TRANSPORT IMPACT STATEMENT

Lot 503 (No 30) Maroochydore Way,
Clarkson

October 2020

Rev C

kctt

HISTORY AND STATUS OF THE DOCUMENT

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Rev A	14.09.2020	M Kleyweg	M Kleyweg	14.09.2020	Issued for Review
Rev B	22.09.2020	M Kleyweg	M Kleyweg	22.09.2020	Amended as per comments
Rev C	19.10.2020	M Kleyweg	M Kleyweg	20.10.2020	Proposed layout amended

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Revision	Date of issue	Quantity	Issued to
Rev A	14.09.2020	1 (PDF)	Mike Lovegrove (Lovegrove)
Rev B	22.09.2020	1 (PDF)	Mike Lovegrove (Lovegrove)
Rev B	20.10.2020	1 (PDF)	Mike Lovegrove (Lovegrove)

Document Printed	20/10/2020 9:52 AM
File Name	C:\Users\Korisnik\Box\KCTT Projects\KC00000 Current Projects\KC01210.000 Lot 503 (No 30) Maroochydore Way, Clarkson TIS\Outgoing\Report\201013 Rev C\KC01210.000 Lot 503 (No 30) Maroochydore Way, Clarkson.docx
Author of the Report	Ana Marijanovic
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Project Director / Project Manager	Marina Kleyweg
Name of Project	Lot 503 (No 30) Maroochydore Way, Clarkson
Name of the Document	Lot 503 (No 30) Maroochydore Way, Clarkson - Transport Impact Statement
Document Version	KC01210.000_R01_ Rev C

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Appendices

1. Executive Summary

Site Context

- The subject site is currently an empty lot with a service station (BP) and a fast food restaurant (McDonald's) as neighbouring properties. The proposed land use is a car wash and a dog wash facility.

Technical Findings

- The proposed development is expected to attract up to 402 vehicular trips per day, 31 vehicular trips in the AM peak and 22 vehicular trips in the PM peak hour. According to WAPC Guidelines developments generating 10-100 vehicular trips in the peak hour have a moderate impact on the road network and warrant a Transport Impact Statement.

  However, it is expected that the large percentage of development attracted traffic would be passing traffic, already present on the surrounding road network. The additional traffic expected to be attracted by the proposed development would be 121 vehicular trips per day, 9 vehicular trips in the AM peak and 7 vehicular trips in the PM peak hour.

  Having in mind the additional traffic to the surrounding road network would be less than 10 vehicular trips in the peak hour, the impact is considered low as per WAPC Guidelines.

Relationship with Policies

- With proposed 5 parking bays (including one ACROD parking bay) the proposed development will have sufficient parking options onsite. Car wash area provides additional waiting bays, while patrons waiting for the vacuums or dog wash will have standard parking bays available. The proposed number of bays is expected to successfully cater for the parking demand of the proposed land uses.
- Having in mind the proposed land use, cycling to the proposed development is highly unlikely.
- Building Code of Australia ACROD stipulates a requirement of 1 accessible car parking bay which has been provided on site.

Conclusion

- As stated above the additional traffic attracted to the subject site is expected to be 121 vehicular trips per day, 9 vehicular trips in the AM peak and 7 vehicular trips in the PM peak hour.

  Maroochydore Way and Caloundra Road both classified as Access Street as per MRWA classification with the maximum desirable volume of 3,000 vehicles per day. Currently Maroochydore Way carries around 1,500 vehicles per day and Caloundra Road is estimated to carry around 960 vehicles per day. Therefore, with the added traffic from the subject site these streets would remain well under the maximum desirable traffic volume for Access Street roads.

  Neerabup Road is classified as Distributor A as per MRWA classification and currently carries approximately 16,000 vehicles per day. It expected that Neerabup Road would absorb a maximum of additional 72 vehicles per day, which compared to existing traffic volumes will not have a major impact on road capacity.

  Other surrounding roads would absorb significantly less traffic, moreover, the traffic would be dispersed so that the impact can be considered negligible. In summary KCTT believe that the proposed development will not have a negative impact on the surrounding road network.

2. Transport Impact Statement

2.1 Location

Lot Number	503
Street Number	30
Road Name	Maroochydore Way
Suburb	Clarkson
Description of Site	The subject site is currently an empty lot with a service station (BP) and a fast food restaurant (McDonald's) as neighbouring properties. The proposed land use is a car wash and a dog wash facility.

2.2 Technical Literature Used

Local Government Authority	City of Wanneroo
Type of Development	Car wash / Dog wash
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	Town Planning Scheme No. 2
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
Proposed Land Uses	
Nominate land use type and yield	• Office – 14.4m^2 • Dog Wash – 2 stalls • Car Wash – 3 bays • Vacuum area – 4 bays • Ancillary areas (storeroom, toilet, etc)
Are the proposed land uses complimentary with the surrounding land-uses?	YES

2.4 Local Road Network Information

How many roads front the subject site?	1 road

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

Road 1

Road Name	**Neerabup Road**
Number of Lanes	two way, two lanes per direction, divided
Road Reservation Width	60.0m (varies)
Road Pavement Width	8.5m per direction (inclusive of 1.5m cycling lane) 7.0m median
Classification	Distributor A
Speed Limit	70kph
Bus Route	NO
On-street parking	NO

Name of Other Roads within 400m radius of site, or roads likely to take increased traffic due to the development:

Road 1

Road Name	**Maroochydore Way**
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	20.m
Road Pavement Width	7.0m
Classification	Access Road
Speed Limit	50kph
Bus Route	NO
On-street parking	NO

Road 2

Road Name	**Caloundra Road**
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	16.0m
Road Pavement Width	7.5m
Classification	Access Road
Speed Limit	50kph
Bus Route	NO
On-street parking	NO

2.5 Traffic Volumes

Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH)		Heavy Vehicle %	Date of Traffic Count	*If older than 3 years multiply with a growth rate*
			AM Peak Time - Peak VPH	PM Peak Time - Peak VPH	*If HV count is Not Available, are HV likely to be in higher volumes than generally expected?*		
Neerabup Road	East of Marmion Drive	15,963	08:00 – 1,310	15:30 – 1,431	6.3%	2017/ 2018	–
	East of Key Largo Drive *	16,099	08:00 – 1,256	16:00 – 1,414	*N/A – HV not likely to be in higher volumes than generally expected*	Feb 2020	–
	West of Key Largo Drive *	16,435	08:00 – 1,307	16:00 – 1,413	*N/A – HV not likely to be in higher volumes than generally expected*	Feb 2020	–
Connolly Drive	South of Neerabup Road	6,107	08:00 – 594	17:15 – 714	4.7%	2017/ 2018	–
Marmion Avenue	North of Neerabup Road	22,920	07:45 – 1,924	14:45 – 1,879	8.6%	2017/ 2018	–
Maroochydore Way	South of Booranup Avenue **	1,480	08:00 – 118	17:00 – 143	2.9	n/a	–
Caloundra Road ***	*960 VPD - ≈12,000m² GFA commercial premises / 100m² GFA *10 VPD* 80% reciprocity between uses* *192 VPH - ≈12,000m² GFA commercial premises / 100m² GFA *2 VPH* 80% reciprocity between uses*						

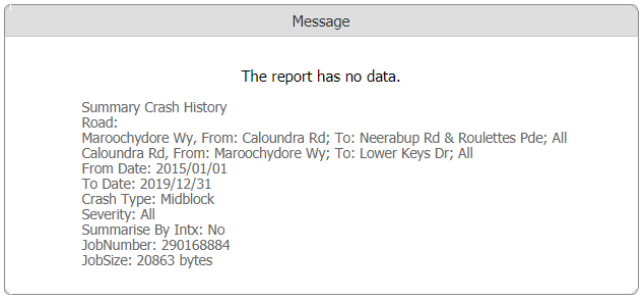
Note- These traffic volumes have been derived from SCATS data obtained through Main Roads for the intersection of Neerabup Road & Key Largo Drive. Although SCATS should not be used as a sole source of data it is a good tool to verify fluctuations in flow.*

*Note** - These traffic counts have been received from the City of Wanneroo.*

*Note *** - Since there are no available traffic counts KCTT provide a rough estimation of traffic volumes based on previous experience and standard traffic rates for the existing land uses.*

2.6 Vehicular Crash Information

Is Crash Data Available on Main Roads WA website?	NO
Nominate important survey locations:	
Location 1	Maroochydore Way SLK [0.26-0.34] - midblock
Location 2	Caloundra Road SLK [0.00-0.39] - midblock
Period of crash data collection	01/01/2015 - 31/12/2019



2.7 Vehicular Parking

Local Government	City of Wanneroo
Local Government Document Utilised	Town Planning Scheme No 2

Description of Parking Requirements in accordance with Scheme:

Office - 1 per 30 m^2 NLA

Car Wash - Nil if incidental to other development on same site otherwise 1

Since the TSP does not offer parking rates for Dog Wash, KCTT utilised the rate for Car Wash in order to assess parking requirements.
Vacuum area is considered to be an incidental land use, meaning all traffic using this facility will be coming directly from the Car Wash. Therefore, it has been excluded from calculations.

Calculation of Parking

Land Use	Requirements	Yield	Total Parking
Office	*1 per 30 m^2 NLA*	14.4m^2	0.5
Dog Wash	*1*	2 stalls	1
Car Wash	*1*	3 bays	1
		Total Car Parking Requirement	**3**
		Total Volume of Parking Provided by Proponent	**5 parking bays + 3 waiting bays**

Justification

The proposed development will have sufficient parking options onsite. Car wash area provides additional waiting bays, while patrons waiting for the vacuums or dog wash will have standard parking bays available.

