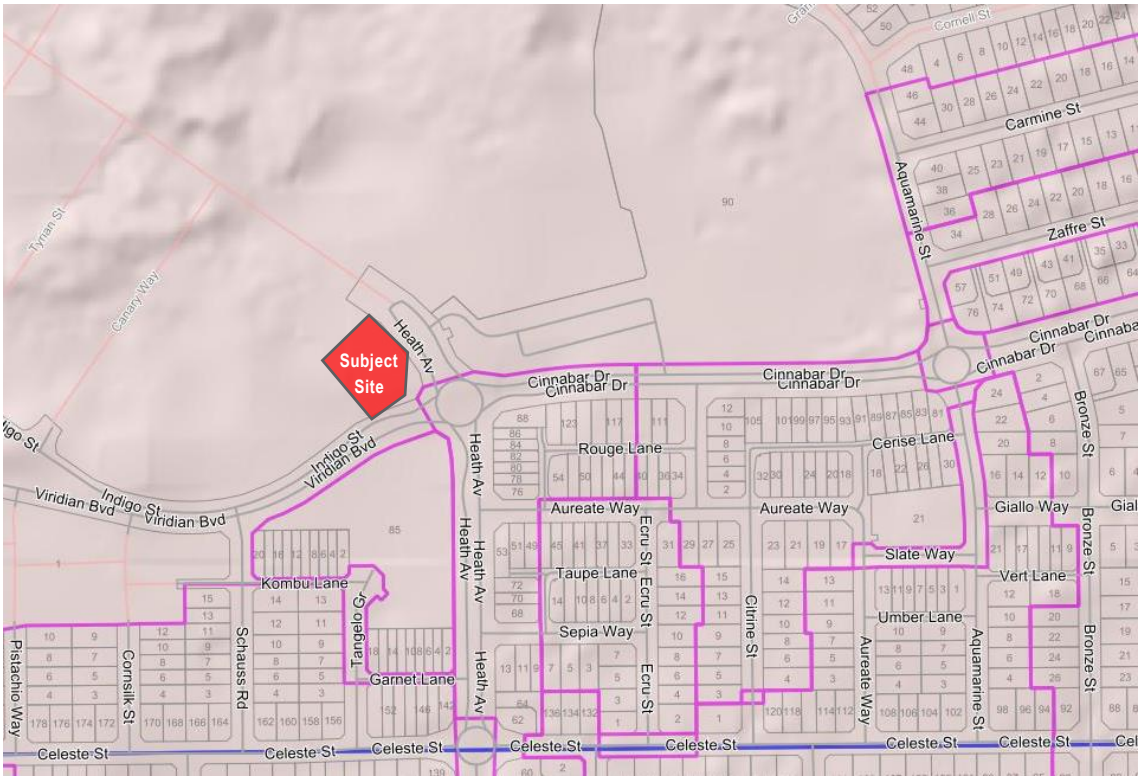
The site is located within an Urban Development Zone and is currently vacant land. The surrounding properties include a mix of Residential, retail and commercial land uses.

The location of the subject site and the surrounding environs is shown in Figure 2.1, and the land zoning is shown in Figure 2.2.

Figure 2.1: Subject Site and its Environs

(Photo Map courtesy of NearMap Pty Ltd)

Figure 2.2: Land Zoning Map



(Reproduced from City of Wanneroo Online Mapping Site)

2.2. Existing Land Uses

The subject site is currently vacant and no structures are presently on the land.

2.3. Proposed Land Use

The application proposes a 854m² Child Care Centre, with six (6) group areas and two (2) outdoor playing areas, and accommodates approximately 104 children and up to 21 full time staff.

