TRANSPORT IMPACT STATEMENT

Lot 1022 (No 150) St Andrews Drive,

Yanchep

October 2023

Rev C

kctt

HISTORY AND STATUS OF THE DOCUMENT

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1. Executive Summary

Site Context

- The subject site is currently an unoccupied landholding. Proponent is looking to construct a childcare centre with capacity for a maximum of 92 children at a time and 15 staff members.

- The proposed development fronts St Andrews Drive to the west and proposes one vehicular access/egress point. Proposed development plans are enclosed in Appendix 1 for clarity.

Technical Findings

- The navigability of the proposed parking area was checked with a B99 Passenger vehicle (5.2m). The analysis did not reveal any potential issues. Refer to Appendix 3 for the vehicle swept paths drawings.

- KCTT believe that a childcare centre does not require a specific bay for delivery vehicles, since deliveries can be conducted outside of peak hours of operation, when all drop-off parking bays will be empty.

- Waste collection can be conducted safely within the road reserve of St Andrews Drive. Alternatively, waste vehicles can perform on-site pickups, reversing from the street onto the site and leaving in forward gear.

Relationship with Policies

- The plans for the proposed development show a total of 23 car parking bays on site, inclusive of 1 ACROD, 10 tandem bays (2x5) for staff members and 12 standard car parking bays. Additionally, 2 car bays are provided in verge, raising the total number of parking bays to 25.

  In accordance with the Local Planning Policy 2.3 a total of 29 parking bays are required, thereby resulting in a shortfall of 4 parking bays. On the other hand City of Wanneroo's District Planning Scheme No 2 stipulates a provision of a drive-in pickup/set down facility plus eight (8) bays for kindergarten's land use. If 8 car bays are set aside for staff members, while 25 car parking bays are provided in total, 17 bays left for a drop off function of the childcare centre.

  KCTT believes that the childcare centre's pick up / drop off function can be effectively catered for and that would not negatively impact the surrounding area. This is elaborated in more detail in Section 2.7 of this report.

- The plans for the proposed development show a provision of 4 bicycle parking racks, which exceeds the requirement of 1 long stay bicycle bay for childcare centre in accordance with the Austroads' Guide to Engineering Practice Part 14: Bicycles.

- Building Code of Australia ACROD Provision – The proposed plans demonstrate 1 ACROD bay, meeting the requirements outlined by the Building Code of Australia.

Conclusion

- With the additional 402 daily vehicular trips, 74 vehicle trips in the AM peak and 64 vehicle trips in the PM peak the proposed development would have a moderate impact on the surrounding road network, per WAPC classification.

  KCTT believe surrounding road network can accommodate additional traffic from the proposed development. In summary KCTT believe that the proposed development will not have a negative impact on the surrounding road network.

2. Transport Impact Statement

Germano Designs engaged KCTT to prepare a TIS for the proposed childcare centre at Lot 1022 (No 150) St Andrews Drive, Yanchep.

This report will primarily address the level impact of the proposed development and the requirements for integration of the proposed development with the surroundings, namely the existing and planned immediate road network.

2.1 Location

Lot Number	1022
Street Number	150
Road Name	St Andrews Drive
Suburb	Yanchep
Description of Site	The subject site is currently an unoccupied landholding. Proponent is looking to construct a childcare centre with capacity for a maximum of 92 children at a time and 15 staff members. The proposed development fronts St Andrews Drive to the west and proposes 1 vehicular access/egress point. Proposed development plans are enclosed in Appendix 1 for clarity.

2.2 Technical Literature Used

Local Government Authority	City of Wanneroo
Type of Development	Childcare Centre - Individual Development
Are the R-Codes referenced?	NO
Is the NSW RTA Guide to Traffic Generating Developments Version 2.2 October 2002 (referenced to determine trip generation / attraction rates for various land uses) referenced?	YES
Which WAPC Transport Impact Assessment Guideline should be referenced?	Volume 4 - Individual Developments
Are there applicable LGA schemes for this type of development?	YES
If YES, Nominate:	
Name and Number of Scheme	District Planning Scheme No. 2 (Updated to include AMD 172 GG 05/05/2023)
Are Austroads documents referenced?	YES
Is the Perth Transport Plan for 3.5 million and Beyond referenced?	NO

2.3 Land Uses

Are there any existing Land Uses	NO
If YES, Nominate:	-

Proposed Land Uses	
How many types of land uses are proposed?	One (1)
Nominate land use type and yield	Childcare Centre - 92 children - 15 staff members
Are the proposed land uses complementary with the surrounding land-uses?	Subject lot is designated as ''Residential – R40'' in the City of Wanneroo's District Planning Scheme No 2. Proposed land use – childcare is identified as 'D' use with the following meaning ''A use class that is not permitted, unless the local government grants its approval after following the procedures laid down by subclause 6.2.2;''

2.4 Local Road Network Information

How many roads front the subject site?	One (1)

Name of Roads Fronting Subject Site / Road Classification and Description:

Road Name	**St Andrews Drive**
Number of Lanes	two way, one lane per direction, divided
Road Reservation Width	App.25m
Road Pavement Width	App.10m
Classification	Local Distributor
Speed Limit	50kph or State Limit
Bus Route	NO
If YES Nominate Bus Routes	-
On-street parking	NO

2.5 Traffic Volumes

Are traffic volumes available on Main Roads WA website?	NO
Are traffic volumes provided by the Local Government?	By the time of writing this report KCTT didn't received the response from the City of Wanneroo's officer to request for available traffic data information if any.

2.6 Vehicular Crash Information

Is Crash Data Available on Main Roads WA website?	NO
Nominate analysed survey locations:	
Location 1	St Andrews Dr (SLK 1.31 – 1.59)
Location 2	Intersection of St Andrews Drive & Birnam Court
Period of crash data collection	01/01/2018 - 31/12/2022
Comment	No crashes were reported at the above locations in the stated 5-year period.

2.7 Vehicular Parking

Local Government	City of Wanneroo
Local Government Document Utilised	City of Wanneroo's District Planning Scheme No 2 Local Planning Policy 2.3: Child Care Centres

Description of Parking Requirements in accordance with nominated documents:

City of Wanneroo's District Planning Scheme No 2 states the following:

' ' CAR PARKING STANDARDS

16.1 The number of on-site car parking bays to be provided for specified development shall be in accordance with Schedule 11. Where development is not specified in Schedule 11 the local government shall determine the parking standard. The local government may also determine that a general car parking standard shall apply irrespective of the development proposed in cases where it considers this to be appropriate.

16.2 The design of off-street parking areas including parking for disabled shall be in accordance with Australian Standards AS2890.1 or AS2890.2 as amended from time to time. Car parking areas shall be constructed, marked, drained and thereafter maintained to the satisfaction of the local government.

SCHEDULE 11 – CAR PARKING STANDARDS

- *childcare premises - Per local planning policy but not less than 5*
- *Kindergarten - Provision of a drive-in pickup/set down facility plus eight (8) bays."*

Additionally, car parking requirements are prescribed within Local Planning Policy 2.3: Child Care Centres as follows:

' 'Parking is to be provided on site at a rate of one parking bay for each staff member, in addition to the required number of bays as outlined in the table below"

children	***Car bays required***
25 or less	*5*
26-30	*6*
31-38	*7*
39-46	*8*
47-54	*9*
55 or more	***9 bays plus 1 per 8 children accommodated in excess of 54***

The same Policy states:

This policy has been prepared under Schedule 2, Part 2 of the Deemed Provisions of the Planning and Development (Local Planning Schemes) Regulations 2015 and is to be read in conjunction with the City of Wanneroo's (the City) District Planning Scheme No. 2 (DPS 2).

Calculation of Parking (in accordance with City of Wanneroo's District Planning Scheme No 2)

Land Use	Requirements	Yield	Total Parking
Childcare Centre	*Provision of a drive-in pickup/set down facility plus eight (8) bays*	n/a	8 +
	Total Car Parking Requirement		8 + drop off bays

Calculation of Parking (in accordance with Local Planning Policy 2.3: Child Care Centres)

Land Use	Requirements	Yield	Total Parking
Childcare Centre	*one parking bay for each staff member*	15 staff	15
	9 bays plus 1 per 8 children accommodated in excess of 54	92 children	9 + 4.75
	Total Car Parking Requirement		**29**
	Total Volume of Parking Provided by Proponent		**25**
		Inclusive of:	*23 car bays on site*
			2 bays on verge

Justification

The plans for the proposed development show a total of 23 car parking bays on site, inclusive of 1 ACROD, 10 tandem bays (2x5) for staff members and 12 standard car parking bays. Additionally, 2 car bays are provided in verge, raising the total number of parking bays to 25.

In accordance with the Local Planning Policy 2.3 a total of 29 parking bays are required, thereby resulting in a shortfall of 4 parking bays.

On the other hand City of Wanneroo's District Planning Scheme No 2 stipulates a provision of a drive-in pickup/set down facility plus eight (8) bays for kindergarten's land use. If 8 car bays are set aside for staff members, while 25 car parking bays are provided in total, 17 bays are left for a drop off function of the childcare centre.

Given the nature of the proposed land use and site context, the following points inform KCTT's opinion that the proposed parking can meet the development requirements:

- The capacity of the childcare centre is 92 children. It is highly unlikely that the childcare centre would always operate at the maximum legal capacity.
- The peak time for childcare centres is typically a 2-hour period. The average length of stay, as stated in NSW RTA - Guide to Traffic Generating Developments, is 6.8 minutes. Even assuming conservative 10 minutes average length of stay, the actual arrivals/departure rate of parents with vehicles is likely to be spread throughout the 2-hour peak time. The AM peak is likely to be the peak development period as most parents drop off their children before going to work, whereas the PM peak tends to be more spread out with pick up times depending on when parents' become available.
- It is expected that staff would possibly cycle/walk to work.
- Adolescent staff will be dropped off.
- It is expected that some of patrons may be residents of the surrounding area since there are no other childcare centres within walking distance.

The table below was derived through many years of practice and research in this field that our office completed. We have worked with a number of established childcare providers who have provided sign-in data for a full week period. The percentages outlined below have emerged as the current average arrival/departure pattern. As per our transport impact assessment, the estimated average dwell time is 10 minutes, which is significantly higher than dwell time suggested by NSW RTA Guide to Traffic Generating Developments.

While this pattern shows that up to 95% of children are in attendance for the day (as practically recorded), this distribution still does not allow for siblings attending the centre and assumes that all children in attendance are driven to the childcare in a separate personal vehicle (not walked or brought on bicycles), therefore the distribution below has a degree of conservativism.

In our previous experience, we have come across data indicating that siblings usually make up 15-25% of attendees. More than one child will be brought in a single vehicle in these cases, reducing the parking requirement.

The table below was developed on the following assumptions:

- The arrival percentage is derived from data provided to KCTT and described above.
- It was assumed there were no siblings in the centre.
- It was assumed that all children in attendance would be driven to the centre.

Sign-in Time	**Extracted Arrival Percentages** (of the maximum number of children)	**Expected Number of Children Signing In**	**Parking demand** (assumed dwell time 10 minutes per vehicle)	**Parking Bays available for visitors on site (at any time)**	
				if 8 bays are designated for staff	If 10 bays are designated for staff
07:00 - 07:30	13.97%	15	2.17 (3)	14	12
07:30 - 08:30	40.55%	42	**6.17 (7)**	**10**	**8**
08:30 - 09:30	30.68%	32	4.67 (5)	12	10
09:30 - 10:30	7.67%	8	1.17 (2)	15	13
After 10:30	1.37%	1	0.17 (1)	16	14
Total:	94.25%	87 children (92 children – 100% capacity)			

As it could be seen in the table above, the parking demand is the strongest in the period from 07.30 till 08:30. When applied to the subject development with the assumed dwell time of 10 minutes per vehicle, the subject childcare centre would require a maximum of 7 car bays to cater for the expected parking demand of pick up / drop off function.

The calculation in a table above shows the number of parking bays available for visitors in 2 cases, when 8 or 10 car bays are dedicated to staff members. Having in mind that 8 or 10 drop off bays could be expected to be available in the period of the strongest parking demand, it could be concluded that each of the analysed arrangements provide a more than enough provision of parking bays to cater for the pickup / drop off function of the childcare centre.

Therefore, based on all above mentioned KCTT believe that pick up / drop off function of the childcare centre can be effectively catered for on premises and it is highly unlikely that the proposed development would have any negative impact. It is expected that the proposed 25 parking bays would adequately cater for the parking demand of the proposed development.

Have Vehicle Swept Paths been checked for Parking? YES

The navigability of the proposed parking area was checked with a B99 Passenger vehicle (5.2m) and a Medium Rigid Vehicle (8.8m) in 2 variations (with 9m and 12.5m curb to curb turning radius).. The analysis did not reveal any potential issues. Refer to Appendix 3 for the vehicle swept paths drawings.