The proposed number of bays is expected to successfully cater for the parking demand of the proposed land uses.

Have Vehicle Swept Paths been checked for Parking? YES

If YES, provide description of performance:

The plans have been checked with a B99 Passenger Vehicle (5.2m) and Service Vehicle (8.8m), no issues have been presented. Refer to Appendix 3 for swept paths drawings.

2.8 Bicycle Parking

Local Government	City of Wanneroo
Reference Document Utilised	Town Planning Scheme No 2

Description of Parking Requirements in accordance with Scheme:

Bicycle Parking and End Of Trip Facilities

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.

Justification

Having in mind the proposed land use, cycling to the proposed development is highly unlikely.

2.9 ACROD Parking

Class of Building	Class 8 - a laboratory, or a building in which a handicraft or process for the production, assembling, altering, repairing, packing, finishing, or **cleaning of goods or produce** is carried on for trade, sale, or gain.
Does this building class require specific provision of ACROD Parking?	NO
Reference Document Utilised	Building Code of Australia

Description of Parking Requirements:

Class 8 — 1 space for every 100 carparking spaces or part thereof.

Parking Requirement in accordance with regulatory documents

Land Use	Requirements	Yield	Total Parking
Proposed development	*1 space for every 100 carparking spaces or part thereof*	4	1
	Total Volume of ACROD Parking Required		**1**

Justification

One ACROD bay has been provided as required.

2.10 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
Proposed development	*1 space per 2,000m2*	≈ 50m^2	1
	Total Volume of Service and Delivery Parking Required		1
	Total Volume of Service and Delivery Parking Provided by Proponent		N/A

Justification

Service Vehicle (8.8m) can safely navigate the proposed layout. Delivery is to be organised outside of the development hours of operation. Therefore, there will be no need for a dedicated service and delivery bay.

2.11 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation?	Open 24 hours
What are the likely peak hours of operation?	08:00 – 09:00 16:00 – 17:00
Do the development generated peaks coincide with existing road network peaks?	YES – both peaks
Guideline Document Used	NSW RTA Guide to Traffic Generating Developments
Rates from above document:	***Office*** • *Daily – 10 vehicular trips per 100m²* • *Peak – 2 vehicular trips per 100m²*
Guideline Document Used	Transportation Engineers (ITE) Common Trip Generation Rates (9th edition)
Rates from above document:	***Self Service Car Wash*** • *Daily – 108 vehicular trips per 1 stall* • *AM Peak – 8 vehicular trips per 1 stall* • *PM Peak – 5.54 vehicular trips per 1 stall*

Since the relevant guideline documents do not offer rates for Dog Wash, KCTT utilised the 50% of the Car Wash rate in order to assess traffic impact. Additionally, it is expected that 30% of all Dog Wash traffic would be coming from the Car Wash facilities. Therefore, the rates above have been adjusted to suit these reductions.
KCTT conducted a small telephone inquiry to dog wash facilities in the area with the purpose of obtaining relevant data. Most of these facilities do not keep through record of occupancy throughout the day. However based on anecdotal evidence, an occupancy of 10-15 dogs per day is considered to be an absolute maximum for the surrounding dog wash facilities. Therefore, the proposed rates used within this report can be considered as worst-case scenario.

Vacuum area is considered to be an incidental land use, meaning all traffic using this facility will be coming directly from the Car Wash. Therefore, it has been excluded from calculations.
Moreover, the proposed land uses are likely to attract significant passing traffic. Considering the nature of the surrounding land uses (service station, fast food etc.) and the position of the subject site it is expected that 70% of all traffic would be traffic already present in the surrounding road network.

Land Use Type	Rate above	Yield	Daily Traffic Generation	Peak Hour Traffic Generation	
				AM	PM
Office	• *Daily – 10 VPD / 100m²* • *Peak – 2 VPH / 100m²*	14.4m²	2	1	1
Dog Wash	• *Daily* – 37.8 VPD/ 1 stall* • *AM Peak* – 3 VPH / 1 stall* • *PM Peak *– 1.9 VPH / 1 stall*	2 stalls	76	6	4
Car Wash	• *Daily – 108 VPD/ 1 stall* • *AM Peak – 8 VPH / 1 stall* • *PM Peak – 5.54 VPH / 1 stall*	3 bays	324	24	17
Total traffic (passing + development)			**402**	**31**	**22**
Passing traffic (70% of total)			**281**	**22**	**15**
Development traffic (30% of total)			**121**	**9**	**7**

*Note * - These rates include a 50% reduction based on the nature of development and an additional 30% reduction based on reciprocity between land uses.*

Does the site have existing trip generation / attraction?	NO
What is the total impact of the new proposed development?	The proposed development is expected to attract up to 402 vehicular trips per day, 31 vehicular trips in the AM peak and 22 vehicular trips in the PM peak hour. According to WAPC Guidelines developments generating 10-100 vehicular trips in the peak hour have a moderate impact on the road network and warrant a Transport Impact Statement. However, it is expected that the large percentage of development attracted traffic would be passing traffic, already present on the surrounding road network. The additional traffic expected to be attracted by the proposed development would be 121 vehicular trips per day, 9 vehicular trips in the AM peak and 7 vehicular trips in the PM peak hour. Having in mind the additional traffic to the surrounding road network would be less than 10 vehicular trips in the peak hour, the impact is considered low as per WAPC Guidelines. KCTT believe the surrounding road network has sufficient capacity to accommodate the expected additional traffic.

2.12 Traffic Flow Distribution

How many routes are available for access / egress to the site?	3 routes 402 VPD / 31 AM VPH / 22 PM VPH – total traffic 121VPD / 9 AM VPH / 7 PM VPH – development traffic
Route 1	
Provide details for Route No 1	To/from Maroochydore Way and Caloundra Road via Neerabup Road east
Percentage of Vehicular Movements via Route No 1	60 %
Route 2	
Provide details for Route No 2	To/from Maroochydore Way and Caloundra Road via Neerabup Road west
Percentage of Vehicular Movements via Route No 2	30%
Route 3	
Provide details for Route No 2	To/from Maroochydore Way and Caloundra Road to/from the properties north of the subject site
Percentage of Vehicular Movements via Route No 2	5%
Route 4	
Provide details for Route No 2	To/from Maroochydore Way and Caloundra Road via Roulettes Parade
Percentage of Vehicular Movements via Route No 2	5%

Note – It is expected that 30% of traffic would be using Caloundra Road crossover, while 70% of traffic would be using Maroochydore Way crossover. For more detailed plans of the estimated vehicular traffic volumes and distribution please refer to the plans provided in Appendix 2.

2.13 Vehicle Crossover Requirements

Are vehicle crossovers required onto existing road networks?	YES
How many existing crossovers?	**Crossover 1 –** existing Service Station crossover on Maroochydore Way, Right of Way provided for the proposed development **Crossover 2 –** existing Fast Food crossover on Caloundra Road, Right of Way provided for the proposed development
How many proposed crossovers?	Existing crossovers to be retained - no additional crossovers required

2.14 Public Transport Accessibility

How many bus routes are within 400 metres of the subject site?	5 routes
How many rail routes are within 800 metres of the subject site?	None – Clarkson Rail Station located 1.2km from the subject site and serviced by Joondalup Line

Bus / Rail Route	Description	Peak Frequency	Off-Peak Frequency
474	Joondalup – Clarkson via Kinross	8 times per day	
480	Clarkson Station - Butler Station via Marmion Avenue	10 minutes	1 hour
481	Clarkson Station - Quinns Rocks via Mindarie	10 minutes	1 hour
482	Clarkson Station - Butler Station via Marmion Avenue & Santa Barbara Parade	20 minutes	1 hour
483	Clarkson Station – Alkimos via Merriwa & Butler Station	10 minutes	1 hour

Walk Score Rating for Accessibility to Public Transport

51	Good Transit. Many nearby public transportation options.

2.15 Pedestrian Infrastructure

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

Classification	**Road Name**
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Neerabup Road, Roulettes Parade, Ocean Keys Boulevard, Rooney Street, Debelle Way, Aviator Boulevard, Observatory Drive, Cronulla Road
Unclassified pedestrian paths	Maroochydore Way, Caloundra Road, Coaldale Link etc.
Does the site have existing pedestrian facilities	YES
Does the site propose to improve pedestrian facilities?	NO

What is the Walk Score Rating?

