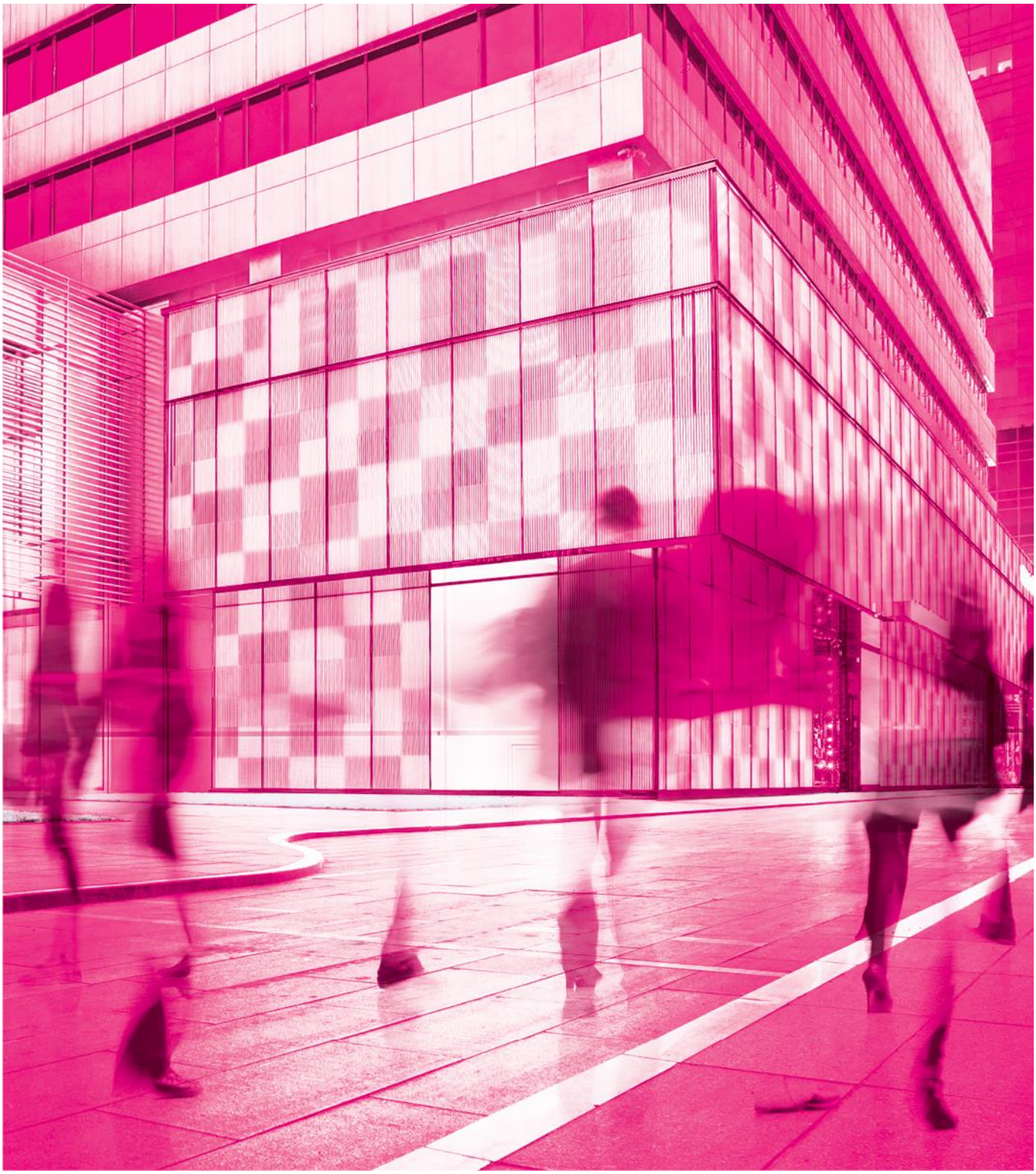

traffic impact assessment;

2115 Castlereagh Road

For Aon Ari Property

11 March 2021

parking;
traffic;
civil design;
wayfinding;

ptc.

ptc.

Document Control

2115 Castlereagh Road, Traffic impact assessment

Issue	Date	Issue Details	Author	Reviewed	For the attention of
1	03/03/21	Draft	AP/JJ	DB	John Joannou (Aon Ari Property)
2	08/03/21	Final Draft	AP	-	John Joannou (Aon Ari Property)
3	11/03/21	Final	AP	-	John Joannou (Aon Ari Property)

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Contents

1 Introduction

1.1 Project Summary

ptc. has been engaged by SJB Architects on behalf of Aon Ari Property to prepare a Traffic Impact Assessment (TIA) to accompany a Development Application (DA) to Penrith City Council for the redevelopment of the former Crane Enfield Metals at 2115 Castlereagh Road, Penrith.

The location of the subject site is outlined in Figure 1.

Figure 1: Site Location (Source: Nearmap)

The site currently consists of warehouses and internal roads which accommodates Capral which supply and distribute aluminium products. The existing site plan for 2115 Castlereagh Road is illustrated in Figure 2.

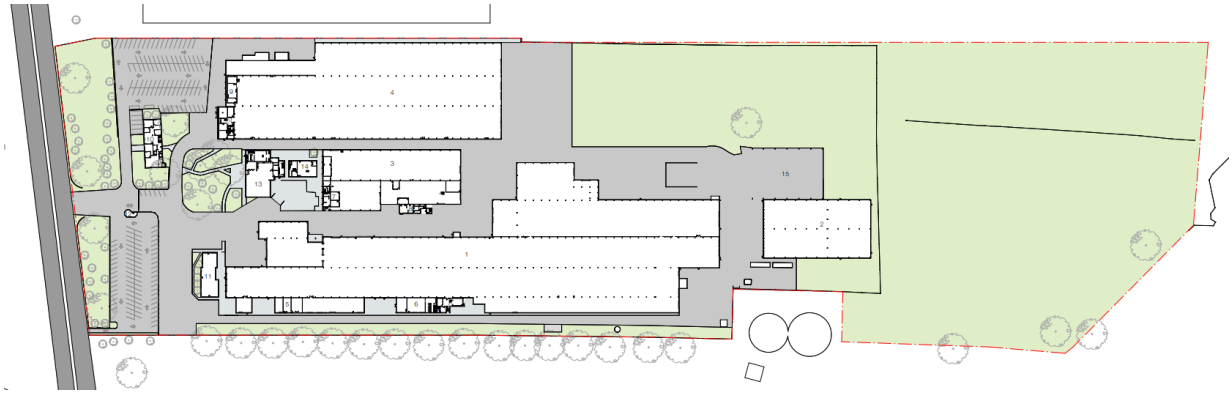

Figure 2: Existing Site Plan

1.2 Reference Documents

The documents referenced in the preparation of this report are as follows:

- Guide to Traffic Generating Developments (RMS, 2002)
- Guide to Traffic Generating Developments Updated Traffic Surveys (TDT 2013/04) (RMS, 2013)
- Building Code of Australia 2016 (BCA)
- Penrith City Council Development Control Plan (DCP) (Penrith City Council, 2010)

2 Background Information

2.1 Site Location

The subject site has a listed street address of 2115 Castlereagh Road, Penrith and comprises the following lot:

- Lot No. 110, DP 774782

The proposed development is located in Penrith, which is approximately 50km west of the Sydney CBD. The site is bordered by Castlereagh Road on the western side of the site, as shown in Figure 3.

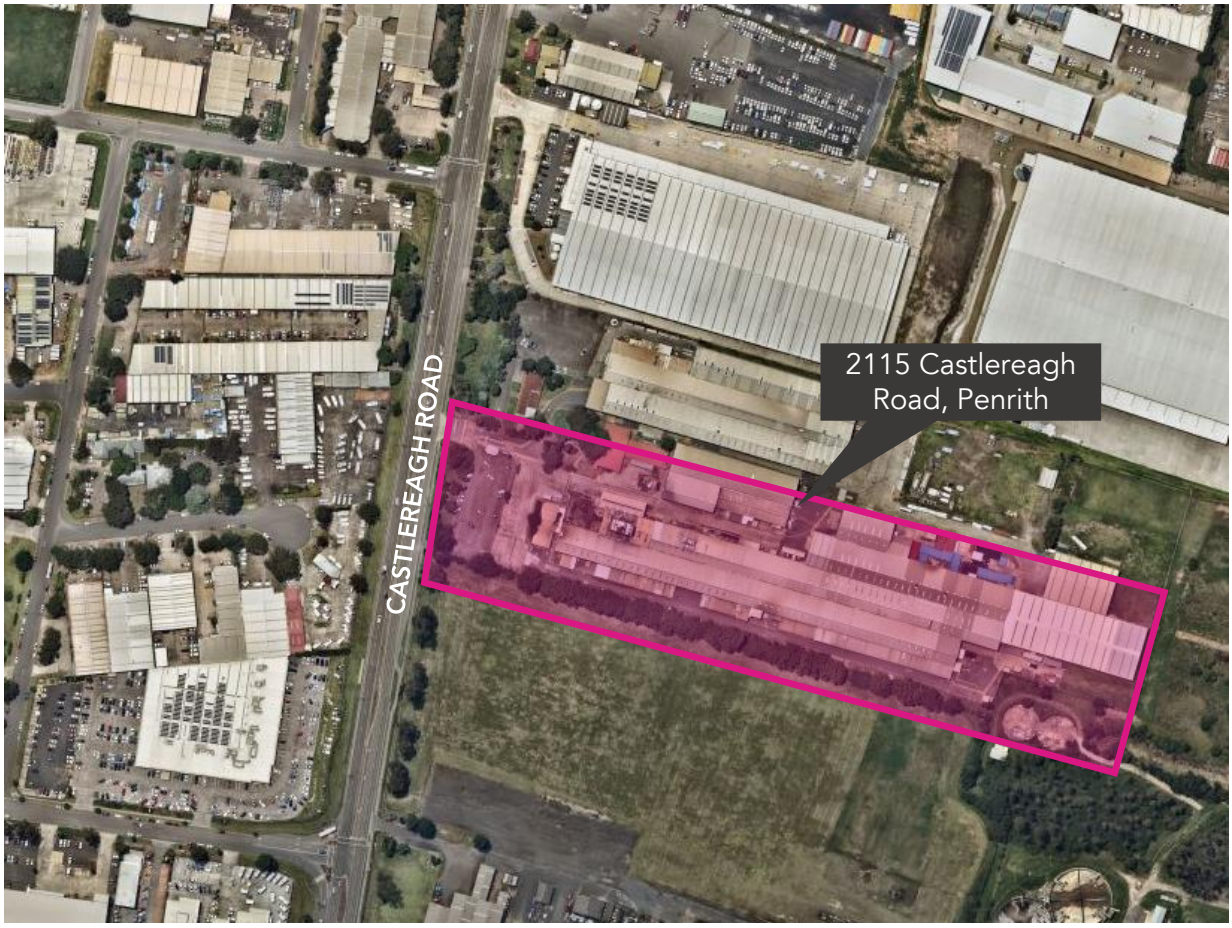

Figure 3: Aerial View of the Subject Site & Surrounds (Source: Nearmap)

