

ATTACHMENT 7

TRANSPORT IMPACT ASSESSMENT



ROWE
GROUP



**Lots 154 & 155 Cnr Alexander Drive
and Landsdale Road, East Landsdale
Proposed Commercial Development
Transport Impact Assessment**

**PREPARED FOR:
Landsdale Unit Trust
& Octangler Pty Ltd
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Author: Mohammad Rasouli

Project manager: Mohammad Rasouli

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1. Introduction and Background

Transcore prepared a TIA in 2018 for the proposed Amendment to the East Landsdale Structure Plan for the proposed Local Centre on Lots 154 and 155 located at the north-west corner of the Alexander Drive and Landsdale Road intersection (subject site) in East Landsdale. **Appendix A** illustrates the site plan access arrangement for the proposed Local Centre at that time.

The subject site entails Lots 154 and 155 which are located at the north-west corner of Alexander Drive and Landsdale Road intersection in East Landsdale, as shown in **Figure 1**.

Figure 2 shows the location of the subject site within the context of the Metropolitan Region Scheme (MRS). As evident Alexander Drive is classified as Other Regional Road (Blue Road) in the MRS.

The proposed Development Application plan (as shown in **Appendix B**) is in line with the proposed access arrangement for the proposed Local Centre except the connections to Ravello Terrace and Melanzana Chase no longer allow vehicle access to the development in line with local development plan.

The focus of this TIA is the proposed commercial development on Lots 154 and 155 including a service station, a supermarket, fast food outlets and a number of retail shops. As part of the assessments the trip generation and distribution of the proposed development were established and SIDRA intersection analysis were undertaken for the western development crossovers on Landsdale Road and the intersection of Landsdale Road/ Alexander Drive.

The development site plan was reviewed to ensure satisfactory access, egress and circulation for all types of vehicles and in particular fuel tankers. The stacking capacity of the proposed fast-food outlets, liquor store, car wash and the service station were also reviewed.



Figure 1: Location of the subject site

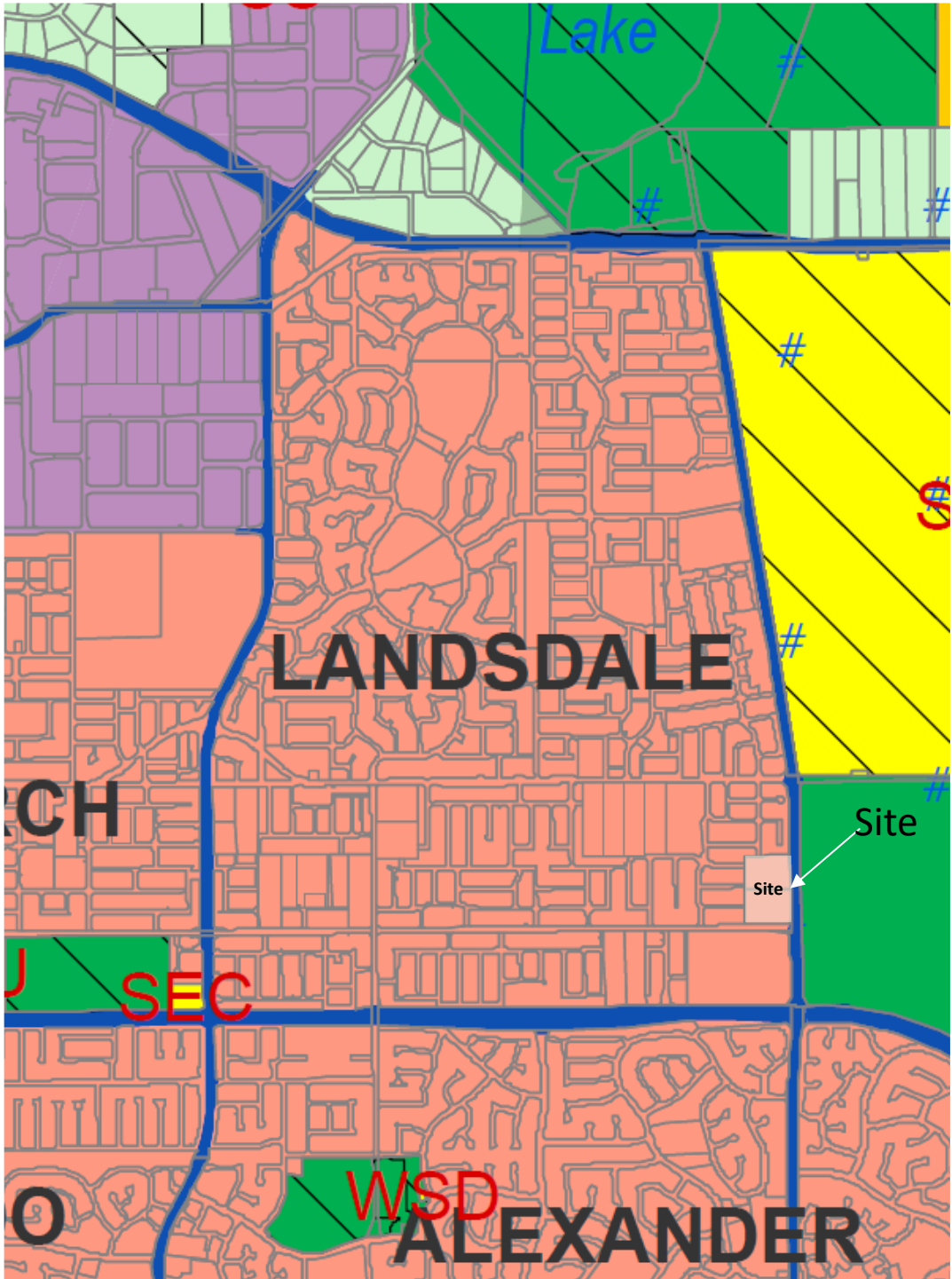


Figure 2: Location of the Subject Site in the MRS

2. Existing Situation

Existing Land Use

The subject site is currently vacant land with one residential dwelling within the southern portion. The subject site entails one formal and one informal crossover on Landsdale Road about 100m and 80m away from the Alexander Drive intersection respectively. Adjacent land uses to the north and west are mainly residential. Hepburn Park is located to the south and Alexander Drive is forming the eastern boundary of the subject site.

Existing Road Network

The existing road network and its classification in the Main Roads WA functional road hierarchy is illustrated in **Figure 3**.



Figure 3: Existing road hierarchy

Landsdale Road in the vicinity of the subject site is constructed with 7.2m pavement and 1m shoulders on both sides. Landsdale Road has a posted speed limit of 60km/h in this vicinity. According to the information obtained from the City of Wanneroo, Landsdale Road east of Pomodora Avenue carried about 1,736vpd in December 2017. The traffic counts undertaken by Transcore for the turn movements of the intersection of Landsdale Road/ Alexander Drive (17 October 2020) indicated that Landsdale Road immediately west of Alexander Drive carried about 106vph, 155vph and 94vph during the Weekday AM, Weekday PM and Saturday mid-day peak hours respectively (refer **Figure 4**).

Landsdale Road intersects with Alexander Drive at a channelised T-intersection with turn pockets on Alexander Drive. Based on advice from the Department of Planning, this intersection is likely to be upgraded to traffic signal control or roundabout sometime in the future as a result of traffic growth on Alexander Drive.

Alexander Drive is constructed to dual divided carriageway standard with a wide (about 12m) median and posted speed limit of 70kmh in the vicinity of the subject site. Alexander Drive is classified as a “District Distributor A” road under the Main Road WA functional road hierarchy. This road is also classified as “Other Regional Road” (Blue Road) in the Metropolitan Region Scheme.

Existing Traffic Volumes

The traffic counts undertaken by Transcore for the turn movements of the intersection of Landsdale Road/ Alexander Drive (17 October 2020) is illustrated in **Figure 4**.

Existing average weekday traffic (AWT) volumes on Alexander Drive (obtained from Main Roads WA) are illustrated in **Figure 5**. The SCATS data for the signalised intersection of Hepburn Avenue and Alexander Drive was also reviewed to establish the historical traffic growth on Alexander Drive. As evident in **Figure 5** the existing traffic counts on Alexander Drive in this vicinity has been reduced by about 13% in 2020 since 2017.

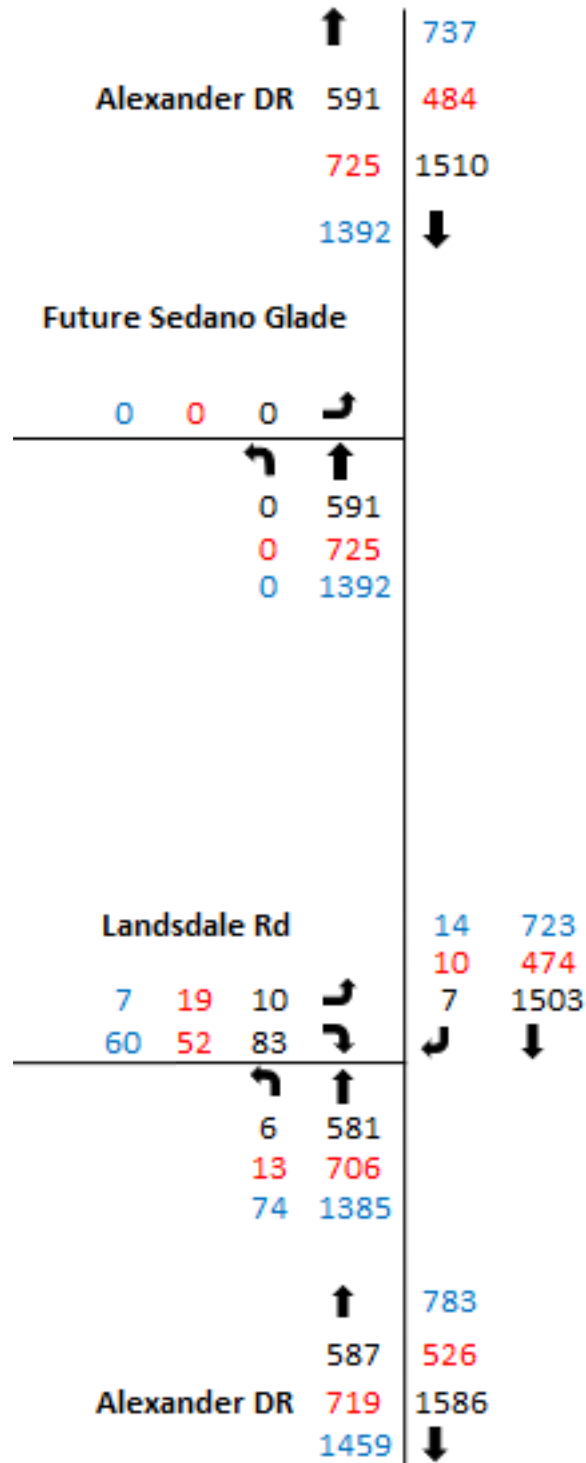


Figure 4: Existing traffic counts AM, PM, Saturday mid-day peak hours

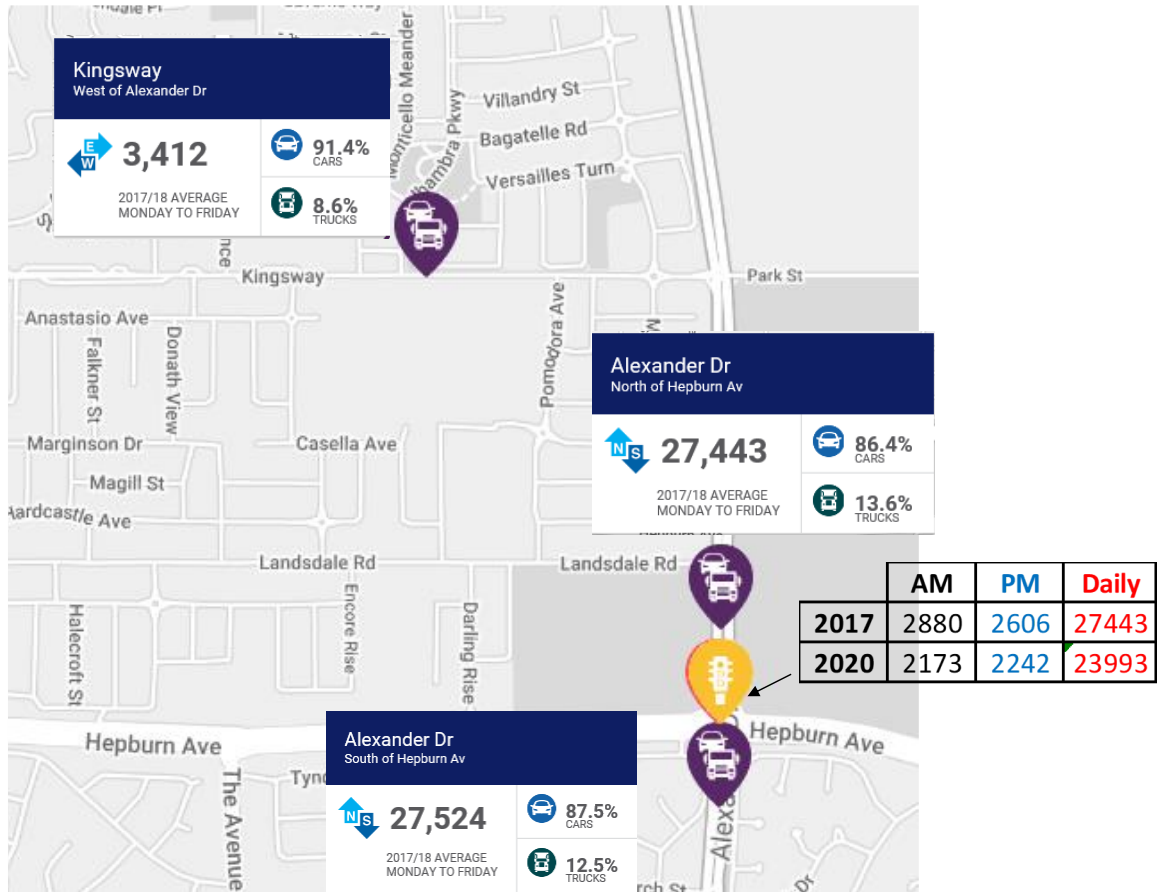


Figure 5: Existing traffic counts

Heavy Vehicle Routes

Restricted Access Vehicle (RAV) Network routes are designated for access by large heavy vehicle combinations, which is managed by Main Roads WA. Alexander Drive in the vicinity of the subject site forms part of RAV Tandem Drive Network 4 as shown in **Figure 6**. The RAV Tandem Drive Network 4 classification permits a variety of prime mover and trailer combinations, such as B-doubles up to a maximum length of 27.5m.

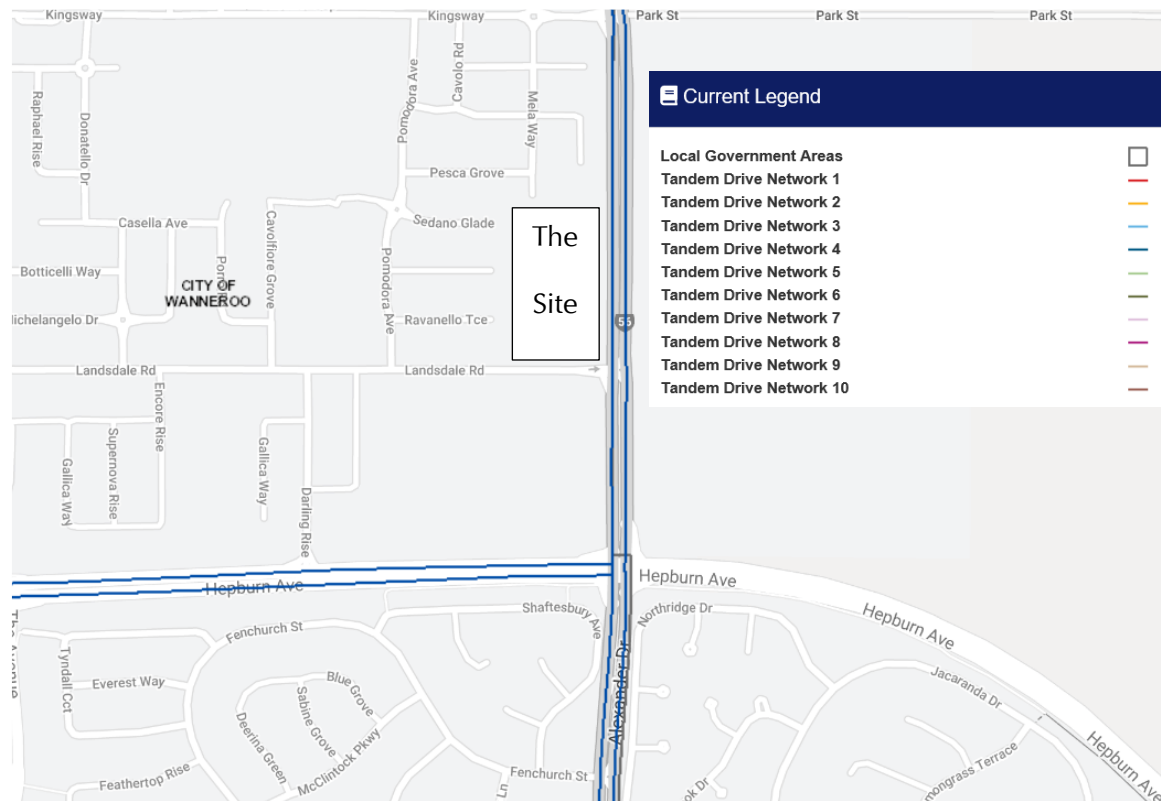


Figure 6: Restricted access vehicle network

Public Transport

Currently, there are no bus routes servicing the subject site. The closest existing bus route is Bus Route No. 450 along Kingsway Road as shown in **Figure 7** which traverses about 500m to the north of the site.



Figure 7: Existing bus route

Pedestrian and Cyclist Facilities

The Department of Transport's Perth Bike Map series shows good riding environment on Landsdale Road fronting the subject site as shown in **Figure 8**.

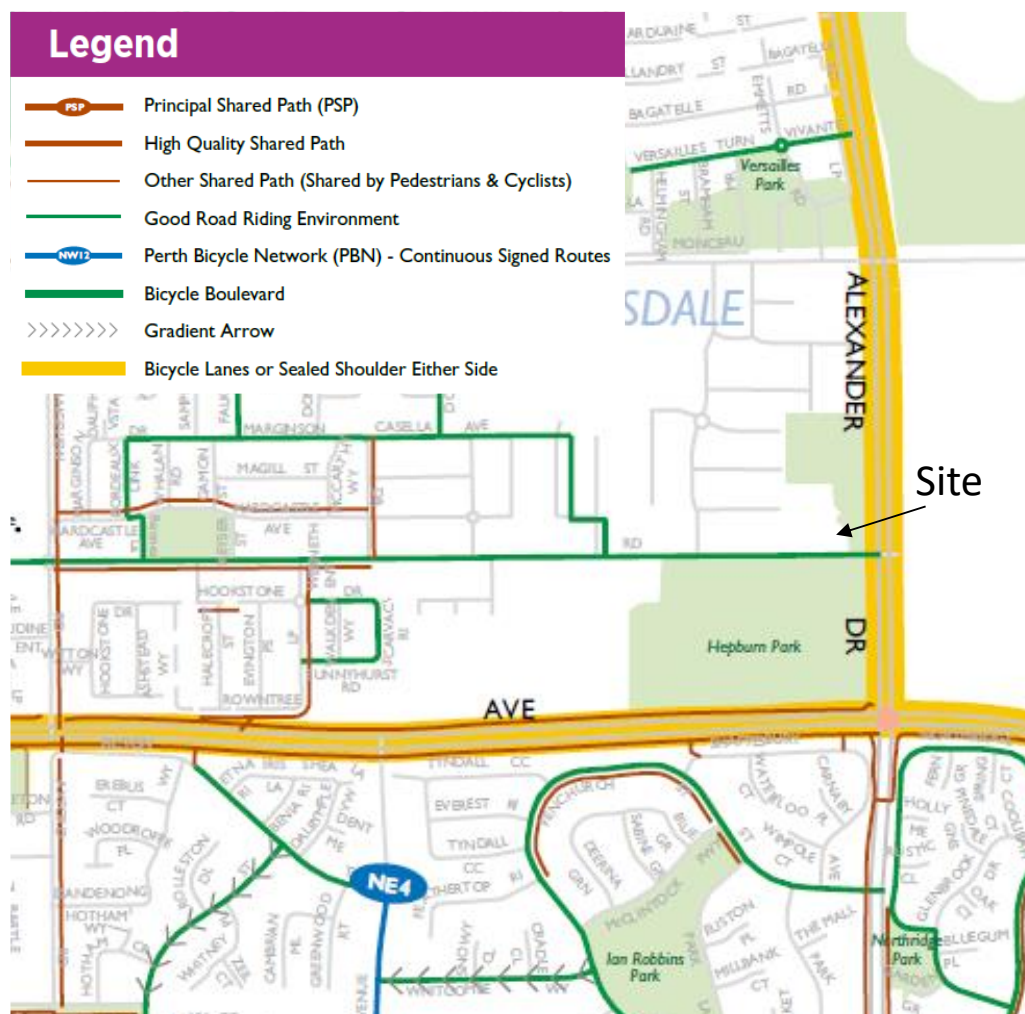


Figure 8: Bike map

Crash Data

Information available on Main Roads WA website provides crash statistics for Landsdale Road/ Alexander Drive intersection during the five-year period ending in December 2019. The crash records indicate 4 crashes at this intersection with no casualty. More detail on the crash records are provided in **Table 1**.

Table 1. Crash history for Landsdale Road/ Alexander Drive intersection

Intersection				Total Crashes	Casualty
Landsdale Road/ Alexander Drive				4	0
Daylight	Rear End	Rt Angle	Dry	Wet	Pedestrian
3	2	2	4	0	0

3. Development Proposal

Proposed Site Use

The proposed Development Concept Plan is shown in **Appendix B**. The proposed development includes:

- A Service station with about 290 m² convenience store and eight fuelling positions;
- A Supermarket with total GFA of about 1,846m²;
- A Carwash with 1 auto bay, 1 super wash and 4 manual bays;
- Fast food outlets with drive through facilities with total GFA of about 898m²,
- Retail shops with total GFA of about 1,302m²;
- A Liquor store with total GFA of about 438 m², with about 100 m² drive through;
- A Medical centre with total GFA of about 440 m²;
- Takeaway outlets with total GFA of about 300 m²;
- A Restaurant with total GFA of about 200 m²;
- A Pharmacy with total GFA of about 216 m²; and,
- Office with total GFA of about 447 m².

The proposed development is in line with the approved local development plan. The proposed development will be connected to Alexander Drive via Landsdale Road and the continuation of Sedano Glade with 3 crossovers on Sedano Glade and two crossovers on Landsdale Road. The access crossovers on Sedano Glade will operate as full movement and would need to be constructed as simple T-intersections. The eastern most crossover onto Sedano Glade would operate as an exit only crossover.

The eastern access crossover on Landsdale Road is proposed to be left in/ left out due to its proximity to the intersection of Landsdale Road/ Alexander Drive. The western access crossover on Landsdale Road would operate as full movement and would need to be constructed as a simple T-intersection. According to the approved local development plan, Mela Way from the north will connect to Sedano Glade and will provide a direct connection to the proposed residential dwellings to the north of the proposed development.