57	Somewhat Walkable. Some errands can be accomplished on foot.

2.16 Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the subject site?	YES

If YES, describe:

Classification	Road Name
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Neerabup Road, Roulettes Parade, Ocean Keys Boulevard, Rooney Street, Debelle Way, Aviator Boulevard, Observatory Drive, Cronulla Road, Marmion Avenue, Key Largo Drive, Lower Keys Drive, Belleville Gardens, Victorsen Parade, McAllister Boulevard, Melbourne Loop, Santa Clara Crescent
" Good Road Riding Environment"	Boranup Avenue, Tamarama Crescent, Neerabup Road, Key Largo Drive, The Straits, Garret Way, Fleming Parkway, Airlie Chase, Gaudi Way, Palladio Pass, Belleville Gardens, Victorsen Parade
" Bicycle Lanes or Sealed Shoulder Either Side"	Neerabup Road, Lower Keys Drive, Ocean Keys Boulevard, Marmion Avenue, Connolly Drive

Are there any PBN Routes within a 400m radius of the subject site?	YES

If YES, describe:

Classification	Road Name
" Other Shared Path (Shared by Pedestrians and Cyclists)"	Neerabup Road, Roulettes Parade, Ocean Keys Boulevard, Rooney Street, Debelle Way, Aviator Boulevard, Observatory Drive, Cronulla Road
" Good Road Riding Environment"	Boranup Avenue, Tamarama Crescent
" Bicycle Lanes or Sealed Shoulder Either Side"	Neerabup Road, Lower Keys Drive, Ocean Keys Boulevard

Does the site have existing cyclist facilities?	NO
Does the site propose to improve cyclist facilities?	NO

2.17 Site-Specific Issues and Proposed Remedial Measures

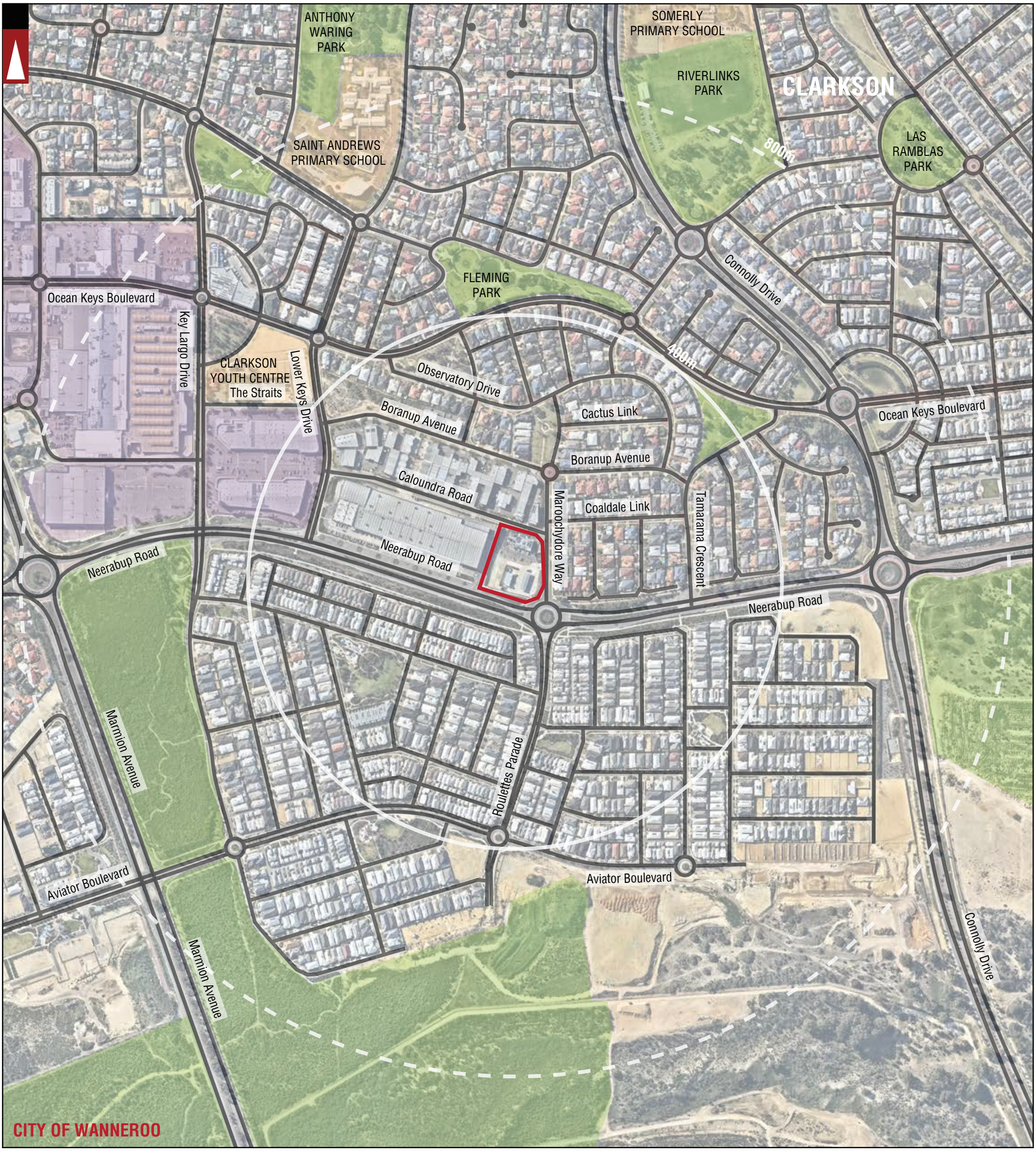
How many site-specific issues need to be discussed?	One
Site-Specific Issue No 1	**Traffic impact**
Remedial Measure / Response	The proposed development is expected to attract up to 402 vehicular trips per day, 31 vehicular trips in the AM peak and 22 vehicular trips in the PM peak hour. According to WAPC Guidelines developments generating 10-100 vehicular trips in the peak hour have a moderate impact on the road network and warrant a Transport Impact Statement. However, it is expected that the large percentage of development attracted traffic would be passing traffic, already present on the surrounding road network. The additional traffic expected to be attracted by the proposed development would be 121 vehicular trips per day, 9 vehicular trips in the AM peak and 7 vehicular trips in the PM peak hour. Having in mind the additional traffic to the surrounding road network would be less than 10 vehicular trips in the peak hour, the impact is considered low as per WAPC Guidelines. KCTT believe the surrounding road network has sufficient capacity to accommodate the expected additional traffic.

Appendix 1

The Layout of the Proposed Development

Appendix 2

Transport Planning and Traffic Plans



PARKS AND RECREATION

WATERWAYS

PUBLIC PURPOSE

SHOPPING AREA

ROAD

Hay Street — STREET NAME

RAILWAY

LOCATION BOUNDARY

DISTANCE FROM LOCATION

CITY OF WANNEROO — LOCAL GOVERNMENT NAME

CLARKSON — SUBURB NAME

LEGEND

No	DATE	AMENDMENT
A	15-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: LOCALITY PLAN - 800M RADIUS

DRAWING NUMBER: KC01210.000_ S01

DRAWN BY: J.S.

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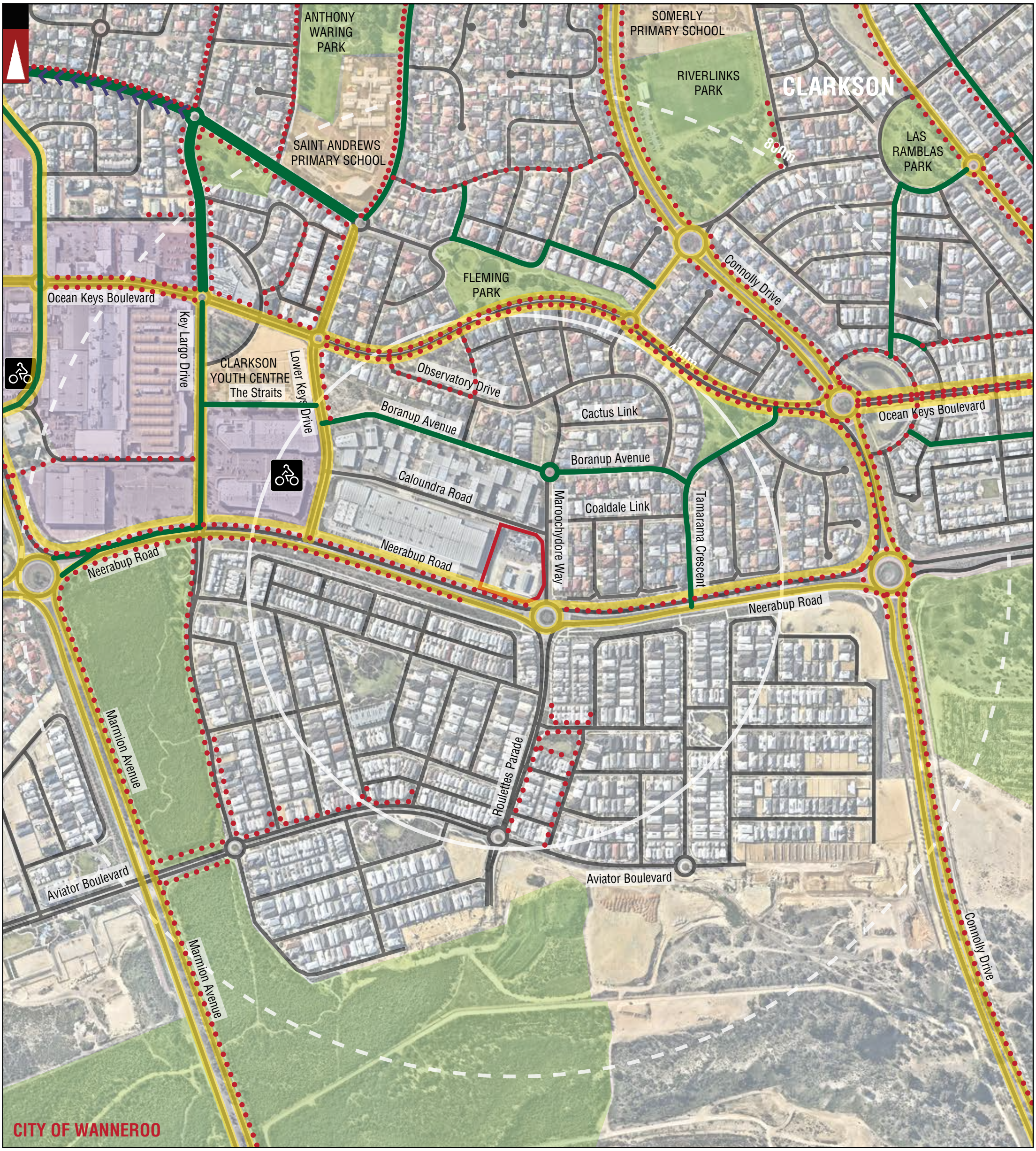

PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street STREET NAME
RAILWAY
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF WANNEROO LOCAL GOVERNMENT NAME
CLARKSON SUBURB NAME
OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)
GOOD ROAD RIDING ENVIRONMENT
BICYCLE LANES OR SEALED SHOULDER EITHER SIDE
GRADIENT ARROW
BIKE SHOP

LEGEND

No	DATE	AMENDMENT
A	15-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: BICYCLE NETWORK PLAN - 800M RADIUS

DRAWING NUMBER: KC01210.000_ S02

DRAWN BY: J.S.