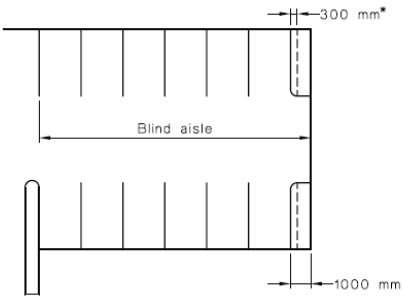
2.8 Compliance with AS2890.1:2004 and AS2890.6

Number of Parking Bays on-site	23
Are Austroads documents referenced? *If YES, Nominate:*	YES • Australian/New Zealand Standard, Parking facilities, Part 1: Off-street car parking - Originated as AS 2890.1—1986. • Australian/New Zealand Standard, Parking facilities, Part 6: Off-street parking for people with disabilities - Originated as AS2890.6
Proposed development User Class	User Class 1A (Residential, domestic and employee parking) User Class 3 (visitors' parking) User Class 4

AS2890.1:2004 Off-street car parking AS2890.6 Off-street parking for people with disabilities						
Parking Bay Type	Parking Bay Length		Parking Bay Width		Aisle Width	
	Required	Proposed	Required	Proposed	Required	Proposed
All bays at 90° (User Class 1A)	5.4m	5.5m	2.4m	2.5m	5.8m	6.4m
All bays at 90° (User Class 3)	5.4m	5.5m	2.6m	2.5m	5.8m	6.4m
ACROD Parking	5.4m	5.5m	2.4m–ACROD 2.4m–shared space	2.5m–ACROD 2.5m–shared space	5.8m	6.4m

Name the other requirements in the AS2890.1:2004 document.

'' At blind aisles, the aisle shall be extended a minimum of 1 m beyond the last parking space, as shown in Figure 2.3, and the last parking space widened by at least 300 mm if it is bounded by a wall or fence.
In car parks open to the public, the maximum length of a blind aisle shall be equal to the width of six 90 degree spaces plus 1 m, unless provision is made for cars to turn around at the end and drive out forwards.''



*Additional widening required if there is a wall or fence at the side of the last space, see Clause 2.4.1(b)(ii).

DIMENSIONS IN MILLIMETRES

FIGURE 2.3 BLIND AISLE EXTENSION

KCTT comment:

Single-sided aisles	Not increased by 300 mm
Blind aisle	Extended by a minimum of 1 m
Reversing bay	Provided as shown on the layout plans enclosed in Appendix 1.

Does the parking area meet the requirements set in AS2890.1:2004?	KCTT reviewed the proposed development layout and concluded that dimensions of all car parking bays and aisle width generally comply with the Australian Standard AS/NZS 2890.1/2004. The width of the parking bays for visitors' is

below standard for User Class 3 but in line with Class 2 and having in mind the increased width of the aisle, KCTT believe this could adequately serve proposed land use.

Does the parking area meet the requirements set in AS2890.6? YES

2.9 Compliance with AS 2890.5—1993 for on-street parking bays

Number of Parking Bays on-site: 2 on-street bays on St Andrews Drive

Are regulatory documents referenced? YES

If YES, Nominate: AS 2890.5—1993, Parking facilities, Part 5: On–street parking

AS 2890.5—1993 requirement		Proposed
Parking Bay Width	For cars and light commercial vehicles, normal conditions - 2.3m	2.5m
Parking Bay Length	**Length of intermediate space**—6.0 m to 6.7 m, depending on parking turnover and traffic volume (see Note 3) *Note 3 - Where parking turnover is high and vehicles backing into parking spaces cannot be readily tolerated, increased space lengths, up to 8 m, should be considered.*	-
	Length of end space which is obstructed at one end by a kerb or barrier—6.3 m or length Z of adjacent space, whichever is the greater	6.5m

Name the other requirements in the AS2890.1:2004 document.

'' Roadway width limitations for parallel parking
Width limitations which should be observed when determining the type of parking appropriate in a particular case, are as follows:
(a) Parallel parking Under low speed urban conditions, i.e. traffic speeds past the site generally not exceeding 60 km/h, the width from kerb to left-hand edge of the nearest moving traffic lane that should be provided is the parking space width from Table 2.1, plus 0.5 m clearance. This clearance should be increased by 1.0 m for each 10 km/h by which traffic speeds exceed 60 km/h, up to a maximum of 3.0 m.''

Having in mind St Andrews Drive has a speed limit of 50kph and carriageway width of 10m for one-lane two-way traffic; there are no limitations for introducing parallel parking.

Does the parking area meet the requirements set in AS 2890.5—1993?

KCTT reviewed the proposed street parking bays and concluded that all car parking bays' dimensions comply with the Australian Standard AS 2890.5—1993.

2.10 Bicycle Parking

Local Government	City of Wanneroo
Reference Document Utilised	District Planning Scheme No. 2 Austroads' Guide to Engineering Practice Part 14: Bicycles

Description of Parking Requirements in accordance with Scheme:

" Bicycle Parking and End of Trip Facilities

18.1 The local government may require the provision of bicycle parking and end of trip facilities such as showers, change rooms and lockers in commercial developments and other employment centres in accordance with Austroads' Guide to Engineering Practice Part 14: Bicycles."

Austroads' Guide to Engineering Practice Part 14: Bicycles has been replaced by Guide to Traffic Management Part 11: Parking, therefore KCTT have referenced the latter document:
" Child day care centre: Bicycles (long-stay) -1 space"

Total Volume of Bicycle Parking Provided by Proponent	4 bicycle parking racks

Justification

The plans for the proposed development show a provision of 4 bicycle parking racks, which exceeds the requirement of 1 long stay bicycle bay for childcare centre in accordance with the Austroads' Guide to Engineering Practice Part 14: Bicycles.

2.11 ACROD Parking

Class of Building	Class 1b (Child Care Centre);
Does this building class require specific provision of ACROD Parking?	YES
Reference Document Utilised	Building Code of Australia

Description of Parking Requirements:
Class 1b — 1 space for every 100 carparking spaces or part thereof.

Parking Requirement in accordance with regulatory documents

Land Use	Requirements	Yield	Total Parking
Childcare	*1 space for every 100 carparking spaces or part thereof*	23	1
	Total Volume of ACROD Parking Required		**1**
	Total Volume of ACROD Parking Provided by Proponent		1

Justification

The proposed plans demonstrate 1 ACROD bay, meeting the requirements outlined by the Building Code of Australia.

2.12 Delivery and Service Vehicles

Guideline Document used as reference	NSW RTA Guide to Traffic Generating Developments
Requirements	
Other uses - 1 space per 2,000m2	

Parking Requirement in accordance with regulatory documents

Land Use	Minimum Requirements	Yield	Total Parking
Childcare	*1 space per 2,000m2*	<2,000m^2	1
	Total Volume of Service and Delivery Parking Required		1
	Total Volume of Service and Delivery Parking Provided by Proponent		N/A

Justification

The above requirements are only stated as a guide. KCTT believe that a childcare centre does not require a specific bay, since all deliveries can be conducted outside of peak hours of operation when all drop-off parking bays will be empty.

Waste collection can be conducted safely within the road reserve of St Andrews Drive. Alternatively, waste vehicles can perform on-site pickups, reversing from the street onto the site and leaving in forward gear. This operation is exemplified using a Medium Rigid Vehicle (8.8m) in 2 variations (with 9m and 12.5m curb to curb turning radius), as illustrated in plans S40 and S41 found in Appendix 3 for enhanced clarity.

2.13 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation?	Child Care Centre – 07:00-19:00
What are the likely peak hours of operation?	07:00 - 08:00 and 16:00 - 17:00
Do the development generated peaks coincide with existing road network peaks?	YES
If YES, Which:	Both
Guideline Document Used	NSW RTA Guide to Traffic Generating Developments
Rates from above document:	***Child Day Care*:** • *AM Peak - 0.8 VPH per child* • *PM Peak - 0.7 VPH per child* It should be noted that these rates are given for a 2-hour peak period. For the purposes of this report KCTT assumes that the two-hour traffic volume will be attracted to the development in one hour period that will represent the peak for the subject site.

Given that the WAPC Transport Assessment Guidelines and NSW RTA Guide to Traffic Generating Developments do not offer daily vehicular trip generation rate for the proposed land use KCTT have assumed the following to apply:

Childcare centre

Vehicular daily trips can be assumed to be 4 VPD per child and 2 VPD per employee. Each parent will make 2 vehicular trips when dropping off the child to the day care centre and 2 vehicular trips when picking the child up. Employees will make 1 vehicular trip arriving to work, and another vehicular trip when leaving work.

In our experience, childcare centres tend to operate with up to 95% utilisation rate of the licenced capacity over the year due to a number of days those children attend (this ranges from 2 to 5 days a week) and seasonal adjustments (end of year and when people return to work from maternity leave). Therefore, the expected average daily operative maximum of this childcare facility can be estimated as 99 children. Market information indicates that between 10-20 parents have more than one child at the centre so those families only account for one vehicular trip. A further % of parents will have older siblings attending one of the nearby schools.

However, in the calculations below, a conservative approach has been applied showing the theoretical maximum number of children, under assumption that all children are driven to school and there are no siblings in the centre.

Does the site have existing trip generation / attraction? NO

Land Use Type	Rate above	Yield	Daily Traffic Generation	Peak Hour Traffic Generation	
				AM	PM
Child Care	*Daily - 4 VPD per child and 2 VPD per staff member* *AM Peak - 0.8 VPH per child* *PM Peak - 0.7 VPH per child*	92 children 15 staff	368 30	74	64
Total Traffic impact of the proposed development (A):			**398**	**74**	**64**

What is the total impact of the new proposed development?

With the additional 398 daily vehicular trips, 74 vehicle trips in the AM peak and 64 vehicle trips in the PM peak the proposed development would have a moderate impact on the surrounding road network, per WAPC classification.

KCTT believe surrounding road network can successfully accommodate additional traffic from the proposed development.

2.14 Traffic Flow Distribution

How many routes are available for access / egress to the site? One

Route 1 / Movement 1	
Provide details for Route No 1	From/to the south via St Andrews Drive
Percentage of Vehicular Movements via Route No 1	100%

Note – expected traffic flow distribution is based on a currently existing road network as shown on proposed development plans enclosed in Appendix 1. It could be expected that the surrounding area will be further

developed and St Andrews Drive extended, given that currently the cul-de-sac of this street is adjacent to the subject development site, it's clear that all the traffic generated by the proposed development will be distributed to the south. If the road is extended in future traffic flow is likely to be redistributed.

For more detailed plans of the estimated vehicular traffic volumes and distribution, please refer to the plans provided in Appendix 2.

2.15 Vehicle Crossover Requirements

Are vehicle crossovers required onto existing road networks?	YES
How many existing crossovers?	None
How many proposed crossovers?	One

If there are greater numbers of new crossovers, than existing, provide justification:
An access to the road network via crossover must be provided for each development.

How close are proposed crossovers to existing intersections?	Approximately 20m
Does this meet existing standards?	YES

Justification

According to AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking the user class of the access point is: User Class 1 - Employee and commuter parking Proposed development plans indicate a total of 23 parking bays on site and 1 crossover.

This crossover serves less than 25 parking bays from a local road, making it a ''Category 1 driveway''

TABLE 3.1
SELECTION OF ACCESS FACILITY CATEGORY

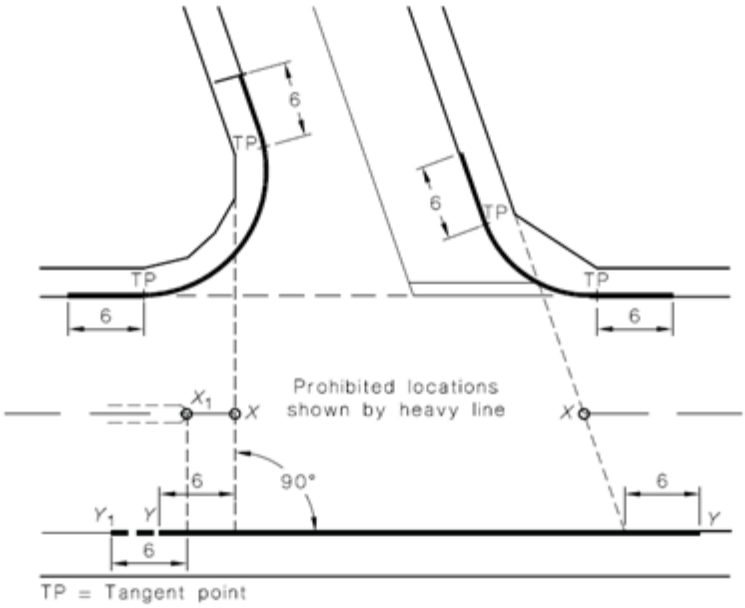
Class of parking facility (see Table 1.1)	Frontage road type	Access facility category — Number of parking spaces (Note 1)				
		<25	25 to 100	101 to 300	301 to 600	>600
1,1A	Arterial	1	2	3	4	5
	Local	1	1	2	3	4
2	Arterial	2	2	3	4	5
	Local	1	2	3	4	4
3,3A	Arterial	2	3	4	4	5
	Local	1	2	3	4	4

NOTES:
1 When a car park has multiple access points, each access should be designed for the number of parking spaces effectively served by that access.
2 This Table does not imply that certain types of development are necessarily suitable for location on any particular frontage road type. In particular, access to arterial roads should be limited as far as practicable, and in some circumstances it may be preferable to allow left-turn-only movements into and out of the access driveway.