Pedestrian access to the site will be facilitated from the existing footpaths on the abutting road. Footpath connectivity from the existing network to the proposed development is recommended to facilitate the pedestrian movements.

Proposed Access for all Modes

Figure 9 shows the proposed access crossovers on Landsdale Road and Sedano Glade.

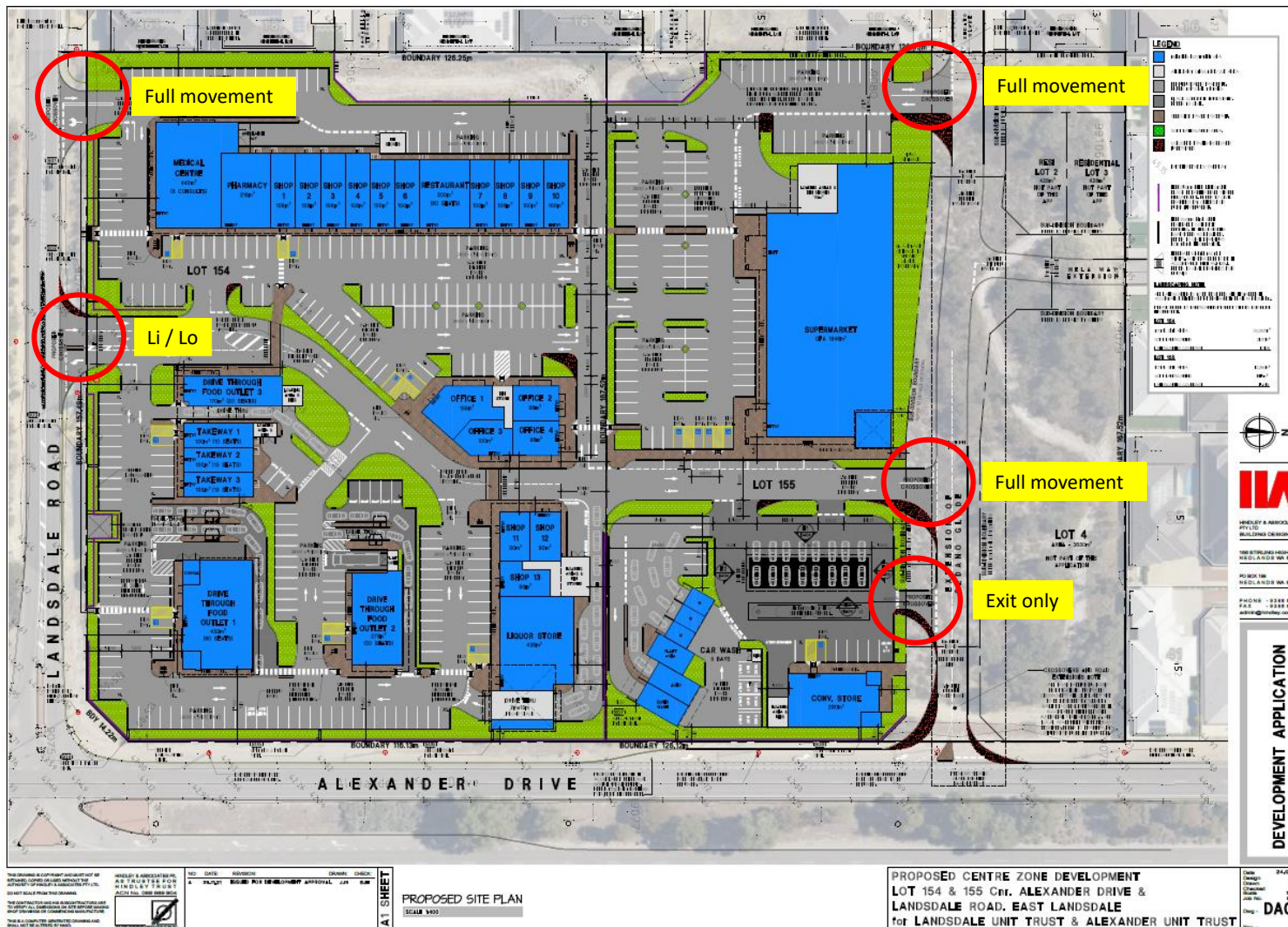


Figure 9: Proposed development access/egress system

4. Changes to the surrounding Road Network

The intersection of Landsdale Road/ Alexander Drive is currently operating as priority-controlled T-intersection which is likely to be upgraded to traffic signals or roundabout in the future. However, at present no timeframe for this upgrade is available.

The proposed intersection of Sedano Glade/ Alexander Drive would operate as a left in/ left out intersection. A kerbed median on Landsdale Road would be required to enforce the left in/ left out treatment at the eastern most crossover. The details of the proposed median (length and width) will be investigated during the detailed design stage of the development.

The turn lane assessment undertaken indicates that a left turn slip lane (approximately 85m including taper) at the proposed left in/ left out intersection of continuation of Sedano Glade/Alexander Drive would be required to satisfy Austroads requirements.

It should be noted that the proposed left turn slip lane and the continuation of Sedano Glade/Alexander Drive (once constructed) would be used by the proposed development and the existing and proposed residential developments in this vicinity.

The extension of the Sedano Glade to Alexander Drive would trigger the requirement for the left turn slip lane regardless of the proposed development. Therefore, the provision of the proposed left turn slip lane would improve safety and traffic operations of the existing and future residents in this vicinity as well as the proposed development.

5. Integration with Surrounding Area

The proposed development is within the approved East Landsdale Structure Plan area and the land uses for the proposed development are predominantly retail/commercial.

6. Traffic Assessment

Assessment Years and Time Periods

The assessment years that have been adopted for this analysis are 2021 and 2031 in accordance with the requirements of the WAPC Guidelines.

The proposed land uses within the proposed development are predominantly retail/commercial and, therefore, it is expected that the peak combination of development traffic and road network traffic would occur during the typical weekday afternoon and Saturday mid-day peak period. However, this TIA includes the AM peak hour analysis as well.

Development Generation and Distribution

- **Estimated Existing Traffic Generation**

The site is presently mainly vacant and does not generate significant traffic.

- **Proposed Development Traffic Generation**

The traffic volumes that will be generated by the proposed development have been estimated using trip generation rates derived from the RTA NSW – Guide to Traffic Generating Developments, TRMS NSW – Guide to Traffic Generating Developments Updated Traffic Surveys 04a (2013) and the Institute of Transport Engineers Trip Generation Manual (10th Edition).

It should be noted that since retail types of land uses typically generate minimal trips during weekday AM peak hour, adjustment factors have been applied for such land uses in an attempt to realistically represent the actual traffic activity during this period. Hence, minimal traffic activity is anticipated for the retail type of uses during AM peak hour.

Due to the land use mix within the proposed development incidences of multi-purpose trips¹ (i.e. cross-trade) are anticipated. Accordingly, the applied cross-trade adjustment is calculated to result in a moderate overall reduction in trip generation of approximately 30% but only during the weekday PM and Saturday mid-day peak period and for the overall daily trips.



Accordingly, it is estimated that the proposed development would generate a total of approximately 9,000 total trips per weekday (both inbound and outbound) with

¹ Multi-purpose trips are incidences where more than one shop/outlet are visited within the development (also referred to as “cross-trade”)

approximately 645, 700 and 1065 trips (both inbound and outbound) during weekday morning, weekday afternoon and Saturday mid-day peak hour periods, respectively as shown in **Table 2**.

Table 3 summarises the passing trade and primary trips component of the total development generated trips. The net addition of traffic when accounting for passing traffic is approximately **+379 trips** (AM peak hour), **+350 trips** (PM peak hour) and **+600 trips** (Saturday-day peak hour) on the surrounding road network.

Two traffic distributions have been modelled for the weekday AM, PM peak and Saturday mid-day peak hours:

-  Passing trade traffic as detailed in **Figure 10**.
-  Non-passing trade traffic as detailed in **Figure 11**.

The total proposed development traffic is detailed in **Figure 12**. The development traffic distribution modelled in this report has been evaluated by considering the catchment area of the proposed development, existing traffic patterns and the identified key traffic routes.

Table 2: AM Weekday, Lunch time Saturday and PM Weekday peak hour trip generation for the proposed land uses

Land use	Quantity	Daily Rate	Weekd-AM Peak	Sat-PM Peak	Weekd-PM Peak	Cross Trade	Daily Trips	Weekd-AM trips	Sat-PM trips	Weekd-PM trips	AM		Sat-PM		PM	
											IN	OUT	IN	OUT	IN	OUT
Retail (shops)	1302	0.46	0.00	0.06	0.05	0.30	419	6	54	42	3	3	27	27	21	21
Service Station	8	205.36	12.47	19.46	13.99	0.30	1150	100	109	78	50	50	54	55	39	39
Supermarket	1846	1.15	0.04	0.08	0.10	0.30	1485	76	106	129	38	38	53	53	64	65
Fast food outlet with drive through	898	5.07	0.27	0.55	0.35	0.30	3187	246	348	221	123	123	174	174	111	110
Takeway outlets	300	0.97	0.03	0.52	0.31	0.30	204	9	110	64	5	4	55	55	32	32
Liquore Store	438	1.09	0.00	0.18	0.18	0.30	335	0	57	54	0	0	28	29	27	27
Restaurant	200	1.21	0.01	0.19	0.11	0.30	169	2	26	15	1	1	13	13	7	8
Medical Centre	440	3.73	0.27	0.52	0.04	0.30	1148	119	161	11	59	60	81	80	6	5
Pharmacy	216	0.97	0.03	0.11	0.09	0.30	147	7	17	14	3	4	9	8	7	7
Office	447	0.10	0.02	0.024	0.02	0.30	31	9	8	6	4	5	4	4	3	3
Carwash	5.00	200.00	20.00	20.00	20.00	0.30	700	70	70	70	35	35	35	35	35	35
TOTAL TRAFFIC							8975	644	1065	704	321	323	533	532	352	352

Table 3: Passing trade and primary trips components of the trip generation

		Passing Trade Component					
Passing Trade	Daily Trips	AM		Sat-PM		PM	
		IN	OUT	IN	OUT	IN	OUT
34%	143	1	1	9	9	7	7
60%	690	30	30	32	33	23	24
36%	535	14	14	19	19	23	23
50%	1593	62	62	87	87	56	55
50%	102	3	2	28	28	16	16
89%	298	0	0	25	25	24	24
43%	73	0	0	6	6	3	3
0%	0	0	0	0	0	0	0
53%	78	2	2	5	4	4	4
0%	0	0	0	0	0	0	0
60%	420	21	21	21	21	21	21
	3932	133	132	232	232	177	177

		Primary Trips Component					
Daily Trips	IN	OUT	Sat-PM		PM		
			IN	OUT	IN	OUT	
276	2	2	18	18	14	14	
460	20	20	22	22	16	15	
950	24	24	34	34	41	42	
1594	61	61	87	87	55	55	
102	2	2	27	27	16	16	
37	0	0	3	4	3	3	
96	1	1	7	7	4	5	
1148	59	60	81	80	6	5	
69	1	2	4	4	3	3	
31	4	5	4	4	3	3	
280	14	14	14	14	14	14	
	5043	188	191	301	300	175	175

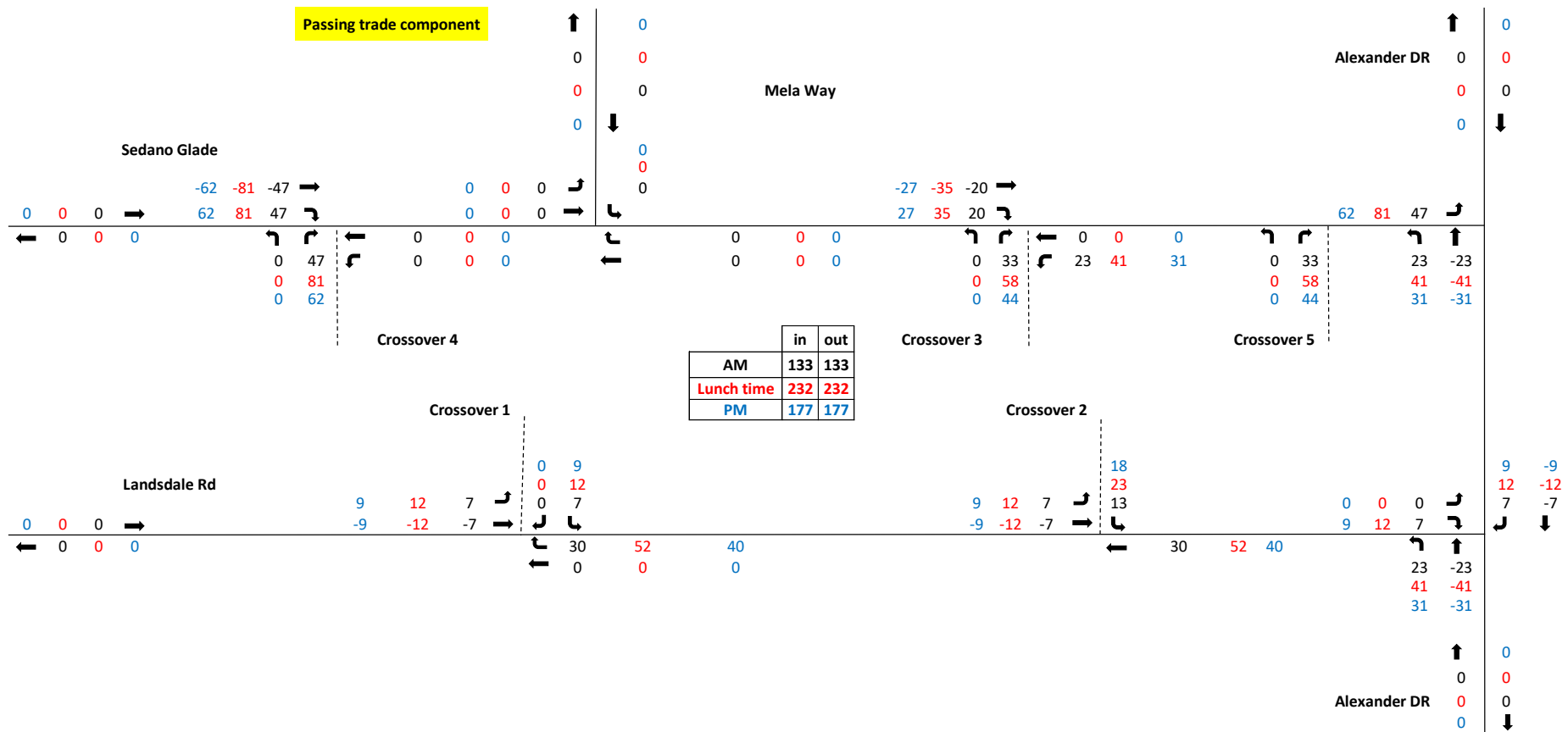


Figure 10: Passing trips, AM weekday, mid-day Saturday and PM weekday peak hour traffic for the proposed development

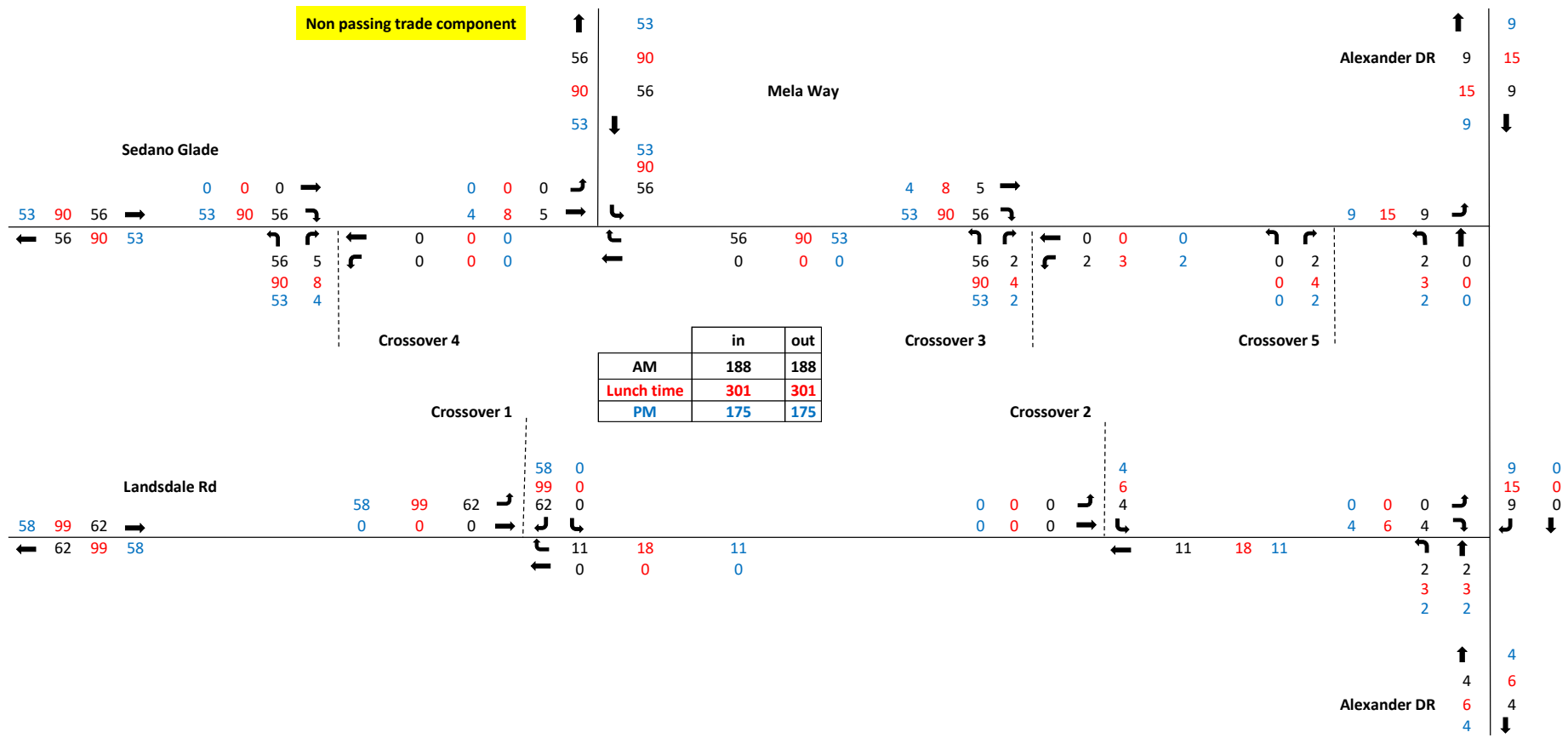


Figure 11: Additional (non-passing trade) component - AM weekday, mid-day Saturday and PM weekday peak hours

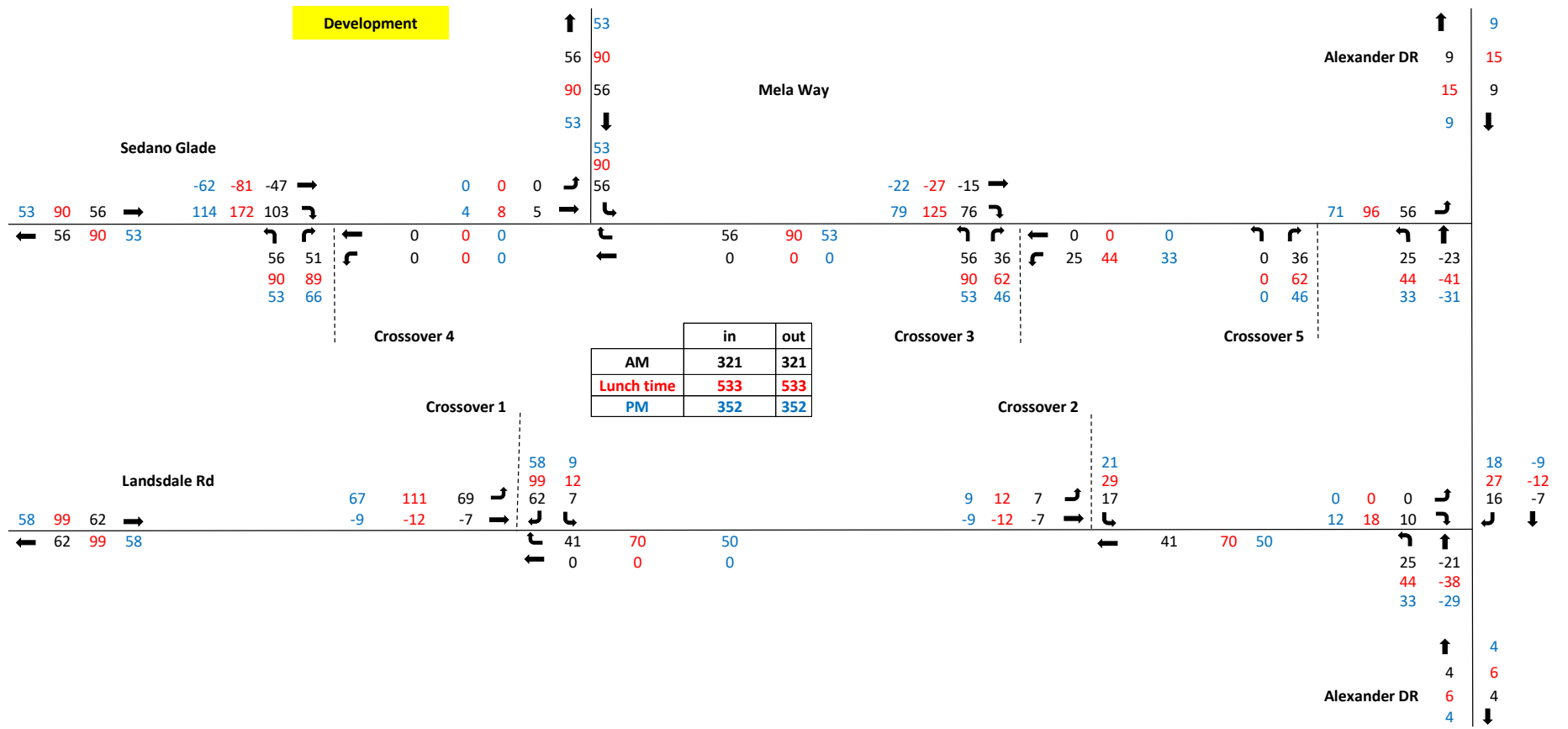


Figure 12: Total peak hour traffic generated by the proposed redevelopment – AM weekday, mid-day Saturday and PM weekday peak hours

Traffic Flow Forecasts

The existing traffic flows are presented in **Figure 13**. The existing traffic volumes were derived from traffic survey conducted on 17th October 2020 by Transcore and traffic counts available from Main Roads WA.

The combined base and development traffic volumes for the post-redevelopment scenario are presented in **Figure 14**.

To approximate the year 2031 traffic on Landsdale Road a traffic growth of 20% was applied to the tuning movements of the intersection of Landsdale Road/Alexander Drive but no growth has been applied to the Alexander Drive traffic because review of the historical traffic counts showed traffic reduction along this section of Alexander Drive (refer **Figure 5**).

The total ten-year post-redevelopment traffic volumes are presented in **Figure 15**.