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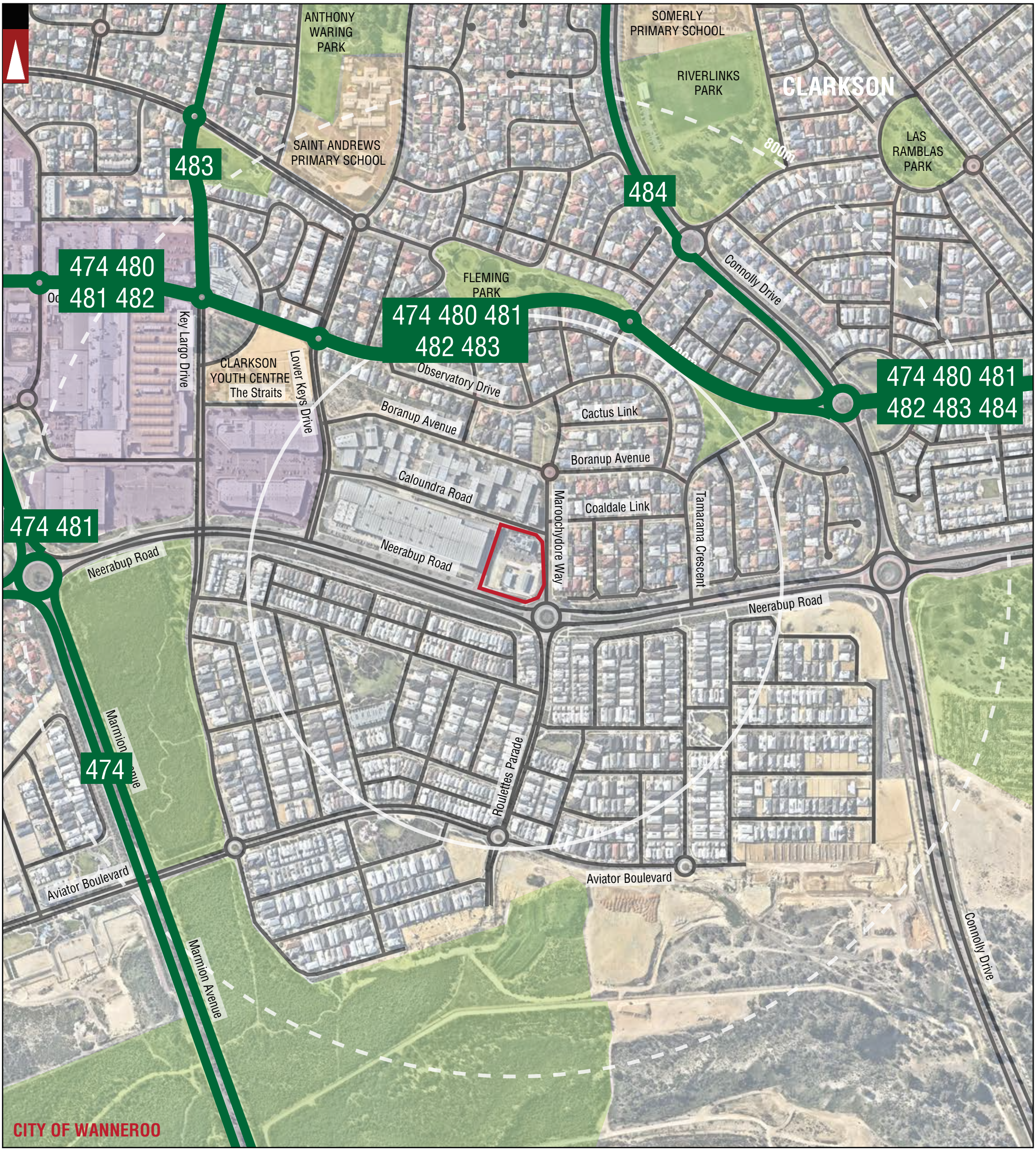

PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street STREET NAME
RAILWAY
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF WANNEROO LOCAL GOVERNMENT NAME
CLARKSON SUBURB NAME
BUS ROUTES
103 BUS ROUTE NUMBER

NOTE : FOR MORE INFORMATION REGARDING THE DESCRIPTION OF BUS ROUTES AND THEIR INDICATIVE PEAK AND OFF-PEAK FREQUENCIES REFER TO THE REPORT.

LEGEND

Certified System Quality ISO 9001 SAI GLOBAL

No	DATE	AMENDMENT
A	15-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: PUBLIC TRANSPORT PLAN - 800M RADIUS

DRAWING NUMBER: KC01210.000_ S03

DRAWN BY: J.S.

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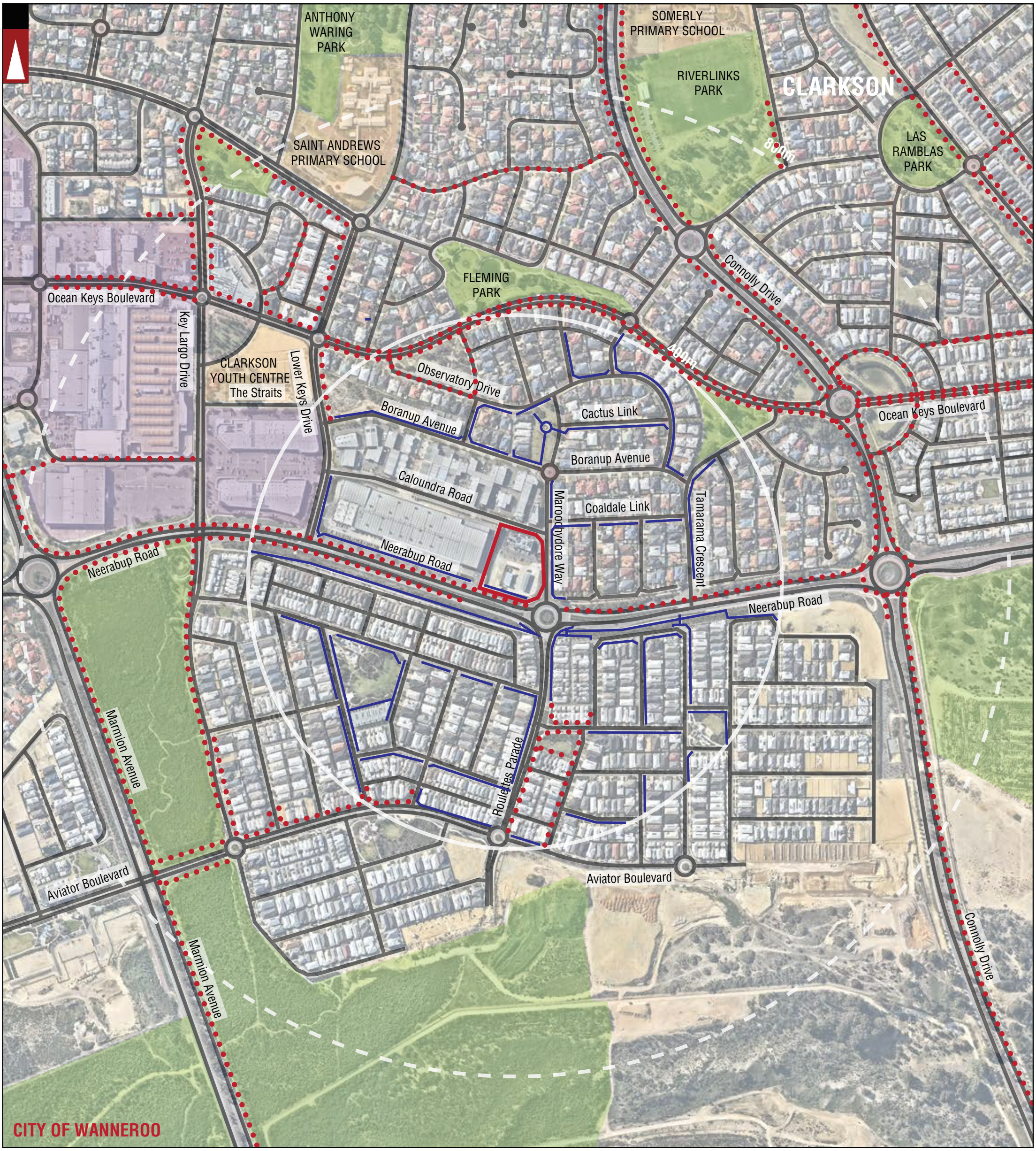

PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street STREET NAME
RAILWAY
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF WANNEROO LOCAL GOVERNMENT NAME
CLARKSON SUBURB NAME
OTHER SHARED PATH (SHARED BY PEDESTRIANS & CYCLISTS)
PEDESTRIAN PATH WITHIN 400M FROM THE SUBJECT LOCATION

LEGEND

Certified System Quality ISO 9001 SAI GLOBAL

No	DATE	AMENDMENT
A	15-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: PEDESTRIAN PATHS PLAN - 800M RADIUS

DRAWING NUMBER: KC01210.000_ S04

DRAWN BY: J.S.