Therefore, the following requirements from AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking apply:

"(a) Driveway Categories 1 and 2: At unsignalized intersections of sub-arterial, collector or local streets with each other or with an arterial road, access driveways in Categories 1 and 2 (see Table 3.1) shall not be located in the sections of kerb shown by heavy lines in Figure 3.1.
This requirement shall not apply to accesses to domestic driveways in the kerb section opposite the entering road at any intersection including signalized intersections.

Furthermore, it shall not apply to any access driveway serving a property which would otherwise be denied access due to the physical impossibility of meeting the requirement.



NOTES:

1 Accesses to domestic driveways are excluded from the prohibition in respect of the kerb section marked *Y*-*Y* (see Clause 3.2.3(a)).

2 The points marked X_1 and *X* are respectively at the median end on a divided road and at the intersection of the main road centre-line and the extensions of the side road property lines shown as dotted lines, on an undivided road. On a divided road, dimension *Y*-*Y* extends to Point Y_1.

DIMENSIONS IN METRES

FIGURE 3.1 PROHIBITED LOCATIONS OF ACCESS DRIVEWAYS

As shown on the layout for the proposed development in Appendix 1, the proposed crossover is not located in any of the areas shown by heavy lines and therefore complies with the AS/NZS 2890.1:2004 requirements

2.16 Pedestrian Safety

Are sight distances adequate for pedestrian safety? YES

Justification

There is more than 4.7m distance between the edge of the fence and the edge of the pedestrian path. Given the position of the rear-view mirror and wing mirrors on the vehicle - the driver would be able to see the pedestrian well before any part of the vehicle encroaches the footpath. Also, any pedestrian on the path would have more than enough sight line to see the egressing vehicle. Pedestrians walking along the verge would be an absolute minority and limited to delivery people (post is distributed in motorised vehicles in general).

Clearance between the path and the fence (>4.7m) is more than sufficient for the pedestrian to clearly see and hear the vehicle leaving the driveway and to adjust their behaviour.

In addition, MRWA data base do not have any records of any incident along St Andres Drive occurring within last 5 years.

2.17 Public Transport Accessibility

How many bus routes are within 400 metres of the subject site? None
How many rail routes are within 800 metres of the subject site? None

Walk Score Rating for Accessibility to Public Transport
n/a | -
Is the development in a Greenfields area? YES

2.18 Pedestrian Infrastructure

Describe existing local pedestrian infrastructure within a 400m radius of the site:

Does the site have existing pedestrian facilities YES

Does the site propose to improve pedestrian facilities? YES
If YES, describe the measures proposed.
The proposed walkway and covered entry veranda allow the pedestrian connection of the existing pedestrian path on St Andrews Drive and pedestrian entrances of the proposed facility.

What is the Walk Score Rating?
0 | Car-Dependent. Almost all errands require a car.

2.19 Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the subject site? NO
Although there are no bike routes classified by the Department of Transport, the area surrounding the subject site could be consider as very cycling friendly and provides good connectivity through the area.

Are there any PBN Routes within a 400m radius of the subject site? NO

Does the site have existing cyclist facilities? NO

Does the site propose to improve cyclist facilities? YES
If YES, describe the measures proposed.
The plans for the proposed development show a provision of 4 bicycle parking racks

2.20 Site-Specific Issues and Proposed Remedial Measures

How many site-specific issues need to be discussed?	One

Site-Specific Issue No 1	**Parking provision**
Remedial Measure / Response	KCTT believes that the childcare centre's pick up / drop off function can be effectively catered for and that would negatively impact the surrounding area. This is elaborated in more detail in Section 2.7 of this report.

Appendix 1

The Layout of the Proposed Development

MAC HOMES

Address:Lot 1022 (#150) St Andrews Drive,
YANCHEP

Childcare Centre

Job Number: 21109

Drawing No	Description
PD01	Cover Sheet
PD02	3D
PD03	Existing Site Survey
PD04	Site Plan
PD05	Context Plan
PD06	Floor Plan
PD07	Elevations

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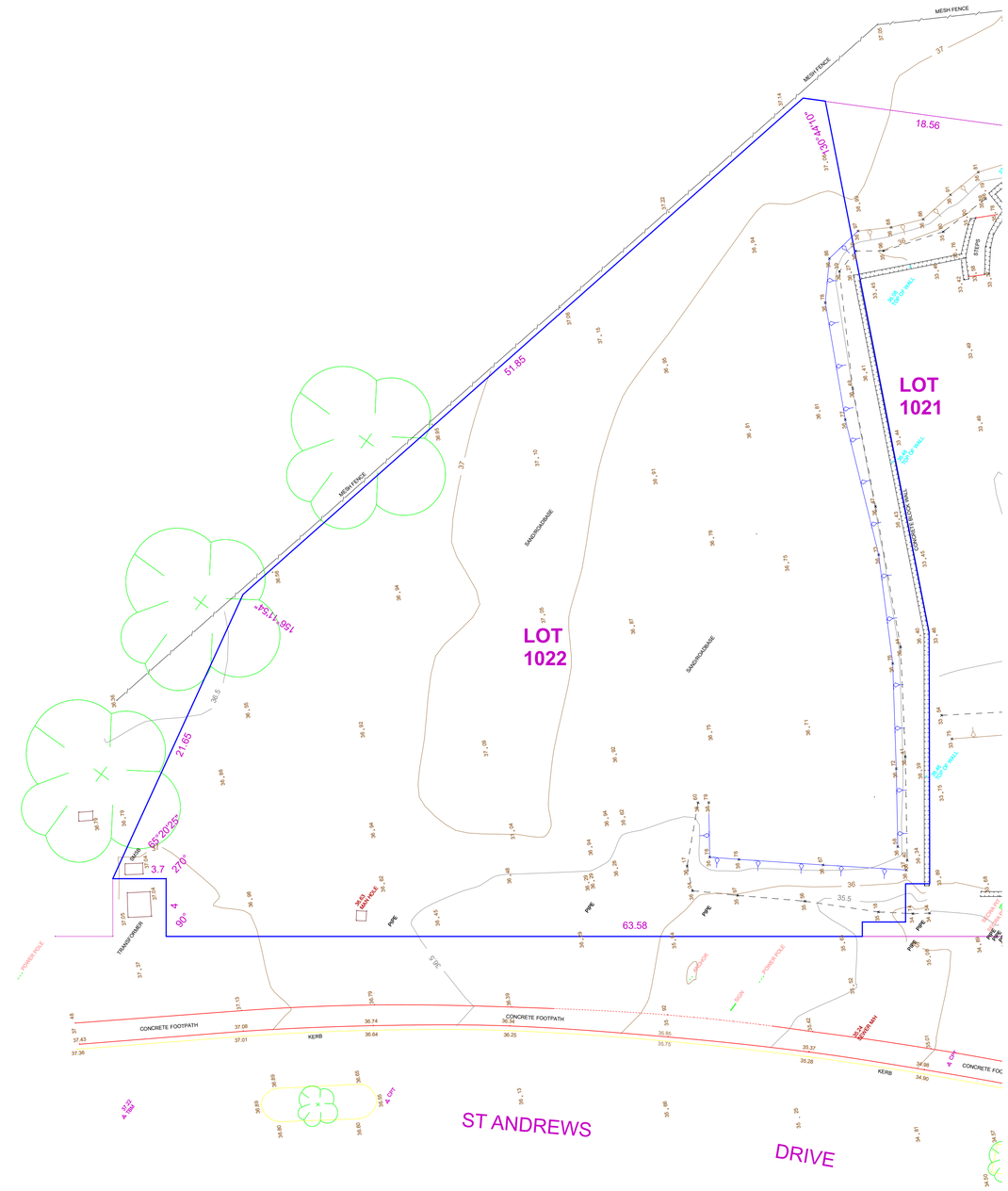

ROSS McLOUGHLIN
CONSULTING SURVEYOR
JOONDALUP: UNIT 1, 9 MERCER LANE
LANCELIN: 4 SALVAIRE CRESCENT
MOBILE 0419 255 999
EMAIL rossmac@iinet.net.au

LOT 1020 (No.150) ST ANDREWS DRIVE - YANCHEP

SITE PLAN - STRATA LOT 9

SCALE: 1:200 @ A1 SIZE	LOCAL AUTHORITY: CITY OF WANNEROO	SURVEYOR:	RAM
DATE: 24.7.2019	PLAN: LOT 9 ON STRATA PLAN 70720	DRAWN:	RAM
DATUM: AHD	AREA: 4138m 2	SDR FILE:	YP5

CHECK CERTIFICATE OF TITLE FOR EASEMENTS, RESTRICTIVE COVENANTS, ETC.

THIS SURVEY DOES NOT GUARANTEE THE CORRECT POSITION OF BOUNDARY PEGS OR FENCES.

ALL FEATURES AND BUILDING POSTIONS ARE APPROXIMATE ONLY, AS THEY HAVE BEEN POSITIONED FROM MEASUREMENTS TAKEN FROM EXISTING PEGS, FENCES AND WALLS.

INFORMATION SHOWN ON THIS PLAN IS CURRENT AT THE DATE SHOWN.

ROSS McLOUGHLIN SURVEYS ACCEPTS NO RESPONSIBILITY FOR ANY CHANGES THAT HAVE OCCURED AFTER THIS DATE TO SITE LEVELS, FEATURES OR BUILDINGS.

CADASTRAL BOUNDARY DIMENSIONS SHOWN HAVE BEEN OBTAINED FROM SURVEY PLANS AND ARE SUBJECT TO FIELD SURVEY.

A BOUNDARY RE-ESTABLISHMENT SURVEY IS RECOMMENDED PRIOR TO UNDERTAKING ANY SITE WORKS OR CONSTRUCTION.

Scale 1:200

Client
MAC HOMES

Project Name
Childcare Centre

Project Address
Lot 1022 (#150) St Andrews Drive, YANCHEP

Drawing Title:
Existing Site Survey

Scale: as noted
Sheet Size: A1
Project No: 21109
Drawing No.: PD03 of 07

Issue:
Development Approval

Rev:	Description:	Drawn:
007	Planning Drawings	CD

Revision Number: 007
Date: 31.07.2023

Revision	Description	Date
007	Planning Drawings	31.07.23
006	Sketch	29.07.22
005	Sketch	24.02.22
004	Sketch	22.02.22
003	Sketch	11.02.22
002	Sketch	20.01.22
001	Concept Design	19.01.22

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LANCELIN: 4 SALVAIRE CRESCENT
MOBILE 0419 255 999
EMAIL rossmac@iinet.net.au

LOT 1020 (No.150) ST ANDREWS DRIVE - YANCHEP

SITE PLAN - STRATA LOT 9

SCALE:	1:200 @ A1 SIZE	LOCAL AUTHORITY: CITY OF WANNEROO	SURVEYOR: RAM
DATE:	24.7.2019	PLAN: LOT 9 ON STRATA PLAN 70720	DRAWN: RAM
DATUM:	AHD	AREA: 4138m ^{2}	SDR FILE: YP5

CHECK CERTIFICATE OF TITLE FOR EASEMENTS, RESTRICTIVE COVENANTS, ETC.

THIS SURVEY DOES NOT GUARANTEE THE CORRECT POSITION OF BOUNDARY PEGS OR FENCES.

ALL FEATURES AND BUILDING POSITIONS ARE APPROXIMATE ONLY, AS THEY HAVE BEEN POSITIONED FROM MEASUREMENTS TAKEN FROM EXISTING PEGS, FENCES AND WALLS.

INFORMATION SHOWN ON THIS PLAN IS CURRENT AT THE DATE SHOWN.