2.2 Surrounding Land Use

The site lies within a General Industrial (IN1) zone and is surrounded by the following key features:

- Environmental Management (E3)
- Light Industrial (IN2)
- Infrastructure (SP2)
- Public Recreation (RE1)
- Local Centre (B2)

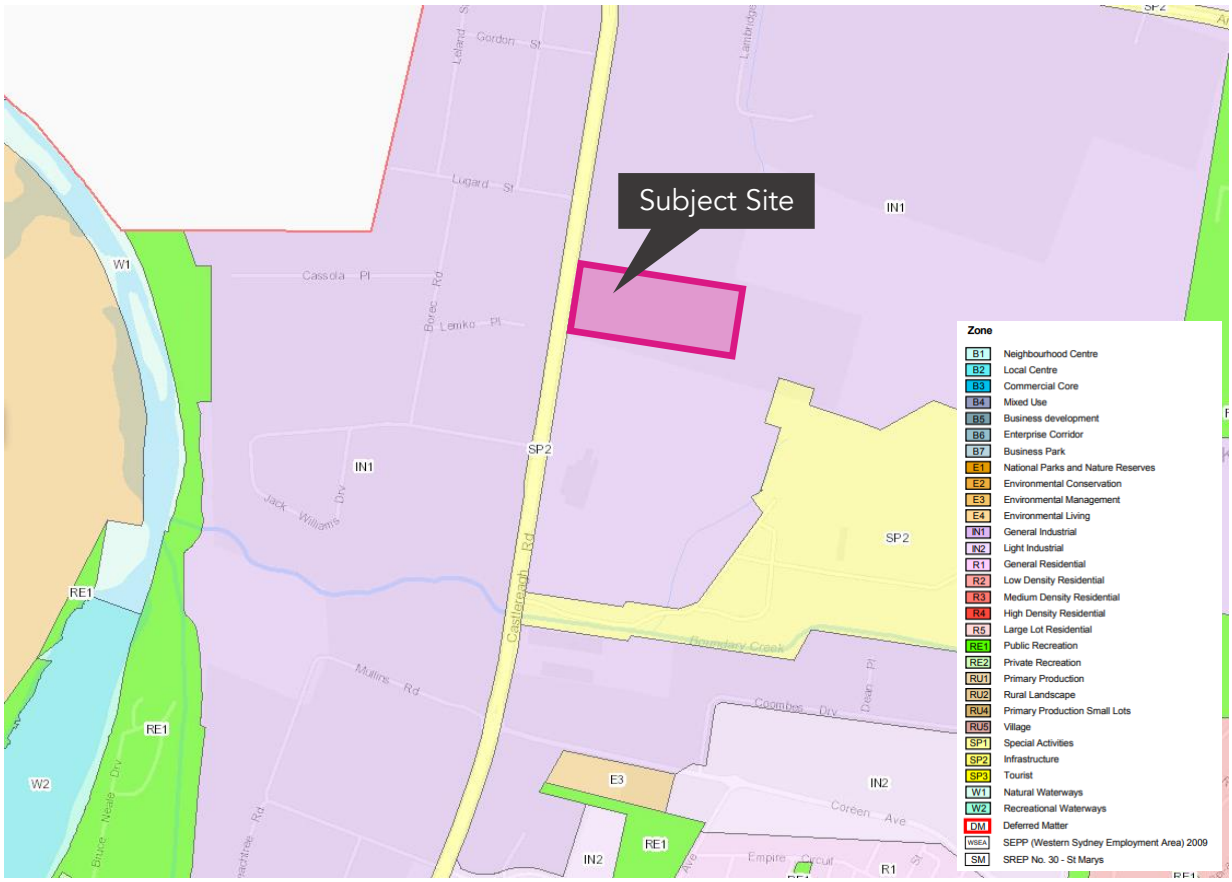

Figure 4: Local Land Use Map (Source: NSW Planning Viewer)

3 Development Proposal

3.1 Proposed Site

The proposal is to upgrade the former Crane Enfield Metals in Penrith to provide a new industrial precinct that will include:

- New warehouse and manufacturing space with ancillary office space
- A canteen
- Parents room
- A location for click & collect
- Three multi-storey car parks
- At-grade truck parking
- Truck wash area
- Two site accesses off Castlereagh Road

The layout of the proposed development is provided in Figure 5.

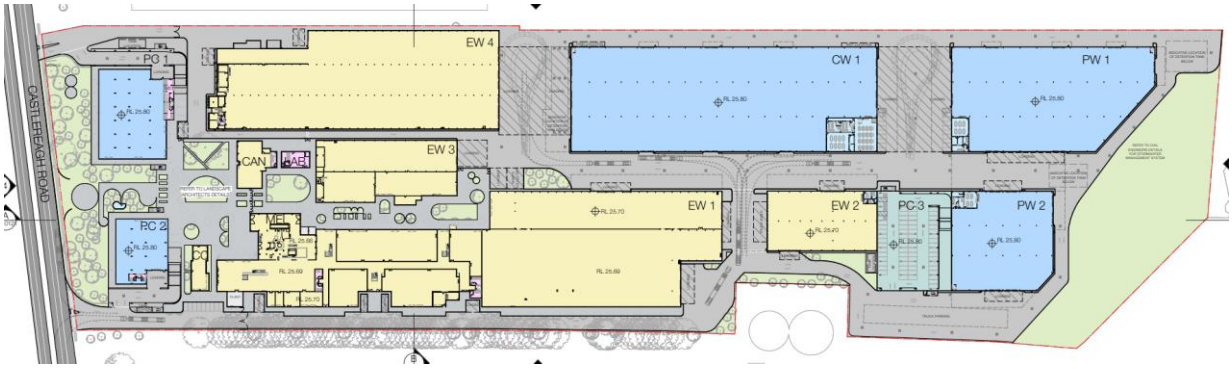

Figure 5: Proposed Site Layout

3.2 Site Access

Due to the size and geometry of the site, there is merit in providing two accesses off Castlereagh Road to service this new development. Justification for a two access arrangement is provided in the following sections.

3.2.1 Existing Site Access Arrangement

It should be noted that the site, as it currently stands, has two crossovers, one two-way access in the centre of the site frontage along Castlereagh Road and one egress point at the southern side of the frontage. With the significant redevelopment proposed at this lot, it is anticipated that the site will generate significantly more vehicular trips and it would be reasonable to expect the site to increase the capacity at the accesses. Maintaining two accesses will improve the intersection performance of the site access and reduce congestion at the site access.

3.2.2 Fire Appliance Access

The NSW Fire and Rescue, *Fire Safety Guideline, Access for fire brigade vehicles and firefighters*, Version 05 Issued 4 October 2019 states in section 7, "During an emergency incident, the fire appliance will be positioned i.e. parked in the most tactically advantageous position."

The additional northern access is required for this positioning of fire appliances and for access to the new PC1 building. The existing roads around the existing warehouse and blocks (EW3 and EW4) are too narrow and aren't designed to accommodate fire appliance access.

3.2.3 Maximising Green Space and Improve Traffic Flow

A second access allows the site to maximise the internal green space by reducing the number of internal roads. A singular access will require extensive removal of the existing trees to accommodate access to PC1.

The second access also allows extra capacity to the egressing vehicles and improve the overall vehicular movement within the site.

A second access allows the site to maximise the internal green space by reducing the number of new internal roads along the frontage. It is important to maintain a green frontage to the site to keep the existing green look. Furthermore, the second access also allows extra capacity to the ingress and egress of vehicles which improves the overall vehicular movement from and to Castlereagh Road.

It is observed that, with one access, the development will likely meet the traffic signal warrants at the site access. To avoid the need of excessive traffic signals along Castlereagh Road, two accesses will improve the delays experienced by the development without having to provide another traffic signal within 200m of Castlereagh Road / Jack Williams Drive intersection.