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ANTHONY WARING PARK

SOMERLY PRIMARY SCHOOL

RIVERLINKS PARK

CLARKSON

LAS RAMBLAS PARK

SAINT ANDREWS PRIMARY SCHOOL

800m

FLEMING PARK

Connolly Drive

400m

Ocean Keys Boulevard

Key Largo Drive

22,920 AM 07:45 – 1,924 PM 14:45 – 1,879 2017/18
NORTH OF NEERABUP ROAD

Observatory Drive

Cactus Link

16,435 AM 08:00 – 1,307 PM 16:00 – 1,413 2020
WEST OF KEY LARGO DRIVE**

Boranup Avenue

16,099 AM 08:00 – 1,256 PM 16:00 – 1,414 2020
EAST OF KEY LARGO DRIVE**

1,480 AM 08:00 – 118 PM 17:00 – 143 n/a
SOUTH OF BOORANUP AVENUE**

Maroochydore Way

Crescent

Neerabup Road

Neerabup Road

15,963 AM 08:00 – 1,310 PM 15:30 – 1,431 2017/18
EAST OF MARMION DRIVE

960 AM 192 PM n/a

6,107 AM 08:00 – 594 PM 17:15 – 714 2017/18
SOUTH OF NEERABUP ROAD

Marmion Avenue

Roulettes Parade

Aviator Boulevard

Aviator Boulevard

Connolly Drive

CITY OF WANNEROO

PARKS AND RECREATION
WATERWAYS
PUBLIC PURPOSE
SHOPPING AREA
ROAD
Hay Street STREET NAME
RAILWAY
LOCATION BOUNDARY
DISTANCE FROM LOCATION
CITY OF WANNEROO LOCAL GOVERNMENT NAME
CLARKSON SUBURB NAME
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

LEGEND

Certified System Quality ISO 9001 SAI GLOBAL

No	DATE	AMENDMENT
B	22-09-2020	ADDITIONAL INFORMATION INCLUDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: EXISTING TRAFFIC COUNTS - 800M RADIUS

DRAWING NUMBER: KC01210.000_ S05

DRAWN BY: J.S.

Civil & Traffic Engineering Consultants
Suite 7 No 10 Whipple Street Balcatta WA 6021
PH: 08 9441 2700
WEB: www.kctt.com.au
kctt

LOCATION BOUNDARY

Lewis Road ROAD NAME

IN +OUT 484 — TOTAL EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (PASSING + DEVELOPMENT)

484 OUT + IN — TOTAL EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (PASSING + DEVELOPMENT) ON THE CROSSOVER

17 — TOTAL EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (PASSING + DEVELOPMENT) IN DIRECTION

17 — TOTAL EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (PASSING + DEVELOPMENT) OUT DIRECTION

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF HODGE COLLARD PRESTON

LEGEND

No	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	18-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: TRAFFIC FLOW DIAGRAM - TOTAL DAILY TRAFFIC

DRAWING NUMBER: KC01210.000_ S06a

DRAWN BY: J.S.

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LOCATION BOUNDARY

Lewis Road ROAD NAME

IN +OUT 484 — EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (30% OF TOTAL EXPECTED TRAFFIC)

484 OUT + IN — EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (30% OF TOTAL EXPECTED TRAFFIC) ON THE CROSSOVER

17 — EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (30% OF TOTAL EXPECTED TRAFFIC) - IN DIRECTION

17 — EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (30% OF TOTAL EXPECTED TRAFFIC) - OUT DIRECTION

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF HODGE COLLARD PRESTON

LEGEND

Certified System Quality ISO 9001 SAI GLOBAL

No	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	18-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: TRAFFIC FLOW DIAGRAM - TOTAL DAILY DEVELOPMENT TRAFFIC (30% OF TOTAL)

DRAWING NUMBER: KC01210.000_ S06b

DRAWN BY: J.S.

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LOCATION BOUNDARY

Lewis Road ROAD NAME

IN +OUT 484 — TOTAL EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (PASSING + DEVELOPMENT) - AM PEAK

484 OUT + IN — TOTAL EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (PASSING + DEVELOPMENT) ON THE CROSSOVER - AM PEAK

17 — TOTAL EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (PASSING + DEVELOPMENT) IN DIRECTION - AM PEAK

17 — TOTAL EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (PASSING + DEVELOPMENT) OUT DIRECTION - AM PEAK

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF HODGE COLLARD PRESTON

LEGEND

Certified System Quality ISO 9001 SAI GLOBAL

No	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	18-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: TRAFFIC FLOW DIAGRAM - TOTAL TRAFFIC - AM PEAK

DRAWING NUMBER: KC01210.000_ S07a

DRAWN BY: J.S.

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kctt

LOCATION BOUNDARY

Lewis Road ROAD NAME

IN + OUT 484 — EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (30% OF TOTAL EXPECTED TRAFFIC) - AM PEAK

484 OUT + IN — EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (30% OF TOTAL EXPECTED TRAFFIC) ON THE CROSSOVER - AM PEAK

17 — EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (30% OF TOTAL EXPECTED TRAFFIC) IN DIRECTION - AM PEAK

17 — EXPECTED TRAFFIC GENERATION FROM THE PROPOSED DEVELOPMENT (30% OF TOTAL EXPECTED TRAFFIC) OUT DIRECTION - AM PEAK

Traffic Flow IN Direction

Traffic Flow OUT Direction

NOTE: THE PLAN IS COURTEOUSY OF HODGE COLLARD PRESTON

LEGEND

Certified System Quality ISO 9001 SAI GLOBAL

No	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	18-09-2020	ISSUED FOR REVIEW

PROJECT: LOT 503 (NO 30) MAROOCHYDORE WAY, CLARKSON

TITLE: TRAFFIC FLOW DIAGRAM - AM PEAK
TOTAL DAILY DEVELOPMENT TRAFFIC (30% OF TOTAL)

DRAWING NUMBER: KC01210.000_ S07b

DRAWN BY: J.S.

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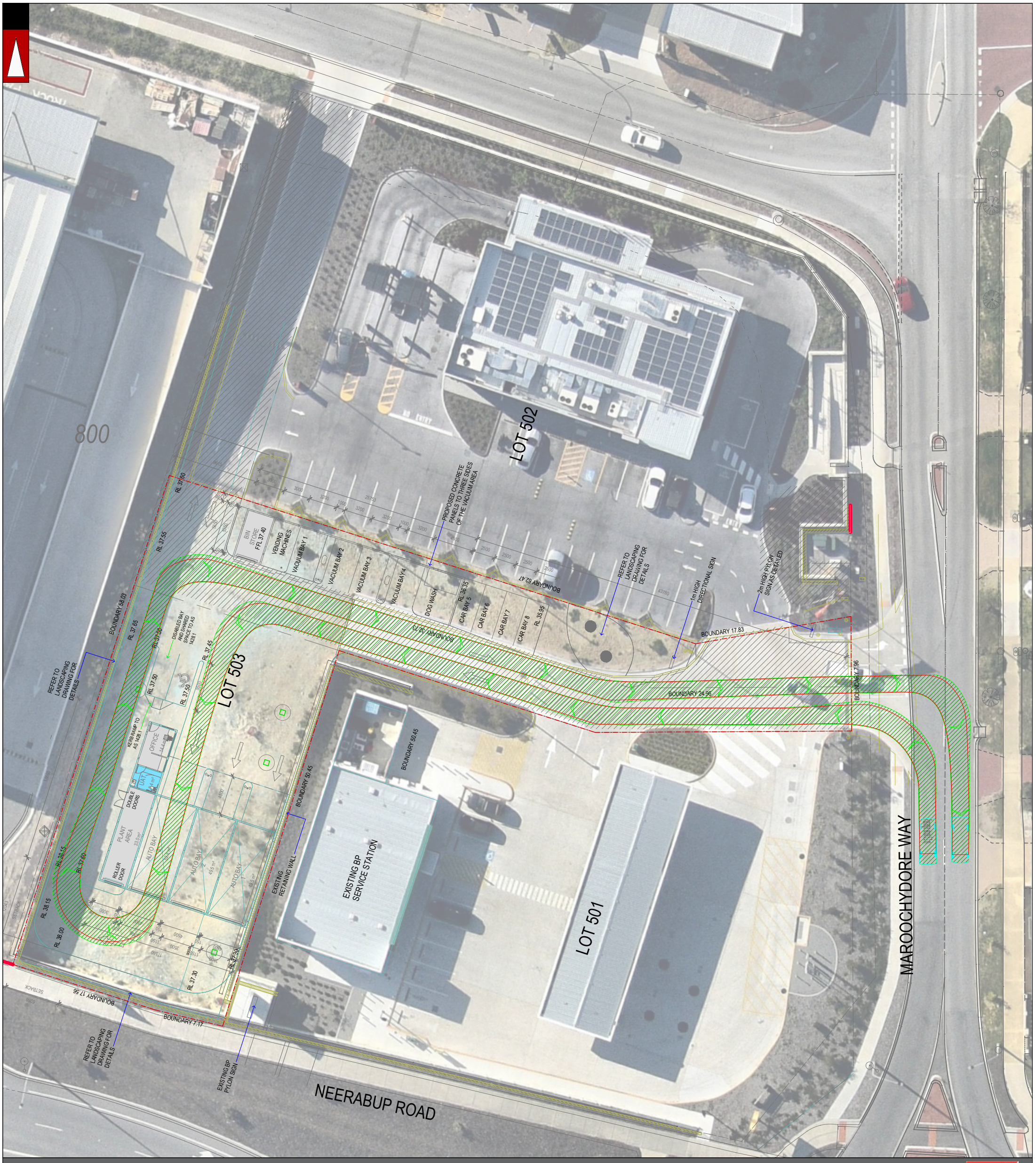
Appendix 3

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)

Certified System Quality ISO 9001 SAI GLOBAL

LEGEND

NO	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT:
Lot 503 (No 30) Maroochydore Way, Clarkson

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

DRAWING NUMBER:
KC01210.000_S20

DRAWN BY:
A.M.