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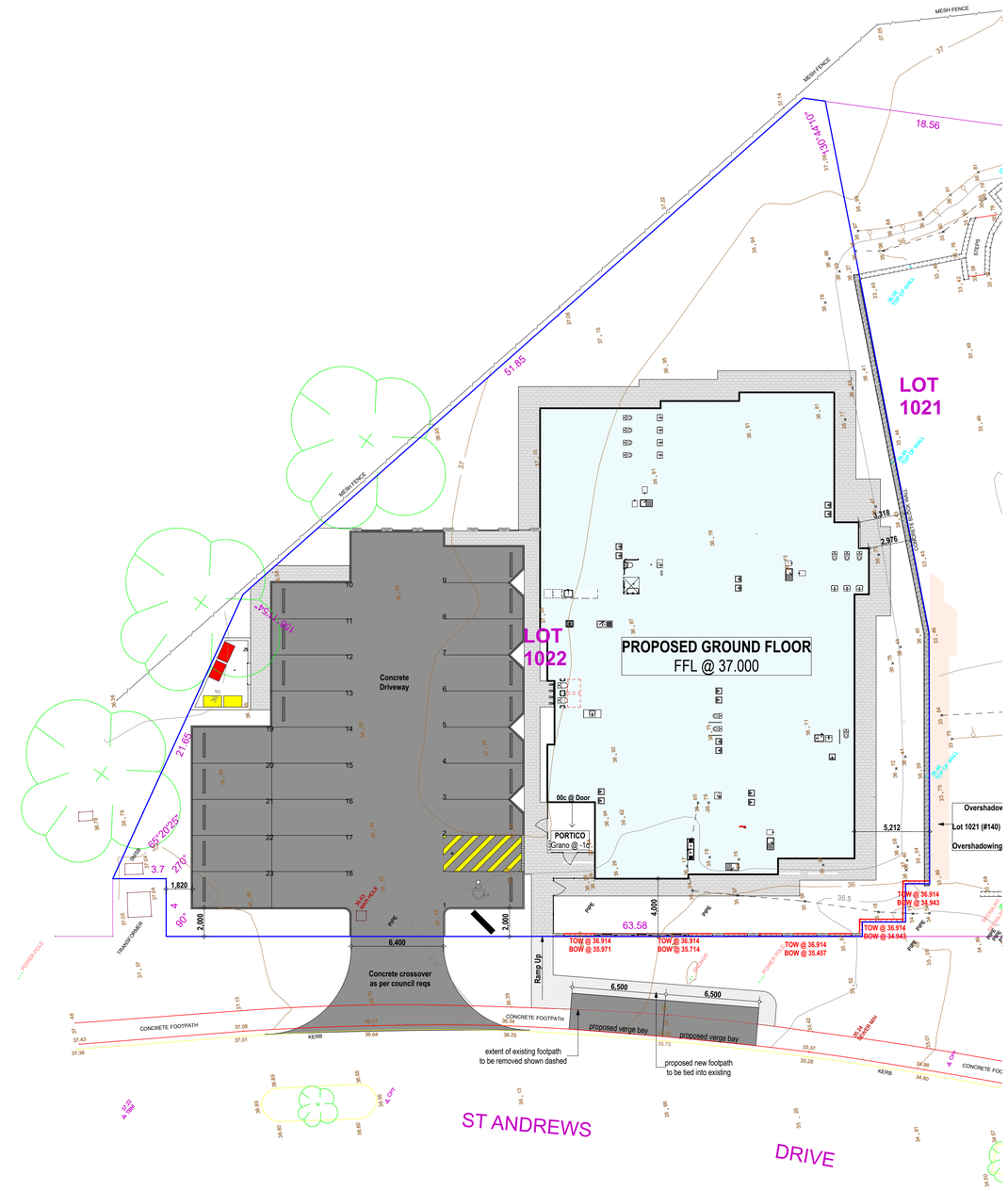
CADASTRAL BOUNDARY DIMENSIONS SHOWN HAVE BEEN OBTAINED FROM SURVEY PLANS AND ARE SUBJECT TO FIELD SURVEY.

A BOUNDARY RE-ESTABLISHMENT SURVEY IS RECOMMENDED PRIOR TO UNDERTAKING ANY SITE WORKS OR CONSTRUCTION.



Scale 1:200

Client MAC HOMES	**Drawing Title:** Site Plan		**Issue:** Development Approval		**Revision**	**Description**	**Date**
Project Name Childcare Centre	Scale: as noted	Sheet Size: A1	Rev:	Description:	Drawn:	007	Planning Drawings	31.07.23
Project Address Lot 1022 (#150) St Andrews Drive, YANCHEP	Project No: **21109**	Drawing No.: **PD04 of 07**	007	Planning Drawings	CD	006	Sketch	29.07.22
			Revision Number: 007	Date: 31.07.2023		005	Sketch	24.02.22
						004	Sketch	22.02.22
						003	Sketch	11.02.22
						002	Sketch	20.01.22
						001	Concept Design	19.01.22

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144 St Andrews Dr, Yanchep

Residential - St Andrews Drive

Yanchep Rise Primary School

Client
MAC HOMES

Project Name
Childcare Centre

Project Address
Lot 1022 (#150) St Andrews Drive, YANCHEP

Drawing Title:
Context Plan

Scale: as noted | Sheet Size: A1

Project No: 21109 | Drawing No.: PD05 of 07

Issue:
Development Approval

Rev:	Description:	Drawn:
007	Planning Drawings	CD

Revision Number: 007 | Date: 31.07.2023

Revision	Description	Date
007	Planning Drawings	31.07.23
006	Sketch	29.07.22
005	Sketch	24.02.22
004	Sketch	22.02.22
003	Sketch	11.02.22
002	Sketch	20.01.22
001	Concept Design	19.01.22

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Child / Room Calculations

Room	Age (Yrs)	Quant.	Size	Staff Req
Activity 1	*0-2*	*12*	*40.73m²*	*3*
Activity 2	*2-3*	*20*	*64.73m²*	*4*
Activity 3	*2-3*	*20*	*65.06m²*	*4*
Activity 4	*3+*	*20*	*66.29m²*	*2*
Activity 5	*3+*	*20*	*65.39m²*	2
Piazza			*36.06m²*	(total 15 staff)
Total Internal = (Min 3.25m² per child)		**92**	**339.39m² (Min 299m² req)**	
Total External Play Area = (Min 7m² per child)		**92**	**672.99m² (Min 644m² req)**	

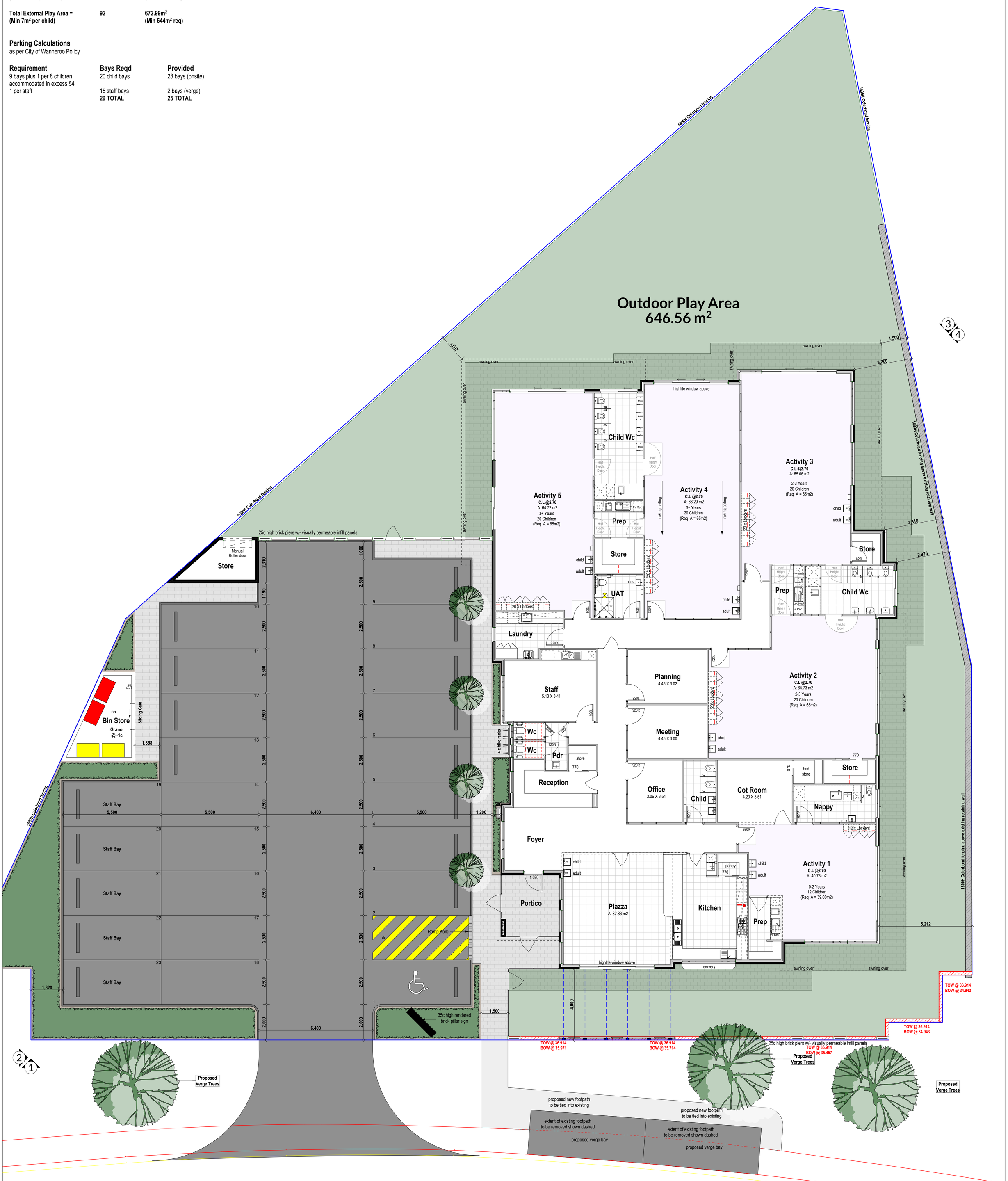
Parking Calculations

as per City of Wanneroo Policy

Requirement	Bays Reqd	Provided
9 bays plus 1 per 8 children accommodated in excess 54	20 child bays	23 bays (onsite)
1 per staff	15 staff bays	2 bays (verge)
	29 TOTAL	**25 TOTAL**

Ground Floor

Childcare Centre	675.56
Bin Store	15.09
Portico	11.55
Store	9.77
	711.97 m²



Scale 1:100

Client MAC HOMES	**Drawing Title:** Floor Plan	**Issue:** Development Approval	
Project Name Childcare Centre	Scale: as noted	Sheet Size: A1	Rev: 007 — Description: Planning Drawings — Drawn: CD
Project Address Lot 1022 (#150) St Andrews Drive, YANCHEP	Project No: **21109**	Drawing No.: **PD06 of 07**	Revision Number: 007 — Date: 31.07.2023

Revision	Description	Date
007	Planning Drawings	31.07.23
006	Sketch	29.07.22
005	Sketch	24.02.22
004	Sketch	22.02.22
003	Sketch	11.02.22
002	Sketch	20.01.22
001	Concept Design	19.01.22

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Material & Colour Schedule

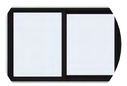
Acrylic Render
Dulux "Mt Aspiring"

Acrylic Render
Dulux "Champignon"

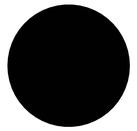
Face Brick
Midland Brick Recycled

Vertical Cladding
"Axon Cladding"

Colorbond Roof
"Monument"

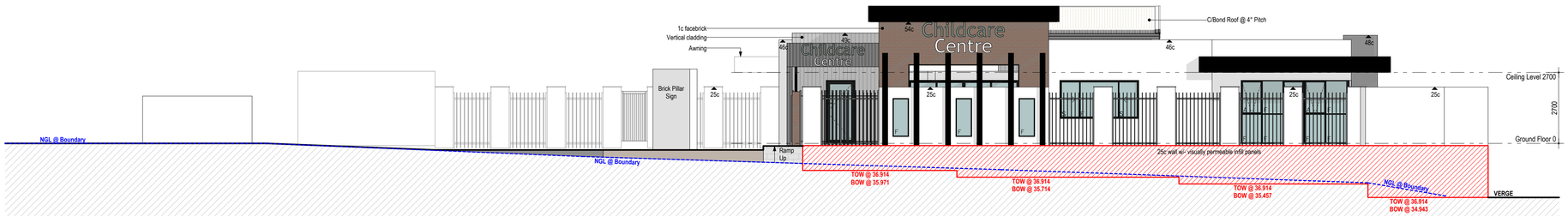


Window Frames
"Marble Black Satin"