3. VEHICULAR ACCESS AND PARKING

03

3.1. Access and Parking Arrangement

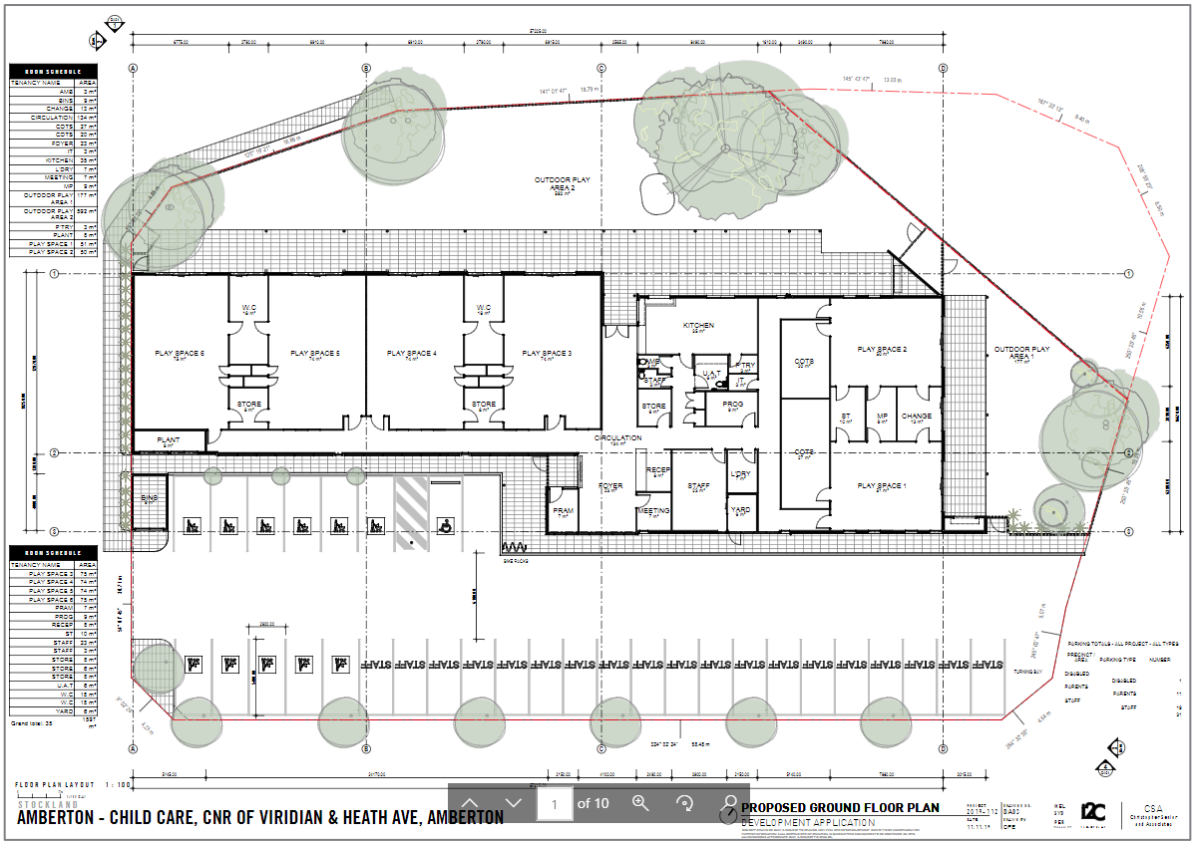
Access and egress to the development is via a proposed full movement crossover/driveway on an unnamed Access Road connecting to Heath Avenue. A turnaround bay is also proposed at the end of the car park adjacent to Viridian Boulevard.

The development proposes a two-way manoeuvring aisle car park, with a two-way crossover of 6.2m width at the unnamed Access Roads. The car park aisle is proposed as 6m wide, which is consistent with AS2890.1 for the intended User Class and the type of car park arrangement.

The development proposes a total 31 car parking spaces. This includes 12 parents/carers parking bay (including one ACROD parking bay) and 19 staff parking bays. A turnaround bay is also proposed at the southern end of the car park.

A copy of the development plan is shown in Figure 3.1 and Appendix A.