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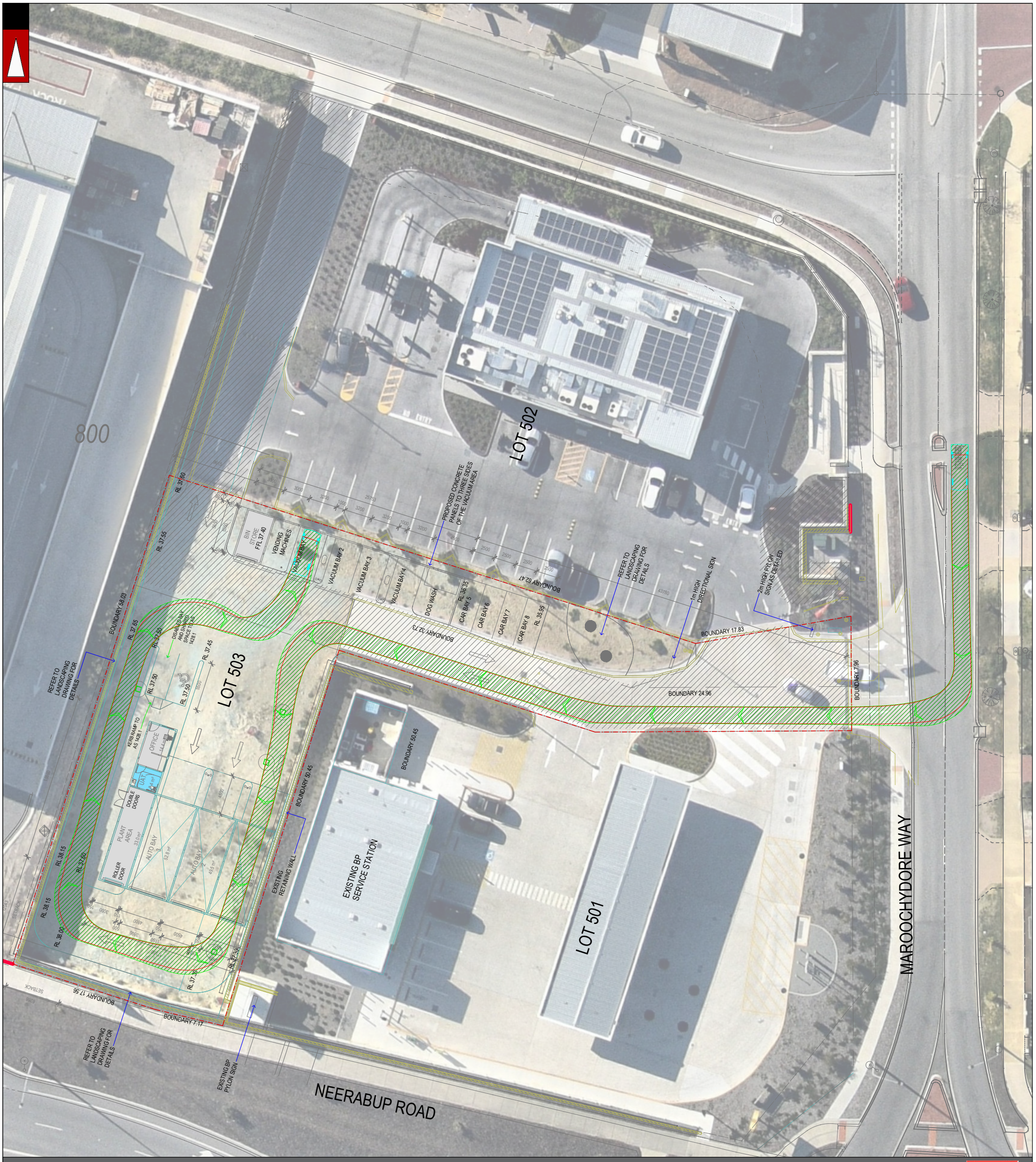

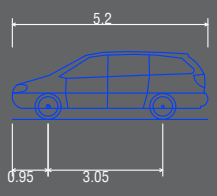

Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

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

Certified System Quality ISO 9001 SAI GLOBAL

LEGEND

NO	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT:
Lot 503 (No 30) Maroochydore Way, Clarkson

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

DRAWING NUMBER:
KC01210.000_S21a

DRAWN BY:
A.M.

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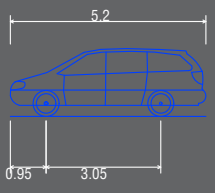

Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

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

Certified System Quality ISO 9001 SAI GLOBAL

LEGEND

NO	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT:
Lot 503 (No 30) Maroochydore Way, Clarkson

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

DRAWING NUMBER:
KC01210.000_S21b

DRAWN BY:
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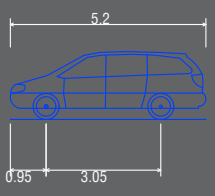

Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

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

Certified System Quality ISO 9001 SAI GLOBAL

LEGEND

NO	DATE	AMENDMENT
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B	19-10-2020	PROPOSED LAYOUT AMENDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT:
Lot 503 (No 30) Maroochydore Way, Clarkson

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

DRAWING NUMBER:
KC01210.000_S22a

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

Certified System Quality ISO 9001 SAI GLOBAL

NO	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT:
Lot 503 (No 30) Maroochydore Way, Clarkson

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

DRAWING NUMBER:
KC01210.000_S22b

DRAWN BY:
A.M.

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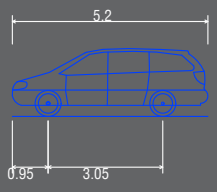

Passenger vehicle (5.2 m)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.804m
Min Body Ground Clearance	0.295m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.300m

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

Certified System Quality ISO 9001 SAI GLOBAL

LEGEND

NO	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT:
Lot 503 (No 30) Maroochydore Way, Clarkson

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

DRAWING NUMBER:
KC01210.000_S23

DRAWN BY:
A.M.

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kctt

5.2

0.95 3.05

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)

Certified System Quality ISO 9001 SAI GLOBAL

LEGEND

NO	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT:
Lot 503 (No 30) Maroochydore Way, Clarkson

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

DRAWING NUMBER:
KC01210.000_S24

DRAWN BY:
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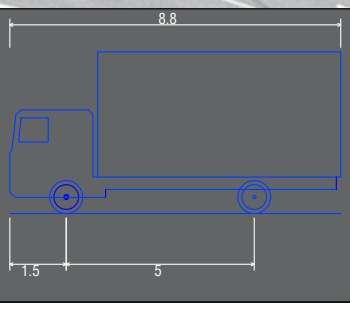
kctt



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)

Certified System Quality ISO 9001 SAI GLOBAL

LEGEND

NO	DATE	AMENDMENT
C	05-11-2020	PROPOSED LAYOUT AMENDED
B	19-10-2020	PROPOSED LAYOUT AMENDED
A	15-09-2020	ISSUED FOR REVIEW

PROJECT:
Lot 503 (No 30) Maroochydore Way, Clarkson

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

DRAWING NUMBER:
KC01210.000_S25

DRAWN BY:
A.M.