4 Existing Conditions

4.1 Road Hierarchy

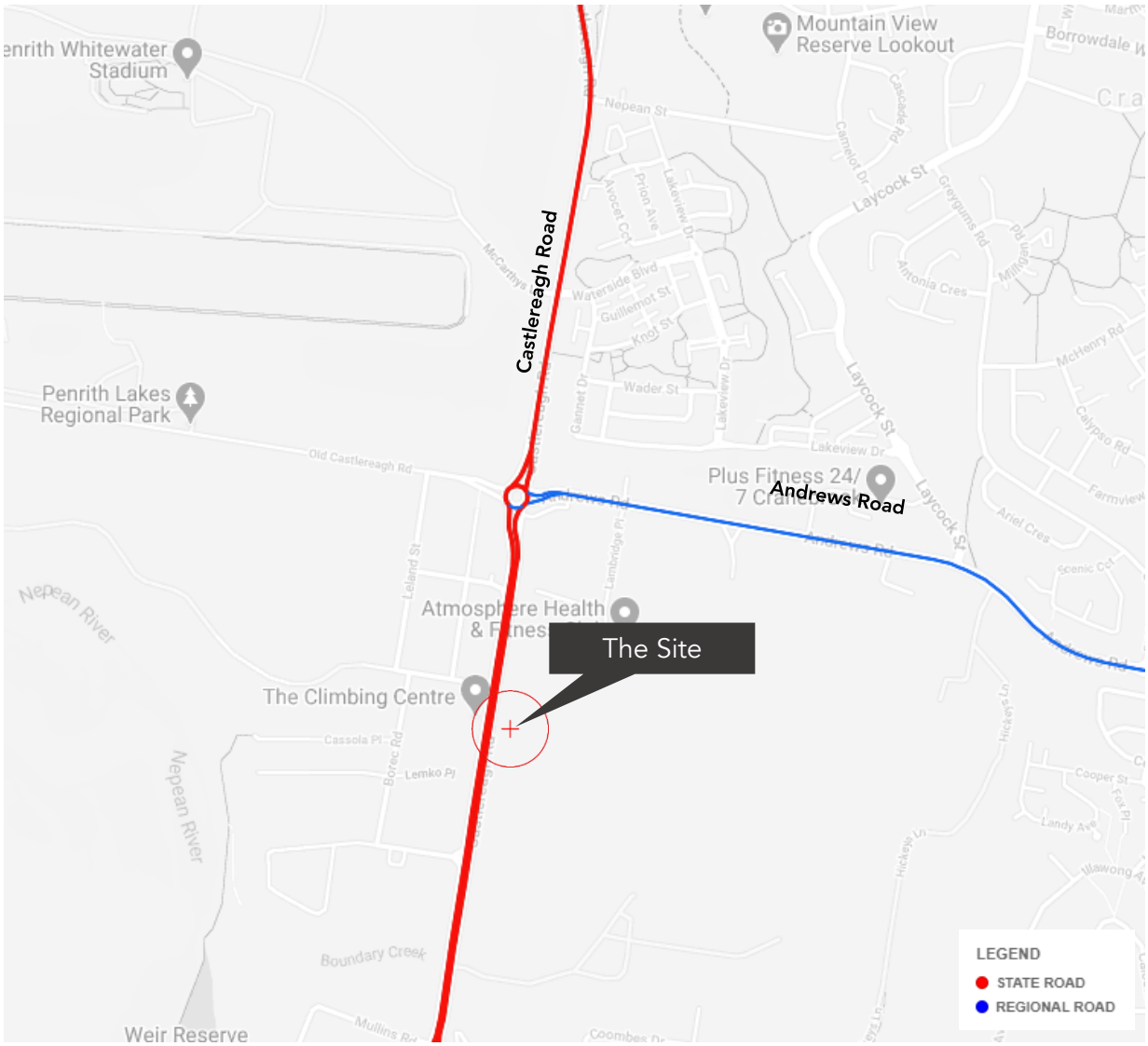

Figure 6: Road Hierarchy (Source: RMS Road Hierarchy Review)

The NSW administrative road hierarchy comprises the following road classifications:

- State Roads – Under the care and maintenance of Roads and Maritime Services
- Regional Roads – Under the care and maintenance of Council partially funded by the State
- Local Roads – Under the care and maintenance of Council

4.1.1 Existing Road Network

Table 1: Existing Road Network – Castlereagh Road

Castlereagh Road	
Road Classification	State Road
Alignment	North - South
Number of Lanes	2 lanes in each direction
Carriageway Type	Divided
Carriageway Width	23 metres
Speed Limit	60 kph
School Zone	No
Parking Controls	No Stopping
Forms Site Frontage	Yes

Figure 7: Castlereagh Road Northbound

Table 2: Existing Road Network – Andrews Road

Andrews Road	
Road Classification	Regional
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Divided
Carriageway Width	13 metres
Speed Limit	70 kph
School Zone	No
Parking Controls	No Stopping
Forms Site Frontage	No

Figure 8: Andrews Road Westbound

4.2 Public Transport

The locality has been assessed in the context of available forms of public transport that may be utilised by prospective staff and patrons. When defining accessibility, reference is made to the NSW Planning Guidelines for Walking and Cycling (2004) where a distance of 400-800m is recommended as a comfortable walkable catchment to access public transport and local amenities. The document also suggests a distance of 1500m as a suitable catchment for cycling.

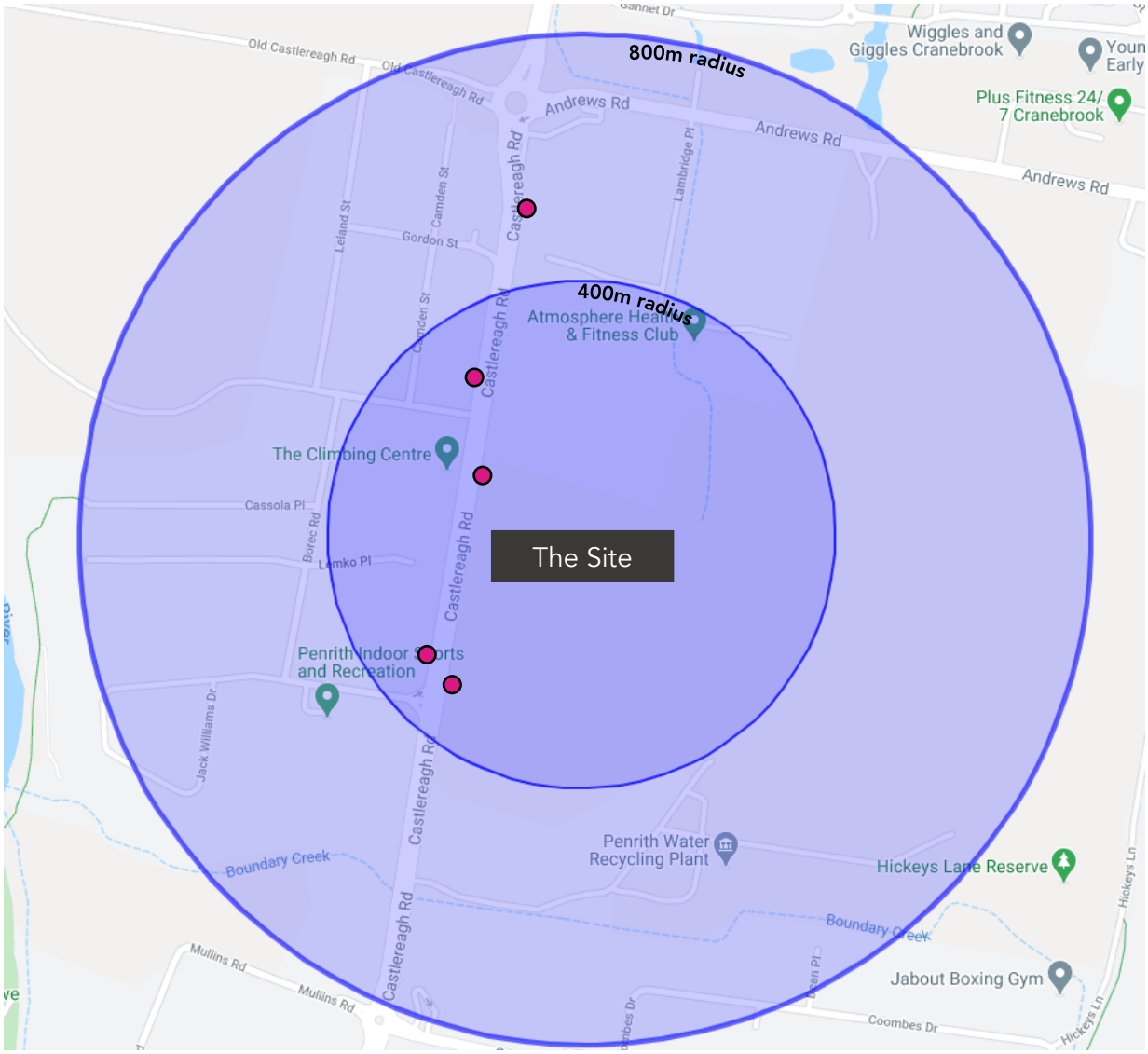

Figure 9: Public transport accessibility (bus stops in pink)

4.2.1 Bus Services

The site is provided with bus stops within a comfortable walking distance. A summary of the available bus routes is presented in Table 3.

Table 3: Bus Route Summary

Bus Route	Coverage (to and from)	Service Frequency
673	**Penrith – Windsor via Cranebrook**	**Mon-Fri: 5 services available from 8am to 6pm** **Sat: 2 services available from 10am to 4pm** **Sun & Public Holidays: No services available**
783	**Jordan Springs - Penrith**	**Mon-Fri: Every 30 min during peak, 1 hr during off peak** **Sat: Every 1hr** **Sun & Public Holidays: Every 1hr**
784	**Penrith – Cranebrook (Loop Service)**	**Mon-Fri: 4 services available from 6:30am to 8:30am & 3pm to 5:30pm** **Sat: No services available** **Sun & Public Holidays: No services available**

4.3 Active Transport

The site is provided with limited cycling infrastructure towards the site as illustrated in Figure 10. A substantial portion of the infrastructure is classified as "Low Difficulty" which makes cycling a viable option for all cyclists. The site is also well served with sufficient pedestrian amenities provided in the vicinity of the site. However, due to the locality of the site, it is envisaged that walking and cycling would be a viable option for local residents with those travelling from greater Sydney region likely to utilise both public and active transport to travel to and from the site.