Figure 3.1: Development Plan



4. SERVICE VEHICLES

04

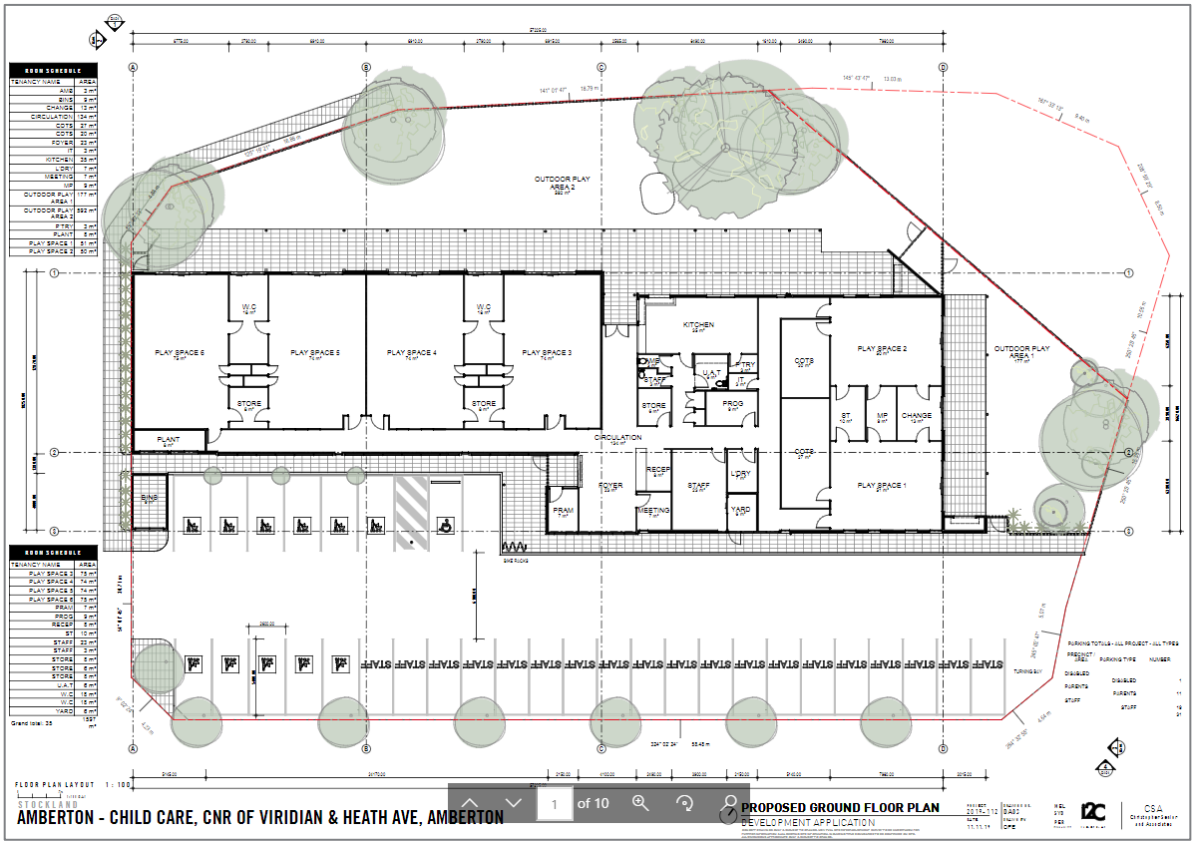
4.1. Rubbish Collection and Emergency Vehicle Access

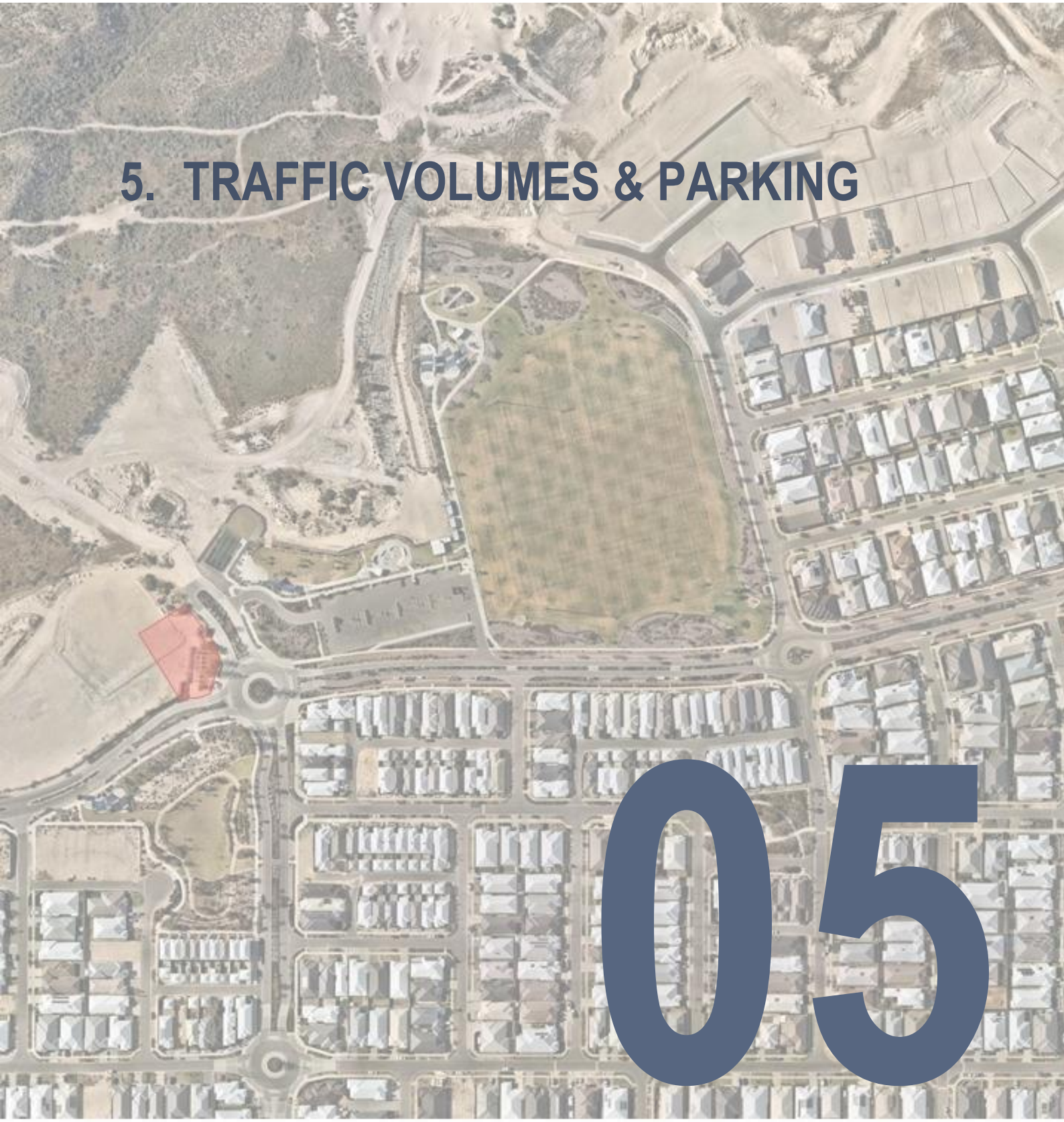
The development proposes a single bin store located at the northern end of the car park. The current expectation is that waste collection will occur out of hours and will therefore not impact any parking at the site. The waste is proposed to be collected from within the parking area of the property and not from the verge. This is to be confirmed by the Applicant and will be supported with a waste management plan (to be prepared by others) and this will consider appropriate waste collection methods from the site.