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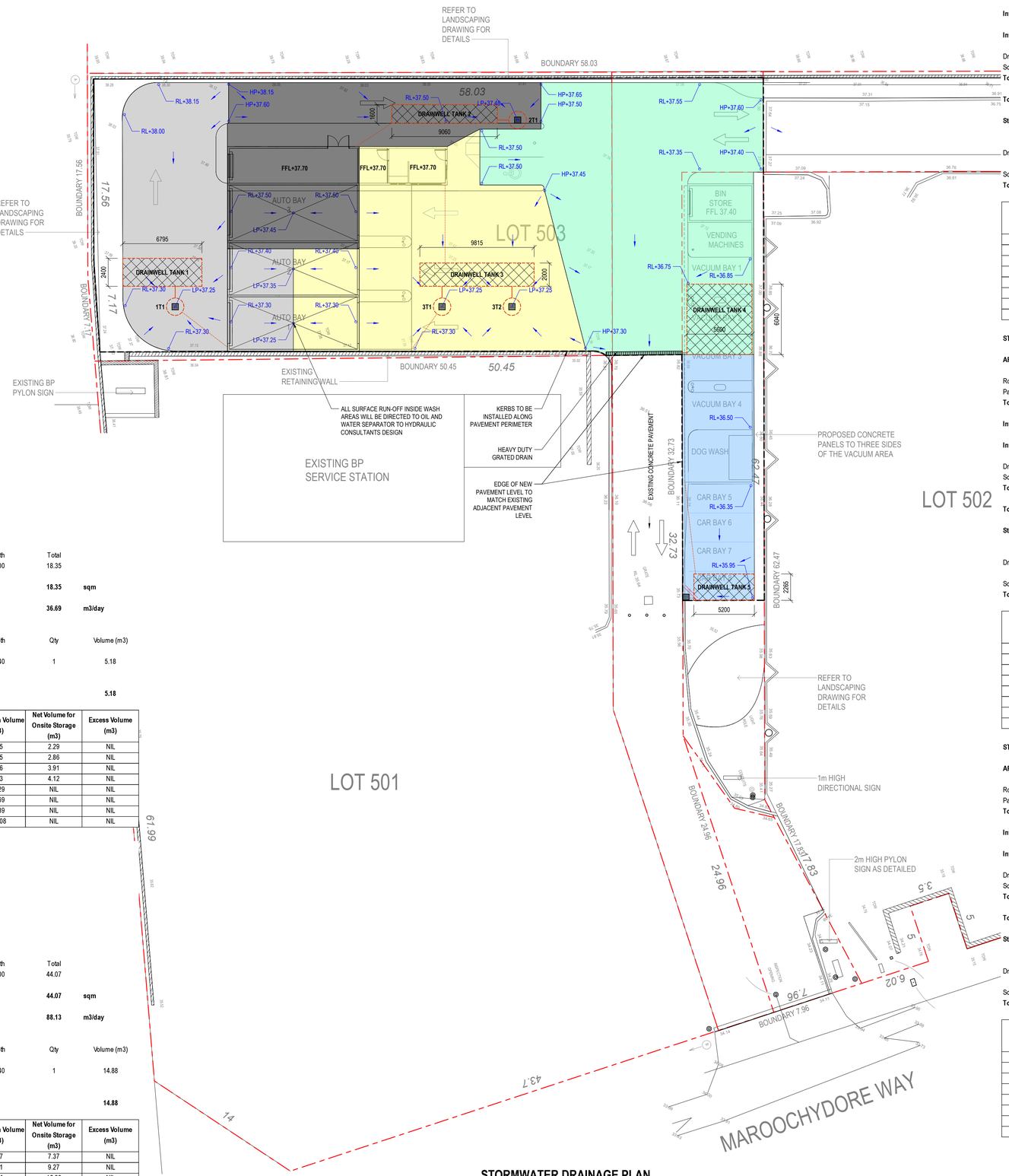
WEB: www.kctt.com.au



STORMWATER DRAINAGE PLAN
SCALE 1:200

STORMWATER DRAINAGE CALCULATIONS - AREA 5

ARI	**1:100**	
		Runoff Coefficient
Roof Area	69	1.00
Paved Area	61	0.90
Total	**130**	**0.95**
Infiltration Rate	**2**	m/day

Infiltration Area

	Qty	Length	Width	Total	
Drainwell Tanks	1	2.265	5.200	18.35	
Total				**18.35**	**sqm**
Total Infiltration Rate				**36.69**	**m3/day**

Storage Capacity

	Length	Width	Depth	Qty	Volume (m3)
Drainwell Tanks	2.265	5.200	0.440	1	5.18
	Area	Average Depth			
Total Storage Capacity					**5.18**

Duration (min)	Duration (hr)	Intensity (mm/hr)	Inflow Volume (m3)	Infiltration Volume (m3)	Net Volume for Onsite Storage (m3)	Excess Volume (m3)
6	0.10	197.00	2.44	0.15	2.29	NIL
10	0.17	151.00	3.12	0.25	2.86	NIL
30	0.50	75.50	4.68	0.76	3.91	NIL
60	1.00	45.60	5.65	1.53	4.12	NIL
600	10.00	9.52	11.80	15.29	NIL	NIL
1440	24.00	5.54	16.47	36.69	NIL	NIL
2880	48.00	3.65	21.71	73.39	NIL	NIL
4320	72.00	2.78	24.80	110.08	NIL	NIL

STORMWATER DRAINAGE CALCULATIONS - AREA 4

ARI	**1:100**	
		Runoff Coefficient
Roof Area	94	1.00
Paved Area	332	0.90
Total	**426**	**0.92**
Infiltration Rate	**2**	m/day

Infiltration Area

	Qty	Length	Width	Total	
Drainwell Tanks	1	6.040	5.600	44.07	
Total				**44.07**	**sqm**
Total Infiltration Rate				**88.13**	**m3/day**

Storage Capacity

	Length	Width	Depth	Qty	Volume (m3)
Drainwell Tanks	6.040	5.600	0.440	1	14.88
	Area	Average Depth			
Total Storage Capacity					**14.88**

Duration (min)	Duration (hr)	Intensity (mm/hr)	Inflow Volume (m3)	Infiltration Volume (m3)	Net Volume for Onsite Storage (m3)	Excess Volume (m3)
6	0.10	197.00	7.74	0.37	7.37	NIL
10	0.17	151.00	9.89	0.61	9.27	NIL
30	0.50	75.50	14.83	1.84	12.99	NIL
60	1.00	45.60	17.91	3.67	14.24	NIL
600	10.00	9.52	37.39	36.72	0.67	NIL
1440	24.00	5.54	52.23	88.13	NIL	NIL
2880	48.00	3.65	68.82	176.27	NIL	NIL
4320	72.00	2.78	78.62	264.40	NIL	NIL

STORMWATER DRAINAGE CALCULATIONS - AREA 1

ARI	**1:100**	
		Runoff Coefficient
Roof Area	49	1.00
Paved Area	201	0.90
Total	**250**	**0.92**
Infiltration Rate	**2**	m/day

Infiltration Area

	Qty	Length	Width	Total	
Drainwell Tanks	1	6.795	2.400	24.40	
Soakwells (1.5m dia x 0.9m deep)	1	0.60	0.60	0.36	
Total				**24.76**	**sqm**
Total Infiltration Rate				**49.52**	**m3/day**

Storage Capacity

	Length	Width	Depth	Qty	Volume (m3)
Drainwell Tanks	6.795	2.400	0.440	1	7.18
	Area	Average Depth			
Soakwells (1.5m dia x 0.9m deep)	1.77	0.9		1	1.59
Total Storage Capacity					**8.77**

Duration (min)	Duration (hr)	Intensity (mm/hr)	Inflow Volume (m3)	Infiltration Volume (m3)	Net Volume for Onsite Storage (m3)	Excess Volume (m3)
6	0.10	197.00	4.53	0.21	4.32	NIL
10	0.17	151.00	5.79	0.34	5.44	NIL
30	0.50	75.50	8.68	1.03	7.65	NIL
60	1.00	45.60	10.48	2.06	8.42	NIL
600	10.00	9.52	21.89	20.63	1.25	NIL
1440	24.00	5.54	30.57	49.52	NIL	NIL
2880	48.00	3.65	40.28	99.04	NIL	NIL
4320	72.00	2.78	46.02	148.56	NIL	NIL

STORMWATER DRAINAGE CALCULATIONS - AREA 2

ARI	**1:100**	
		Runoff Coefficient
Roof Area	95	1.00
Paved Area	137	0.90
Total	**232**	**0.94**
Infiltration Rate	**2**	m/day

Infiltration Area

	Qty	Length	Width	Total	
Drainwell Tanks	1	9.060	1.600	23.88	
Soakwells (1.5m dia x 0.9m deep)	1	0.60	0.60	0.36	
Total				**24.24**	**sqm**
Total Infiltration Rate				**48.47**	**m3/day**

Storage Capacity

	Length	Width	Depth	Qty	Volume (m3)
Drainwell Tanks	9.060	1.600	0.440	1	6.38
	Area	Average Depth			
Soakwells (1.5m dia x 0.9m deep)	1.77	0.9		1	1.59
Total Storage Capacity					**7.97**

Duration (min)	Duration (hr)	Intensity (mm/hr)	Inflow Volume (m3)	Infiltration Volume (m3)	Net Volume for Onsite Storage (m3)	Excess Volume (m3)
6	0.10	197.00	4.30	0.20	4.10	NIL
10	0.17	151.00	5.49	0.34	5.16	NIL
30	0.50	75.50	8.24	1.01	7.23	NIL
60	1.00	45.60	9.95	2.02	7.93	NIL
600	10.00	9.52	20.78	20.20	0.58	NIL
1440	24.00	5.54	29.03	48.47	NIL	NIL
2880	48.00	3.65	38.25	96.95	NIL	NIL
4320	72.00	2.78	43.69	145.42	NIL	NIL

STORMWATER DRAINAGE CALCULATIONS - AREA 3

ARI	**1:100**	
		Runoff Coefficient
Roof Area	134	1.00
Paved Area	198	0.90
Total	**332**	**0.94**
Infiltration Rate	**2**	m/day

Infiltration Area

	Qty	Length	Width	Total	
Drainwell Tanks	1	9.815	2.000	30.03	
Soakwells (1.5m dia x 0.9m deep)	2	0.60	0.60	0.72	
Total				**30.75**	**sqm**
Total Infiltration Rate				**61.49**	**m3/day**