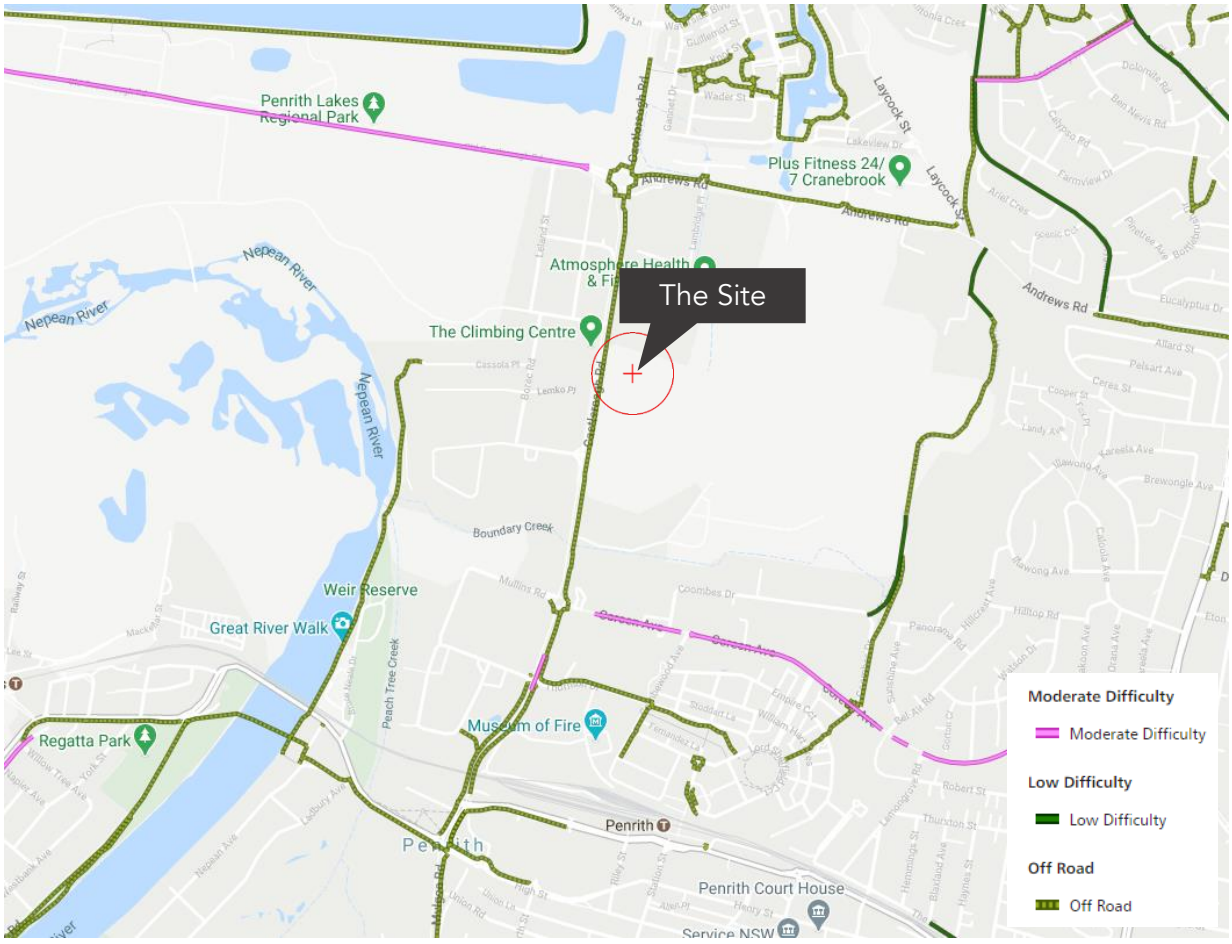

Figure 10: Cycling Network (Source: RMS Cycleway Finder)

5 Future Road Network Upgrades

Transport for NSW (TfNSW) is in the process of upgrading the Mulgoa Road / Castlereagh Road corridor between Glenmore Parkway, Glenmore Park and Andrews Road, Penrith. The upgrade involves the construction of an additional traffic lane in each direction to improve safety, congestion and reduce travel times to accommodate the current and anticipated future traffic demands within the Penrith region.

The proposed intersection and roadway upgrades in the vicinity of the site are shown in Figure 11 and Figure 12.

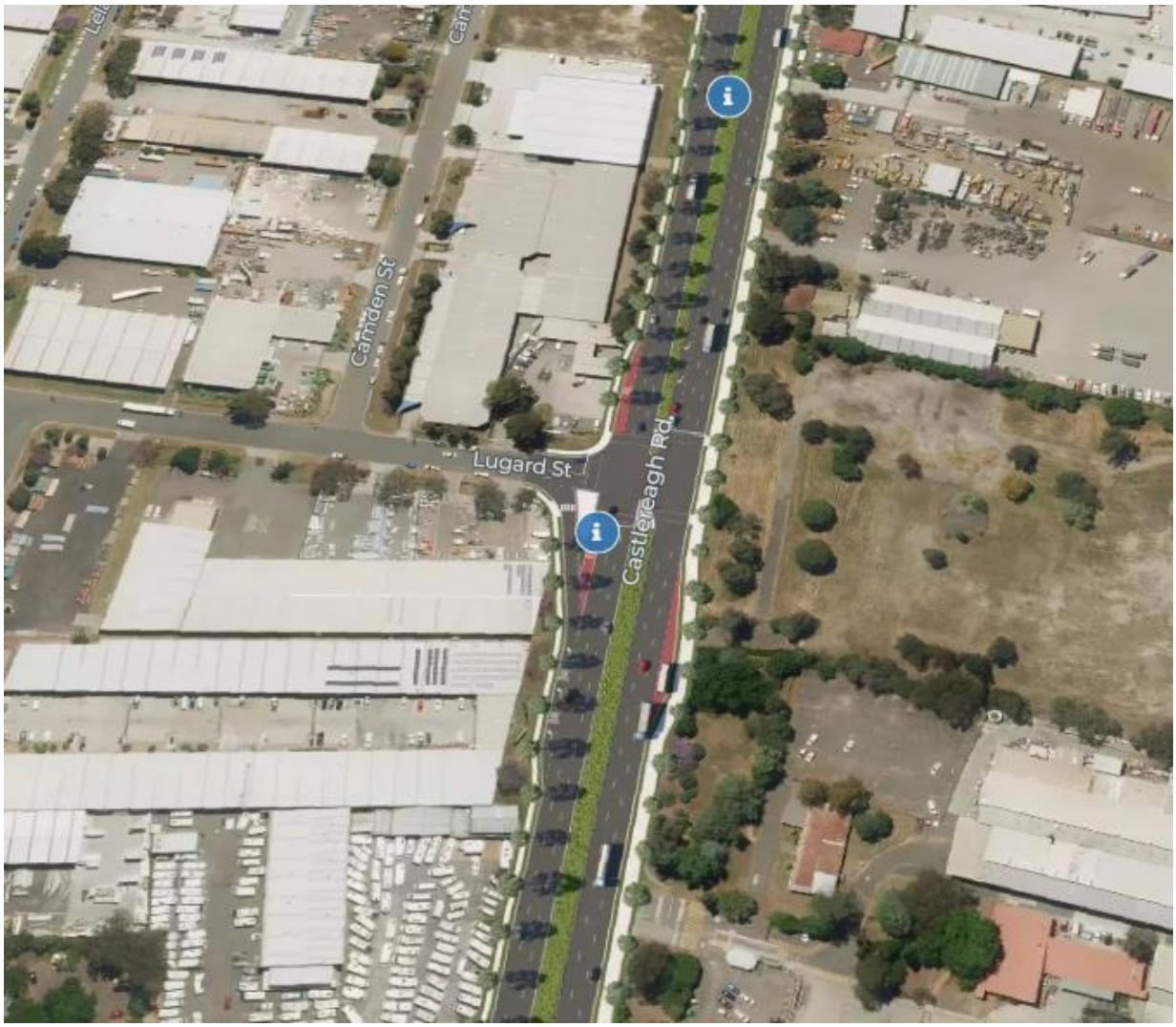

Figure 11: Castlereagh Road / Lugard Street Intersection Upgrade

Figure 12: Castlereagh Road / Jack Williams Drive Intersection Upgrade

It is noted that, though there are plans to upgrade Castlereagh Road, the current works being undertaken only include Mulgoa Road. It is anticipated that Castlereagh Road will eventually be upgraded, however, detailed designs for the road upgrades have not yet been made public at this time. For the purposes of this report, it is assumed that Castlereagh Road will remain two-lane in each direction at least until the proposal is completed and operational.

6 Access and Car Park Assessment

The following section presents an assessment of the proposed development with reference to the requirements of AS2890.1:2004 (Off-street Car Parking), AS2890.2:2018 (Off-street Commercial Vehicle Facilities), AS2890.3:2015 (Bicycle Parking) and AS2890.6:2009 (Off-street Parking for People with Disabilities). This section is to be read in conjunction with the following architectural plans provided by SJB Architects (Attachment 2) and the car park assessment undertaken by ptc. (Attachment 3).

- Overall G-L1 (Drawing No. DA-0111, Revision 8, Dated 26 February 2021)
- Proposed Carpark 1 (Drawing No. DA-0201, Revision 8, Dated 1 March 2021)
- Proposed Carpark 2 (Drawing No. DA-0202, Revision 8, Dated 1 March 2021)
- PW2 & PC3 – Ground (Drawing No. DA-0211, Revision 8, Dated 1 March 2021)
- PW2 & PC3 – Level 1 (Drawing No. DA-0212, Revision 8, Dated 1 March 2021)
- PW2 & PC3 – Level 2-3 (Drawing No. DA-0213, Revision 8, Dated 1 March 2021)
- PW2 & PC3 – Level 4 (Drawing No. DA-0214, Revision 8, Dated 1 March 2021)

6.1 Vehicular Access

The southern access driveway has been assessed against the requirements of AS2890.2. It is noted that the largest anticipated vehicle accessing the subject site from the southern access driveway is a B-Double.

The northern access driveway has been assessed against the requirement of AS2890.1 and it is deemed compliant. It is noted that the largest anticipated vehicle accessing the subject site from the northern access driveway is a fire appliance. The NSW Fire and Rescue, *Fire Safety Guideline, Access for fire brigade vehicles and firefighters*, Version 05 Issued 4 October 2019 states in section 7.1.7, "The design vehicle from AS2890.2:2018 Parking facilities Off-street commercial vehicle facilities should be used for swept path analysis, with 'medium rigid vehicle' used for general fire appliance and 'heavy rigid vehicle' for specialist fire appliance." The northern access has been assessed using the swept path of a HRV.