Generally, the full width of the car park inclusive of parking aisle and parking bays, will typically allow a vehicle up to a standard rubbish collection vehicle (8.8m in length) to undertake a 3-point turn to allow forward entry and exit to and from the site.

The proposed 6m wide aisle is sufficient for emergency vehicles to access the site.

Figure 4.1: Development Plan showing car park arrangement





5. TRAFFIC VOLUMES & PARKING

05

5.1. Daily or Peak Hour Traffic Volumes

The Child Care Centre is proposed to cater for up to 104 children with 21 staff. In order to determine traffic generation, reference has been made to GTA Consultants in-house database for both peak parking demand and traffic generation. This database is based on observations made at ten (16) Child Care sites located throughout Australia. In terms of traffic generation for Child Care Centres, the expected peak traffic flows in the AM and PM peaks are (inclusive of parents/carers and staff):

- AM Peak 0.83 trips per child
- PM Peak 0.82 trips per child

Based on the 104 children maximum expected to be on the site, this development is expected to generate approximately:

- AM Peak 87 trips
- PM Peak 86 trips

These trips are expected to be evenly divided into 50% entering and 50% exiting over that peak period (approximately 44 entering and 43 exiting the northern crossover). Along the frontage road, this is further expected to be distributed 50% in each direction of Heath Avenue.

Table 2.4 from the Austroads publication, *Guide to Traffic Management Part 6 – Intersections, Interchanges and Crossings* in the 2007 version provided advice relating to the intersection and crossover performance in peak flow conditions for possible further analysis and is summarised in Table 5.1. If the calculated expected traffic flows for this development exceed those shown in Table 5.1, a further assessment is typically required.

Table 5.1: Austroads Guidelines

Major Road Type	Major Road Flow (two-way, vph)	Minor Road Flow (two-way, vph)
Two-lane	400	250
	500	200
	650	100
Four-lane	1,000	100
	1,500	50
	2,000	25

Based on the expected future (2031) traffic flows on Heath Avenue determined in a previous assessment carried out by GTA (dated April 2019) with reference to ARUP's network modelling report for the Centre (dated May 2015) and the expected traffic flows for the proposed development, the development is expected to generate two-way traffic flows less than 100 vehicles per hour (the "Minor" road). However, the traffic flows on Heath Avenue (the "Major" road) are expected to be more than approximately 1,000 in the AM peak. The major flows are half over the threshold of 650 vph. Thus, there is a requirement to undertake a detailed assessment on the crossover.