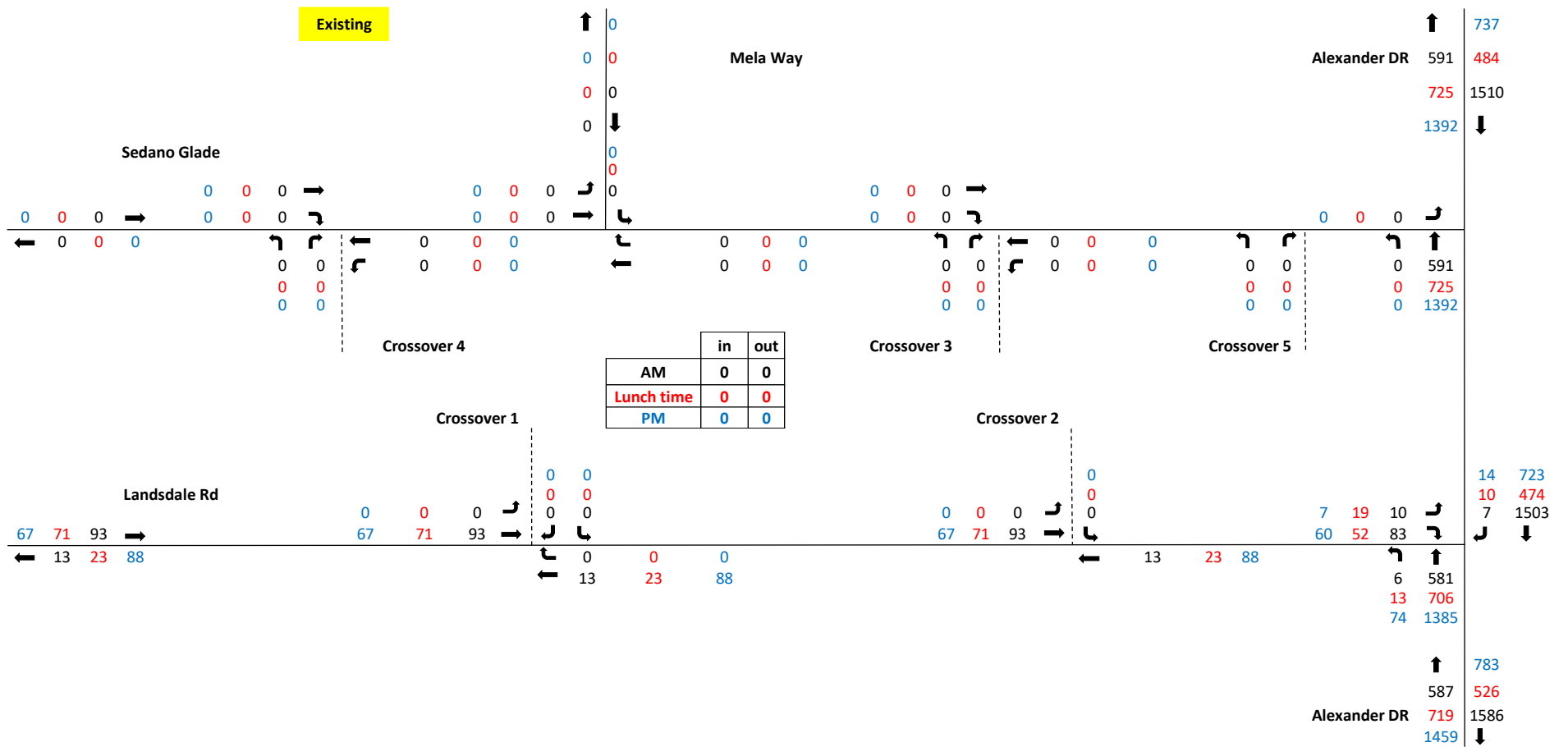


Figure 13: Existing traffic flows near the subject site – AM weekday, Lunch time Saturday and PM weekday peak hours

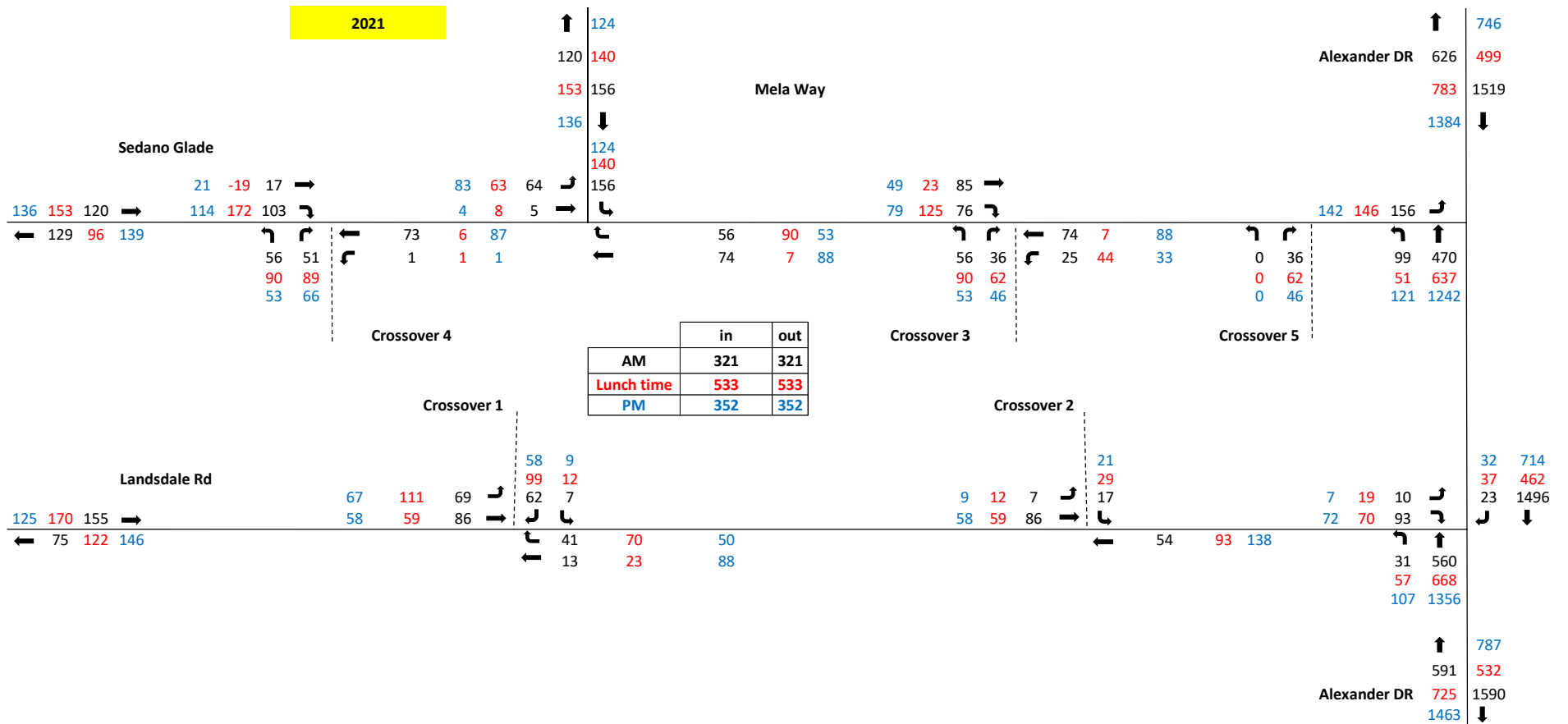


Figure 14: Post-development traffic flows near the subject site – AM weekday, mid-day Saturday and PM weekday peak hours

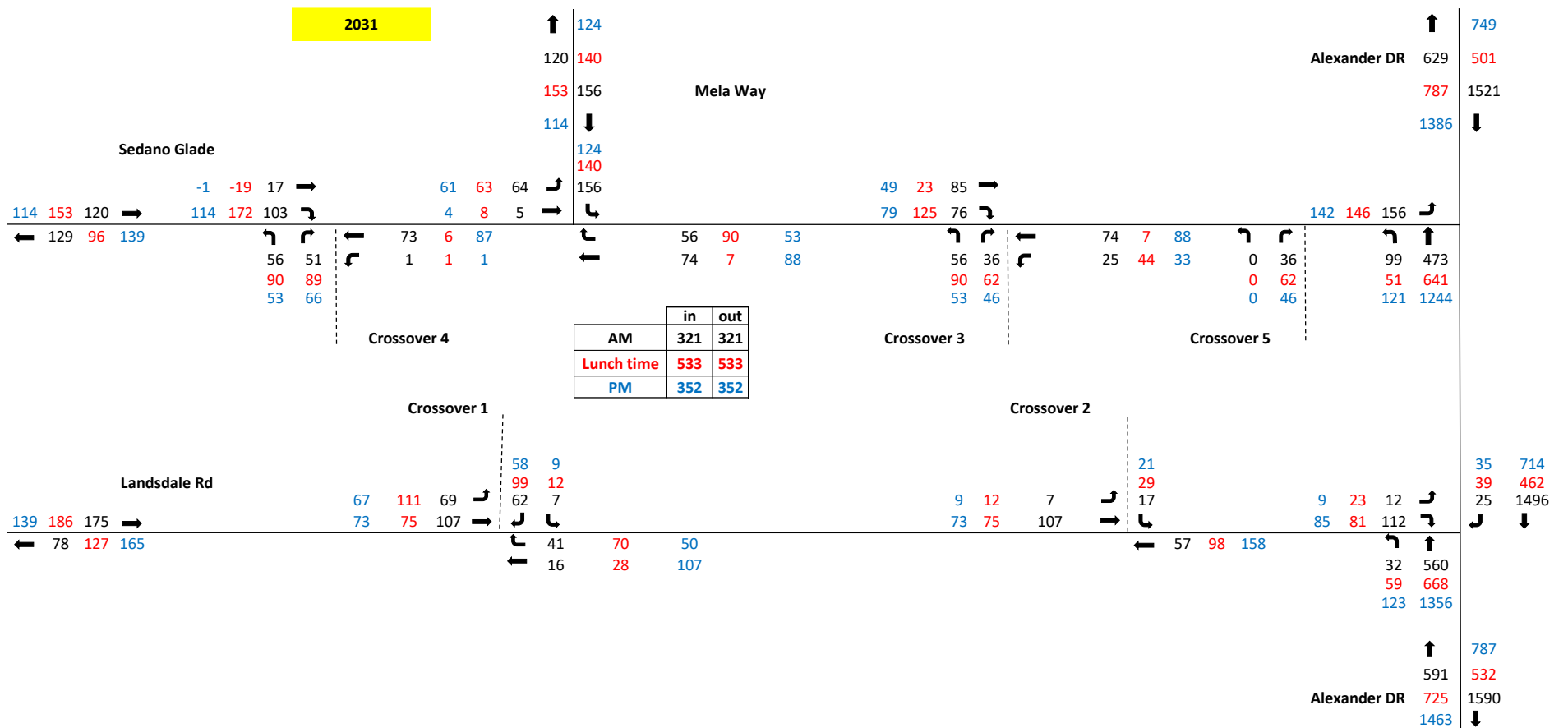


Figure 15: Estimated 10-year total post-development traffic flows near the subject site – AM weekday, mid-day Saturday and PM weekday peak hours

Intersection Analysis

Capacity analysis was undertaken for the existing priority-controlled intersection of Alexander Drive/ Landsdale Road and the proposed development full movement crossover on Landsdale Road (western crossover) for weekday AM and PM and Saturday mid-day peak hours. The eastern crossover is Left in/ Left out crossover and therefore SIDRA analysis was not undertaken for this crossover.

Capacity analysis was undertaken using the SIDRA computer software package. SIDRA is an intersection modelling tool commonly used by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These characteristics are defined as follows:

- ✚ **Degree of Saturation (DoS):** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for varied traffic flow up to one for saturated flow or capacity.
- ✚ **Level of Service (LoS):** is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).
- ✚ **Average Delay:** is the average of all travel time delays for vehicles through the intersection.
- ✚ **95% Queue:** is the queue length below which 95% of all observed queue lengths fall.

The results of the SIDRA analysis are summarised in **Appendix C**. The SIDRA intersection models were coded with reference to the Main Roads WA Operation Modelling Guidelines Version No. 1.1. All relevant parameters such as heavy vehicle groups, PCU factors etc. were coded as per the Main Roads WA Guidelines.

The modelled geometry of the intersection and crossover in SIDRA are shown in **Figure 16**. As evident the existing wide median on Alexander Drive allows for two stage movement for the right turns out of Landsdale Road.

The full movement crossover on Landsdale Road is modelled as basic T-intersection in SIDRA.

Alexander Drive/ Landsdale Road intersection

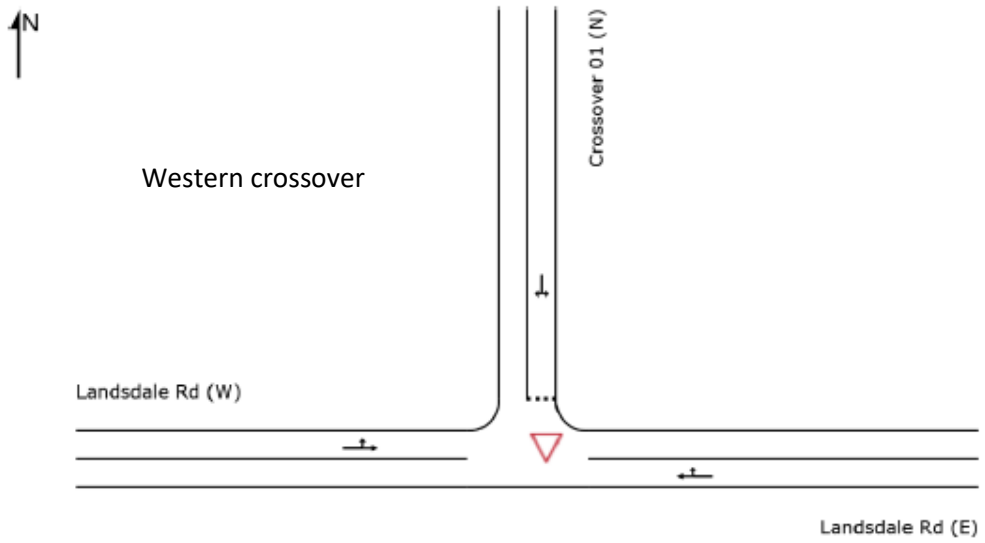
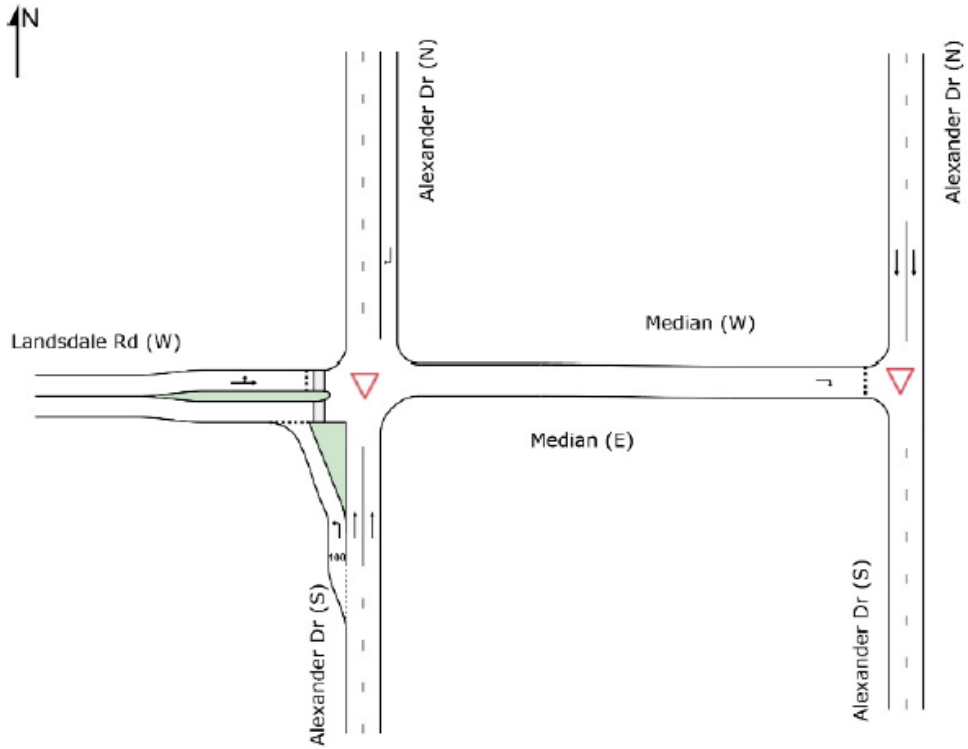


Figure 16: Sidra layouts

Alexander Drive/ Landsdale Road Intersection

The SIDRA analysis results indicate that the intersection of Alexander Drive/ Landsdale Road presently operates satisfactorily with moderate queues and delays for the right turn movements in and out of Landsdale Road during weekday PM peak hour (refer **Appendix C** for more details).

The addition of the development-generated traffic to the intersection resulted in negligible increases in overall queues and delays. No significant change in LoS for any of the turns is reported during the post-development scenario (refer **Appendix C** for more details).

The SIDRA assessment for the 10-year post development during weekday AM and Saturday mid-day peak hour rendered similar results to post-development scenario with again marginal increases in delays and queues and no significant changes to the Level of Service for any of the turns (refer **Appendix C** for more details). SIDRA results indicated that the right turn movements in and out of Landsdale Road during the PM peak hours would experience more delays. However, the level of queues and delays is not reported as significant.

It should be noted that the upgrades to the intersection (roundabout or traffic lights) as outlined in the Structure Plan would improve the capacity and traffic operations of the intersection.

Proposed Crossover

The SIDRA analysis results indicate that the proposed development western crossover on Landsdale Road will operate at an overall LoS A for both post-development and 10-year post-development scenarios.

Turn lane assessment

In order to investigate the need for a left turn slip lane on Alexander Drive for the proposed left in/ left out intersection, reference was made to the warrants in "Austroads Guide to Road Design Part 4" document and MRWA Supplement to Austroads Guide to Road Design - Part 4.

The assessment undertaken by Transcore using MRWA spreadsheet tool for 2031 projected traffic volumes indicates that a AUL or CHL treatment would be required for the left turn movement at this intersection. Therefore, it is recommended to provide an 85m (including taper) left turn slip lane at the intersection.

Impact on Surrounding Roads

Table 4 summarises the 2031 projected traffic volumes on the surrounding roads using the projected traffic volumes reported in **Figure 15**.

Table 4: 2031 projected peak hour traffic volumes on surrounding roads

Roads	AM (vph)	PM (vph)	Sat mid-day (vph)
Landsdale Rd (west of the Alexander Drive)	180	250	200
Landsdale Rd (west of the development)	250	300	310
Sedano Glade (West of Alexander Drive)	255	260	200
Mela Way	275	235	290

Accordingly, Sedano Glade and Mela Way would carry less than 300vph or 3,000vpd in future and the proposed “Access Street” standard of these roads as indicated in the road hierarchy plan for the East Landsdale Structure Plan would be able to accommodate the projected traffic volumes on these roads. Accordingly, the original proposed 18m road reserve for these roads would still be adequate to accommodate the additional traffic generated by the proposed development.

Mela Way is constructed with a 6.0 m wide carriageway within the 18.0m road reserve which is suitable for low densities (<R40) environment and will provide occasional on-street parking without disruption to the through traffic flow.

Sedano Glade is planned to be a bus route and therefore requires a 7.2m carriageway width. The existing sections of this road have already been constructed to a 7.2m carriageway width standard and it is proposed that the same standard carriageway width be constructed towards east.

The Structure Plan proposes a “Higher Order Access Street” classification for Landsdale Road. However, due to its function and the projected traffic volumes it would be more appropriate if this road is classified as “Neighbourhood Connector A” road. The existing 20m road reservation of this road would be able to accommodate the projected traffic volumes and the proposed new classification without the construction of any on-street parking.

The internal site layout including the proposed accessways are designed to accommodate the waste collection trucks or service vehicles in both directions and accommodate the projected traffic volumes within the site.

Impact on Neighbouring Areas

The traffic generated by the proposed development is not expected to significantly affect surrounding areas and the road network has been designed to accommodate this type and level of development traffic.

Traffic Noise and Vibration

It generally requires a doubling of traffic volumes on a road to produce a perceptible 3dB (A) increase in road noise. The proposed development will not increase traffic volumes on surrounding roads anywhere near this level.

7. Parking

The development proposes to provide a total of 302 and 131 for car parking spaces for Lot 154 and 155 respectively.

It is considered that the proposed parking provision is sufficient to accommodate the needs of the proposed development.

8. Provision for Heavy Vehicles

The fuel delivery trucks are expected to enter and exit the proposed service station via the proposed left in/ left out intersection on Alexander Drive. This intersection has been designed to accommodate the 19.0m fuel tankers. The turn path analysis confirms satisfactory traffic movements of the fuel tanker.

The relevant turn path analysis was also undertaken to ensure satisfactory operation of the service vehicles entering and exiting the loading dock areas for each individual loading dock within the development. The outcomes of the turn path analysis are shown in **Appendix D**.

9. Stacking Capacity

The stacking capacity of the proposed fast-food outlets and the proposed car wash was reviewed against the RTA Guidelines requirements. A queue length analysis model was developed for the proposed service station to investigate the queuing capacity of the proposed service station.

RTA requirements

Section 5.8.1 of RTA Traffic Generating Developments document deals with the parking requirements for the drive-in and take-away food outlets. With respect to the drive through facilities this section states that:

An exclusive area for queuing of cars for a drive through is required (queue length of 5 to 12 cars measured from pick up point). There should also be a minimum of four car spaces for cars queued from the ordering point.

The proposed fast-food outlets 1 and 2 provide a drive through facility with two Customer Order Booth (COB). The fast-food outlet 1 provides for 14 car stacking capacity with 6 car spaces available from the ordering points (3 on each side). The fast-food outlet 2 provides for 12 car stacking capacity with 4 car spaces available from the ordering points (2 on each side).

The fast-food outlet 3 is a small size fast-food with seven stacking car capacity and minimum of four car spaces for cars queued from the ordering point in line with RTA requirements.

Accordingly, the proposed drive through facilities for both fast-food outlets meet and exceed the RTA drive through requirements.

The drive through of the proposed liquor store also provides 19 car stacking capacity which is expected to be sufficient.

The RTA guidelines provide design requirements for single unit car wash and suggest that each unit should be able to accommodate at least five cars. The proposed development has three manual and one automated tunnel and one super wash which allows for a quick reduction in queuing due to availability of services. The proposed carwash can accommodate at least 21 cars (five cars stacking capacity for each manual bay and six cars stacking capacity for the auto bay). So, the stacking capacity is considered sufficient for the proposed carwash.

Queue Length Analysis Model

The stacking capacity of the proposed service station and detailed queue analysis at the filling points have been assessed to investigate the impacts of higher-than-average site patronage during peak operational periods. This analysis was

undertaken to confirm the capacity of the service station to operate satisfactory under amplified traffic activity conditions (e.g. “cheap fuel” day).