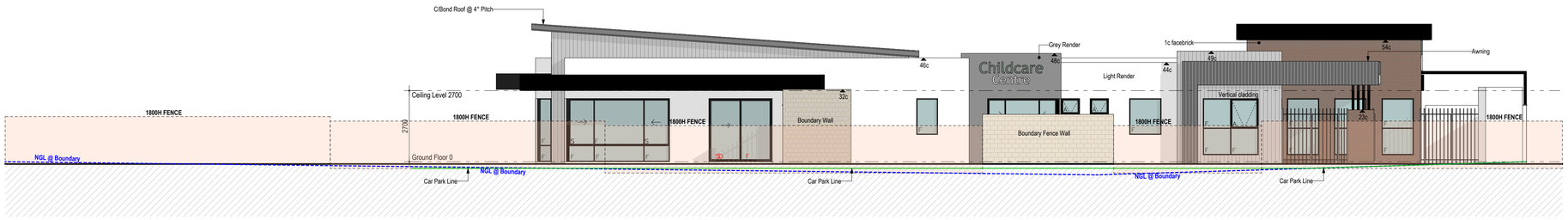
Awning
Dulux "Mt Aspiring

P/Coated Fence



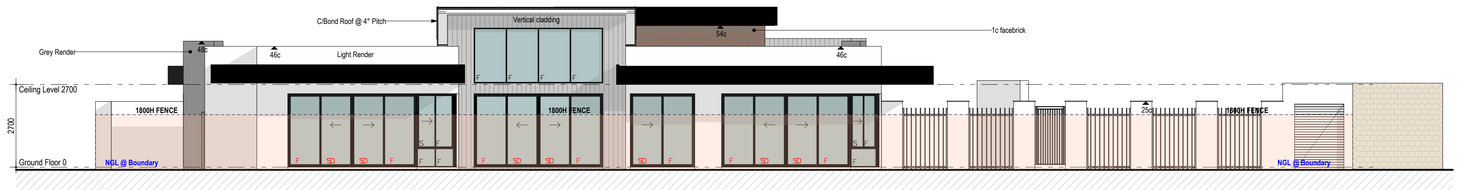
West Elevation 1

Scale 1:100



North Elevation 2

Scale 1:100



East Elevation 3

Scale 1:100

South Elevation 4

Scale 1:100

Client MAC HOMES	**Drawing Title:** Elevations	**Issue:** Development Approval	
Project Name Childcare Centre	Scale: as noted	Sheet Size: A1	Rev: 007 — Description: Planning Drawings — Drawn: CD
Project Address Lot 1022 (#150) St Andrews Drive, YANCHEP	Project No: **21109**	Drawing No.: **PD07 of 07**	Revision Number: 007 — Date: 31.07.2023

Revision	Description	Date
007	Planning Drawings	31.07.23
006	Sketch	29.07.22
005	Sketch	24.02.22
004	Sketch	22.02.22
003	Sketch	11.02.22
002	Sketch	20.01.22
001	Concept Design	19.01.22

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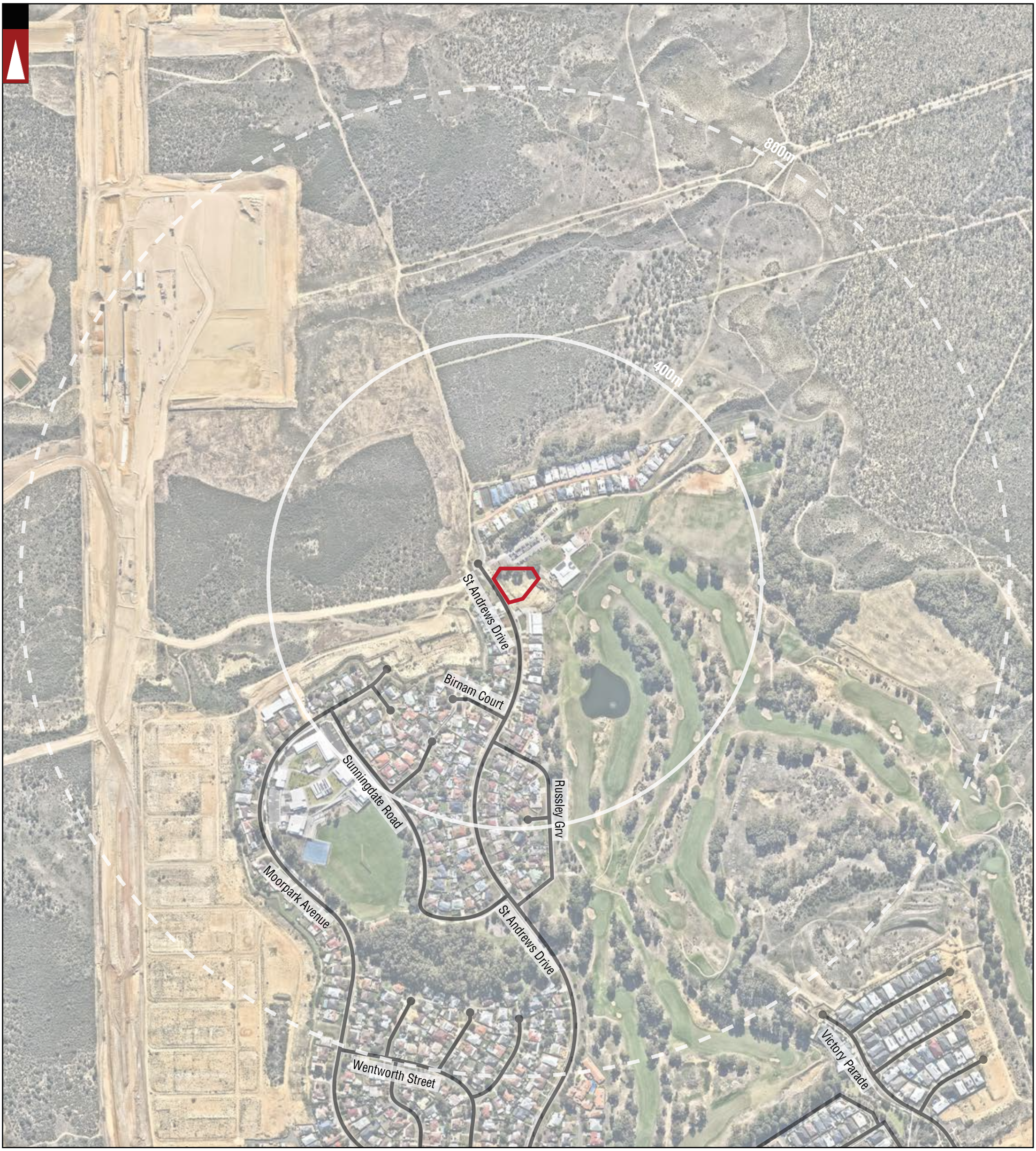
Appendix 2

Transport Planning and Traffic Plans



PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH LOCAL GOVERNMENT NAME
NORTHBRIDGE SUBURB NAME
LOCAL AUTHORITY BOUNDARY

LEGEND

No	DATE	AMENDMENT
B	01-08-2023	INFORMATION UPDATED
A	21-07-2022	ISSUED FOR REVIEW

PROJECT: LOT 1022 (NO 150) ST ANDREWS DRIVE, YANCHEP

TITLE: LOCALITY PLAN - 800M RADIUS

DRAWING NUMBER: KC01437.000_S01

DRAWN BY: J.S.

Civil & Traffic Engineering Consultants
KCTT (Trading as KC Traffic and Transport Pty Ltd)
PO Box 1456 Scarborough WA 6922
PH: 08 9441 2700
WEB: www.kctt.com.au

Wanneroo Key Bicycle Routes Map

Legend

- Missing Links Identified by DoT
- Missing Links Identified by Jacobs

Activity Centres

- Facility Centre (Shop, Park, Recreation)
- Strategic Centres / Stations
- School
- Train Station

Key Bicycle Routes

- Key Corridor
- New High Quality Shared Paths
- PSP

Roads

- Main Road
- Minor Road
- Railways

LGA Boundary

KCTT addition on above Inset

Approximative possition of the subject developent site

St Andrews Drive
Birnam Court
Sunningdale Road
Russley Grv
Moorpark Avenue
St Andrews Drive
Wentworth Street
Victory Parade

PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH LOCAL GOVERNMENT NAME
NORTHBRIDGE SUBURB NAME
LOCAL AUTHORITY BOUNDARY

Given there are no bike routes classified by the Department of Transport within 800m radius from the subject development site Inset from ''Wanneroo Key Bicycle Routes Map'' is shown above to indicate the closest existing cycling falicities. network

Approximative possition of Strategic Centre/Station based on the information collected from ''Wanneroo Key Bicycle Routes Map'' which inset is enclosed for clarity

LEGEND

No	DATE	AMENDMENT
B	01-08-2023	INFORMATION UPDATED
A	21-07-2022	ISSUED FOR REVIEW

PROJECT: LOT 1022 (NO 150) ST ANDREWS DRIVE, YANCHEP

TITLE: BICYCLE NETWORK PLAN - 800M RADIUS

DRAWING NUMBER: KC01437.000_S02

DRAWN BY: J.S.

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KCTT addition on above Inset

✕ Approximative possition of the subject developent site

PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH LOCAL GOVERNMENT NAME
NORTHBRIDGE SUBURB NAME
LOCAL AUTHORITY BOUNDARY
BUS ROUTES
103 BUS ROUTE NUMBER

Given there are no existing Public Transport routes within 800m radius from the subjec development site, above is shown the inset from the Transpert map which indicates the closest public transport routes in the surrounding.

LEGEND

No	DATE	AMENDMENT
B	01-08-2023	INFORMATION UPDATED
A	21-07-2022	ISSUED FOR REVIEW

PROJECT: LOT 1022 (NO 150) ST ANDREWS DRIVE, YANCHEP

TITLE: PUBLIC TRANSPORT PLAN - 800M RADIUS

DRAWING NUMBER: KC01437.000_S03

DRAWN BY: J.S.

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PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH LOCAL GOVERNMENT NAME
NORTHBRIDGE SUBURB NAME
LOCAL AUTHORITY BOUNDARY
PEDESTRIAN PATH

LEGEND

No	DATE	AMENDMENT
B	01-08-2023	INFORMATION UPDATED
A	21-07-2022	ISSUED FOR REVIEW

PROJECT: LOT 1022 (NO 150) ST ANDREWS DRIVE, YANCHEP

TITLE: PEDESTRIAN PATHS PLAN - 800M RADIUS

DRAWING NUMBER: KC01437.000_S04

DRAWN BY: J.S.

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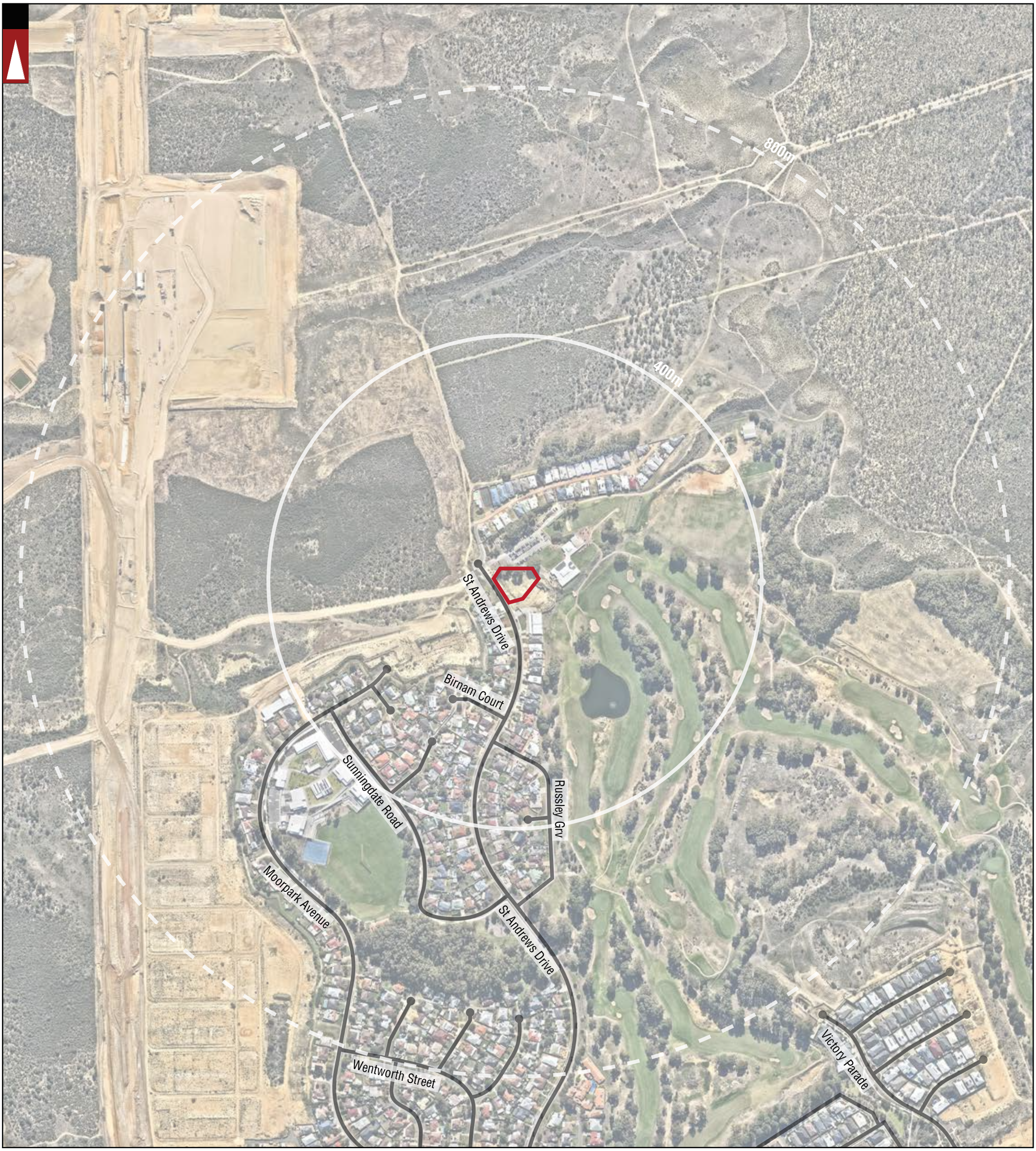

PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street — STREET NAME
RAILWAY
ROAD BRIDGE
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF PERTH — LOCAL GOVERNMENT NAME
NORTHBRIDGE — SUBURB NAME
LOCAL AUTHORITY BOUNDARY
5,512 — NUMBER OF VEHICLES PER DAY
AM 1145 – 381 / PM 1630 – 480 — NUMBER OF VEHICLES PER AM PEAK HOUR / NUMBER OF VEHICLES PER PM PEAK HOUR
2014 — YEAR
EAST OF HARLOW ROAD — LOCATION

No traffic data available within analised area

LEGEND

No	DATE	AMENDMENT
B	01-08-2023	INFORMATION UPDATED
A	21-07-2022	ISSUED FOR REVIEW

PROJECT: LOT 1022 (NO 150) ST ANDREWS DRIVE, YANCHEP

TITLE: EXISTING TRAFFIC COUNTS - 800M RADIUS

DRAWING NUMBER: KC01437.000_S05

DRAWN BY: J.S.

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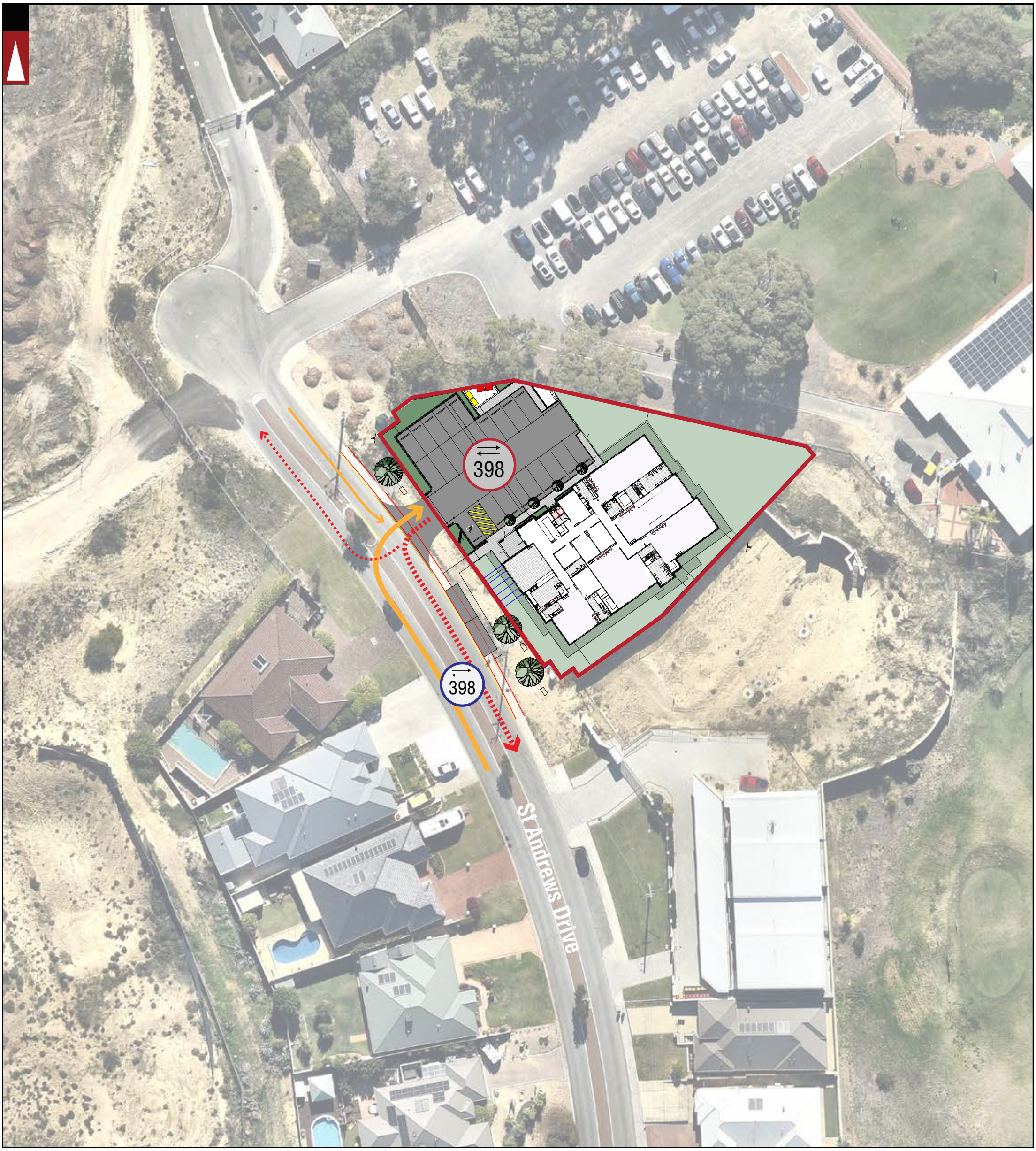

LOCATION BOUNDARY

Lewis Road ROAD NAME

1,389 Total Expected Traffic Generation from the proposed development

503 Total Expected Traffic Generation from Subject Site on the specific section of road - **IN and OUT direction**

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF GERMANO DESIGN

LEGEND

No	DATE	AMENDMENT
B	01-08-2023	PROPOSED LAYOUT AMENDED
A	22-07-2022	ISSUED FOR REVIEW

PROJECT: LOT 1022 (NO 150) ST ANDREWS DRIVE, YANCHEP

TITLE: TRAFFIC FLOW DIAGRAM - DAILY

DRAWING NUMBER: KC01437.000_ S06

DRAWN BY: J.S.

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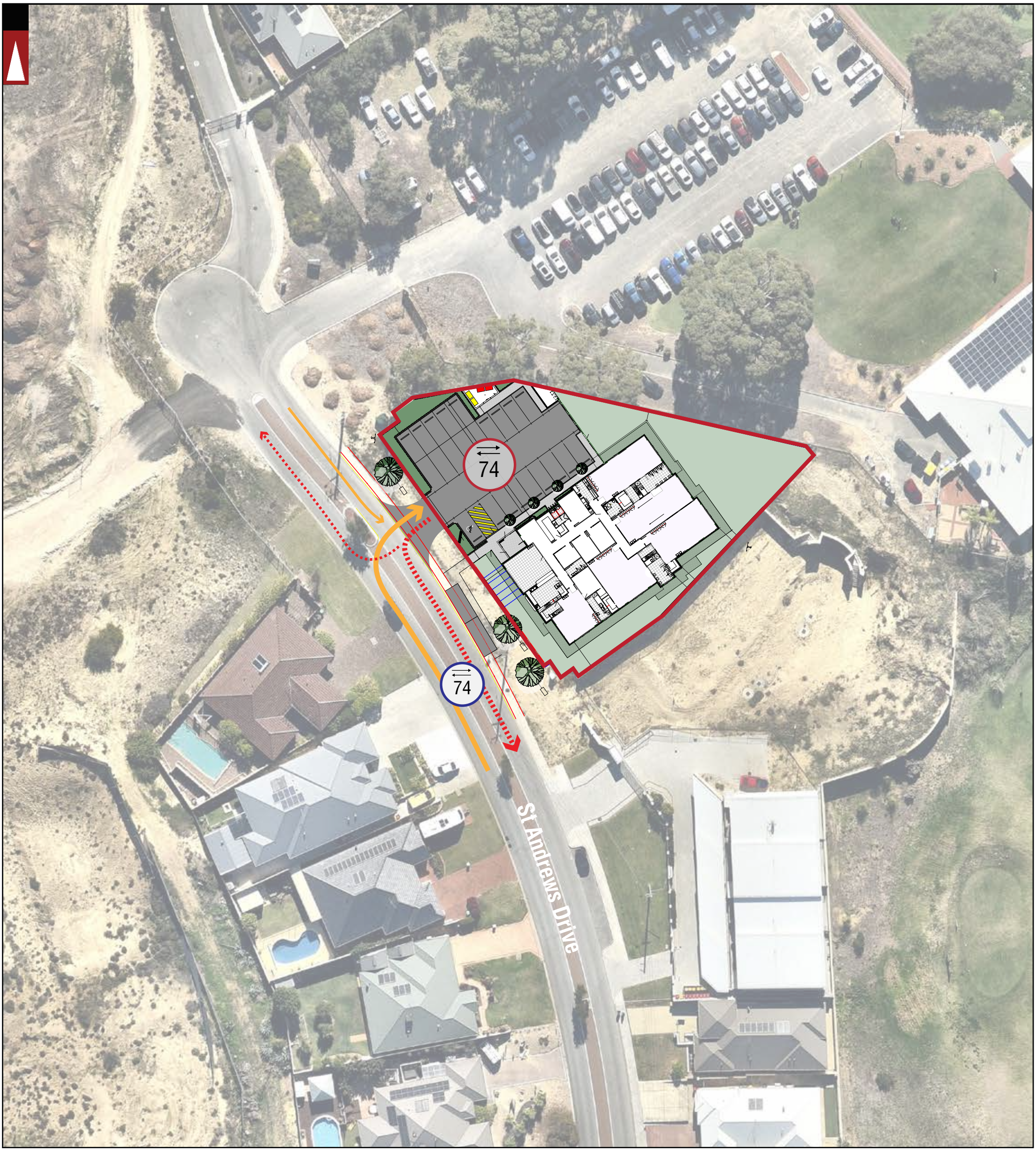

LOCATION BOUNDARY

Lewis Road ROAD NAME

1,389 Total Expected Traffic Generation from the proposed development

503 Total Expected Traffic Generation from Subject Site on the specific section of road - **IN and OUT direction**

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF GERMANO DESIGN

LEGEND

No	DATE	AMENDMENT
B	01-08-2023	PROPOSED LAYOUT AMENDED
A	22-07-2022	ISSUED FOR REVIEW

PROJECT: LOT 1022 (NO 150) ST ANDREWS DRIVE, YANCHEP

TITLE: TRAFFIC FLOW DIAGRAM - AM PEAK

DRAWING NUMBER: KC01437.000_ S07

DRAWN BY: J.S.