5.2. Level of Service Concepts

The Level of Service (LoS) concept describes the quality of traffic service in terms of six levels, designated A to F, with LoS A representing the best operating condition (i.e. at or close to free flow), and LoS F being the poorest (i.e. forced flow). More specifically:

- *LoS A*: Primarily free flow operations at average travel speeds, usually about 90% of the FFS (free flow speed) for the given street class. Vehicles are completely unimpeded in their ability to manoeuvre within the traffic stream. Control delay at signalised intersections is less than 10 seconds. At non-signalised movements at intersections, the average control delay is less than 10 seconds;

- *LoS B*: Reasonably unimpeded operations at average travel speeds, usually about 70% of the FFS for the street class. The ability to manoeuvre within the traffic stream is only slightly restricted, and control delays at signalised intersections are between 10 and 20 seconds. At non-signalised movements at intersections the average control delay is between 10 and 15 seconds;
- *LoS C*: Stable operations; however, ability to manoeuvre and change lanes in mid-block locations may be more restricted than at LoS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50% of the FFS for the street class. Signalised intersection delays are between 20 and 35 seconds. At non-signalised movements at intersections the average control delay is between 15 and 25 seconds;
- *LoS D*: A range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. LoS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors. Average travel speeds are about 40% of FFS. Signalised intersection delays are between 35 and 55 seconds. At non-signalised movements at intersections the average control delay is between 25 and 35 seconds;
- *LoS E:* Characterised by significant delays and average travel speeds of 33% of the FFS or less. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections (between 55 and 80 seconds), and inappropriate signal timing. At non-signalised movements at intersections the average control delay is between 35 and 50 seconds; and,
- *LoS F*: Characterised by urban street flow at extremely low speeds, typically 25% to 33% of the FFS. Intersection congestion is likely at critical signalised locations, with high delays (in excess of 80 seconds), high volumes, and extensive queuing. At non-signalised movements at intersections the average control delay is greater than 50 seconds.

In addition to the above:

- Average Delay: is the average of all travel time delays for vehicles through the intersection; and,
- Queue: is the queue length below which 95% of all observed queue lengths fall.
- Degree of Saturation (DoS): Ratio of the traffic flow to the capacity for that particular lane/movement.
- The above has been summarised below.

LoS		Intersection Degree of Saturation (DoS, X)	
		Unsignalised Intersection	Signalised Intersection
A	Excellent	<=0.50	<=0.60
B	Very Good	0.50-0.70	0.60-0.75
C	Good	0.70-0.80	0.75-0.90
D	Acceptable	0.80-0.90	0.90-0.95
E	Poor	0.90-1.00	0.95-1.00
F	Very Poor	>=1.0	>=1.0

5.3. Heath Avenue/Access Road 'T-Junction' Intersection Performance

The Heath Avenue/Access Road 'T-Junction' intersection was assessed with Heath Avenue as two-way two-lane road with a right turn lane from the North approach into the crossover, extended to the North with the Amberton Neighbour Centre in place.

Heath Avenue will remain as the priority (major) road with the crossover as the terminating (minor) road. The intersection was assessed with the expected traffic flows derived with reference to ARUP network modelling report in 2031 with the proposed development traffic flows included.

Table 5.2 and Table 5.3 (excerpts from the SIDRA Intersection output table for Movements) show the expected performance of the intersection at 2031 (at completion of the subdivisional works for the structure plan area).

Table 5.2: Heath Avenue/ Access Road Expected 2031 AM Peak Performance

Approach	Performance Criteria		
	Lane	DoS	Non-Priority Av. Delay (s) Intersection LoS
Heath Ave (S)	Left/Through	0.27	
Heath Ave (N)	Through	0.36	
	Right	0.04	8
Child Care/Access Rd (W)	Left/Right	0.17	8
Intersection	**ALL**	**0.36**	**A**

Table 5.3: Heath Avenue/ Access Road Expected 2031 PM Peak Performance

Approach	Performance Criteria		
	Lane	DoS	Non-Priority Av. Delay (s) Intersection LoS
Heath Ave (S)	Left/Through	0.34	
Heath Ave (N)	Through	0.23	
	Right	0.05	8
Child Care/Access Rd (W)	Left/Right	0.16	8
Intersection	**ALL**	**0.34**	**A**

5.4. Types of Vehicles

The type of vehicles expected to access the site are predominantly private motor vehicles. There is not expected to be a vehicle larger than that, apart from a small delivery van or similar delivering to the site, which would be very close in size to the largest expected private motor vehicle, typically a B99 as defined in Australian Standards. There will be the occasional waste collection truck accessing the site, but this is expected to occur outside operating hours of the centre.

5.5. Parking Impacts

Based on the GTA database, a Child Car Centre has a peak parking demand of 0.19 parked cars per child in both the AM and PM peak periods (this is the average rate across 16 Child Care Centres). Based on the 104 children expected to attend/work at the facility, the peak parking demand is expected to be 21 cars parked on site (inclusive of staff and parents). These peaks are expected to occur at typically 9am and 3pm with demand decrease either side of these times.