Based on the peak hour trip generation documented in this TIA, it is estimated that the proposed service station would attract up to 56 vehicles during the regular weekday PM peak hour (critical peak hour). In order to ensure a robust assessment, it is assumed that the trade on “cheap fuel” day would be 50% higher than the typical peak weekday PM hour. Accordingly, it is conservatively assumed that the site would attract about 84 cars per hour on this occasion.

The experience indicates that, under normal circumstances, the rate of service per fill point (time taken for a vehicle to arrive, park at a fill point, get fuel, pay for fuel and leave the fill point and service station site) is usually between 2-3 minutes. In some circumstances refuelling time may extend to about five minutes when window washing or other similar activities are practiced. However, during the “cheap fuel” day periods and due to high turnover of vehicles and “pressure” from the patrons waiting behind the parked vehicle to access the bowser, the refuelling activity is always shortened and typically in order of up to 3min maximum. In this case, and in order to allow for a conservative scenario, the service time is assumed to be 4 minutes. Accordingly, a service rate of 240sec (15 vehicles per hour) was assumed for weekday PM peak “cheap fuel” peak hour.

It is assumed that all bowsers will be in operation during the peak periods, giving an order taking service rate and capacity of 120 vehicles per hour. It is also assumed that cars would enter the service channel with the shortest queue, therefore over the peak hour the transactions at each service channel would be evenly split.

A queue length analysis was undertaken to assess the provision of storage for vehicles within the service channels. For this purpose, an M/M/1 queuing model was adopted for each bowser. The M/M/1 is a single-server queue model that can be used to approximate simple systems.

The queuing model adopts the following assumptions:

- ✚ Vehicles arrive unevenly following Poisson’s probability distribution;
- ✚ Service time is exponentially distributed;
- ✚ There is one server per queue, i.e. there are 8 queues, one for each bowser;
- ✚ The capacity of the queue in which arriving users wait before being served is infinite (for the purposes of identifying queue space requirements);
- ✚ The population of users (i.e. the pool of users) available to join the system is infinite; and,
- ✚ The queue is serviced on a first come, first served basis.

The results of the queuing analysis are detailed in **Figure 17**.

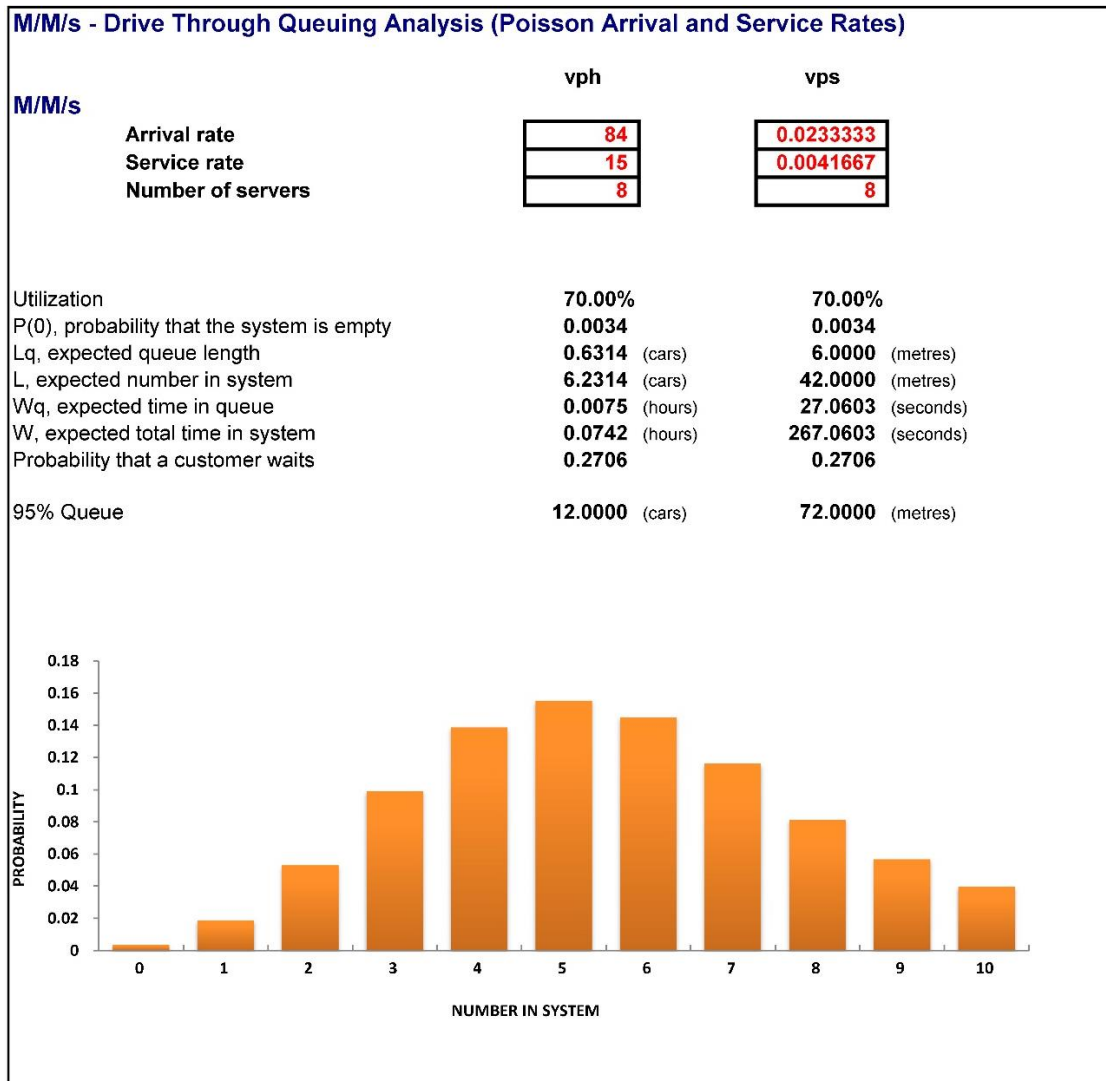


Figure 17. Peak “cheap fuel” hour queuing analysis

In summary, critical “cheap fuel” hour queuing analysis of the service station established the following for the worst-case scenario:

- ✚ The system utilisation is at 70% during the “cheap fuel” hour;
- ✚ The expected number in the system (refuelling) is 7 vehicles;
- ✚ The expected time in the queue is 267 seconds; and,
- ✚ The 95th percentile queue within the whole system is 12 cars (8 cars refuelling and 4 cars waiting).

The queue length usually adopted for robust analysis is the 95th percentile queue. Assuming equal queue distribution it is estimated that in the worst-case scenario there will be about one vehicle waiting behind each refuelling vehicle at four bowsers. The service station forecourt can accommodate this level of queuing.

10. Conclusions

The subject of this TIA is the proposed commercial development on Lots 154 and 155 located at the north-west corner of the Alexander Drive and Landsdale Road intersection in East Landsdale.

The proposed development is in line with the approved local development plan. The proposed development will be connected to Alexander Drive via Landsdale Road and the continuation of Sedano Glade with 3 crossovers on Sedano Glade and two crossovers on Landsdale Road.

The eastern access crossover on Landsdale Road is proposed to be left in/ left out due to its proximity to the intersection of Landsdale Road/ Alexander Drive. The western access crossover on Landsdale Road would operate as full movement and would need to be constructed as a basic T-intersection.

The net addition of traffic when accounting for passing traffic is approximately +379 trips (AM peak hour), +350 trips (PM peak hour) and +600 trips (Saturday-day peak hour) on the surrounding road network.

The SIDRA analysis results indicate that the intersection of Alexander Drive/ Landsdale Road presently operates satisfactorily with moderate queues and delays. The addition of the development-generated traffic to the intersection would result in minor increases in overall queues. It should be noted that the future planned upgrades to the intersection (roundabout or traffic lights) would improve the capacity and traffic operations of the intersection.

The SIDRA analysis results indicate that the proposed development western crossover on Landsdale Road (as a basic priority-controlled T-intersection) will operate at an overall LoS A for both post-development and 10-year post-development scenarios.

The turn lane assessment using MRWA spreadsheet tool for 2031 projected traffic volumes indicates that a AUL or CHL treatment would be required for the left turn movement at the proposed left in/ left out intersection on Alexander Drive. Therefore, it is recommended to provide an 85m left turn slip lane (including taper) at the intersection to satisfy Main Roads WA and Austroads requirements.

The standard and road hierarchy of Mela Way, Sedano Glade and Landsdale Road as indicated in the proposed road hierarchy plan for the East Landsdale Structure Plan would be able to accommodate the projected traffic volumes on these roads after full development of the proposed local centre.

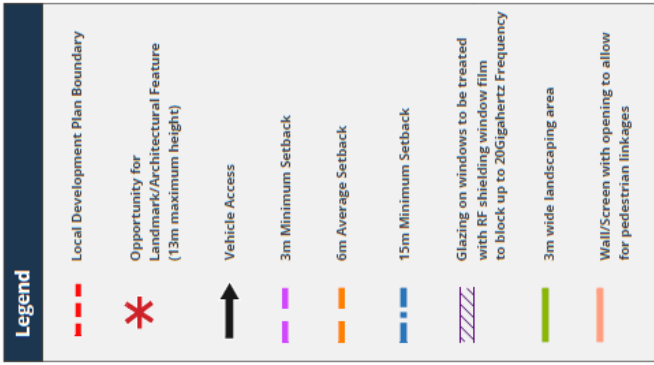
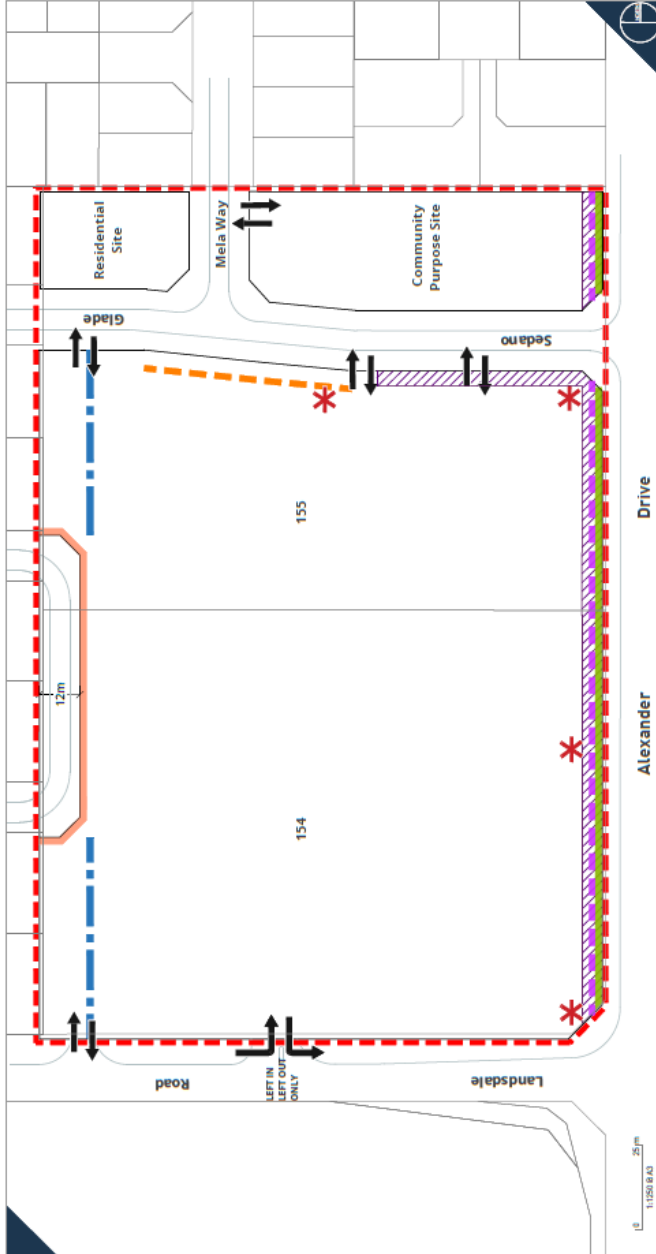
Turn path analysis undertaken for fuel tanker and service vehicles confirm satisfactory access, egress and circulation.

The stacking capacity assessment for the proposed fast-food outlets and the car wash confirms satisfactory traffic operations. The queue assessments undertaken for the service station confirms that the site layout would be able accommodate internal patronage with no blockage of the service station crossovers.

It is considered that the proposed parking provision is sufficient to accommodate the needs of the proposed development.

Appendix A

ENDORSED LOCAL DEVELOPMENT PLAN



Local Development Plan Provisions

General Planning Requirements

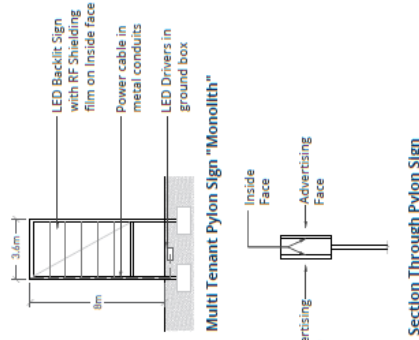
- Unless provided for in this Local Development Plan, the provisions of the City of Wanneroo District Planning Scheme No. 2, the City of Wanneroo Cell 9 Agreed Structure Plan No.57 and the Residential Design Codes would apply.
- Where possible remnant vegetation is to be retained within car parking areas.
- Where required, retaining wall heights are to be kept a to a minimum and where possible should be screened by landscaping/vegetation.

General Requirements

- A copy of the supplier, installer, specifications and documentation of the RF shielding film to be used on relevant signage and/or glazing is to be provided to Telstra for approval.
- Written confirmation is to be provided to Telstra prior to occupation of the building(s) that the RF shielding film has been applied in accordance with the requirements of this Local Development Plan.

Signage

- RF shielding film on the inside face of pylon signs is to block up to 20 Gigahertz frequency.
- Illuminated signage may be positioned above 6m in height measured from the ground level provided it is either screened from the PITC by the building structure or it is in the form of an LED backlit sign with RF shielding film on the inside face of the sign to block up to 20 Gigahertz frequency. Power cables are to be in metal conduits with LED drivers within the building structure or within an in ground box.



This Local Development Plan has been approved by the City of Wanneroo under Clause 52(1)(a) of the Planning and Development (Local Planning Scheme) Regulations 2015.

Manager Approval Services
 City of Wanneroo
 Date: 16 July 2020

Proposed Local Development Plan
 Lots 154 and 155 Alexander Drive, Landsdale



W:\2019\WANNEROO\WANNEROO\2019\154-155\CDM\154-155_CDMP\LANDSCAPE\LANDSCAPE.dwg A. Skelton 7 July 2020 Plan prepared by Bruce Brown

Appendix B

DEVELOPMENT APPLICATION PLAN



Appendix C

SIDRA ANALYSIS

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - Existing - AM]

Network: N101 [Existing - AM]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
South: Alexander Dr (S)														
4	L2	6	2.0	6	2.0	0.004	6.6	LOS A	0.0	0.1	0.04	0.57	0.04	46.2
5	T1	612	14.3	612	14.3	0.182	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		618	14.2	618	14.2	0.182	0.1	LOS A	0.0	0.1	0.00	0.01	0.00	69.6
North: Alexander Dr (N)														
12	R2	7	2.0	7	2.0	0.008	8.2	LOS A	0.0	0.2	0.55	0.64	0.55	30.2
Approach		7	2.0	7	2.0	0.008	8.2	NA	0.0	0.2	0.55	0.64	0.55	30.2
West: Landsdale Rd (W)														
1	L2	11	2.0	11	2.0	0.171	5.1	LOS A	0.6	4.7	0.57	0.76	0.57	29.3
2	T1	87	2.0	87	2.0	0.171	8.0	LOS A	0.6	4.7	0.57	0.76	0.57	19.9
Approach		98	2.0	98	2.0	0.171	7.7	LOS A	0.6	4.7	0.57	0.76	0.57	21.6
All Vehicles		723	12.4	723	12.4	0.182	1.2	NA	0.6	4.7	0.08	0.12	0.08	64.9

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - Existing - AM]

Network: N101 [Existing - AM]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
North: Alexander Dr (N)														
11	T1	1582	15.1	1582	15.1	0.473	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1582	15.1	1582	15.1	0.473	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.8
West: Median (W)														
3	R2	87	2.0	87	2.0	0.478	27.1	LOS D	1.6	11.9	0.93	1.04	1.21	4.1
Approach		87	2.0	87	2.0	0.478	27.1	LOS D	1.6	11.9	0.93	1.04	1.21	4.1
All Vehicles		1669	14.4	1669	14.4	0.478	1.4	NA	1.6	11.9	0.05	0.05	0.06	65.2

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - Existing - PM]

Network: N101 [Existing - PM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles	Distance				
South: Alexander Dr (S)														
4	L2	78	2.0	78	2.0	0.049	6.6	LOS A	0.2	1.5	0.06	0.56	0.06	46.0
5	T1	1458	14.3	1458	14.3	0.434	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1536	13.7	1536	13.7	0.434	0.4	LOS A	0.2	1.5	0.00	0.03	0.00	68.2
North: Alexander Dr (N)														
12	R2	15	2.0	15	2.0	0.063	21.3	LOS C	0.2	1.6	0.87	0.95	0.87	18.1
Approach		15	2.0	15	2.0	0.063	21.3	NA	0.2	1.6	0.87	0.95	0.87	18.1
West: Landsdale Rd (W)														
1	L2	7	2.0	7	2.0	0.632	28.1	LOS D	2.3	17.5	0.96	1.09	1.42	8.6
2	T1	63	2.0	63	2.0	0.632	59.6	LOS F	2.3	17.5	0.96	1.09	1.42	3.8
Approach		71	2.0	71	2.0	0.632	56.3	LOS F	2.3	17.5	0.96	1.09	1.42	4.4
All Vehicles		1621	13.1	1621	13.1	0.632	3.0	NA	2.3	17.5	0.05	0.08	0.07	59.9

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - Existing - PM]

Network: N101 [Existing - PM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles	Distance				
North: Alexander Dr (N)														
11	T1	761	15.1	761	15.1	0.228	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		761	15.1	761	15.1	0.228	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Median (W)														
3	R2	63	2.0	63	2.0	0.094	5.9	LOS A	0.3	2.2	0.55	0.80	0.55	13.6
Approach		63	2.0	63	2.0	0.094	5.9	LOS A	0.3	2.2	0.55	0.80	0.55	13.6
All Vehicles		824	14.1	824	14.1	0.228	0.5	NA	0.3	2.2	0.04	0.06	0.04	68.1

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - Existing - Sat Lunch time]

Network: N101 [Existing - Sat Lunch time]

Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total veh/h	HV %				Vehicles veh	Distance m				
South: Alexander Dr (S)														
4	L2	14	2.0	14	2.0	0.009	6.6	LOS A	0.0	0.3	0.05	0.57	0.05	46.1
5	T1	743	14.3	743	14.3	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		757	14.1	757	14.1	0.221	0.1	LOS A	0.0	0.3	0.00	0.01	0.00	69.3
North: Alexander Dr (N)														
12	R2	11	2.0	11	2.0	0.014	9.2	LOS A	0.1	0.4	0.60	0.70	0.60	28.8
Approach		11	2.0	11	2.0	0.014	9.2	NA	0.1	0.4	0.60	0.70	0.60	28.8
West: Landsdale Rd (W)														
1	L2	20	2.0	20	2.0	0.144	5.4	LOS A	0.5	3.8	0.59	0.76	0.59	28.0
2	T1	55	2.0	55	2.0	0.144	9.8	LOS A	0.5	3.8	0.59	0.76	0.59	18.5
Approach		75	2.0	75	2.0	0.144	8.6	LOS A	0.5	3.8	0.59	0.76	0.59	22.1
All Vehicles		842	12.9	842	12.9	0.221	1.0	NA	0.5	3.8	0.06	0.09	0.06	65.6

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - Existing - Sat Lunch time]

Network: N101 [Existing - Sat Lunch time]

Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total veh/h	HV %				Vehicles veh	Distance m				
North: Alexander Dr (N)														
11	T1	499	15.1	499	15.1	0.149	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	70.0
Approach		499	15.1	499	15.1	0.149	0.0	NA	0.0	0.0	0.00	0.00	0.00	70.0
West: Median (W)														
3	R2	55	2.0	55	2.0	0.060	4.3	LOS A	0.2	1.5	0.43	0.67	0.43	16.7
Approach		55	2.0	55	2.0	0.060	4.3	LOS A	0.2	1.5	0.43	0.67	0.43	16.7
All Vehicles		554	13.8	554	13.8	0.149	0.4	NA	0.2	1.5	0.04	0.07	0.04	68.1

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - 2021 - AM] Network: N101 [2021 - AM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total veh/h	HV %				Vehicles veh	Distance m				
South: Alexander Dr (S)														
4	L2	37	2.0	37	2.0	0.023	6.7	LOS A	0.1	0.7	0.08	0.56	0.08	45.9
5	T1	584	14.3	584	14.3	0.174	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		621	13.6	621	13.6	0.174	0.4	LOS A	0.1	0.7	0.00	0.03	0.00	68.0
North: Alexander Dr (N)														
12	R2	24	2.0	24	2.0	0.025	8.1	LOS A	0.1	0.8	0.54	0.68	0.54	30.6
Approach		24	2.0	24	2.0	0.025	8.1	NA	0.1	0.8	0.54	0.68	0.54	30.6
West: Landsdale Rd (W)														
1	L2	11	2.0	11	2.0	0.192	5.3	LOS A	0.7	5.3	0.57	0.77	0.57	29.3
2	T1	99	2.0	99	2.0	0.192	8.2	LOS A	0.7	5.3	0.57	0.77	0.57	20.5
Approach		109	2.0	109	2.0	0.192	7.9	LOS A	0.7	5.3	0.57	0.77	0.57	21.8
All Vehicles		755	11.5	755	11.5	0.192	1.7	NA	0.7	5.3	0.10	0.16	0.10	62.3

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - 2021 - AM] Network: N101 [2021 - AM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total veh/h	HV %				Vehicles veh	Distance m				
North: Alexander Dr (N)														
11	T1	1574	15.1	1574	15.1	0.471	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1574	15.1	1574	15.1	0.471	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.8
West: Median (W)														
3	R2	99	2.0	99	2.0	0.533	28.2	LOS D	1.8	13.7	0.93	1.05	1.28	4.3
Approach		99	2.0	99	2.0	0.533	28.2	LOS D	1.8	13.7	0.93	1.05	1.28	4.3
All Vehicles		1673	14.3	1673	14.3	0.533	1.7	NA	1.8	13.7	0.06	0.06	0.08	64.4

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - 2021 - PM] Network: N101 [2021 - PM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles	Distance m				
South: Alexander Dr (S)														
4	L2	112	2.0	112	2.0	0.071	6.7	LOS A	0.3	2.2	0.10	0.56	0.10	45.8
5	T1	1428	14.3	1428	14.3	0.425	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1540	13.4	1540	13.4	0.425	0.5	LOS A	0.3	2.2	0.01	0.04	0.01	67.4
North: Alexander Dr (N)														
12	R2	33	2.0	33	2.0	0.130	20.7	LOS C	0.4	3.3	0.87	0.95	0.87	18.8
Approach		33	2.0	33	2.0	0.130	20.7	NA	0.4	3.3	0.87	0.95	0.87	18.8
West: Landsdale Rd (W)														
1	L2	7	2.0	7	2.0	0.749	39.8	LOS E	3.1	23.3	0.97	1.17	1.71	7.4
2	T1	76	2.0	76	2.0	0.749	71.6	LOS F	3.1	23.3	0.97	1.17	1.71	3.4
Approach		83	2.0	83	2.0	0.749	68.8	LOS F	3.1	23.3	0.97	1.17	1.71	3.8
All Vehicles		1656	12.6	1656	12.6	0.749	4.3	NA	3.1	23.3	0.07	0.11	0.11	56.1