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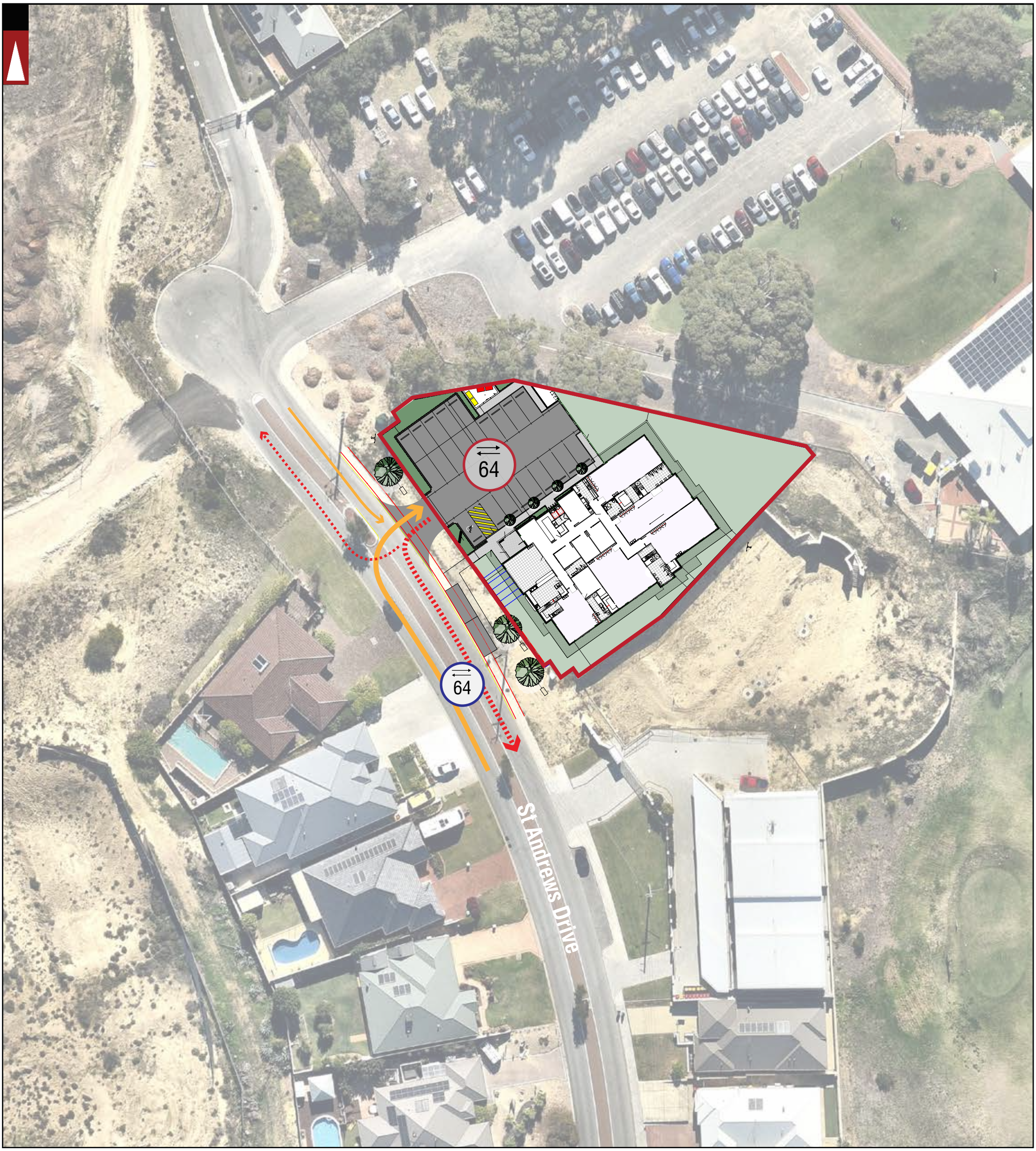

LOCATION BOUNDARY

Lewis Road ROAD NAME

1,389 Total Expected Traffic Generation from the proposed development

503 Total Expected Traffic Generation from Subject Site on the specific section of road - **IN and OUT direction**

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF GERMANO DESIGN

LEGEND

No	DATE	AMENDMENT
B	01-08-2023	PROPOSED LAYOUT AMENDED
A	22-07-2022	ISSUED FOR REVIEW

PROJECT: LOT 1022 (NO 150) ST ANDREWS DRIVE, YANCHEP

TITLE: TRAFFIC FLOW DIAGRAM - PM PEAK

DRAWING NUMBER: KC01437.000_ S08

DRAWN BY: J.S.

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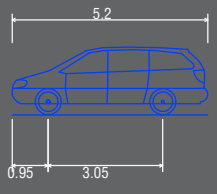
Appendix 3

Vehicle Turning Circle Plan



Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
B	02-08-2023	PROPOSED LAYOUT AMENDED
A	29-07-2022	ISSUED FOR REVIEW

PROJECT:
Lot 1022 (No 150) St Andrews Drive, Yanchep

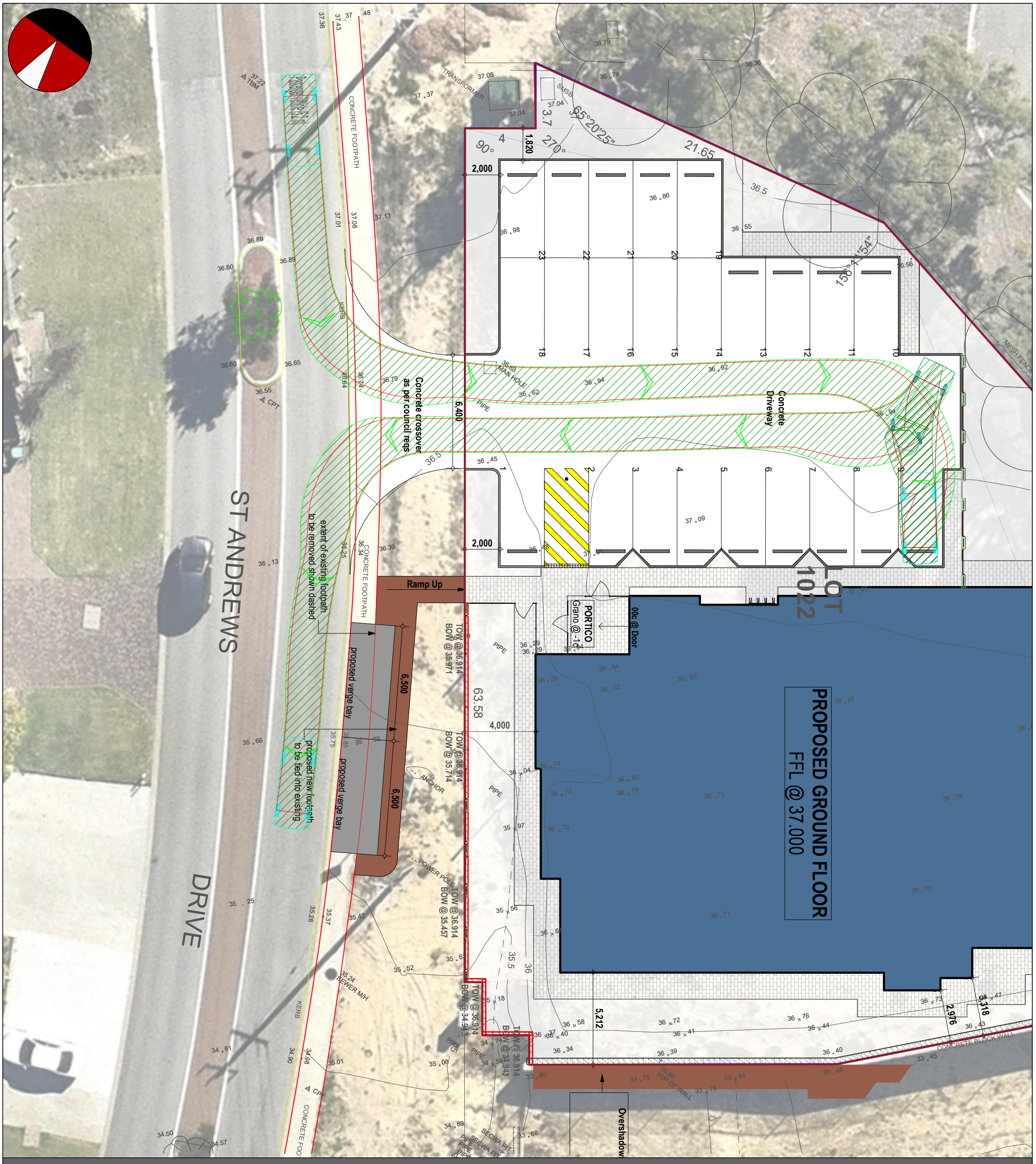
TITLE:
Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)

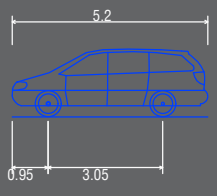
DRAWING NUMBER:
KC01437.000_S20

DRAWN BY:
J.S.

Civil & Traffic Engineering Consultants
KCTT (Trading as KC Traffic and Transport Pty Ltd)
PO Box 1456 Scarborough WA 6922

PH: 08 9441 2700
WEB: www.kctt.com.au





Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
B	02-08-2023	PROPOSED LAYOUT AMENDED
A	29-07-2022	ISSUED FOR REVIEW

PROJECT:
Lot 1022 (No 150) St Andrews Drive, Yanchep

TITLE:
Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)

DRAWING NUMBER:
KC01437.000_S21

DRAWN BY:
J.S.

Civil & Traffic Engineering Consultants
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LEGEND

Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

(5.2 / 0.95 / 3.05)

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)

NO	DATE	AMENDMENT
B	02-08-2023	PROPOSED LAYOUT AMENDED
A	29-07-2022	ISSUED FOR REVIEW

PROJECT: Lot 1022 (No 150) St Andrews Drive, Yanchep

TITLE: Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)

DRAWING NUMBER: KC01437.000_S22

DRAWN BY: J.S.

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Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
B	02-08-2023	PROPOSED LAYOUT AMENDED
A	29-07-2022	ISSUED FOR REVIEW

PROJECT:
Lot 1022 (No 150) St Andrews Drive, Yanchep

TITLE:
Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)

DRAWING NUMBER:
KC01437.000_S23

DRAWN BY:
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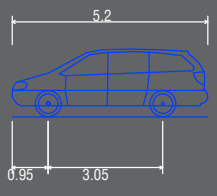

Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
B	02-08-2023	PROPOSED LAYOUT AMENDED
A	29-07-2022	ISSUED FOR REVIEW

PROJECT:
Lot 1022 (No 150) St Andrews Drive, Yanchep

TITLE:
Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)

DRAWING NUMBER:
KC01437.000_S24

DRAWN BY:
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PO Box 1456 Scarborough WA 6922

PH: 08 9441 2700
WEB: www.kctt.com.au

Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
B	02-08-2023	PROPOSED LAYOUT AMENDED
A	29-07-2022	ISSUED FOR REVIEW

PROJECT:
Lot 1022 (No 150) St Andrews Drive, Yanchep

TITLE:
Vehicle Turning Circle Plan - B99 Passenger Vehicle (5.2m)

DRAWING NUMBER:
KC01437.000_S25

DRAWN BY:
J.S.

Civil & Traffic Engineering Consultants
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PO Box 1456 Scarborough WA 6922

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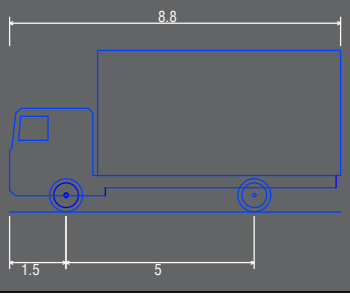
WEB: www.kctt.com.au



Service Vehicle (8.8 m)	
Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.427m
Track Width	2.500m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	12.500m

- Lot boundary
- Wheel Path (Forward Vehicle Motion)
- Vehicle Chasis Envelope (Forward Vehicle Motion)
- Wheel Path (Reverse Vehicle Motion)
- Vehicle Chasis Envelope (Reverse Vehicle Motion)

LEGEND

NO	DATE	AMENDMENT
C	05-10-2023	ISSUED FOR REVIEW
B	02-08-2023	PROPOSED LAYOUT AMENDED
A	29-07-2022	ISSUED FOR REVIEW

PROJECT:
Lot 1022 (No 150) St Andrews Drive, Yanchep

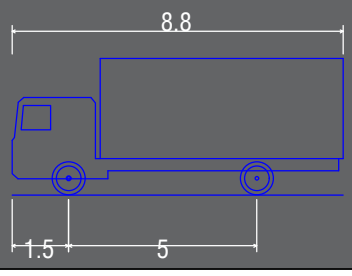
TITLE:
Vehicle Turning Circle Plan - Service Vehicle (8.8m)

DRAWING NUMBER:
KC01437.000_S31

DRAWN BY:
J.S.