During the day, with no children being picked up or dropped off, the parking demand would be predominately based on the staff movements on the site.

Census data for the City of Wanneroo from 2016 indicated that the City of Wanneroo residents used the following modes of transport to places of employment:

- Car Driver 67.6%
- Car Passenger 3.9%
- Train/Bus 11.3%
- Bicycle/Motorcycle ~0%
- Walk 1.6%
- Other (taxi/uber/dropped off) 15.6%

Based on the above information, there is an expectation that of the 21 staff, approximately 14 staff vehicles will be parked on-site. The remaining 7 staff are expected to commute either by train/bus to the centre and/or arrive via ride sharing/passenger set-down or walk.

On the basis of the City of Wanneroo Census data for staff, there would be 4 available spaces left for parents/visitors to use in addition to the 13 x parents parking bays and 1x disabled bay.

The expected parking demand use should not exceed the proposed supply of parking on the site consisting of:

- 11 x parents parking bays (use by parents)
- 19 x staff parking bays
- 1 x disabled bay with shared area

Under the expected GTA database peak parking demand, the 21 cars expected on site will be able to park within the available 31 bays provided and there should not be any requirement for cars to be parked off-site.

A further assessment was undertaken, this based on an M/M/c multi-server model queuing analysis for the car park with the parking bays acting as servers. Based on the 12 bays available for parents (11 normal bays plus the disabled bay, with parking limited to 10 minutes maximum), the car park is expected to be able to cater for up to approximately 72 vehicles entering the site in the busiest peak hour and parking. Based on an arrival rate of 44 vehicles per hour the 95th percentile queue (this is typically the required design parameter for traffic engineering purposes) is expected to be up to 12 vehicles within the site at the busiest period (this excludes the 19 bays allocated to staff) or 31 including staff bays. For an average period, there is expected to be approximately 7 cars parked on the site, excluding staff or 26 including staff.

In addition to actual parked cars, the car park aisle and entry driveway will allow for up to one (1) car to queue, if there were to be instances (in any) to require such use.

6. TRAFFIC MANAGEMENT ON FRONTAGE STREETS

06

TRAFFIC MANAGEMENT ON FRONTAGE STREETS

Heath Avenue affords the site the main access. This road will be under the care and control of the City of Wanneroo and is expected to be classified as a Local Distributor Road under Main Roads WA Functional Road Hierarchy. It is expected to carry approximately 7,000 to 8,000[1] vehicles per day with approximately 5% of these being truck type traffic.

In the peak period the traffic flows consist of:

- AM Peak 390 northbound/640 southbound for a total of 1,030 vehicles per hour
- PM Peak 560 northbound/410 southbound for a total of 970 vehicles per hour