The proposed access ramps within the proposed car parks have been assessed in accordance with AS2890.1:2004 in relation to its width and relevant grades. The ramp widths have been measured to be a minimum 6.9m which exceeds the minimum requirement stipulated in AS2890.1. The ramps are also provided with 300mm wide kerb extensions on either side as per AS2890.1. A vertical clearance assessment has been undertaken using a typical B99 vehicle which indicates that no underbody scraping or overhead clearance issues are present. The proposed access ramp is to maintain a 2.2m height clearance (additional clearance may be required at crests/sags along the ramp subject to further assessment in the detailed design stage).

The access ramp grades have also been assessed in accordance with AS2890.l1. The ramps are to be maximum 1 in 5 grade with 1 in 8 transition grades which extends a minimum of 2.0m to be provided on either side of the maximum grade. The maximum grade has been measured to be no greater than 20m in length which meets the requirement stipulated in AS2890.1.

A swept path assessment has been undertaken using a typical B99 vehicle which indicates that the proposed access ramps are able to accommodate two-way traffic flow.

6.2 Car Park Arrangement

6.2.1 Typical Requirements

The car parking requirements have been assessed against the requirements of AS2890.1:2004 with reference to Class 3 (Short-term city and town centre parking, parking stations, hospital and medical centres).

Class 3 (Short-term City Parking) facilities:

- Car Space Dimension 2.6m x 5.4m
- Aisle Width 5.8m (double-sided aisles)

All parking spaces have been individually assessed and found to be compliant with the minimum requirements of AS2890.1. All spaces are to meet the clearance requirements (door opening, entry flanges, column locations) of the parking space envelope requirements provided in Figure 5.2 of AS2890.1.

6.2.2 Accessible Parking

All accessible parking spaces have been individually assessed against the requirements of AS2890.6. The parking spaces have been designed based on the following dimensions:

- Accessible Space Dimensions 2.4m x 5.4m
- Adjacent Shared Bay 2.4m x 5.4m

All accessible spaces and shared bays have been individually assessed and found to be compliant with the minimum requirements of AS2890.6, with relevant pavement markings and bollards. A minimum height clearance of 2.5m is to be maintained above all accessible and shared bays with 2.2m height clearance to be maintained along the path of travel.

6.2.3 Headroom Clearance

The following are the requirements in relation to minimum headroom clearances stipulated in the Australian Standards:

- Minimum 2.2m above all general spaces and path of travel;
- Minimum 2.5m directly above all accessible spaces and adjacent shared bays.

The proposed car parks are to provide the minimum height clearances as per the requirements stipulated in the relevant Australian Standards.

6.2.4 Bicycle Parking

Approved bicycle parking devices (BPD) shall be installed as per the following requirements of AS2890.3:2015:

Horizontal Bicycle Parking

- Space Dimension 1800mm x 500mm
- Access Aisle 1500mm

7 Parking Assessment

7.1 Planning Policy

The proposed development is subject to the parking provision rates stipulated in the following planning documents:

- Penrith Development Control Plan 2014 (DCP)
- Building Code of Australia 2019 (BCA)
- NSW Planning Guidelines for Walking and Cycling (2004)

7.2 Proposed Parking Provision

7.2.1 Car Parking Provision

The car parking requirement for the proposed development has been calculated with reference to the parking rate stipulated in the Council DCP for a typical industrial development. The proposed car parking provision and the requirements are summarised in Table 4.

Table 4: Car Parking Provision

Land Use	GFA (m^2)	Parking Rate	Parking Provision Requirement	Proposed Parking Provision
Industrial	61,841	1 space per 75m^2 GFA	825 (824.5)	872
		TOTAL	825	872

7.2.2 Accessible Parking Provision

The Council DCP refers to the BCA in relation to accessible parking rate for various types of developments. Therefore, reference has been made to the BCA to calculate the accessible parking requirement for the proposed development. The proposed accessible parking provision and the requirements are summarised in Table 5.

Table 5: Accessible Parking Provision

Building Class	Car Parking Space	Parking Rate	Parking Provision Requirement	Proposed Parking Provision
Class 7	872	1 space per 100 car parking space	9 (8.72)	22
		TOTAL	9	22

7.2.3 Bicycle Parking Provision

The Council DCP refers to the NSW Planning Guidelines for Walking and Cycling to obtain the bicycle parking rates. Therefore, reference has been made to the planning document to calculate the minimum bicycle parking requirement for the proposed development. Since the tenancies aren't filled, it has been

assumed that 500 staff will work in the precinct. The proposed bicycle parking provision and the requirements are summarised in Table 6.

Table 6: Bicycle Parking Provision

Land Use	Component	No. Staff	Parking Rate	Parking Provision Requirement	Proposed Parking Provision
Industrial	Staff	500	3-5% Staff	15-25	-
	Customer	500	5-10% Staff	25-50	-
			TOTAL	40-75	80

8 Traffic Impact Assessment

The potential traffic generation of the proposed development has been estimated with reference to the following:

- RMS Guide to Traffic Generating Developments 2002 (RMS Guide)
- RMS Technical Direction: Guide to Traffic Generating Developments Updated Traffic Surveys (TDT2013/04a)

8.1 Existing Traffic Volumes

Intersection surveys were undertaken on Saturday 6th February 2021 & Tuesday 9th February 2020 at the following intersections between 7:00am-9:00am and 4:30pm-6:30pm at the following intersections:

- Castlereagh Road / Andrews Road / Old Castlereagh Road (roundabout)
- Castlereagh Road / Coreen Avenue / Mullins Road (roundabout)

The locations of the intersections are shown in Figure 13.

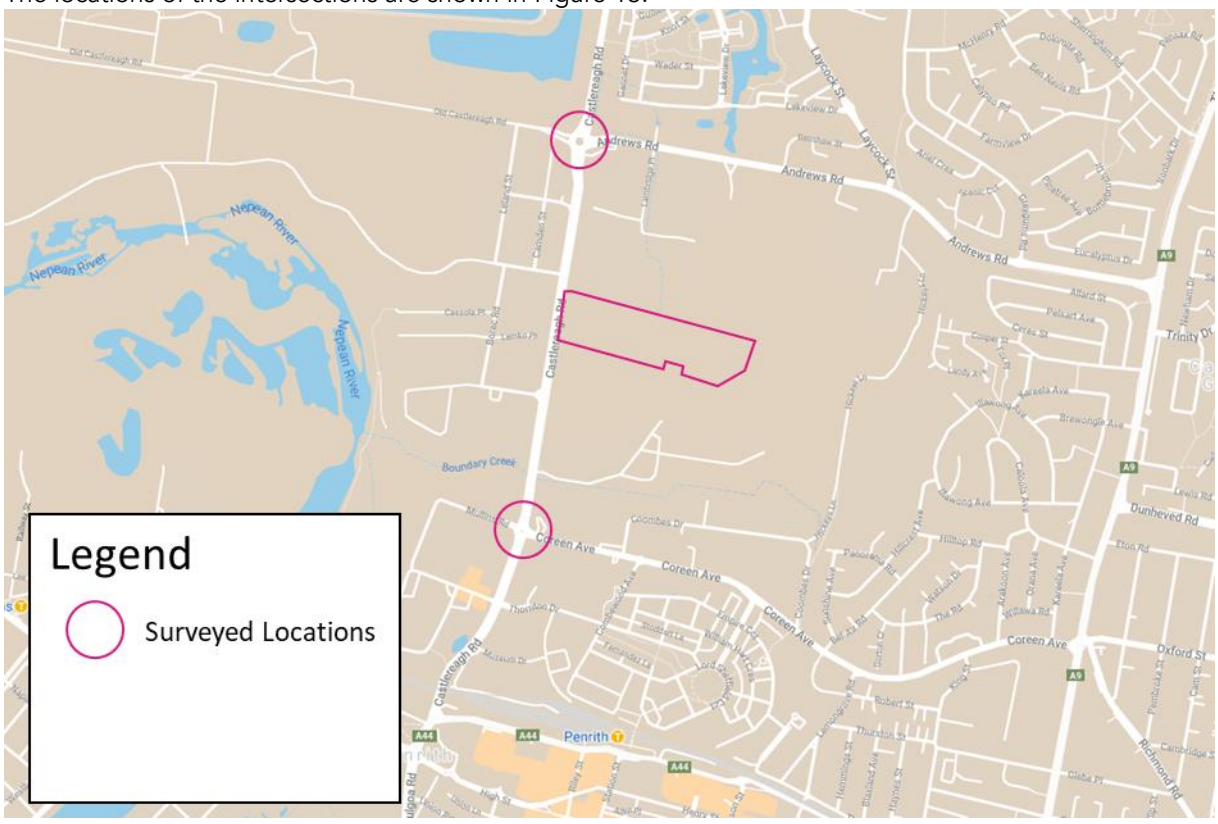

Figure 13: Locations of Intersection Survey

The morning and afternoon peak hours for the local road network have been determined as follows:

- Morning Peak Period: 7:45am – 8:45am
- Afternoon Peak Period: 4:45pm – 5:45pm

8.2 Development Traffic Generation

8.2.1 Light Vehicles Traffic Generation

The proposed development consists of industrial land use primarily used for manufacturing. The traffic generation rates for each components of the development were extracted from the RMS Guide and Technical Direction guidelines.

The following rates have been extracted from the RMS guideline for Business parks and industrial estates:

Morning Peak: 0.52 trips per 100m^2 GFA

Evening Peak: 0.56 trips per 100m^2 GFA

For the purposes of this report, we are assuming the existing site is not generating any vehicular trips to ensure a conservative analysis. The rates and development trip generations are summarised in Table 7.

Table 7: Development Traffic Generation

Land Use	Peak Hour	GFA (m^2)	Trip Generation Rate	Generated Trips / Hour
Industrial	AM	61,841	0.52 trips / 100m^2 GFA	322 (321.57)
	PM		0.56 trips / 100m^2 GFA	347 (346.31)

The above calculations indicate that the proposed development will likely generate a total of 322 trips and 347 trips in the morning and evening peak periods respectively.