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - 2021 - PM] Network: N101 [2021 - PM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles	Distance m				
North: Alexander Dr (N)														
11	T1	752	15.1	752	15.1	0.225	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		752	15.1	752	15.1	0.225	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Median (W)														
3	R2	76	2.0	76	2.0	0.111	6.0	LOS A	0.4	2.7	0.55	0.80	0.55	14.4
Approach		76	2.0	76	2.0	0.111	6.0	LOS A	0.4	2.7	0.55	0.80	0.55	14.4
All Vehicles		827	13.9	827	13.9	0.225	0.6	NA	0.4	2.7	0.05	0.07	0.05	67.7

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - 2021 - Sat Lunch time]

Network: N101 [2021 - Sat Lunch time]

Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total veh/h	HV %				Vehicles	Distance m				
South: Alexander Dr (S)														
4	L2	59	2.0	59	2.0	0.038	6.7	LOS A	0.2	1.2	0.11	0.55	0.11	45.7
5	T1	704	14.3	704	14.3	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		763	13.3	763	13.3	0.210	0.5	LOS A	0.2	1.2	0.01	0.04	0.01	67.4
North: Alexander Dr (N)														
12	R2	38	2.0	38	2.0	0.046	9.0	LOS A	0.2	1.4	0.59	0.75	0.59	29.3
Approach		38	2.0	38	2.0	0.046	9.0	NA	0.2	1.4	0.59	0.75	0.59	29.3
West: Landsdale Rd (W)														
1	L2	20	2.0	20	2.0	0.185	5.6	LOS A	0.7	5.0	0.61	0.78	0.61	27.7
2	T1	73	2.0	73	2.0	0.185	10.2	LOS B	0.7	5.0	0.61	0.78	0.61	18.6
Approach		93	2.0	93	2.0	0.185	9.2	LOS A	0.7	5.0	0.61	0.78	0.61	21.5
All Vehicles		894	11.7	894	11.7	0.210	1.8	NA	0.7	5.0	0.10	0.15	0.10	62.1

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - 2021 - Sat Lunch time]

Network: N101 [2021 - Sat Lunch time]

Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total veh/h	HV %				Vehicles	Distance m				
North: Alexander Dr (N)														
11	T1	487	15.1	487	15.1	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	70.0
Approach		487	15.1	487	15.1	0.146	0.0	NA	0.0	0.0	0.00	0.00	0.00	70.0
West: Median (W)														
3	R2	73	2.0	73	2.0	0.079	4.4	LOS A	0.3	1.9	0.43	0.68	0.43	17.4
Approach		73	2.0	73	2.0	0.079	4.4	LOS A	0.3	1.9	0.43	0.68	0.43	17.4
All Vehicles		560	13.4	560	13.4	0.146	0.6	NA	0.3	1.9	0.06	0.09	0.06	67.4

MOVEMENT SUMMARY

Site: [Landsdale Rd & Crossover 1 - 2021 - AM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Landsdale Rd (E)												
8	T1	14	2.0	0.038	0.5	LOS A	0.2	1.3	0.26	0.43	0.26	46.8
9	R2	47	2.0	0.038	6.0	LOS A	0.2	1.3	0.26	0.43	0.26	28.6
Approach		61	2.0	0.038	4.7	NA	0.2	1.3	0.26	0.43	0.26	32.7
North: Crossover 01 (N)												
10	L2	8	2.0	0.056	0.3	LOS A	0.2	1.4	0.23	0.18	0.23	26.1
12	R2	55	2.0	0.056	1.0	LOS A	0.2	1.4	0.23	0.18	0.23	32.7
Approach		63	2.0	0.056	0.9	LOS A	0.2	1.4	0.23	0.18	0.23	31.9
West: Landsdale Rd (W)												
1	L2	63	2.0	0.079	5.6	LOS A	0.0	0.0	0.00	0.25	0.00	36.9
2	T1	89	2.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.25	0.00	53.4
Approach		153	2.0	0.079	2.3	NA	0.0	0.0	0.00	0.25	0.00	45.3
All Vehicles		277	2.0	0.079	2.5	NA	0.2	1.4	0.11	0.27	0.11	39.0

MOVEMENT SUMMARY

Site: [Landsdale Rd & Crossover 1 - 2021 - PM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Landsdale Rd (E)												
8	T1	93	2.0	0.081	0.2	LOS A	0.3	2.3	0.18	0.21	0.18	52.4
9	R2	52	2.0	0.081	5.9	LOS A	0.3	2.3	0.18	0.21	0.18	32.0
Approach		144	2.0	0.081	2.3	NA	0.3	2.3	0.18	0.21	0.18	45.1
North: Crossover 01 (N)												
10	L2	9	2.0	0.067	0.2	LOS A	0.2	1.7	0.24	0.20	0.24	26.1
12	R2	62	2.0	0.067	1.3	LOS A	0.2	1.7	0.24	0.20	0.24	32.6
Approach		72	2.0	0.067	1.1	LOS A	0.2	1.7	0.24	0.20	0.24	31.9
West: Landsdale Rd (W)												
1	L2	71	2.0	0.069	5.6	LOS A	0.0	0.0	0.00	0.32	0.00	36.0
2	T1	61	2.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	51.8
Approach		132	2.0	0.069	3.0	NA	0.0	0.0	0.00	0.32	0.00	42.2
All Vehicles		347	2.0	0.081	2.3	NA	0.3	2.3	0.12	0.25	0.12	40.6

MOVEMENT SUMMARY

Site: [Landsdale Rd & Crossover 1 - 2021 - Sat Lunch time]

Site Category: (None)
 Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Landsdale Rd (E)												
8	T1	24	2.0	0.061	0.6	LOS A	0.3	2.2	0.29	0.43	0.29	46.9
9	R2	73	2.0	0.061	6.1	LOS A	0.3	2.2	0.29	0.43	0.29	28.7
Approach		97	2.0	0.061	4.7	NA	0.3	2.2	0.29	0.43	0.29	33.2
North: Crossover 01 (N)												
10	L2	12	2.0	0.106	0.2	LOS A	0.4	2.8	0.25	0.21	0.25	26.0
12	R2	103	2.0	0.106	1.2	LOS A	0.4	2.8	0.25	0.21	0.25	32.6
Approach		115	2.0	0.106	1.1	LOS A	0.4	2.8	0.25	0.21	0.25	32.0
West: Landsdale Rd (W)												
1	L2	115	2.0	0.094	5.6	LOS A	0.0	0.0	0.00	0.38	0.00	35.3
2	T1	63	2.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.38	0.00	50.4
Approach		178	2.0	0.094	3.6	NA	0.0	0.0	0.00	0.38	0.00	39.7
All Vehicles		389	2.0	0.106	3.1	NA	0.4	2.8	0.15	0.34	0.15	35.7

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - 2031 - AM] Network: N101 [2031 - AM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
South: Alexander Dr (S)														
4	L2	39	2.0	39	2.0	0.025	6.7	LOS A	0.1	0.7	0.08	0.56	0.08	45.9
5	T1	584	14.3	584	14.3	0.174	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		623	13.5	623	13.5	0.174	0.4	LOS A	0.1	0.7	0.01	0.03	0.01	67.9
North: Alexander Dr (N)														
12	R2	25	2.0	25	2.0	0.026	8.1	LOS A	0.1	0.8	0.54	0.68	0.54	30.6
Approach		25	2.0	25	2.0	0.026	8.1	NA	0.1	0.8	0.54	0.68	0.54	30.6
West: Landsdale Rd (W)														
1	L2	13	2.0	13	2.0	0.239	5.5	LOS A	0.9	6.7	0.58	0.79	0.61	28.9
2	T1	118	2.0	118	2.0	0.239	8.5	LOS A	0.9	6.7	0.58	0.79	0.61	20.0
Approach		131	2.0	131	2.0	0.239	8.2	LOS A	0.9	6.7	0.58	0.79	0.61	21.4
All Vehicles		779	11.2	779	11.2	0.239	2.0	NA	0.9	6.7	0.12	0.18	0.12	61.3

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - 2031 - AM] Network: N101 [2031 - AM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
North: Alexander Dr (N)														
11	T1	1574	15.1	1574	15.1	0.471	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1574	15.1	1574	15.1	0.471	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.8
West: Median (W)														
3	R2	118	2.0	118	2.0	0.635	31.7	LOS D	2.3	17.6	0.95	1.10	1.46	3.9
Approach		118	2.0	118	2.0	0.635	31.7	LOS D	2.3	17.6	0.95	1.10	1.46	3.9
All Vehicles		1692	14.2	1692	14.2	0.635	2.2	NA	2.3	17.6	0.07	0.08	0.10	62.8

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - 2031 - PM] Network: N101 [2031 - PM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total veh/h	HV %				Vehicles	Distance m				
South: Alexander Dr (S)														
4	L2	128	2.0	128	2.0	0.082	6.7	LOS A	0.3	2.6	0.11	0.55	0.11	45.7
5	T1	1428	14.3	1428	14.3	0.425	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.8
Approach		1557	13.3	1557	13.3	0.425	0.6	LOS A	0.3	2.6	0.01	0.05	0.01	67.1
North: Alexander Dr (N)														
12	R2	37	2.0	37	2.0	0.147	20.8	LOS C	0.5	3.8	0.88	0.95	0.88	18.7
Approach		37	2.0	37	2.0	0.147	20.8	NA	0.5	3.8	0.88	0.95	0.88	18.7
West: Landsdale Rd (W)														
1	L2	9	2.0	9	2.0	0.906	72.9	LOS F	5.0	38.1	0.99	1.37	2.53	5.2
2	T1	89	2.0	89	2.0	0.906	106.2	LOS F	5.0	38.1	0.99	1.37	2.53	2.3
Approach		99	2.0	99	2.0	0.906	103.0	LOS F	5.0	38.1	0.99	1.37	2.53	2.6
All Vehicles		1693	12.4	1693	12.4	0.906	7.0	NA	5.0	38.1	0.09	0.14	0.18	50.1

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - 2031 - PM] Network: N101 [2031 - PM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total veh/h	HV %				Vehicles	Distance m				
North: Alexander Dr (N)														
11	T1	752	15.1	752	15.1	0.225	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		752	15.1	752	15.1	0.225	0.0	NA	0.0	0.0	0.00	0.00	0.00	69.9
West: Median (W)														
3	R2	89	2.0	89	2.0	0.131	6.1	LOS A	0.4	3.2	0.55	0.80	0.55	14.3
Approach		89	2.0	89	2.0	0.131	6.1	LOS A	0.4	3.2	0.55	0.80	0.55	14.3
All Vehicles		841	13.7	841	13.7	0.225	0.7	NA	0.4	3.2	0.06	0.09	0.06	67.2

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 1 - 2031 - Sat Lunch time]

Network: N101 [2031 - Sat Lunch time]

Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total HV %	v/c				sec	Vehicles veh				
South: Alexander Dr (S)														
4	L2	62	2.0	62	2.0	0.040	6.7	LOS A	0.2	1.2	0.11	0.55	0.11	45.7
5	T1	704	14.3	704	14.3	0.210	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	69.9
Approach		766	13.3	766	13.3	0.210	0.6	LOS A	0.2	1.2	0.01	0.04	0.01	67.3
North: Alexander Dr (N)														
12	R2	40	2.0	40	2.0	0.049	9.0	LOS A	0.2	1.5	0.59	0.75	0.59	29.3
Approach		40	2.0	40	2.0	0.049	9.0	NA	0.2	1.5	0.59	0.75	0.59	29.3
West: Landsdale Rd (W)														
1	L2	24	2.0	24	2.0	0.219	5.7	LOS A	0.8	6.1	0.62	0.79	0.64	27.4
2	T1	85	2.0	85	2.0	0.219	10.5	LOS B	0.8	6.1	0.62	0.79	0.64	18.3
Approach		109	2.0	109	2.0	0.219	9.4	LOS A	0.8	6.1	0.62	0.79	0.64	21.2
All Vehicles		916	11.5	916	11.5	0.219	2.0	NA	0.8	6.1	0.11	0.16	0.11	61.3

MOVEMENT SUMMARY

Site: [Alexander Dr & Landsdale Rd - Stage 2 - 2031 - Sat Lunch time]

Network: N101 [2031 - Sat Lunch time]

Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV % veh/h	Total HV %	v/c				sec	Vehicles veh				
North: Alexander Dr (N)														
11	T1	487	15.1	487	15.1	0.146	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	70.0
Approach		487	15.1	487	15.1	0.146	0.0	NA	0.0	0.0	0.00	0.00	0.00	70.0
West: Median (W)														
3	R2	85	2.0	85	2.0	0.093	4.4	LOS A	0.3	2.3	0.43	0.68	0.43	17.3
Approach		85	2.0	85	2.0	0.093	4.4	LOS A	0.3	2.3	0.43	0.68	0.43	17.3
All Vehicles		573	13.1	573	13.1	0.146	0.7	NA	0.3	2.3	0.06	0.10	0.06	66.9

MOVEMENT SUMMARY

Site: [Landsdale Rd & Crossover 1 - 2031 - AM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Landsdale Rd (E)												
8	T1	17	2.0	0.040	0.5	LOS A	0.2	1.4	0.28	0.42	0.28	47.1
9	R2	47	2.0	0.040	6.0	LOS A	0.2	1.4	0.28	0.42	0.28	28.8
Approach		64	2.0	0.040	4.6	NA	0.2	1.4	0.28	0.42	0.28	33.6
North: Crossover 01 (N)												
10	L2	8	2.0	0.058	0.3	LOS A	0.2	1.5	0.26	0.20	0.26	26.0
12	R2	55	2.0	0.058	1.1	LOS A	0.2	1.5	0.26	0.20	0.26	32.6
Approach		63	2.0	0.058	1.0	LOS A	0.2	1.5	0.26	0.20	0.26	31.8
West: Landsdale Rd (W)												
1	L2	63	2.0	0.090	5.6	LOS A	0.0	0.0	0.00	0.22	0.00	37.2
2	T1	111	2.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	54.1
Approach		174	2.0	0.090	2.0	NA	0.0	0.0	0.00	0.22	0.00	46.7
All Vehicles		301	2.0	0.090	2.4	NA	0.2	1.5	0.11	0.26	0.11	40.2

MOVEMENT SUMMARY

Site: [Landsdale Rd & Crossover 1 - 2031 - PM]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Landsdale Rd (E)												
8	T1	113	2.0	0.092	0.2	LOS A	0.3	2.4	0.17	0.18	0.17	53.0
9	R2	52	2.0	0.092	6.0	LOS A	0.3	2.4	0.17	0.18	0.17	32.4
Approach		164	2.0	0.092	2.0	NA	0.3	2.4	0.17	0.18	0.17	46.5
North: Crossover 01 (N)												
10	L2	9	2.0	0.069	0.2	LOS A	0.2	1.8	0.27	0.22	0.27	25.9
12	R2	62	2.0	0.069	1.4	LOS A	0.2	1.8	0.27	0.22	0.27	32.5
Approach		72	2.0	0.069	1.3	LOS A	0.2	1.8	0.27	0.22	0.27	31.8
West: Landsdale Rd (W)												
1	L2	71	2.0	0.077	5.6	LOS A	0.0	0.0	0.00	0.28	0.00	36.4
2	T1	77	2.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	52.5
Approach		147	2.0	0.077	2.7	NA	0.0	0.0	0.00	0.28	0.00	43.6
All Vehicles		383	2.0	0.092	2.1	NA	0.3	2.4	0.12	0.23	0.12	41.8

MOVEMENT SUMMARY

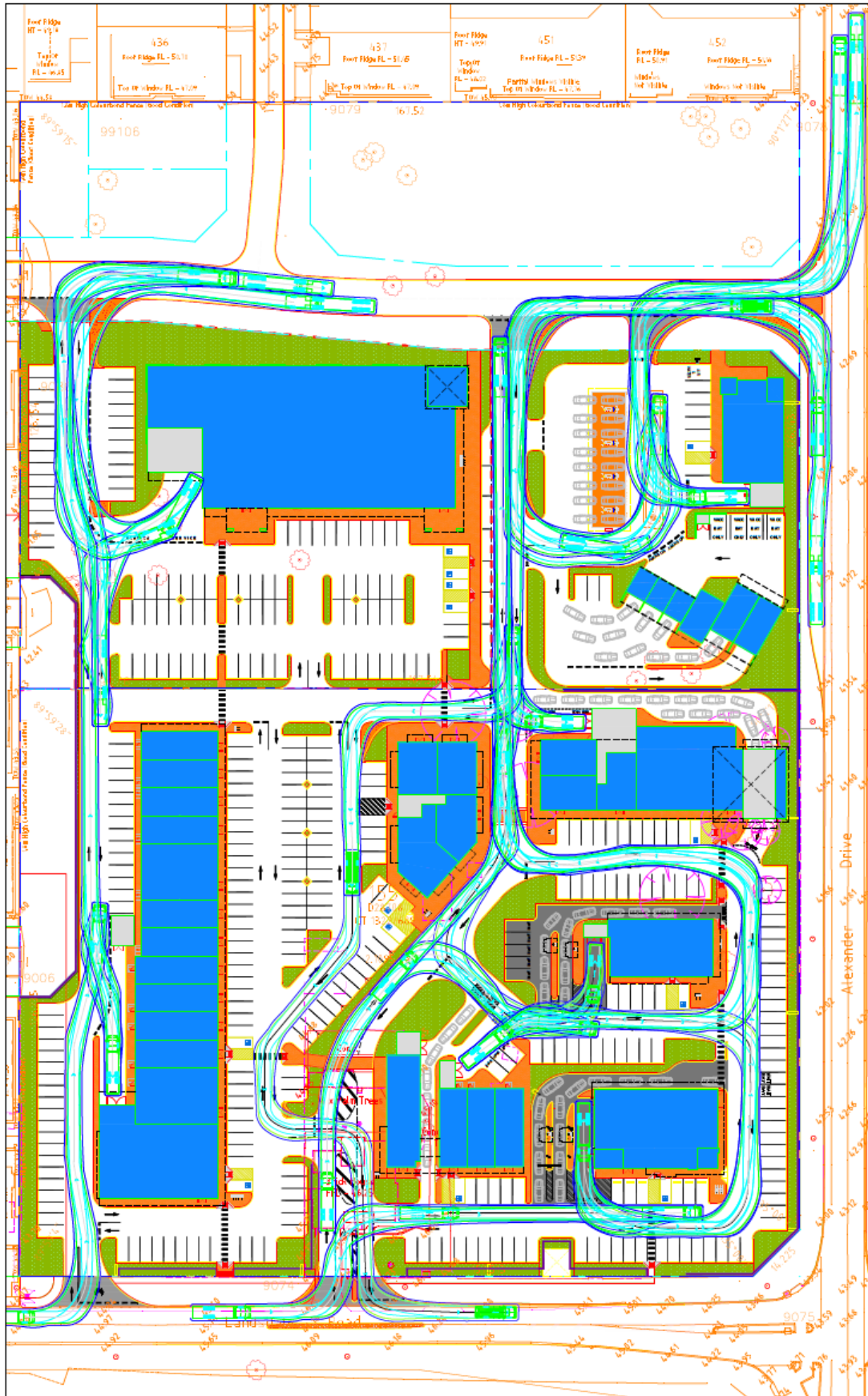
▽ Site: [Landsdale Rd & Crossover 1 - 2031 - Sat Lunch time]

Site Category: (None)
 Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	Queue Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Landsdale Rd (E)												
8	T1	29	2.0	0.065	0.6	LOS A	0.3	2.3	0.30	0.41	0.30	47.2
9	R2	73	2.0	0.065	6.1	LOS A	0.3	2.3	0.30	0.41	0.30	28.9
Approach		102	2.0	0.065	4.5	NA	0.3	2.3	0.30	0.41	0.30	34.1
North: Crossover 01 (N)												
10	L2	12	2.0	0.108	0.3	LOS A	0.4	2.8	0.27	0.23	0.27	25.9
12	R2	103	2.0	0.108	1.3	LOS A	0.4	2.8	0.27	0.23	0.27	32.5
Approach		115	2.0	0.108	1.2	LOS A	0.4	2.8	0.27	0.23	0.27	32.0
West: Landsdale Rd (W)												
1	L2	115	2.0	0.102	5.6	LOS A	0.0	0.0	0.00	0.35	0.00	35.7
2	T1	79	2.0	0.102	0.0	LOS A	0.0	0.0	0.00	0.35	0.00	51.0
Approach		194	2.0	0.102	3.3	NA	0.0	0.0	0.00	0.35	0.00	40.9
All Vehicles		411	2.0	0.108	3.0	NA	0.4	2.8	0.15	0.33	0.15	36.5

Appendix D

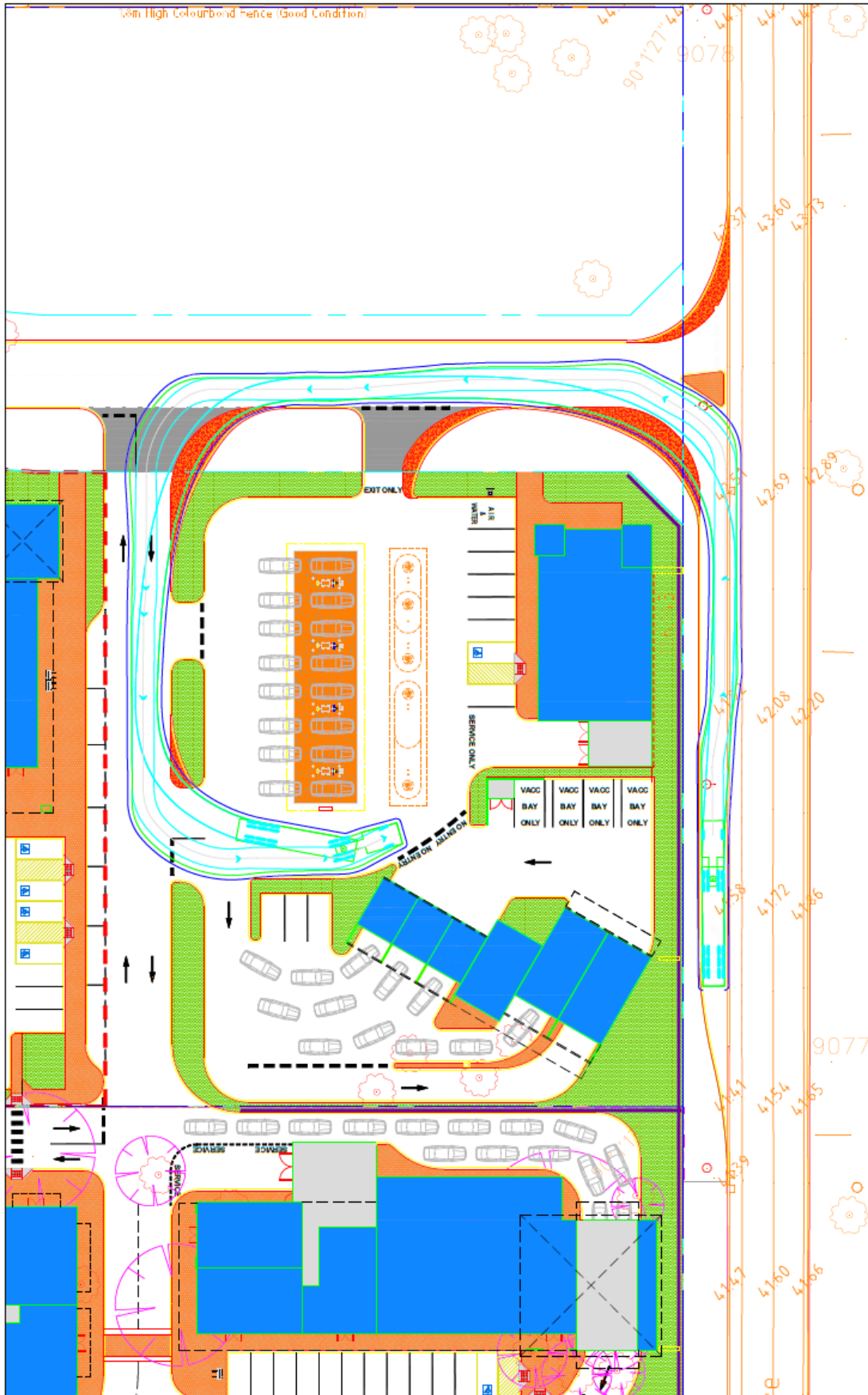
TURN PATHS



t14.172.sk29b
3/12/2021
Scale: 1:750 @ A3

LEGEND
 Vehicle Body
 Wheel Path
 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd
 Austrroads 2013: 19m Semi-Trailer, 12.5m SU Truck & 8.8m Service Vehicle
 Vehicle circulations



Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

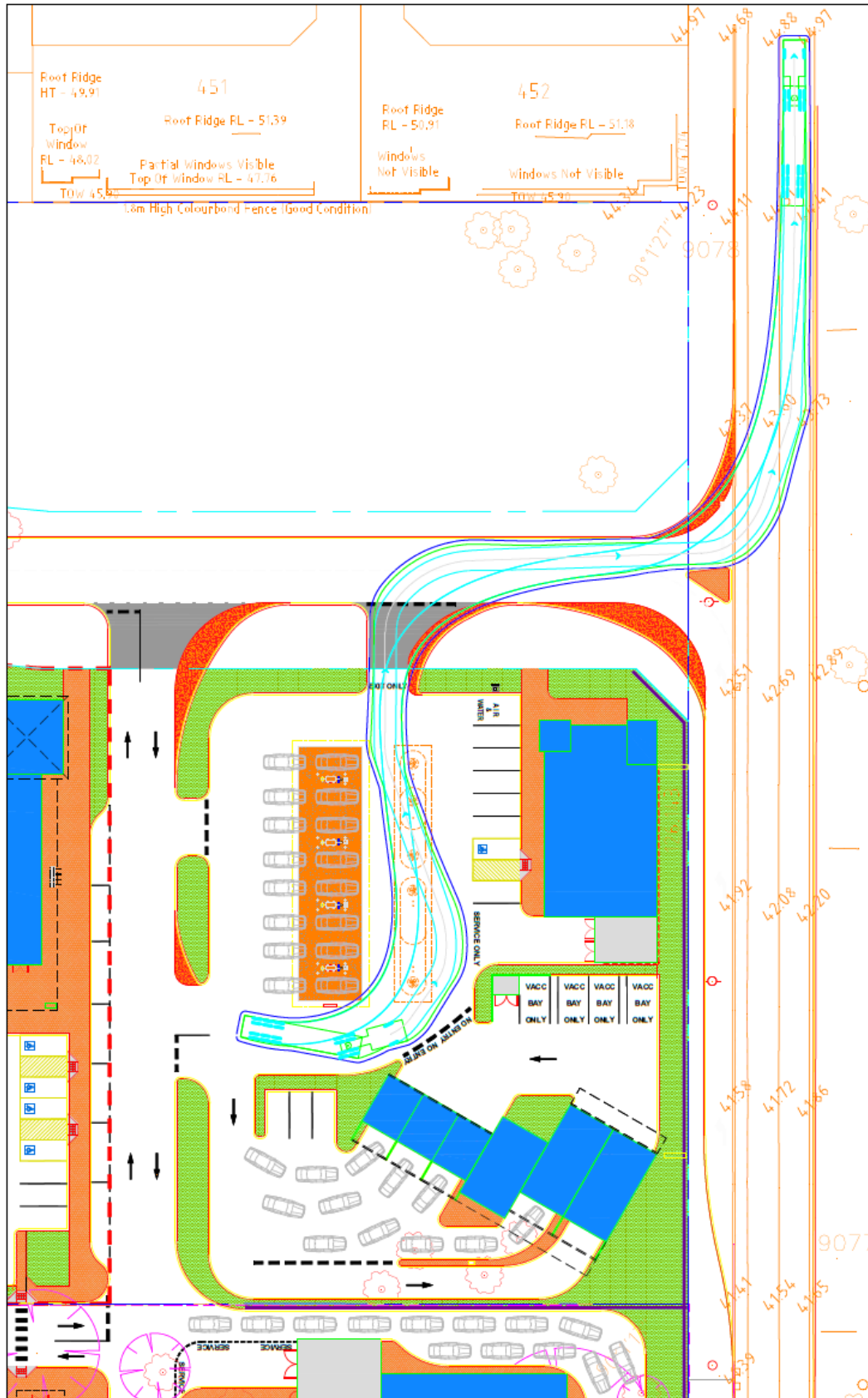
Austrroads 2013: 19.0m Semi-Trailer
Fuel tanker entry

LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

t14.172.sk11d
3/12/2021
Scale: 1:400 @ A3





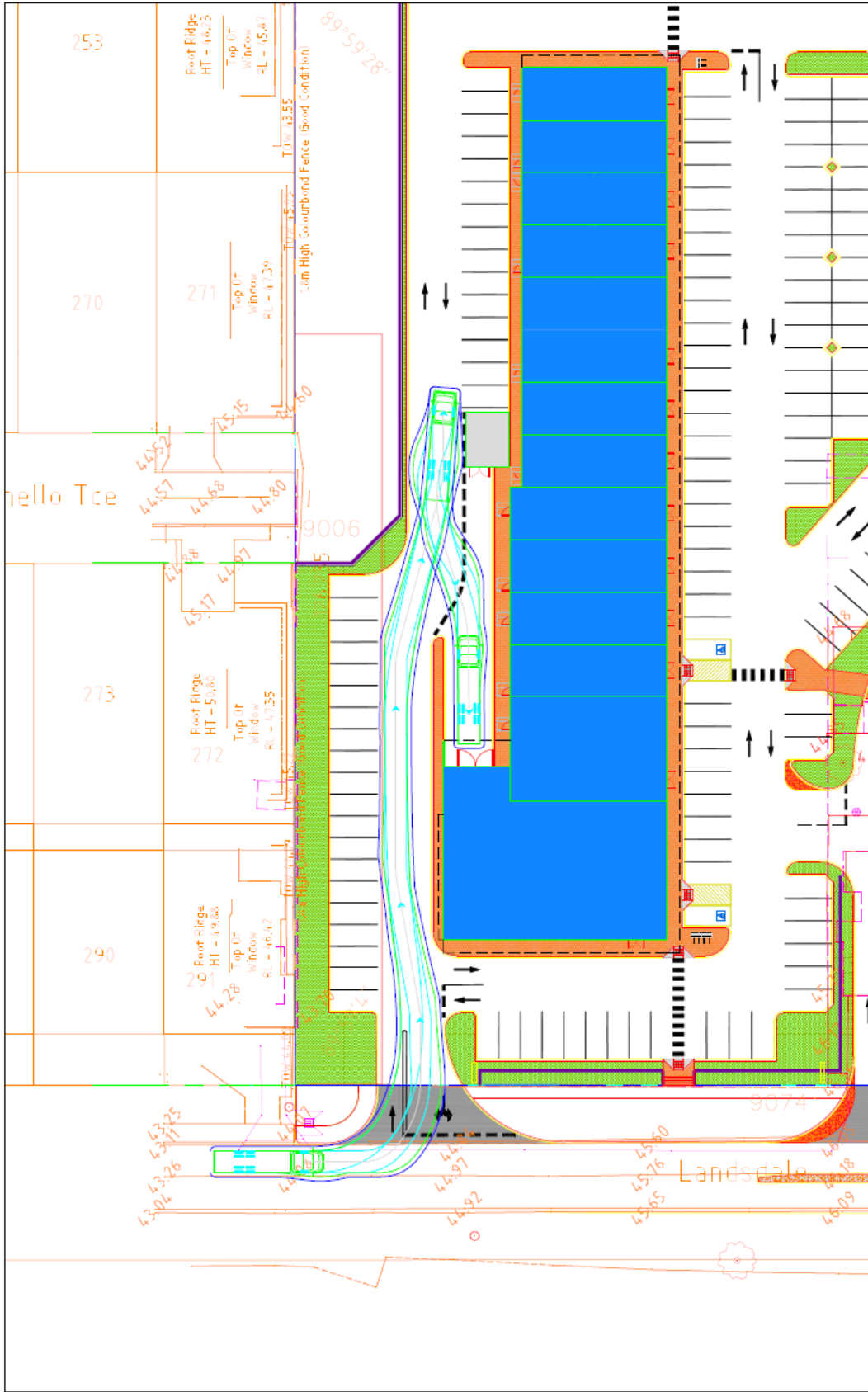
t14.172.sk12d
3/12/2021
Scale: 1:400 @ A3

LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

Austrroads 2013: 19.0m Semi-Trailer
Fuel tanker exit



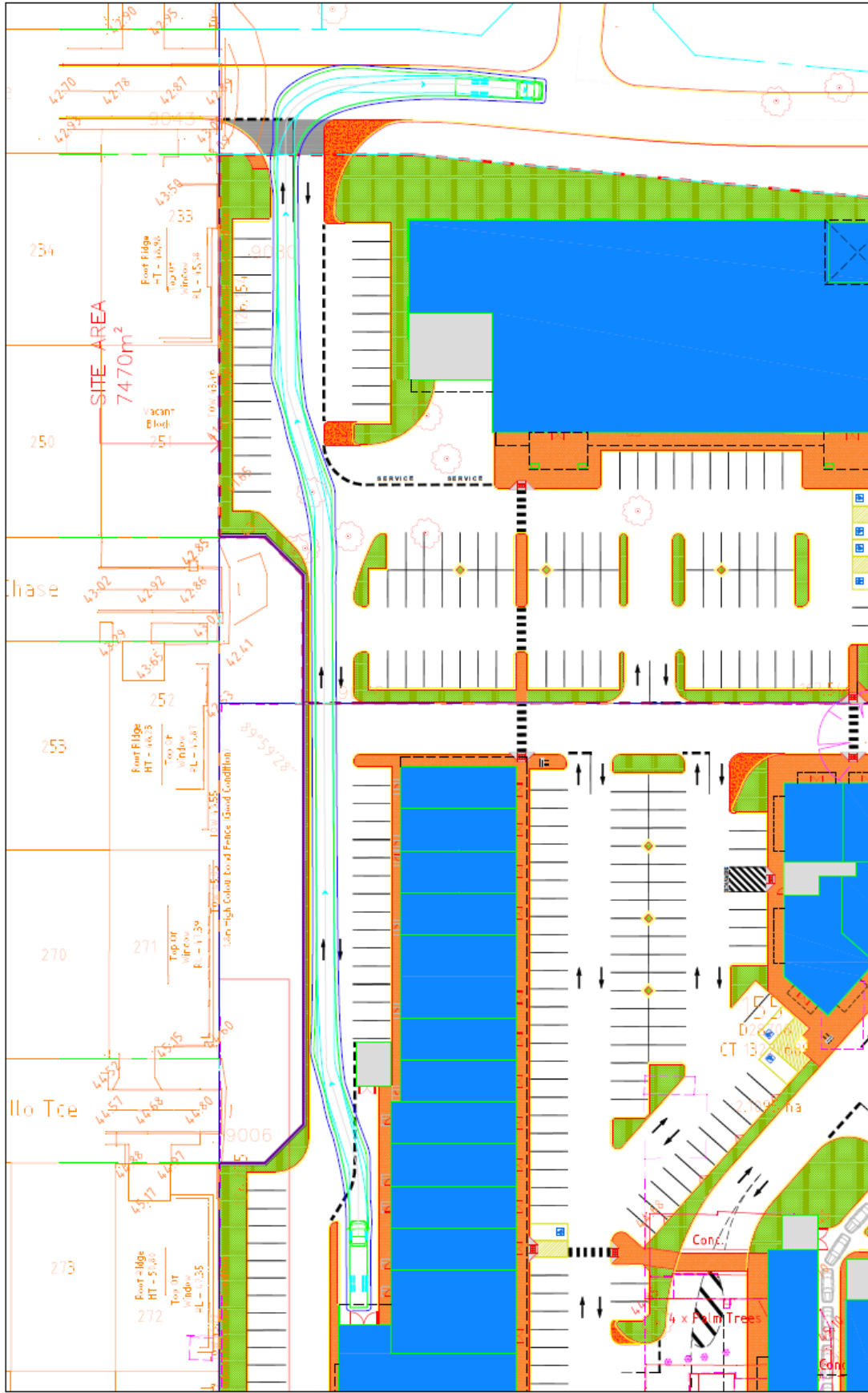
transcore

t14.172.sk15b
3/12/2021
Scale: 1:400 @ A3

LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd
Austroads 2013: 12.5m SU Truck
Service truck entry



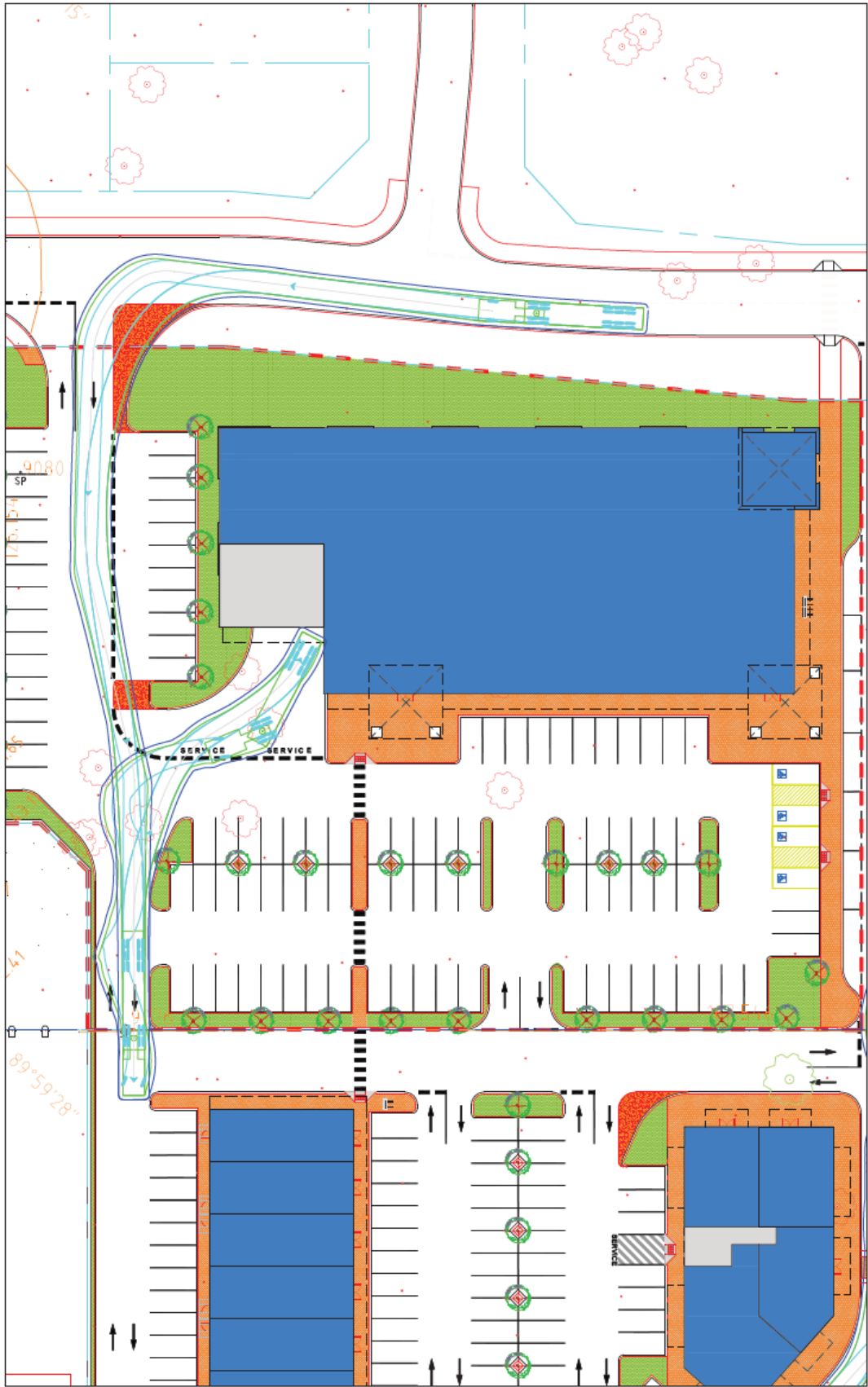
t14.172.sk16b
3/12/2021
Scale: 1:500 @ A3

LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd
Austroads 2013: 12.5m SU Truck
Service truck exit





Lots 154 & 155 Cnr of Alexander Dr & Lansdale Rd

Austrorads 2013: 19.0m Semi-Trailer
Semi-Trailer Entry

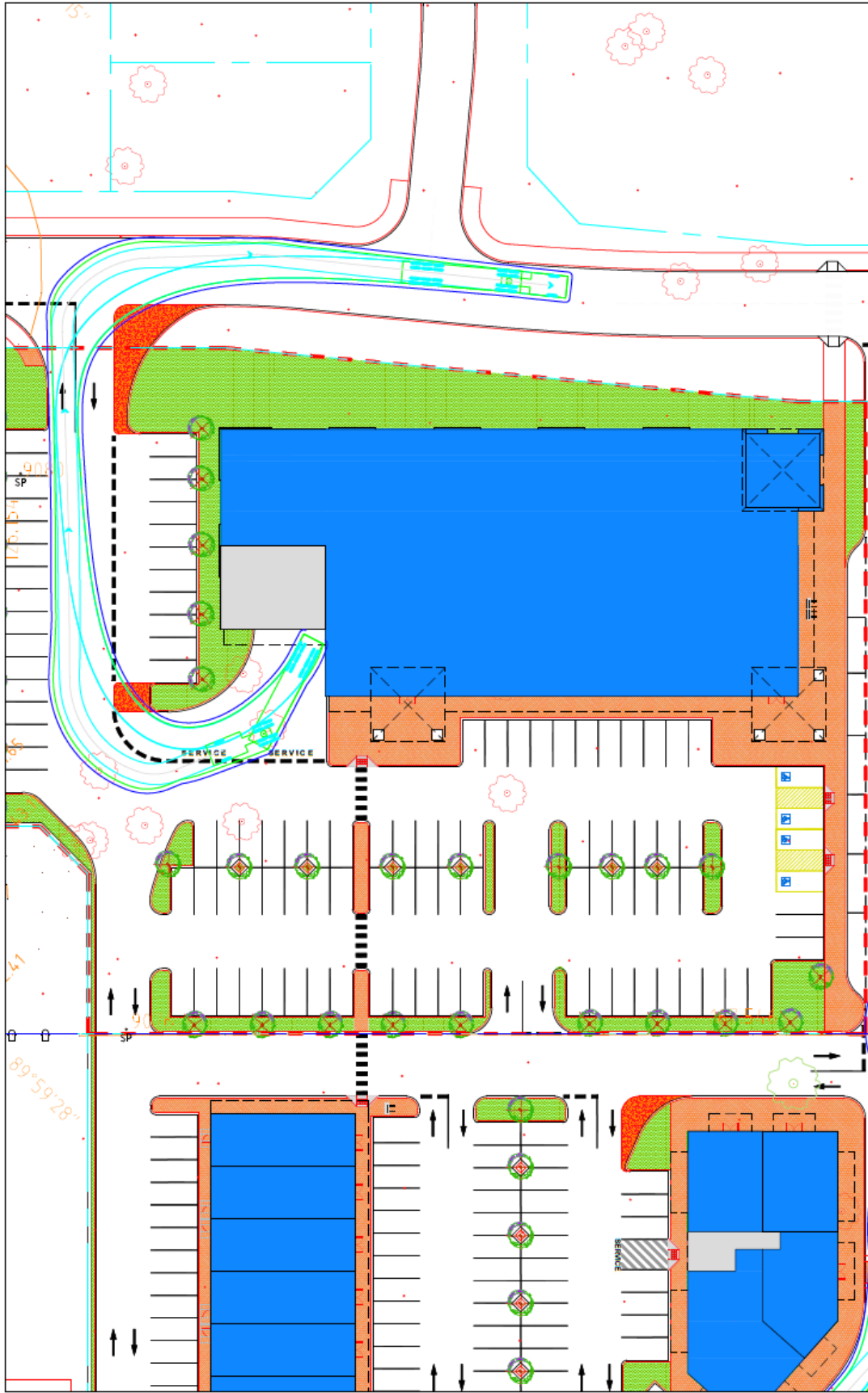
LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