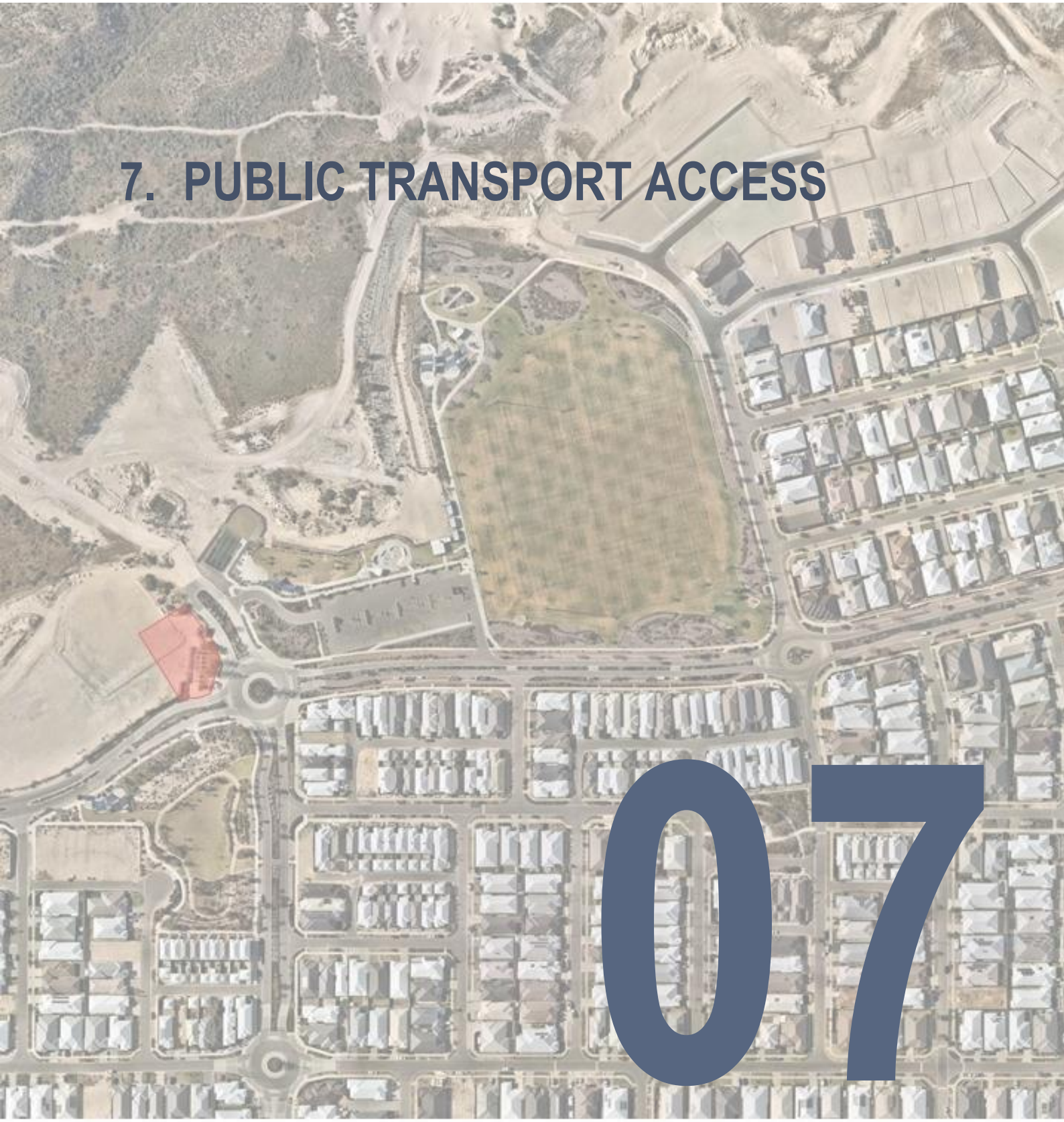
The road is proposed to consist of two 5m wide carriageways either side of a 5.8-7m wide median within a 27m wide road reserve.

On the east side of Heath Avenue of the proposed development there is a 2.5m wide footpath opposite to subject site, whilst there is an approximately 2m wide footpath located on the south side of Viridian Boulevard.

Heath Avenue and Viridian Boulevard are subject to the default built up area speed limit of 50km/h.

In the five-year period up to 31/12/2018 there had been no recorded crashes on Heath Avenue and Viridian Boulevard in the vicinity of the proposed development suggesting this section of road is relatively safe.

[1] From ARUP Network Modelling Report (dated May 2015)



7. PUBLIC TRANSPORT ACCESS

07

7.1. Public Transport Access

Bus Route 490 and 491 runs along Marmion Avenue, with a bus stop 15 minutes walking distance to the site in both directions and operates every 20 minutes in the peak hour towards or away from the Butler Station, and every 60 minutes off peak.

Based on the Alkimos-Eglinton DSP and Eglinton LSP, Heath Avenue will be designed as an STS route with buses running past the subject site to the future Eglinton Station and the Butler station to the south.

Table 7.1: Public Transport Provision

Service	Route	Route Description	Distance to Nearest Stop (m)	Frequency On/Off Peak
Bus	490	Butler Station to Two Rocks	1.2km	20 min on / 50 min off
Bus	491	Butler Station to Yanchep	1.2km	20 min on / 60 min off
Train	Butler Station	Joondalup Line	7.4km	15 min

8. ACTIVE TRANSPORT

08

8.1. Pedestrian Access/Facilities

8.1.1. Pedestrian Facilities Within the Development

There are currently no pedestrian facilities within the development as it is a vacant block of land.

There is proposed to be pedestrian access in front of the building which connects to the wider network on Viridian Boulevard.

8.1.2. Existing Pedestrian Facilities on Surrounding Roads

Access to the site is presently via an existing footpath network along all roads adjoining the site. There is a footpath network on at least one side of the road for all roads surrounding the subject site. There are currently approximately 2m wide footpaths along Viridian Boulevard, on the southern side and Heath Avenue, on the eastern site. This footpath connects to the surrounding footpath network.

8.1.3. Proposals to Improve Pedestrian Access

Footpaths are proposed along Viridian Boulevard and Heath Avenue, which abut the subject site as part of the neighbourhood development.