8.2.2 Heavy Vehicle Traffic Generation

ptc. has been informed that the former site expects 3 semi-trailers per day. This equates to 6 semi-trailer trips to account for the inbound and outbound movements. It has been assumed that each warehouse will generate 6 semi-trailer trips per day, hence, the proposed development will generate 42 semi-trailer trips per day.

8.3 Development Traffic Distribution

8.3.1 Inbound/Outbound Distribution

The development proposal consists of Industrial space which is a traffic generating land use. Therefore, it is assumed that in the AM peak, the majority will arrive at the site and in the PM peak, the majority will leave the site. To account for this behaviour, it is assumed that the inbound/outbound split for light vehicles during the AM peak period will be 80% inbound, 20% outbound split for light vehicles and 20% inbound and 80% outbound for light vehicles in the PM peak.

Heavy vehicle trips are generally spread evenly throughout the day, hence, the split for heavy vehicles during the AM and PM peak periods will be 50% inbound, 50% outbound.

8.3.2 Directional Distribution

The Australian Bureau of Statistics (ABS) 2016 Census – Method of Travel to Work data was used to determine the directional split of the development traffic generation. The directional split was established by assessing the quickest routes for all NSW regions to Penrith. The inbound and outbound directional split for the light vehicles generated by the development proposal is shown in Figure 14 and Figure 15 respectively.

Heavy vehicles generate by the development are assumed to travel along the major arterial roads, and are assumed the spread evenly throughout the network. The heavy vehicle directional distribution is assumed to be 50% north along Castlereagh Road and 50% south along Castlereagh Road.

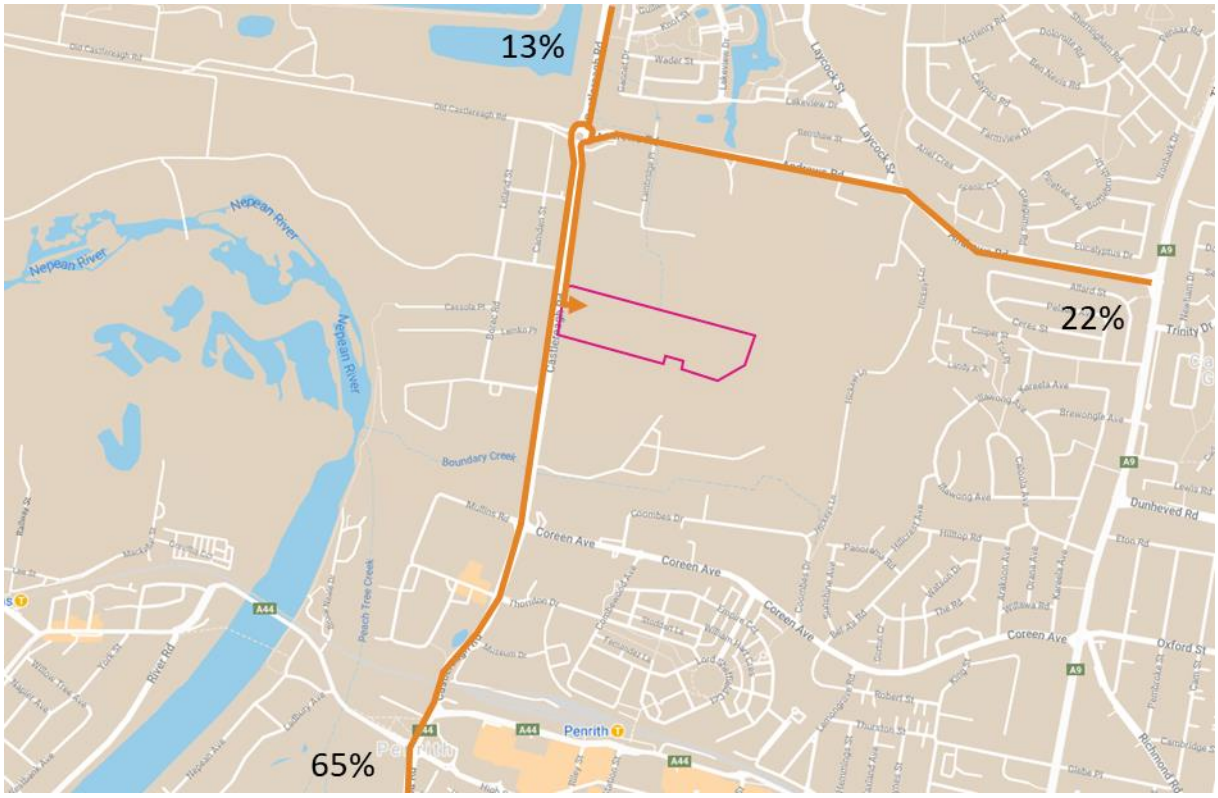

Figure 14: Inbound Directional Split (Light vehicles)

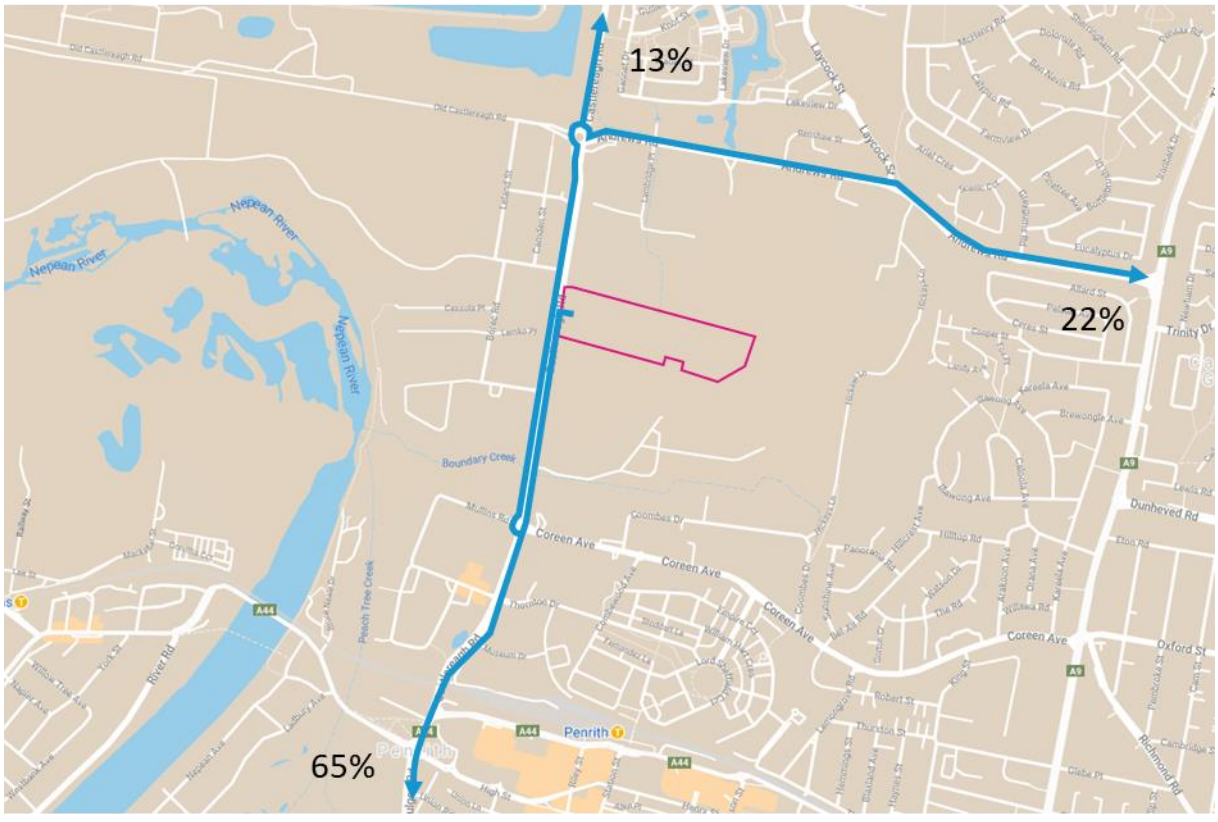

Figure 15: Outbound Directional Split (Light vehicles)

8.4 Modelling Scenarios

The following scenarios have been assessed in this report:

- Existing – The existing road network with the existing traffic volumes as observed in the traffic survey.
- Post Development – The existing road network with the addition of the traffic generated by the proposed development.

Traffic modelling of future scenarios haven't been undertaken due to the upgrade details at Castlereagh Road being unavailable and the existing land use being unchanged from the LEP. Therefore, it is reasonably assumed that the changes made to this site are incorporated/accommodated in the design for the upgrade of Castlereagh Road.

8.5 SIDRA Analysis

A volume analysis was performed using the SIDRA Intersection 9 software, a micro-analytical tool for individual intersection and whole-network modelling. The models are based on the collected traffic survey data. SIDRA provides a number of performance indicators outlined below:

- Degree of Saturation – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation. (e.g. 0.8=80% saturation)
- Average Delay – The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- 95% Queue Lengths (Q95) – is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.
- Level of Service (LoS) – This is a categorization of average delay, intended for simple reference. It is a good indicator of overall performance for individual intersections. The RMS adopts the following bands:

Table 8: Intersection Performance - Levels of Service

Level of Service	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

The summary of the existing and post development performance of the local road network is summarised in Table 9. A detailed breakdown of the SIDRA movement summaries is provided in Attachment 1.

Table 9: Intersection Performance

Intersection	Time	Period	LoS	DoS (v/c)	Average Delay (s)	95% Queue Length (m)
Castlereagh Road / Andrews Road / Old Castlereagh Road*	AM Peak	Existing	B	0.705	18.8	54.6
		Post-Development	B	0.924	27.1	104.2
	PM Peak	Existing	B	0.715	21.8	55.5
		Post-Development	C	0.775	30.1	72.2
Castlereagh Road / Corren Avenue / Mullins Road*	AM Peak	Existing	B	0.876	23.9	114.8
		Post-Development	B	0.919	26.4	148.6
	PM Peak	Existing	B	0.898	24.2	122.8
		Post-Development	D	0.998	50.4	274.6

*For priority and roundabout intersections, the average delay of the worst movement is used to determine the LoS

8.5.1 Castlereagh Road / Andrew Road / Old Castlereagh Road

The Castlereagh Road / Andrew Road / Old Castlereagh Road intersection currently operates at LoS B in both the AM and PM peak periods. The post-development scenario shows the roundabout deteriorates to a LoS C; however, it is noted that a LoS C is generally acceptable for an intersection performance during a peak period.