t14.172.sk17a
17/09/2021

Scale: 1:400 @ A3





Lots 154 & 155 Cnr of Alexander Dr & Lansdale Rd

Austrorads 2013: 19.0m Semi-Trailer
Semi-Trailer Exit

LEGEND

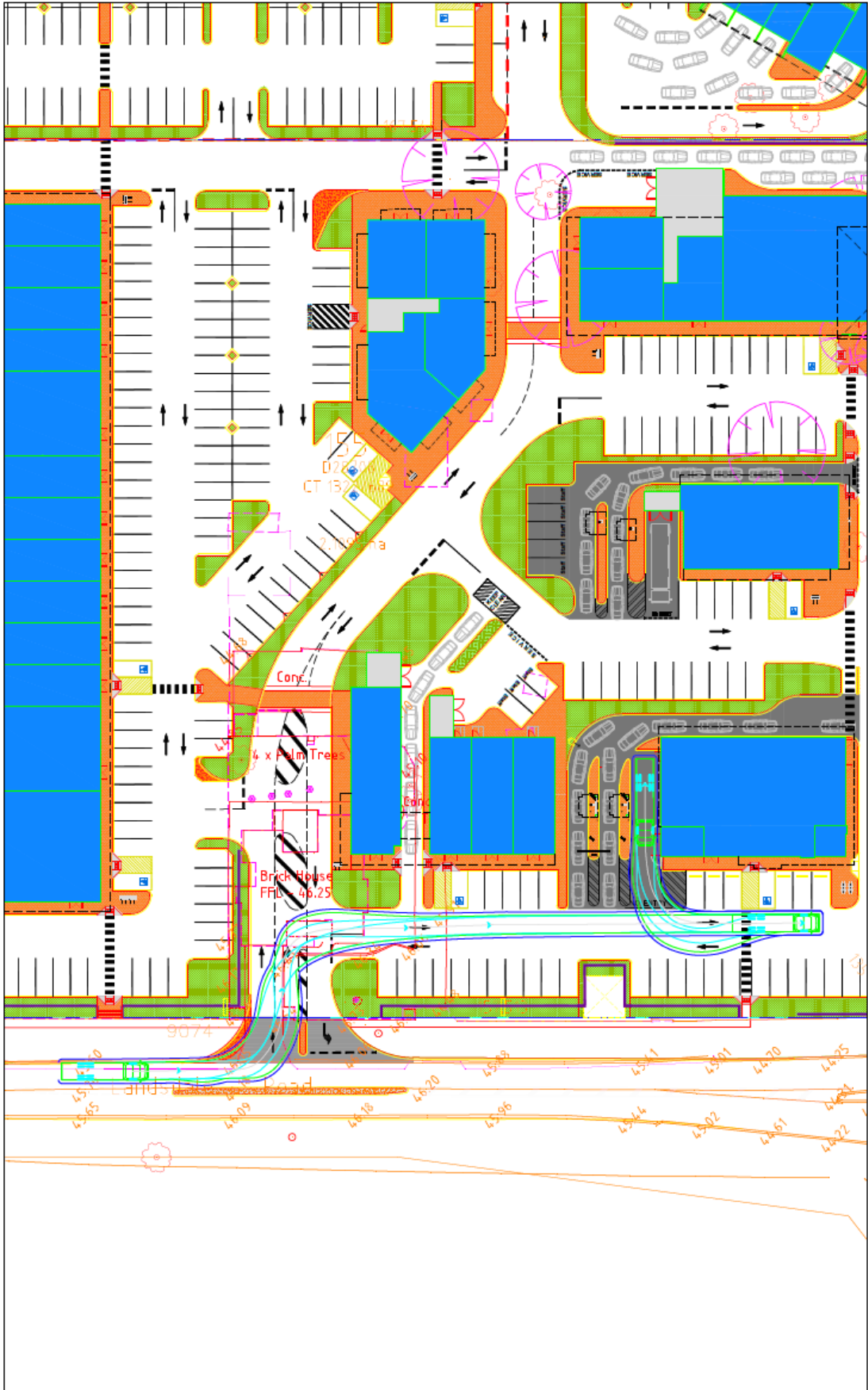
- Vehicle Body
- Wheel Path
- 500mm Clearance

t14.172.sk18a

17/09/2021

Scale: 1:400 @ A3



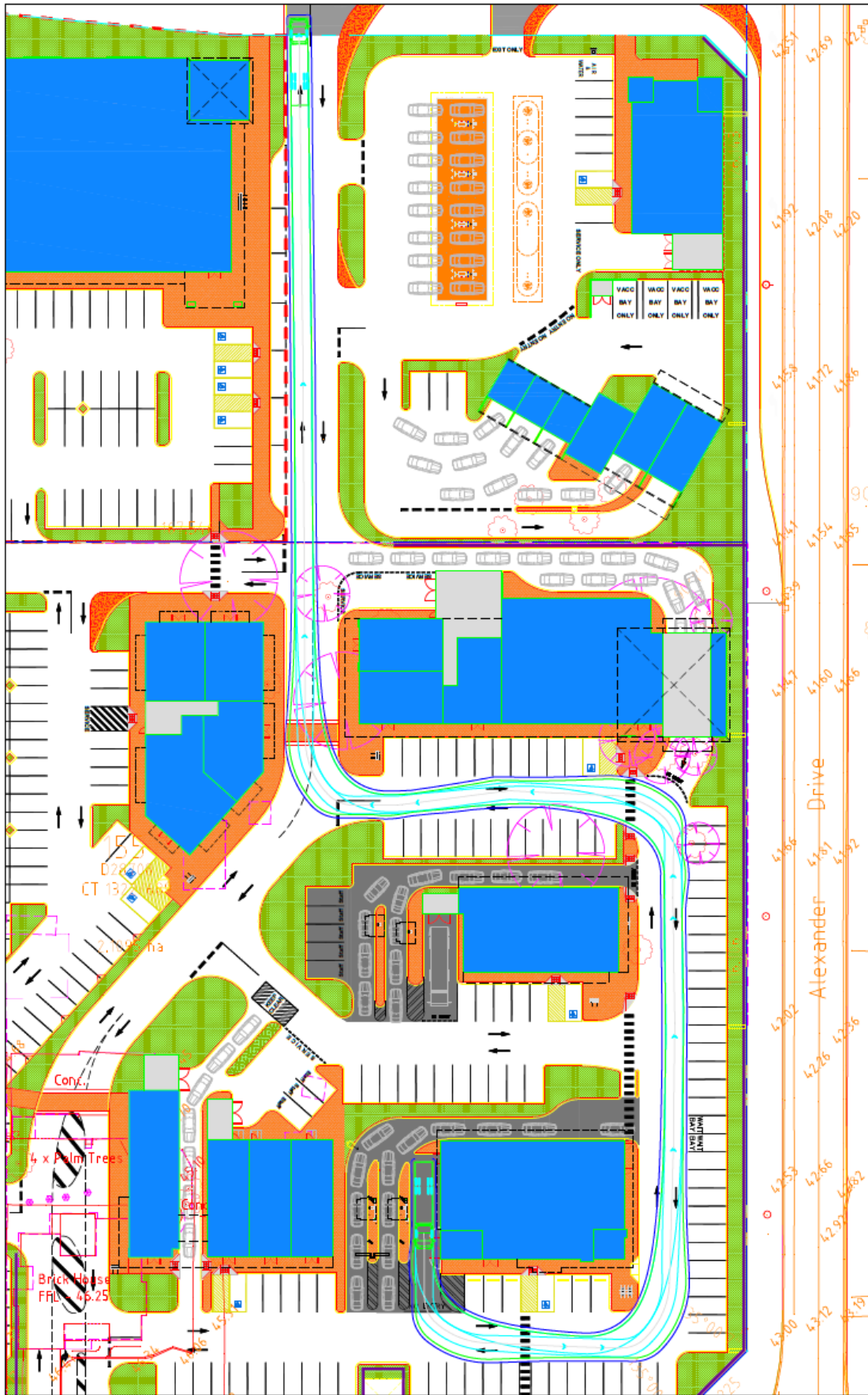


t14.172.sk19b
3/12/2021
Scale: 1:500 @ A3

LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd
Austrroads 2013: 12.5m SU Truck
Service truck entry



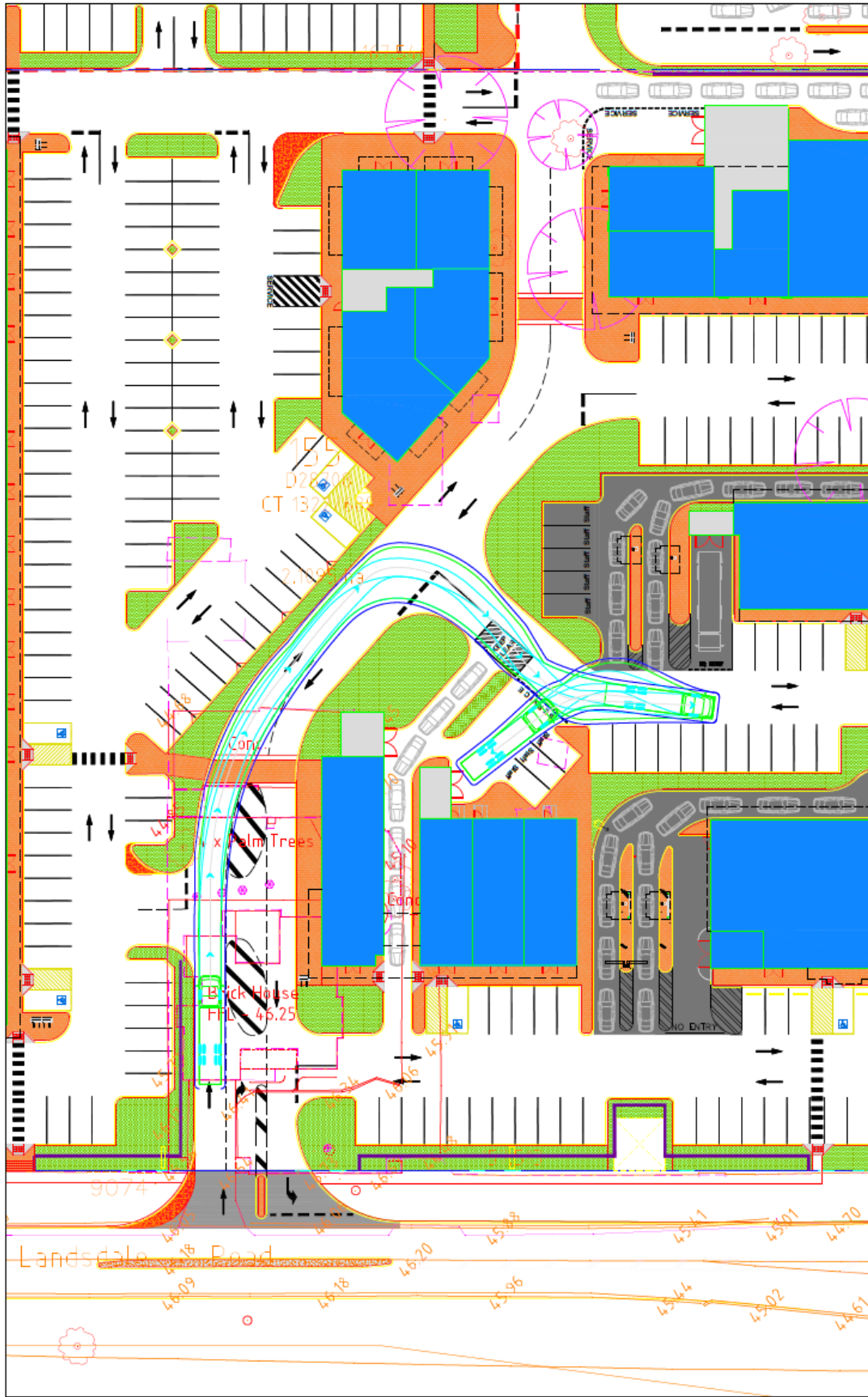
Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd
 Austroads 2013: 12.5m SU Truck
 Service truck exit

LEGEND
 Vehicle Body
 Wheel Path
 500mm Clearance



t14.172.sk20b
 3/12/2021
 Scale: 1:500 @ A3



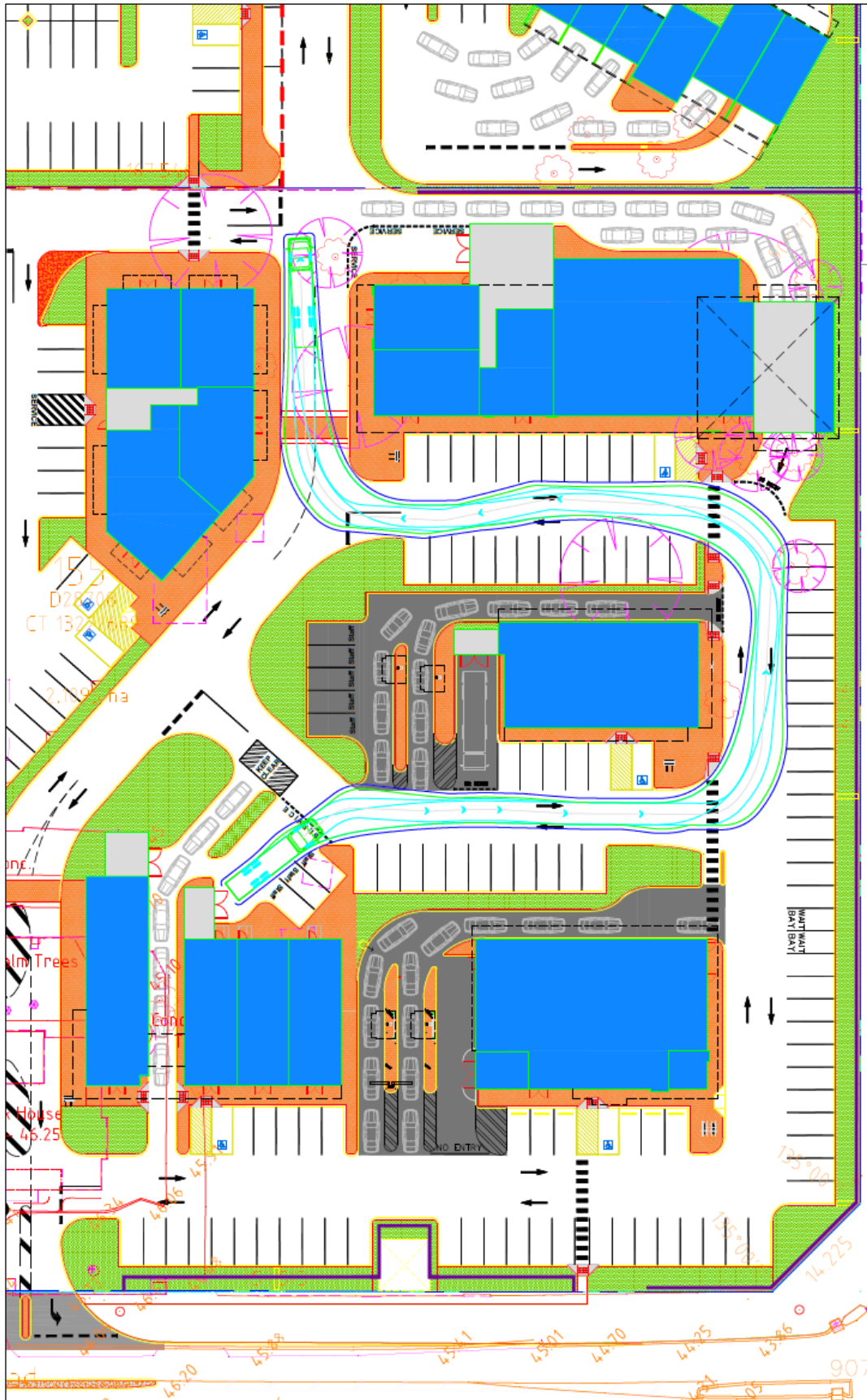


Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd
 Austrads 2013: 12.5m SU Truck
 Service truck entry

LEGEND
 Vehicle Body
 Wheel Path
 500mm Clearance

t14.172.sk21b
 3/12/2021
 Scale: 1:400 @ A3





t14.172.sk22b

3/12/2021

Scale: 1:400 @ A3

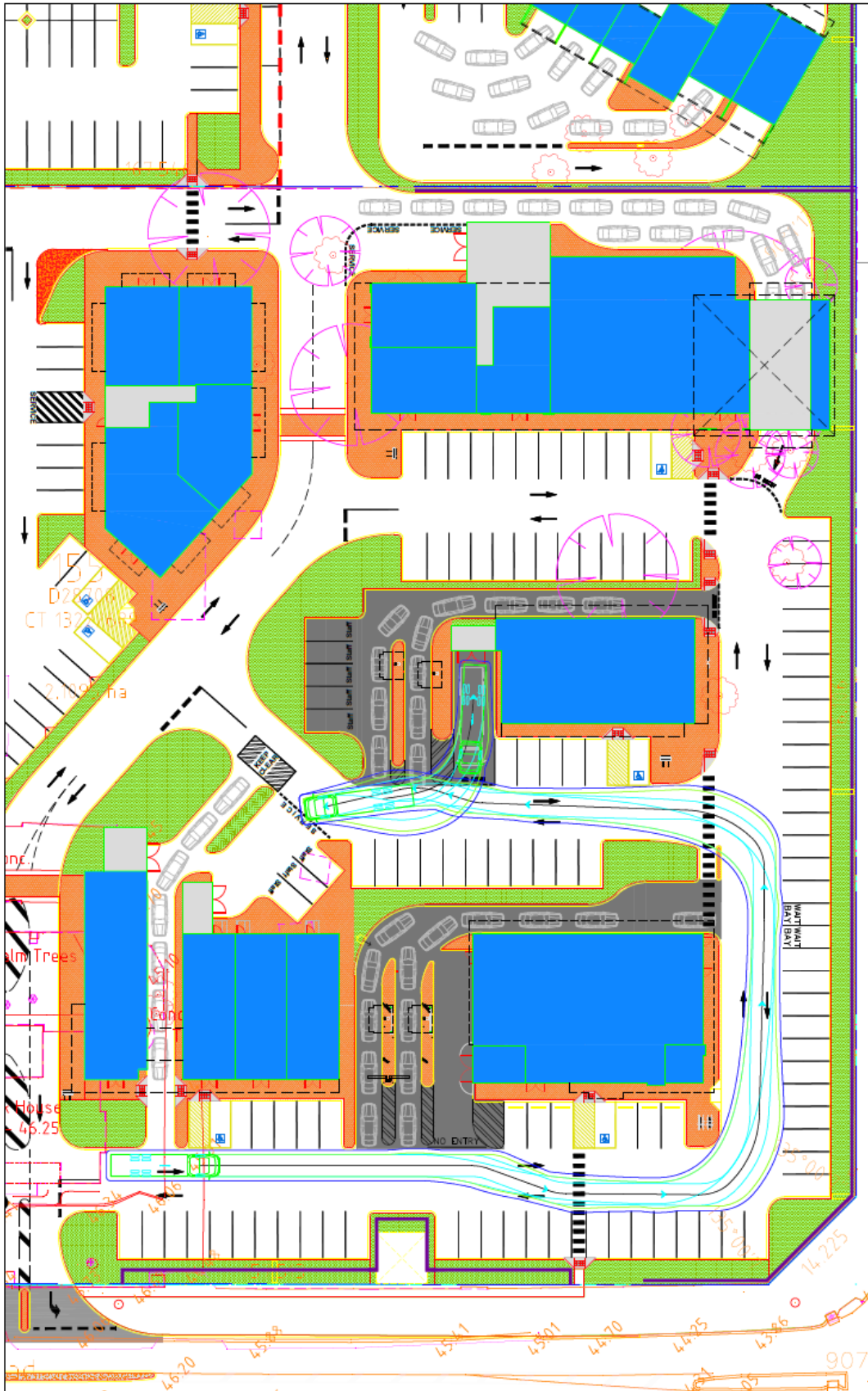
LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

Austrroads 2013: 12.5m SU Truck

Service truck exit



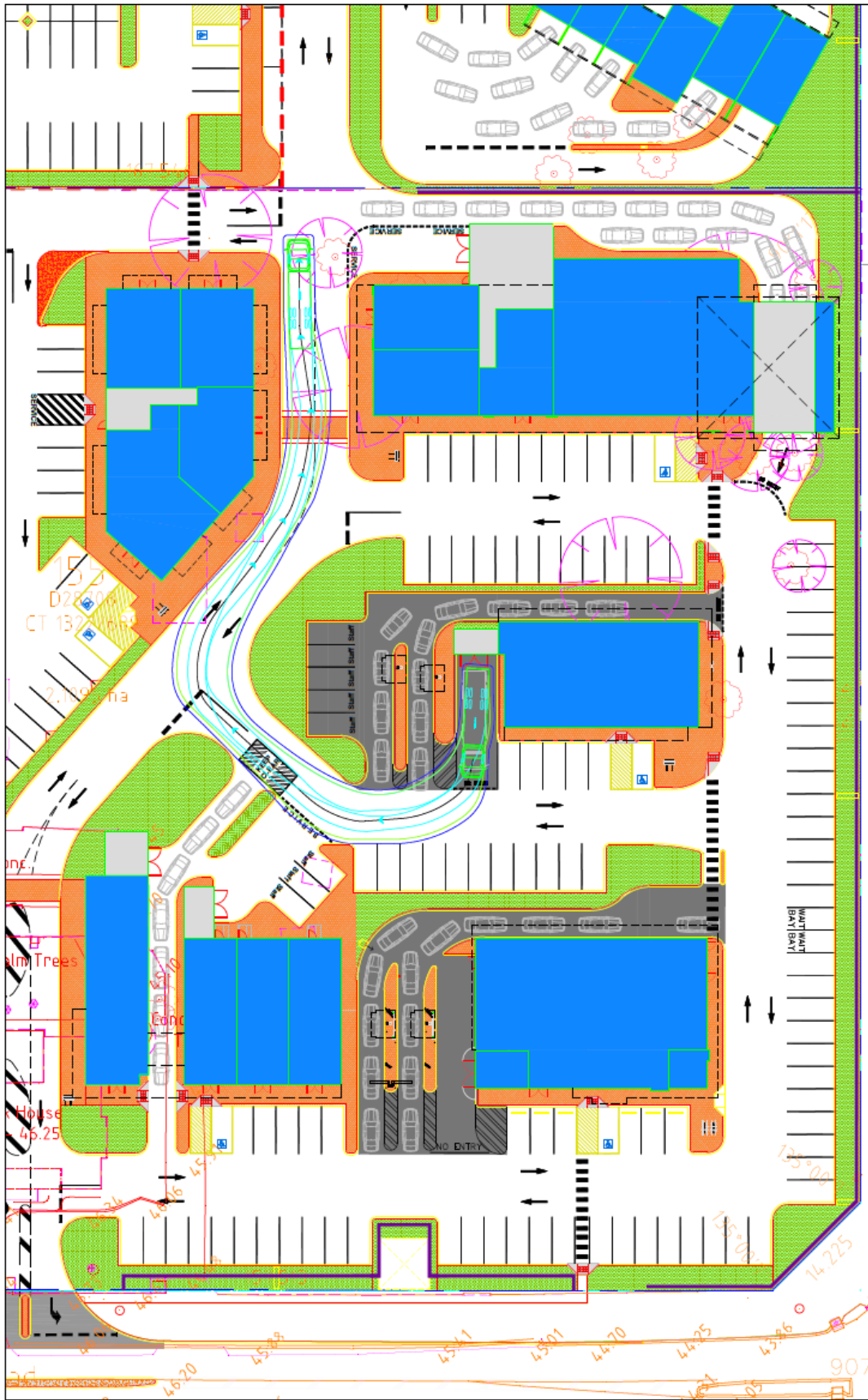
t14.172.sk23b
3/12/2021
Scale: 1:400 @ A3

LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

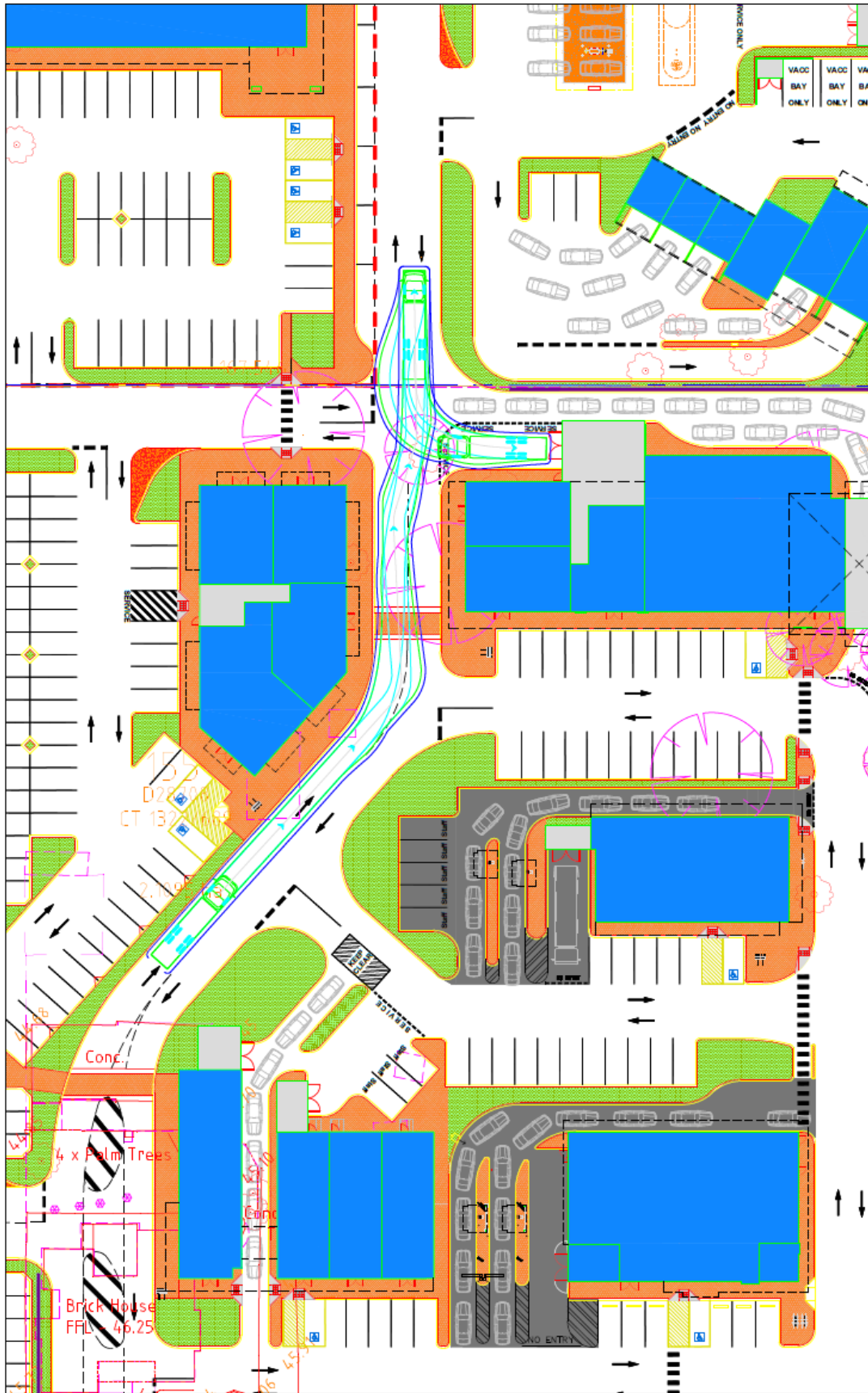
Austrorads 2013: 12.5m SU Truck
Service truck entry



t14.172.sk24b
3/12/2021
Scale: 1:400 @ A3

LEGEND
 Vehicle Body
 Wheel Path
 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd
 Austrroads 2013: 12.5m SU Truck
 Service truck exit



Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

Austrroads 2013: 12.5m SU Truck
Service truck entry

LEGEND

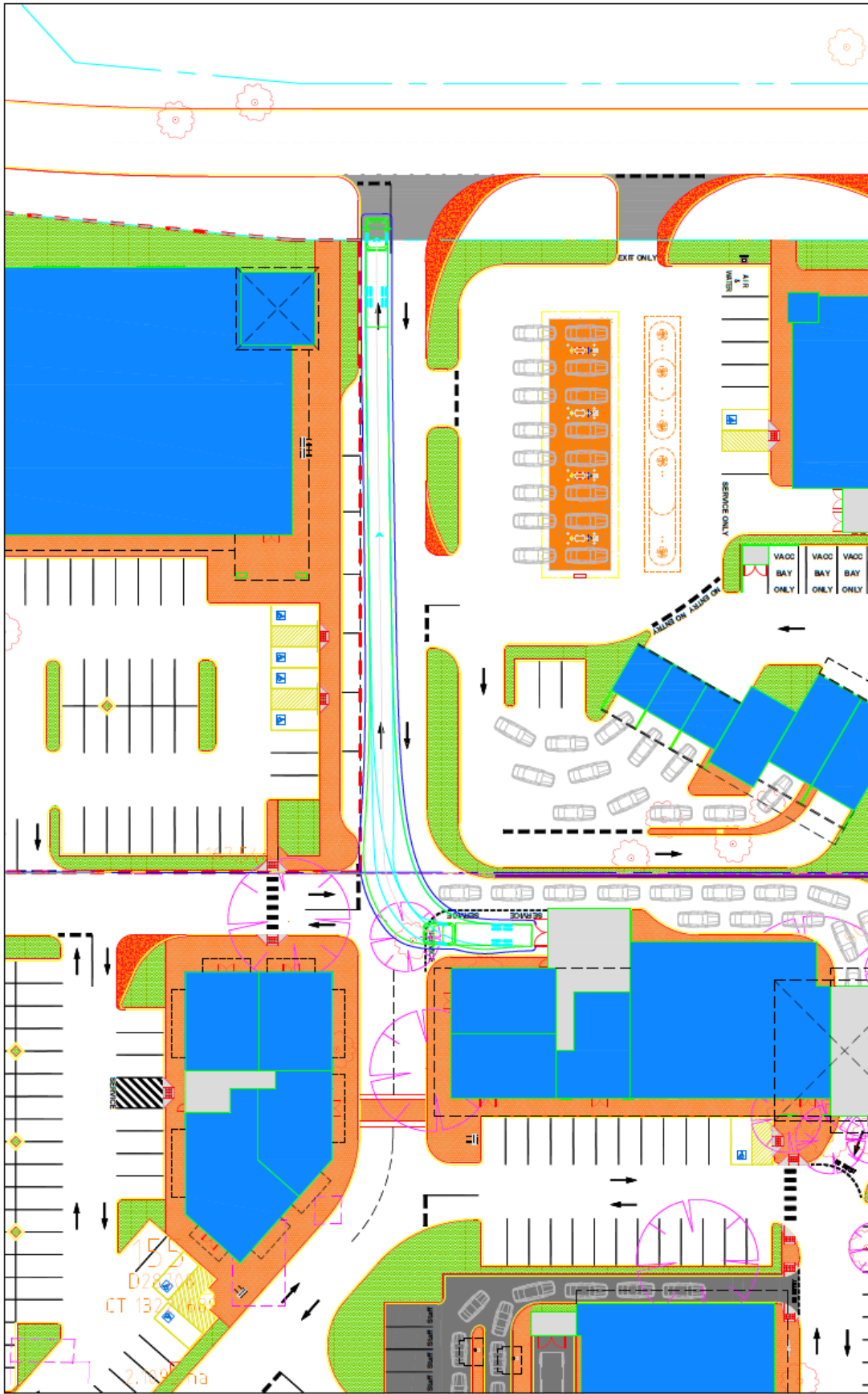
- Vehicle Body
- Wheel Path
- 500mm Clearance

t14.172.sk25b

3/12/2021

Scale: 1:400 @ A3





Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

Austrroads 2013: 12.5m SU Truck
Service truck exit

LEGEND

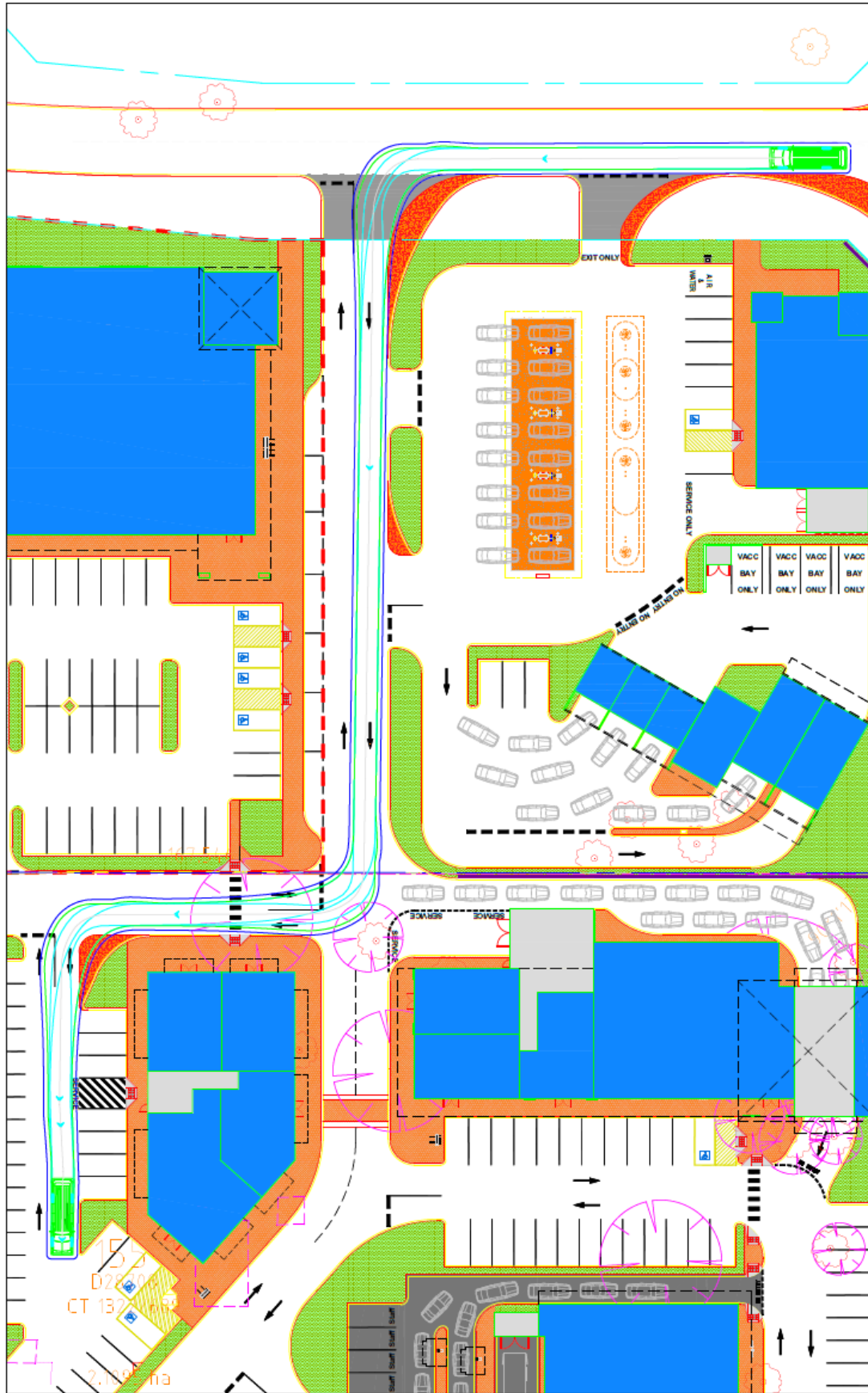
- Vehicle Body
- Wheel Path
- 500mm Clearance

t14.172.sk26b

3/12/2021

Scale: 1:400 @ A3





t14.172.sk27b

3/12/2021

Scale: 1:400 @ A3

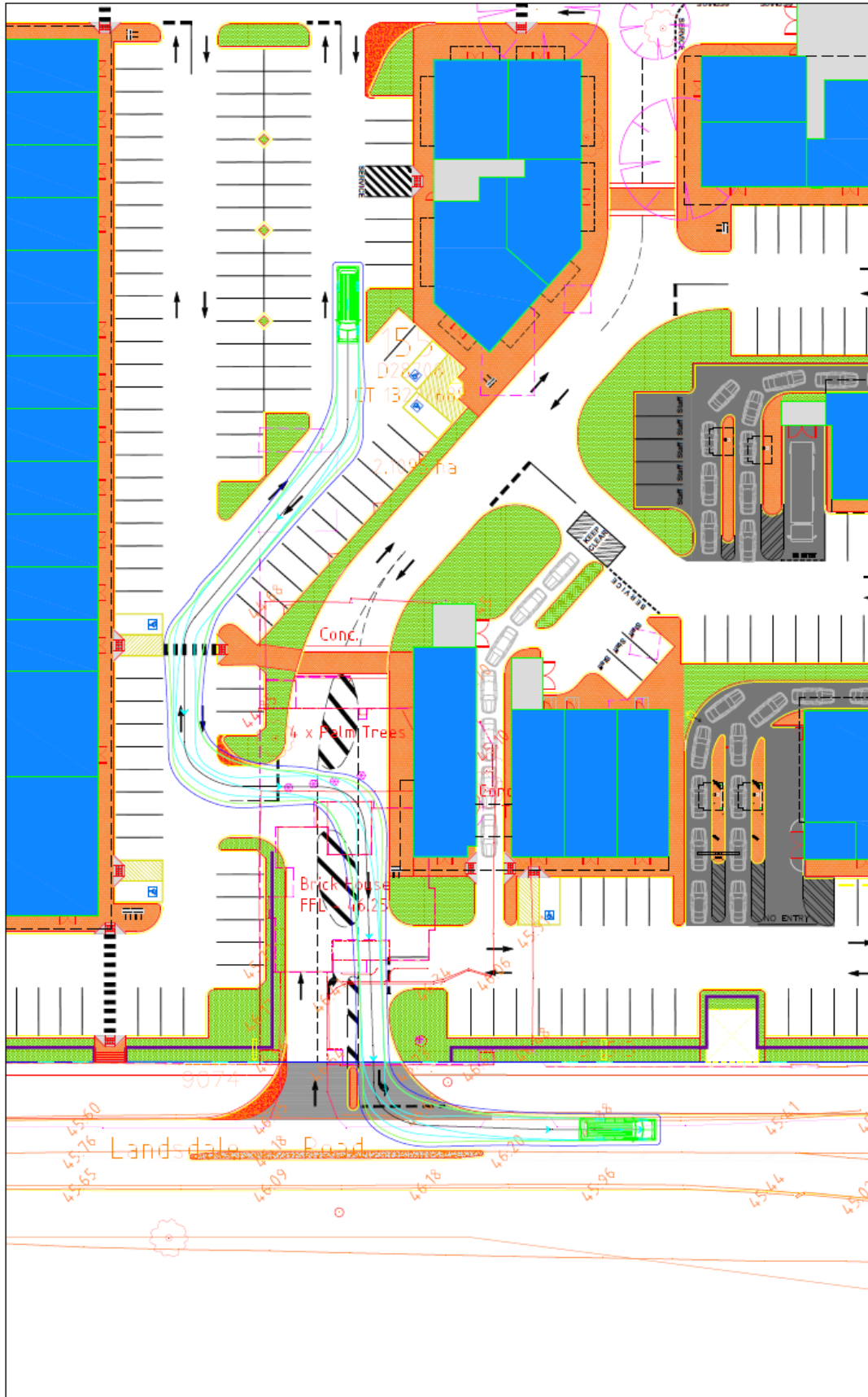
LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

Austrorads 2013: 8.8m Service Vehicle

Service vehicle entry



Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

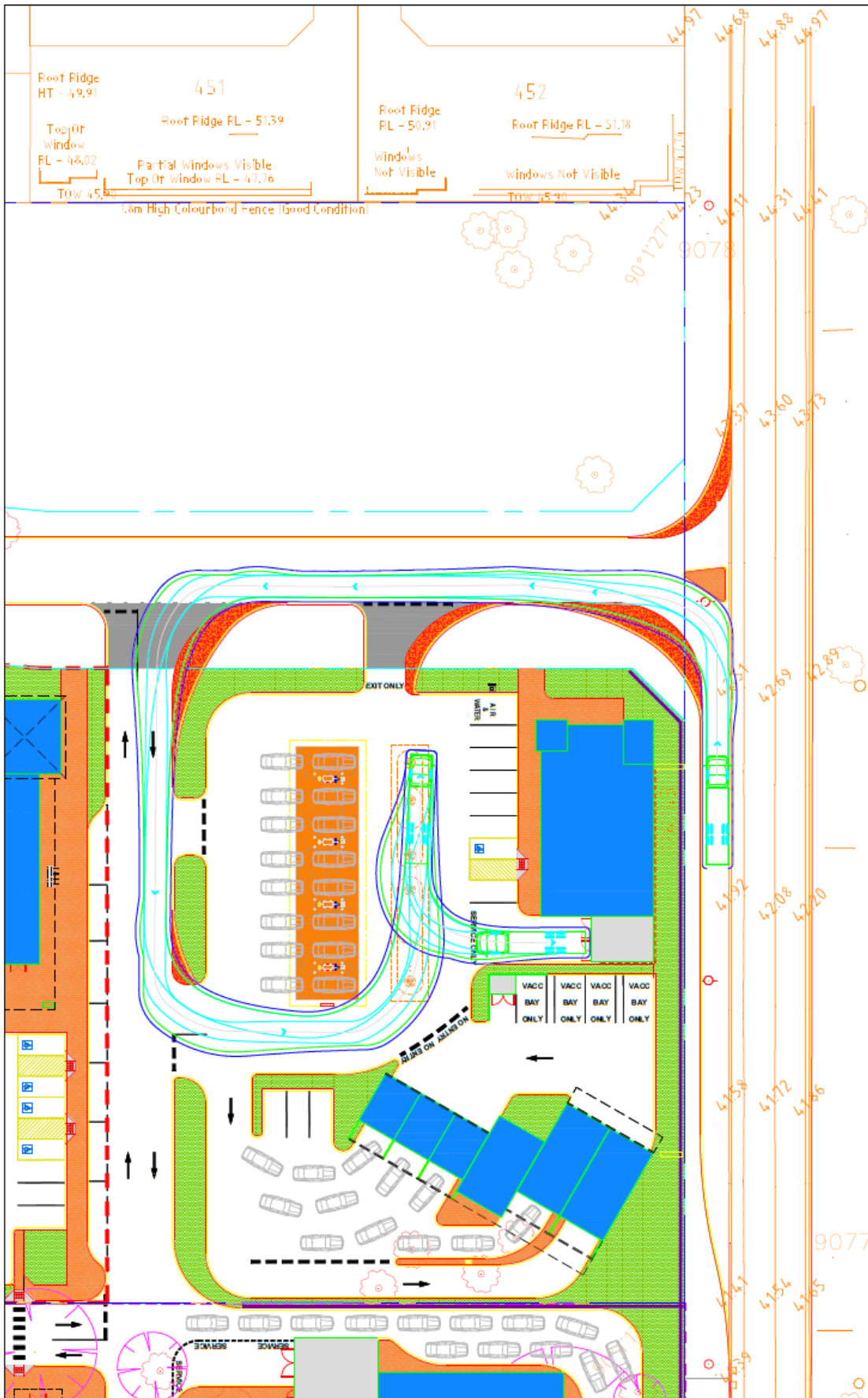
Austrroads 2013: 8.8m Service Vehicle
Service vehicle exit

LEGEND

- Vehicle Body
- Wheel Path
- 500mm Clearance

t14.172.sk28b
3/12/2021
Scale: 1:400 @ A3



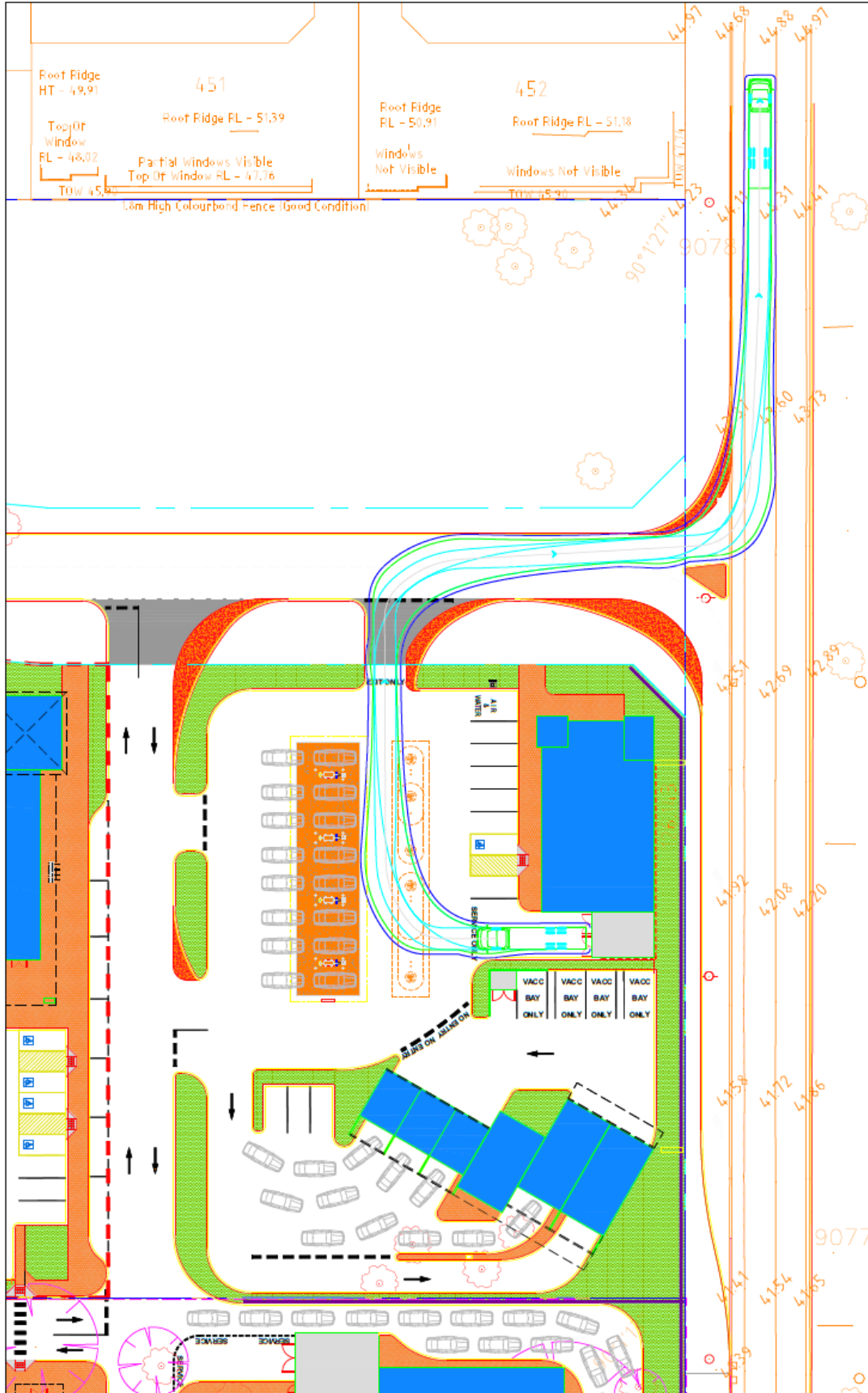


t14.172.sk31
 3/12/2021
 Scale: 1:400 @ A3



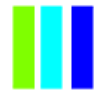
LEGEND
 Vehicle Body
 Wheel Path
 500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd
 Austroads 2013: 12.5m SU Truck
 Service truck entry



t14.172.sk32
3/12/2021
Scale: 1:400 @ A3

LEGEND



Vehicle Body
Wheel Path
500mm Clearance

Lots 154 & 155 Cnr of Alexander Dr & Landsdale Rd

Austrroads 2013: 12.5m SU Truck
Service truck exit