8.2. Cycle Access/Facilities

8.2.1. Cycle Facilities Within the Development

There are no existing cycle facilities at the subject site, as it has not been developed.

There is also a secure yard within the proposed development which staff bikes can be secured. Visitors or parents' bikes can be secured on the bike rack which will be located next to car park. Both these facilities will allow for up to three bikes to be secured.

8.2.2. Existing Cycle Facilities on Surrounding Roads

There are on-road cycle lanes along both sides on Heath Avenue and Viridian Boulevard, west of Heath Avenue. There are also separated cycle lanes along both sides of Cinnabar Drive, from Heath Avenue to Marmion Avenue.

8.2.3. Proposed Cycle Facilities on Surrounding Roads

No upgrades to the cycling facilities in the neighbourhood are required as part of this development. The cycling network surrounding the proposed development is developing in accordance with the approved structure plans for the nearby locality and wider area. The Amberton area is being developed in accordance with Liveable Neighbourhoods which considers the requirements of both commuter and recreation cyclists in providing both on-road and off-road cycling facilities.

9. SITE SPECIFIC ISSUES

09

9.1. Issues

Due to the extended nature of the car park, parents will enter the car park from the adjacent access road from Heath Avenue. In rare instances there are no empty parking bays they will need to drive to the end of the car park past parked staff cars. This distance may be excessive and parents may not be aware of the ability to turn at the end of the parking area.

To reduce the likelihood and number of vehicles which might drive through the car park, the turning bay should be located closer to where the parents are able to park.

10. SAFETY ISSUES

10

10.1. Identified Issues

No issues have been identified as part of this assessment of the proposed development.

There are sufficient vision truncations at the exit from the car park and this will allow drivers to be able to see pedestrians walking along the footpath located adjacent to the site on the access road to the north of the site.

10.2. Remedial Measures

- Based on the above and previous sections there are no required remedial measures.

11. CONCLUSION

11

CONCLUSION

As a result of the traffic analysis undertaken for proposed childcare development at Lot 154 Viridian Boulevard, Eglinton, the following findings have been made:

- The proposed development is not expected to generate significant vehicular trips;
- Therefore, the impacts of the traffic volumes associated with the development on the road network are considered acceptable; and,
- Expected parking peak demand should be all contained on-site and no requirement for off-site parking.

The required WAPC checklist for this transport impact statement is at **Appendix C**.

A. DEVELOPMENT PLANS

Refer to 20/52183 for Development Plans

A

B. WASTE VEHICLE SWEPT PATH

C. WAPC GUIDELINES CHECKLIST

C

APPENDIX: WAPC GUIDELINES CHECKLIST

Item	Provided	Comments/Proposals
Proposed Development		
Existing Land Uses	Y	
Proposed Land Use	Y	
Context with Surrounds	Y	
Vehicular Access and Parking		
Access Arrangements	Y	
Public, Private, Disabled Parking Set Down/Pick Up	Y	
Service Vehicle (Non-Residential)		
Access Arrangements	Y	
On/Off-Site Loading Facilities	Y	
Service Vehicles (Residential)		
Rubbish Collection and Emergency Vehicle Access	Na	
Hours of Operation (Non-Residential Only)		
	Y	
Traffic Volumes		
Daily or Peak Hour Traffic Volumes	Y	
Type of Vehicles (E.G. Cars, Trucks)	Y	
Traffic Management on Frontage Streets	Y	
	Y	
Public Transport Access		
Nearest Bus/Train Routes	Y	
Nearest Bus Stops/Train Stations	Y	
Pedestrian/Cycle Links to Bus Stops/Train Station	Y	
Pedestrian Access/Facilities		
Existing Pedestrian Facilities Within the Development (If Any)	Y	
Proposed Pedestrian Facilities Within Development	Y	
Existing Pedestrian Facilities on Surrounding Roads	Y	
Proposals to Improve Pedestrian Access		
Cycle Access/Facilities		
Existing Cycle Facilities Within the Development (If Any)	Y	
Proposed Cycle Facilities Within Development	Y	
Existing Cycle Facilities on Surrounding Roads	Y	
Proposals to Improve Cycle Access	Y	
Site Specific Issues		
	Y	

APPENDIX: WAPC GUIDELINES CHECKLIST

Item	Provided	Comments/Proposals
Safety Issues		
Identify Issues	Y	
Remedial Measures	Y	

Proponent's Name: _____

Company: _____ Date: _____

Transport Assessor's Name: _____Rodney Ding_____

Company: ___GTA Consultants (WA) Pty Ltd_____ Date: ____19/11/19_____