Storage Capacity

	Length	Width	Depth	Qty	Volume (m3)
Drainwell Tanks	9.815	2.000	0.440	1	8.64
	Area	Average Depth			
Soakwells (1.5m dia x 0.9m deep)	1.77	0.9		2	3.18
Total Storage Capacity					**11.82**

Duration (min)	Duration (hr)	Intensity (mm/hr)	Inflow Volume (m3)	Infiltration Volume (m3)	Net Volume for Onsite Storage (m3)	Excess Volume (m3)
6	0.10	197.00	6.15	0.26	5.89	NIL
10	0.17	151.00	7.86	0.43	7.43	NIL
30	0.50	75.50	11.79	1.28	10.50	NIL
60	1.00	45.60	14.24	2.56	11.67	NIL
600	10.00	9.52	29.72	25.62	4.10	NIL
1440	24.00	5.54	41.51	61.49	NIL	NIL
2880	48.00	3.65	54.70	122.99	NIL	NIL
4320	72.00	2.78	62.49	184.48	NIL	NIL

SITE DATA:

SITE CLASSIFICATION = CLASS A
SOIL PERMEABILITY = 2 m/day (ASSUMED)
GROUND WATER TABLE = OVER 30m BELOW EXISTING GROUND LEVEL

GENERAL NOTES:

1. DATUM IS LOCAL AND TO BE VERIFIED ON SITE.
2. CHECK ALL DIMENSIONS ON SITE. READ ALL ENGINEERING DRAWINGS IN CONJUNCTION WITH ARCHITECTURAL & SURVEY DRAWINGS. ANY DISCREPANCIES BETWEEN ENGINEERING DRAWINGS AND ARCHITECTURAL DRAWINGS SHALL BE CONFIRMED PRIOR TO COMMENCING CONSTRUCTION. DO NOT SCALE FROM THESE DRAWINGS.
3. ALL WORK TO BE IN ACCORDANCE WITH "AS3500-2003 PLUMBING & DRAINAGE", THE "BUILDING CODE OF AUSTRALIA" AND THE LOCAL AUTHORITY'S STANDARD SPECIFICATIONS.
4. LOT CONNECTION PIT (WHEN APPLICABLE) TO LOCAL AUTHORITY SPECIFICATIONS.
5. WHERE MANHOLES ARE LOCATED IN THE AREAS SUBJECT TO VEHICULAR LOADING, STANDARD TRAFFICABLE LIDS ARE TO BE INSTALLED & BASED TO BUILDER'S DETAIL.
6. ALL DRAINAGE PIPEWORK SHALL BE PVC CLASS HD STORMWATER, UNLESS WHERE LOCATED UNDERNEATH ANY STRUCTURES PIPEWORK SHALL BE PVC SEWER CLASS SN8.
7. ALIGNMENT OF PIPES SHALL BE AS SHOWN ON THE PLAN & SHALL BE TO THE PIPE OR MANHOLE CENTRELINE.
8. BEFORE CONSTRUCTION COMMENCES, THE CONTRACTOR SHALL:
   - A. CHECK ON SITE THE LOCATION OF THE EXISTING SERVICES WITH THE APPROPRIATE AUTHORITY. ENSURE PROPOSED STORMWATER PIPE DOES NOT CLASH WITH ANY EXISTING SERVICES.
   - B. ARRANGE FOR THE LOCATION AND THE LEVEL OF THE CONNECTION POINT TO EXISTING STORMWATER MANHOLE TO BE VERIFIED BY A SURVEYOR.
   - C. CONFIRM THAT BOUNDARY PEGS OR OTHER SURVEY REFERENCE POINTS TO BE USED IN SETTING OUT OF THE PROJECT ARE LOCATED IN THE CORRECT POSITIONS.
   - D. ENSURE A PERMIT & REINSTATEMENT SPECIFICATIONS ARE OBTAINED FROM THE LOCAL AUTHORITY IF EXCAVATION WILL BE IN A ROAD RESERVE OR RIGHT OF WAY.
   - E. ENSURE ALL DETAILS HAVE BEEN CHECKED AND THAT NO DISCREPANCIES EXIST. ALL QUERIES AND DISCREPANCIES ARE TO BE RESOLVED PRIOR TO COMMENCING WORKS.
11. ALL EXCAVATIONS SHALL BE SECURED & MADE SAFE IN ACCORDANCE WITH REQUIREMENTS OF THE OCCUPATIONAL SAFETY & HEALTH ACT OF 1984, 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 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. ALL CONNECTION INTO EXISTING LOCAL AUTHORITY STORMWATER ARE TO BE CARRIED OUT BY THE CONTRACTOR TO LOCAL AUTHORITY SPECIFICATIONS.
15. THIS STORM WATER DESIGN IS TO BE READ IN CONJUNCTION WITH THE BUILDER'S ARCHITECTURAL DRAWINGS (PARTIALLY REPRODUCED HERE).
16. CLIENT IS TO ENSURE LOCAL AUTHORITY HAVE APPROVED THESE DRAWINGS BEFORE BEING ISSUED FOR PRICING, TENDER & CONSTRUCTION.

LEGEND:

- 150Ø PIPE
- 100Ø PIPE FROM BUILDING DOWNSPOUT
- TRAFFICABLE STORMWATER TANK WITH GRATE COVER
- TRAFFICABLE STORMWATER TANK WITH CONCRETE COVER
- TRAFFICABLE PRECAST SUMP PIT WITH GRATE COVER
- FALL DIRECTION
- IL+10.00 PIPE INVERT LEVEL
- TT+10.00 TOP OF TANK LEVEL
- RL+10.00 PAVEMENT LEVEL
- HP+10.00 PAVEMENT HIGH POINT
- LP+10.00 PAVEMENT LOW POINT

CATCHMENT AREA LEGEND:

- AREA 1
- AREA 2
- AREA 3
- AREA 4
- AREA 5

TANK SCHEDULE

TANK NUMBER	TOP OF TANK LEVEL	INLET/OUTLET PIPE INVERT LEVEL
1T1	TT + 37.25	IL + 36.65
2T1	TT + 37.48	IL + 36.88
3T1-3T2	TT + 37.25	IL + 36.65
DRAINWELL TANK 1	TT + 37.00	IL + 36.65
DRAINWELL TANK 2	TT + 37.23	IL + 36.88
DRAINWELL TANK 3	TT + 37.00	IL + 36.65
DRAINWELL TANK 4	TT + 36.45	IL + 36.05
DRAINWELL TANK 5	TT + 35.40	IL + 35.00

REV	DESCRIPTION	BY	DATE
C	RE-ISSUE FOR APPROVAL	JC	12-DEC-2020
B	RE-ISSUE FOR APPROVAL	JC	10-NOV-2020
A	ISSUE FOR APPROVAL	JC	27-OCT-2020

RE-ISSUE FOR APPROVAL

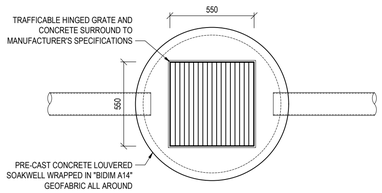
PROJECT:
PROPOSED CAR WASH
CALOUNDRA ROAD, CLARKSON, WESTERN AUSTRALIA

TITLE:
STORMWATER DRAINAGE PLAN AND DETAILS

JCCE JC Consulting Engineers

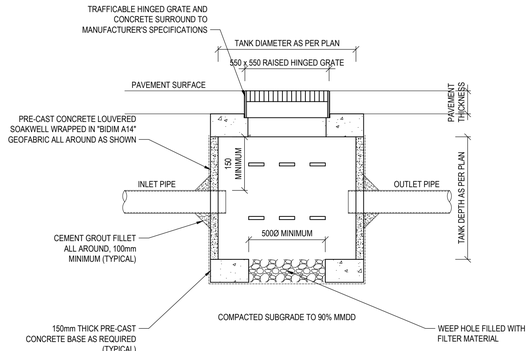
DRAWING:	SCALE:	PROJECT #:	REVISION:
I. FRANCES	AS NOTED	20271	C
DESIGN:	PAPER SIZE:	DRAWING #:	
J. CUBONG	A1	C1	

NOTE: ALL UNITS ARE IN MILLIMETERS UNO



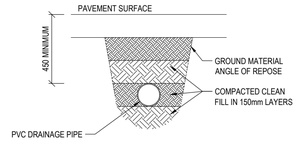
TYPICAL SOAKWELL TANK PLAN

SCALE 1:20



TYPICAL SOAKWELL TANK DETAILS

SCALE 1:20



TYPICAL PVC DRAINAGE PIPE BEDDING DETAILS

SCALE 1:20

REV	DESCRIPTION	BY	DATE
C	RE-ISSUE FOR APPROVAL	JC	12-DEC-2020
B	RE-ISSUE FOR APPROVAL	JC	10-NOV-2020
A	ISSUE FOR APPROVAL	JC	27-OCT-2020

RE-ISSUE FOR APPROVAL

PROJECT:
PROPOSED CAR WASH
CALOUNDRA ROAD, CLARKSON,
WESTERN AUSTRALIA

TITLE:
STORMWATER DRAINAGE DETAILS

JCCE
JC Consulting Engineers

DRAWING:	SCALE:	PROJECT #:	REVISION:
I. FRANCES	AS NOTED	20271	C
DESIGN:	PAPER SIZE:	DRAWING #:	
J. CUBONG	A1	C2	

NOTE: ALL UNITS ARE IN MILLIMETERS UNO