Civil & Traffic Engineering Consultants
KCTT (Trading as KC Traffic and Transport Pty Ltd)
PO Box 1456 Scarborough WA 6922

PH: 08 9441 2700
WEB: www.kctt.com.au



MRV - Medium Rigid Vehicle 9m radious

Overall Length	8.800m
Overall Width	2.500m
Overall Body Height	3.633m
Min Body Ground Clearance	0.428m
Track Width	2.500m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	9.000m

LEGEND

NO	DATE	AMENDMENT
C	05-10-2023	ISSUED FOR REVIEW
B	02-08-2023	PROPOSED LAYOUT AMENDED
A	29-07-2022	ISSUED FOR REVIEW

PROJECT:
Lot 1022 (No 150) St Andrews Drive, Yanchep

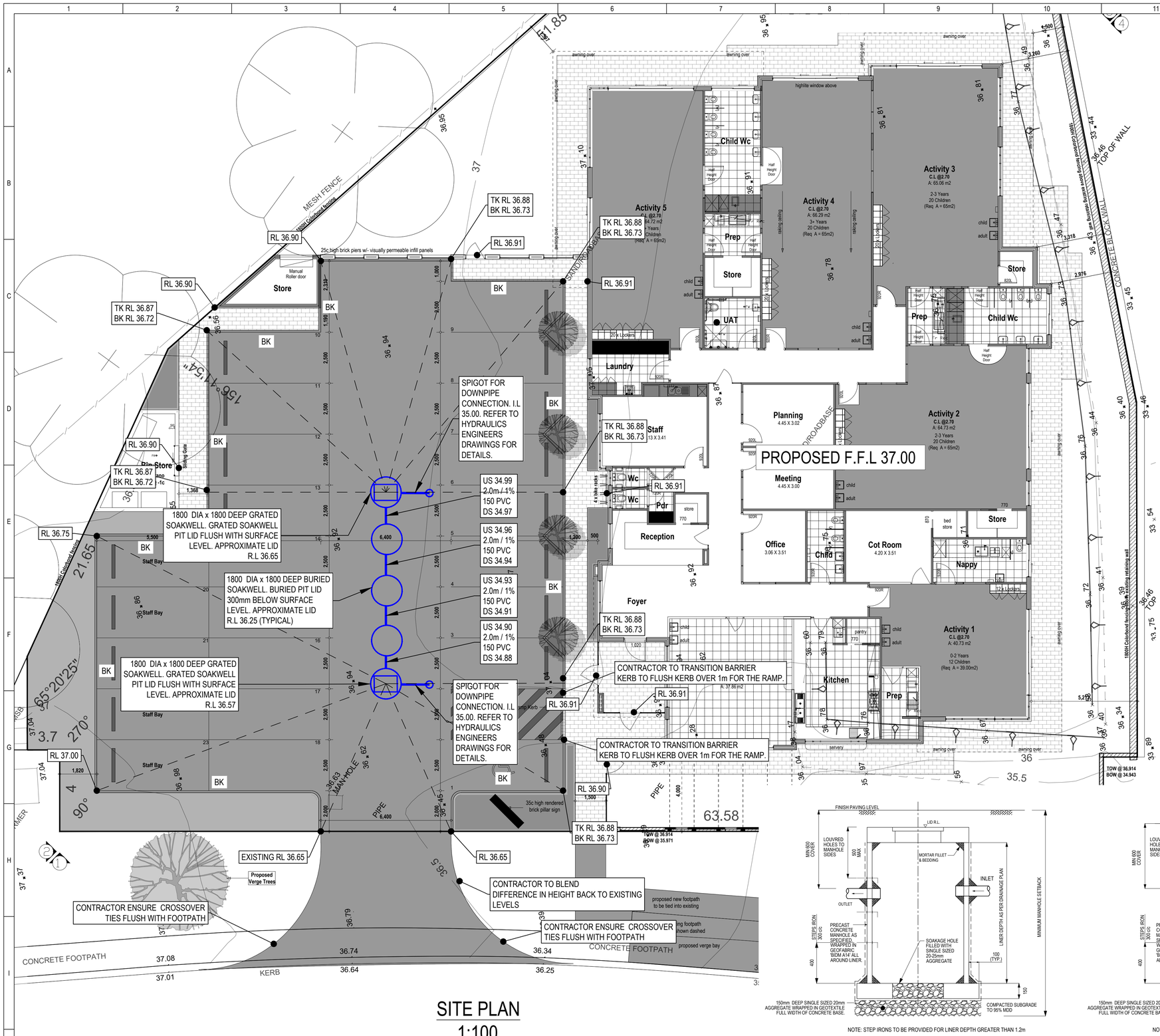
TITLE:
Vehicle Turning Circle Plan - Medium Rigid Vehicle (8.8m)

DRAWING NUMBER:
KC01437.000_S41

DRAWN BY:
J.S.

Civil & Traffic Engineering Consultants
KCTT (Trading as KC Traffic and Transport Pty Ltd)
PO Box 1456 Scarborough WA 6922

PH: 08 9441 2700
WEB: www.kctt.com.au



SITE PLAN
1:100

Meters
3 0 3 6
1:100

DRAINAGE CALCULATION

IFD CHART:	YANCHEP
DESIGN ARI:	5% AEP - 1 IN 20 YEAR ARI
CATCHMENT VOLUME:	1 m^3 PER 60m^2 (AS PER CITY OF WANNEROO REQUIREMENTS)
GROUND WATER TABLE:	> 2.5m
MANHOLES SET BACK:	MINIMUM DISTANCE EQUAL TO MANHOLE HEIGHT INCLUDING PIT LID/BASE AND BLUE METAL

	PROPOSED LOT 1
ROOF AREA (m^2)	790
PAVING+DRIVEWAY AREA (m^2)	565
TOTAL CATCHMENT AREA (m^2)	1355

TOTAL STORAGE CAPACITY REQUIRED = 22.58m^3
SOAKWELL MANHOLE CAPACITY
4.58m^3 PER 1.8 (D) X 1.8m (H) - 5 TOTAL
TOTAL SOAKWELL PIT CAPACITY 22.9m^3

LEGEND

1800mm DIA X 1800mm DEEP STORMWATER MANHOLE WITH TRAFFICABLE GRATE. CLASS D GRATE.

1800mm DIA X 1800mm DEEP STORMWATER MANHOLE WITH CONCRETE COVER BURIED 300mm BELOW PAVEMENT SURFACE. CLASS D LID.

STORMWATER PIPE (DN150 U.N.O)

PAVING FALL DIRECTION

BARRIER KERB TO CITY OF WANNEROO SPECIFICATIONS — BK

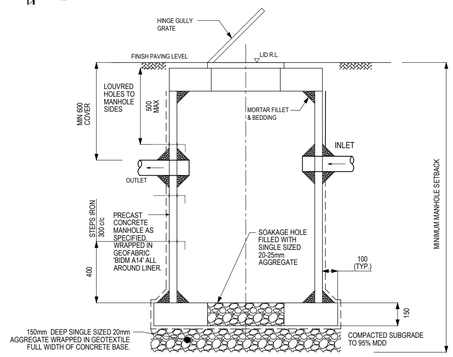
PAVING LEVEL (BOTTOM OF KERB (U.N.O) — R.L 10.66

STORMWATER GENERAL NOTES

1. REFER TO SURVEY PLAN FOR DATUM INFORMATION.
2. ALL WORK TO BE IN ACCORDANCE WITH MOST CURRENT "AS3500.3 PLUMBING &DRAINAGE", THE "BUILDING CODE OF AUSTRALIA" AND THE LOCAL AUTHORITY'S STANDARD SPECIFICATIONS.
3. CONTRACTOR TO CONSTRUCT DRAINAGE INSPECTION/CLEAN OUT POINTS AS PER AS3500.THESE DETAILS ARE NOT SHOWN ON THE DRAINAGE DESIGN.
4. WHERE MANHOLES ARE LOCATED IN THE AREAS SUBJECT TO VEHICULAR LOADING, CLASS D TRAFFICABLE LIDS ARE TO BE INSTALLED.
5. ALL DISPLAYED RL IS SET FOR BOTTOM OF KERB UNLESS NOTED OTHERWISE.
6. ALL DRAINAGE PIPEWORK SHALL BE PVC DWV CLASS UNLESS NOTED OTHERWISE.UNLESS WHERE LOCATED UNDERNEATH ANY STRUCTURES OR VEHICULAR LOADING AREA PIPEWORK SHALL BE PVC SEWER CLASS SN6 AND ABOVE.
7. ALL MANHOLES ARE TO BE SET BACK FROM ALL STRUCTURAL FOOTING ON THE SITE BY A MINIMUM DISTANCE NOTED IN THE CALCULATION ON THIS DRAWING.
8. ALIGNMENT OF PIPES SHALL BE AS SHOWN ON THE PLAN & SHALL BE TO THE PIPE OR MANHOLE CENTERLINE.
9. BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL:
   - 9.1. LOCATE AND PROTECT EXISTING SERVICES PRIOR TO ANY CONSTRUCTION WORKS.
   - 9.2. CONFIRM THAT THE PROPOSED DRAINAGE DOES NOT CLASH OR UNDERMINE ANY EXISTING SERVICES PRIOR TO COMMENCING ANY CONSTRUCTION.
   - 9.3. CONFIRM THAT BOUNDARY PEGS OR OTHER SURVEY REFERENCE POINTS TO BE USED IN SETTING OUT OF THE PROJECT ARE LOCATED IN THE CORRECT POSITIONS.
   - 9.4. ENSURE A PERMIT & REINSTATEMENT SPECIFICATIONS ARE OBTAINED FROM THE LOCAL AUTHORITY IF EXCAVATION WILL BE IN A ROAD RESERVOIR RIGHT OF WAY.
   - 9.5. ENSURE ALL DETAILS HAVE BEEN CHECKED AND THAT NO DISCREPANCIES EXIST. ALL QUERIES AND DISCREPANCIES ARE TO BE RESOLVED PRIOR TO COMMENCING WORKS.
10. ALL EXCAVATIONS SHALL BE SECURED & MADE SAFE IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL SAFETY & HEALTH ACT OF 1984,
11. THE OCCUPATIONAL SAFETY & HEALTH REGULATION 1996 & OF ANY RELEVANT REGULATORY BODY.
12. PROPERTIES WHICH HAVE BEEN EXCAVATED SHALL BE RETURNED TO AT LEAST A SIMILAR OR BETTER CONDITION TO THAT WHICH EXISTED PRIOR TO CONSTRUCTION.
13. TRENCH BACKFILL SHALL BE CLEAN GRANULAR MATERIAL,COMPACTED TO A LEVEL NOT LESS THAN THAT OF THE SURROUNDING UNDISTURBED GROUND,FOR THE FULL DEPTH OF EXCAVATION. BACKFILL UNDER ROADS SHALL BE COMPACTED TO THE REQUIREMENTS OF THE LOCAL AUTHORITY.
14. THE CONTRACTOR SHALL TAKE INTO ACCOUNT MANUFACTURERS SPECIFICATIONS AND AS3500 AND USE THE MOST CONSTRINGENT REQUIREMENT FOR PIPE COVER, BEDDING AND JOINTING.
15. THE CONTRACTOR IS TO APPLY AND OBTAIN APPROVALS AT THEIR COST TO CONNECT INTO COUNCIL'S DRAINAGE NETWORK INCLUDING TRAFFIC MANAGEMENT AND REINSTATEMENT COSTS.
16. THIS DRAINAGE SPECIFICATION IS TO BE READ IN CONJUNCTION WITH BUILDER ARCHITECTURAL'S DRAWINGS (PARTIALLY REPRODUCED HERE).
17. THE DRAINAGE DESIGN IS BASED ON THE DRAINAGE NETWORK BEING MAINTAINED AND CLEANED REGULARLY.
18. CLIENT IS TO ENSURE LOCAL AUTHORITY HAVE APPROVED THESE DRAWINGS BEFORE BEING ISSUED FOR PRICING, TENDER & CONSTRUCTION.
19. CONTRACTOR TO ENSURE ALL PAVEMENTS/SURFACES ARE GRADED AWAY FROM THE BUILDING IN ACCORDANCE WITH AS3500 AND THE NATIONAL CONSTRUCTION CODE OF AUSTRALIA.

NOTE: STEP IRONS TO BE PROVIDED FOR LINER DEPTH GREATER THAN 1.2m

SOAKWELL WITH CONCRETE COVER



NOTE: STEP IRONS TO BE PROVIDED FOR LINER DEPTH GREATER THAN 1.2m

SOAKWELL WITH TRAFFICABLE GRATE

TYPICAL SOAKWELL DETAILS (N.T.S)

WARNING
BEWARE OF UNDERGROUND SERVICES
The location of underground cables are approximate only and their exact position should be checked on site. No guarantee is given that all existing cables and services are shown. Locate all underground cables and services before commencement of work. Refer to Worksafe Regulation 3.21.

DIAL 1100 BEFORE YOU DIG

REV.	BY	DATE	TASK N°	DESCRIPTION
A	NN/VT	10/08/23	197556	ISSUED FOR CLIENT REVIEW

VPE Consulting

TITLE	STORMWATER PLAN	DATE	10/08/2023
		DRAWN	NATHAN NGUYEN
PROJECT	LOT 102 (#140) ST ANDREWS DRIVE YANCHEP 6035 for MAC HOMES (SUN CITY)	DESIGNED	NATHAN NGUYEN
		CHECKED	VINCENT TRAN
		A1 SCALE	AS NOTED ON DRAWING
		JOB REF.	pln_80263_tsk_197556
		SHEET N°	1