8.5.2 Castlereagh Road / Corren Avenue / Mullins Road

The Castlereagh Road / Corren Avenue / Mullins Road intersection currently operates at LoS B in both the AM and PM peak periods. It is also observed that the DoS is approaching 0.9 in both existing peak periods which suggests that the intersection is already nearing capacity. It should be noted that a DoS over 0.8 generally suggests that any additional traffic may significantly impact the intersection performance.

The post- development scenario shows that the intersection will operate at a LoS D with the proposed development. Generally, a LoS D indicates that an intersection experiences fairly long delays on at least one of the movements and will typically require some mitigation measures. However, as mentioned in Section 5, Castlereagh Road and the intersections south and including the intersection of Castlereagh Road and Andrews Road are planned for upgrades which will improve the intersection performance at this intersection and hence, no additional works will be required.

8.6 Traffic Signals Warrant Assessment

Since the development generates a significant number of trips, a traffic signal warrant assessment was undertaken to determine whether the site access might need to be signalised. According to Section 2 – Warrants of the Traffic Signal Design, a signalised intersection may be considered if one of the following warrants is met.

Table 10: Traffic Signal Warrant Assessment - Southern Site Access

Warrant		
Traffic Demand		
For each of four one-hour periods of an average day:		
(i)	The major road flow exceeds 600 vehicles/hour in each direction; and	✓
(ii)	The minor road flow exceeds 200 vehicles / hour in one direction.	×
Continuous Traffic		
For each of four one-hour periods of an average day:		
(i)	The major road flow exceeds 900 vehicles/hour in each direction; and	✓
(ii)	The minor road flow exceeds 100 vehicles/hour in one direction; and	✓
(iii)	The speed of the traffic on the major road or limited sight distance from the minor road causes undue delay or hazard to the minor road vehicles; and	×
(iv)	There is no other nearby traffic signal site easily accessible to the minor road vehicles.	✓
Pedestrian safety		
For each of four one-hour periods of an average day:		
(i)	The pedestrian flow crossing the major road exceeds 150 persons/hour; and	×
(ii)	The major road flow exceeds 600 vehicles/hour in each direction or, where there is a central median of at least 1.2m wide, 1000 vehicles/hour in each direction.	✓
Pedestrian Safety – high speed road		
For each of four one-hour periods of an average day:		
(i)	The pedestrian flow crossing the major road exceeds 150 persons/hour; and	×

(ii)	The major road flow exceeds 450 vehicles/hour in each direction or, where there is a central median of at least 1.2m wide, 750 vehicles/hour in each direction; and	✓
(iii)	The 85th percentile speed on the major road exceeds 75km /h.	×
Crashes		
(i)	The intersection has been the site of an average of three or more reported tow-away or casualty traffic accidents per year over a three-year period,	×
(ii)	The traffic flows are at least 80% of the appropriate flow warrants.	×

The traffic surveys show that Castlereagh Road currently exceeds 900 vehicles per hour over four one-hour periods of an average day. Furthermore, it is anticipated that the development will generate a total of 258 incoming trips in the AM peak period and 277 outgoing vehicle trips in the PM peak period. With approximately 35% of car spaces accessed via the northern access and 65% of car spaces accessed via the southern access, the peak hour trips in one direction does not exceed 200 vehicles/hour, hence, the development does not meet the requirements stipulated in Section 2 – Warrants of the Traffic Signal Design.

9 Conclusion

ptc. has been engaged by SJB Architects on behalf of Aon Ari Property to prepare a TIA to accompany a DA to Penrith City Council for the redevelopment of the former Crane Enfield Metals at 2115 Castlereagh Road, Penrith.

The findings of this report can be summarised as follows:

- The development consists of a number of different buildings primarily to provide warehousing and manufacturing space. The site is located on a lot which fronts Castlereagh Road which is classified as a State Road.
- The development proposed two access driveways on Castlereagh Road for the following reasons:
    - The existing site has two crossovers from Castlereagh Road and the proposed development is expected to significantly increase the traffic generated by the site. Furthermore, it will improve performance of each of the driveways and minimise congestion
    - Both accesses are required to permit fire appliance access to all buildings
    - To maximise green space and retain existing trees
- The DCP stipulates that an industrial development should provide 1 space per 75m² GFA. Accordingly, the whole development must provide 825 car parking spaces to accommodate a development that has a GFA of 61,841m². The development proposes to provide 786 car parking spaces located within three multistorey car parks and a small number of them scattered at-grade around the site which meets the requirements found in the DCP.
- The car park layout and access arrangement comply with the Australian Standards.
- The development is anticipated to generate approximately 322 light vehicular trips in the AM peak and 347 vehicular trips in the PM peak.
- Heavy vehicle trips were calculated based on the trips generated by the existing tenant. The heavy vehicle trip generation of the site is anticipated to be approximately 8 vehicle trips in both the AM and PM peak hours.
- SIDRA analysis has been undertaken at Castlereagh Road / Andrew Road/ Old Castlereagh Road intersection and Castlereagh Road / Coreen Avenue / Mullins Road intersection and it is observed that both the intersections perform at LoS B in both the AM and PM peak hours. It is noted that both intersections deteriorate slightly with the inclusion of development traffic, however, it is noted that the impact on the intersections will be ameliorated with the completion of the Castlereagh Road upgrades.
- Due to the significant traffic generation of the site, a traffic signal warrant assessment was undertaken to determine whether traffic signals might be required at the southern site access. It was observed that the development does not meet the traffic signal warrants.

In light of the above, the proposed development is endorsed in context of parking and traffic.

Attachment 1SIDRA Movement Summaries

MOVEMENT SUMMARY

Site: 103 [4. Castlereagh Rd / Coreen Ave / Mullins Rd - PM Development (Site Folder: Development PM)]

New Site
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Castlereagh Rd (S)														
1	L2	72	21	76	29.2	0.998	39.3	LOS C	37.8	274.6	1.00	1.97	3.33	36.8
2	T1	1350	34	1421	2.5	0.998	39.4	LOS C	37.8	274.6	1.00	1.98	3.36	40.4
3	R2	374	25	394	6.7	0.998	47.2	LOS D	34.3	249.9	1.00	1.99	3.41	36.0
3u	U	15	3	16	20.0	0.998	50.4	LOS D	34.3	249.9	1.00	1.99	3.41	36.4
Approach		1811	83	1906	4.6	0.998	41.1	LOS C	37.8	274.6	1.00	1.98	3.37	39.4
East: Coreen Ave (E)														
4	L2	241	8	254	3.3	0.634	12.5	LOS A	4.2	30.2	0.90	1.03	1.18	49.8
5	T1	63	1	66	1.6	0.634	11.7	LOS A	4.6	33.0	0.91	1.05	1.18	50.2
6	R2	314	8	331	2.5	0.634	16.6	LOS B	4.6	33.0	0.92	1.06	1.18	51.2
6u	U	1	0	1	0.0	0.634	18.9	LOS B	4.6	33.0	0.92	1.06	1.18	50.5
Approach		619	17	652	2.7	0.634	14.5	LOS B	4.6	33.0	0.91	1.05	1.18	50.6
North: Castlereagh Rd (N)														
7	L2	289	5	304	1.7	0.805	10.6	LOS A	10.9	78.0	0.95	1.05	1.30	52.6
8	T1	987	33	1039	3.3	0.805	11.1	LOS A	10.9	78.0	0.95	1.08	1.32	53.2
9	R2	64	4	67	6.3	0.805	17.4	LOS B	10.4	74.7	0.95	1.11	1.35	52.4
9u	U	112	2	118	1.8	0.805	19.6	LOS B	10.4	74.7	0.95	1.11	1.35	54.5
Approach		1452	44	1528	3.0	0.805	12.0	LOS A	10.9	78.0	0.95	1.07	1.32	53.2
West: Mullins Rd (W)														
10	L2	80	2	84	2.5	0.345	15.3	LOS B	2.2	15.8	0.98	1.01	1.04	50.0
11	T1	62	0	65	0.0	0.345	17.6	LOS B	2.2	15.8	0.94	1.00	1.03	47.0
12	R2	34	4	36	11.8	0.345	26.2	LOS B	1.8	13.5	0.92	0.99	1.02	45.1
12u	U	1	0	1	0.0	0.345	27.4	LOS B	1.8	13.5	0.92	0.99	1.02	46.3
Approach		177	6	186	3.4	0.345	18.2	LOS B	2.2	15.8	0.95	1.00	1.04	48.1
All Vehicles		4059	150	4273	3.7	0.998	25.6	LOS B	37.8	274.6	0.97	1.47	2.20	45.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [1. Castlereagh Rd / Andrews Rd / Old Castlereagh Rd - AM Existing (Site Folder: Existing AM)]

Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Castlereagh Rd (S)														
1	L2	11	1	12	9.1	0.421	4.1	LOS A	2.9	21.3	0.51	0.35	0.51	55.6
2	T1	554	33	583	6.0	0.421	3.5	LOS A	2.9	21.3	0.51	0.37	0.51	57.6
3	R2	412	25	434	6.1	0.421	10.9	LOS A	2.8	20.5	0.53	0.66	0.53	54.8
3u	U	3	2	3	66.7	0.421	15.0	LOS B	2.8	20.5	0.53	0.66	0.53	55.5
Approach		980	61	1032	6.2	0.421	6.7	LOS A	2.9	21.3	0.52	0.50	0.52	56.3
East: Andrews Rd (E)														
4	L2	545	31	574	5.7	0.689	8.6	LOS A	5.8	42.6	0.92	1.06	1.21	53.8
5	T1	87	16	92	18.4	0.393	7.1	LOS A	2.1	17.6	0.80	0.88	0.89	53.4
6	R2	106	32	112	30.2	0.393	15.0	LOS B	2.1	17.6	0.80	0.88	0.89	53.7
6u	U	1	0	1	0.0	0.393	16.4	LOS B	2.1	17.6	0.80	0.88	0.89	56.6
Approach		739	79	778	10.7	0.689	9.3	LOS A	5.8	42.6	0.89	1.01	1.13	53.7
North: Castlereagh Rd (N)														
7	L2	145	24	153	16.6	0.705	8.2	LOS A	7.4	54.6	0.82	0.86	1.02	53.4
8	T1	1145	47	1205	4.1	0.705	7.7	LOS A	7.4	54.6	0.82	0.89	1.04	56.1
9	R2	27	6	28	22.2	0.705	16.0	LOS B	7.2	52.2	0.83	0.92	1.06	56.0
9u	U	1	0	1	0.0	0.705	17.8	LOS B	7.2	52.2	0.83	0.92	1.06	59.0
Approach		1318	77	1387	5.8	0.705	7.9	LOS A	7.4	54.6	0.82	0.89	1.04	55.8
West: Old Castlereagh Rd (W)														
10	L2	29	13	31	44.8	0.057	6.0	LOS A	0.2	2.3	0.64	0.66	0.64	54.2
11	T1	30	14	32	46.7	0.057	6.3	LOS A	0.2	2.3	0.64	0.70	0.64	55.1
12	R2	9	2	9	22.2	0.057	13.2	LOS A	0.2	2.1	0.65	0.72	0.65	55.5
12u	U	1	0	1	0.0	0.057	15.1	LOS B	0.2	2.1	0.65	0.72	0.65	57.9
Approach		69	29	73	42.0	0.057	7.2	LOS A	0.2	2.3	0.64	0.69	0.64	54.9
All Vehicles		3106	246	3269	7.9	0.705	7.9	LOS A	7.4	54.6	0.74	0.79	0.89	55.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [4. Castlereagh Rd / Coreen Ave / Mullins Rd - AM Existing (Site Folder: Existing AM)]

New Site
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Castlereagh Rd (S)														
1	L2	39	8	41	20.5	0.623	6.6	LOS A	5.6	41.6	0.71	0.65	0.76	52.2
2	T1	894	49	941	5.5	0.623	6.5	LOS A	5.6	41.6	0.71	0.68	0.77	55.0
3	R2	347	40	365	11.5	0.623	12.5	LOS A	5.5	41.8	0.72	0.79	0.80	52.4
3u	U	17	2	18	11.8	0.623	14.9	LOS B	5.5	41.8	0.72	0.79	0.80	53.8
Approach		1297	99	1365	7.6	0.623	8.2	LOS A	5.6	41.8	0.71	0.71	0.78	54.3
East: Coreen Ave (E)														
4	L2	269	55	283	20.4	0.675	15.2	LOS B	4.8	39.2	0.94	1.08	1.28	47.7
5	T1	36	3	38	8.3	0.675	16.4	LOS B	4.8	39.2	0.92	1.08	1.27	46.2
6	R2	195	15	205	7.7	0.675	22.0	LOS B	4.5	33.3	0.92	1.08	1.27	48.5
6u	U	1	0	1	0.0	0.675	23.9	LOS B	4.5	33.3	0.92	1.08	1.27	47.4
Approach		501	73	527	14.6	0.675	18.0	LOS B	4.8	39.2	0.93	1.08	1.27	47.9
North: Castlereagh Rd (N)														
7	L2	355	17	374	4.8	0.876	13.2	LOS A	15.7	114.8	1.00	1.13	1.51	51.2
8	T1	1241	69	1306	5.6	0.876	13.9	LOS A	15.7	114.8	1.00	1.16	1.55	51.9
9	R2	81	7	85	8.6	0.876	20.3	LOS B	15.1	110.8	1.00	1.19	1.58	51.4
9u	U	9	0	9	0.0	0.876	22.3	LOS B	15.1	110.8	1.00	1.19	1.58	53.7
Approach		1686	93	1775	5.5	0.876	14.1	LOS A	15.7	114.8	1.00	1.16	1.54	51.7
West: Mullins Rd (W)														
10	L2	45	6	47	13.3	0.098	8.1	LOS A	0.5	3.7	0.77	0.84	0.77	53.9
11	T1	27	3	28	11.1	0.098	8.9	LOS A	0.5	3.7	0.76	0.87	0.76	52.3
12	R2	18	5	19	27.8	0.098	15.7	LOS B	0.4	3.4	0.76	0.89	0.76	51.1
12u	U	1	0	1	0.0	0.098	16.5	LOS B	0.4	3.4	0.76	0.89	0.76	53.2
Approach		91	14	96	15.4	0.098	9.9	LOS A	0.5	3.7	0.76	0.86	0.76	53.0
All Vehicles		3575	279	3763	7.8	0.876	12.4	LOS A	15.7	114.8	0.88	0.98	1.21	52.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [1. Castlereagh Rd / Andrews Rd / Old Castlereagh Rd - PM Existing (Site Folder: Existing PM)]

Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Castlereagh Rd (S)														
1	L2	26	0	27	0.0	0.715	4.9	LOS A	7.7	55.2	0.69	0.47	0.73	54.8
2	T1	948	28	998	3.0	0.715	4.4	LOS A	7.8	55.5	0.70	0.48	0.73	56.7
3	R2	765	15	805	2.0	0.715	12.3	LOS A	7.8	55.5	0.73	0.74	0.78	54.0
3u	U	1	0	1	0.0	0.715	14.9	LOS B	7.8	55.5	0.73	0.74	0.78	56.2
Approach		1740	43	1832	2.5	0.715	7.9	LOS A	7.8	55.5	0.71	0.60	0.75	55.4
East: Andrews Rd (E)														
4	L2	364	12	383	3.3	0.356	4.5	LOS A	2.1	14.8	0.68	0.56	0.68	55.4
5	T1	90	1	95	1.1	0.286	4.5	LOS A	1.4	10.5	0.67	0.71	0.67	54.7
6	R2	127	11	134	8.7	0.286	12.0	LOS A	1.4	10.5	0.67	0.71	0.67	55.5
6u	U	1	0	1	0.0	0.286	14.4	LOS A	1.4	10.5	0.67	0.71	0.67	58.0
Approach		582	24	613	4.1	0.356	6.2	LOS A	2.1	14.8	0.68	0.62	0.68	55.3
North: Castlereagh Rd (N)														
7	L2	108	9	114	8.3	0.637	11.4	LOS A	6.3	46.1	0.95	1.09	1.25	51.6
8	T1	677	28	713	4.1	0.637	11.4	LOS A	6.3	46.1	0.95	1.08	1.26	53.8
9	R2	15	1	16	6.7	0.637	19.4	LOS B	5.8	42.0	0.94	1.08	1.26	53.6
9u	U	1	0	1	0.0	0.637	21.8	LOS B	5.8	42.0	0.94	1.08	1.26	55.9
Approach		801	38	843	4.7	0.637	11.6	LOS A	6.3	46.1	0.95	1.08	1.26	53.6
West: Old Castlereagh Rd (W)														
10	L2	57	2	60	3.5	0.114	7.0	LOS A	0.6	4.6	0.84	0.83	0.84	54.1
11	T1	47	1	49	2.1	0.114	7.8	LOS A	0.6	4.6	0.82	0.86	0.82	55.0
12	R2	9	0	9	0.0	0.114	15.4	LOS B	0.5	3.8	0.81	0.87	0.81	56.1
12u	U	1	0	1	0.0	0.114	18.1	LOS B	0.5	3.8	0.81	0.87	0.81	57.9
Approach		114	3	120	2.6	0.114	8.1	LOS A	0.6	4.6	0.83	0.85	0.83	54.7
All Vehicles		3237	108	3407	3.3	0.715	8.5	LOS A	7.8	55.5	0.77	0.73	0.87	54.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [4. Castlereagh Rd / Coreen Ave / Mullins Rd - PM Existing (Site Folder: Existing PM)]

New Site
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Castlereagh Rd (S)														
1	L2	72	21	76	29.2	0.898	14.8	LOS B	16.9	122.8	1.00	1.19	1.61	48.3
2	T1	1303	32	1372	2.5	0.898	14.5	LOS A	16.9	122.8	1.00	1.21	1.64	51.3
3	R2	374	25	394	6.7	0.898	21.2	LOS B	16.2	118.1	1.00	1.25	1.69	47.7
3u	U	15	3	16	20.0	0.898	24.2	LOS B	16.2	118.1	1.00	1.25	1.69	48.4
Approach		1764	81	1857	4.6	0.898	16.0	LOS B	16.9	122.8	1.00	1.22	1.65	50.5
East: Coreen Ave (E)														
4	L2	241	8	254	3.3	0.486	8.8	LOS A	2.9	20.8	0.80	0.93	0.94	52.4
5	T1	63	1	66	1.6	0.486	8.4	LOS A	3.1	22.0	0.80	0.94	0.93	53.0
6	R2	314	8	331	2.5	0.486	13.4	LOS A	3.1	22.0	0.80	0.96	0.92	52.9
6u	U	1	0	1	0.0	0.486	15.7	LOS B	3.1	22.0	0.80	0.96	0.92	52.6
Approach		619	17	652	2.7	0.486	11.1	LOS A	3.1	22.0	0.80	0.95	0.93	52.7
North: Castlereagh Rd (N)														
7	L2	289	5	304	1.7	0.654	7.8	LOS A	6.3	45.1	0.82	0.85	0.98	53.9
8	T1	804	31	846	3.9	0.654	8.2	LOS A	6.3	45.1	0.83	0.89	0.99	54.9
9	R2	64	4	67	6.3	0.654	14.2	LOS A	6.0	43.6	0.83	0.92	1.01	54.7
9u	U	13	0	14	0.0	0.654	16.3	LOS B	6.0	43.6	0.83	0.92	1.01	56.6
Approach		1170	40	1232	3.4	0.654	8.5	LOS A	6.3	45.1	0.83	0.88	0.99	54.7
West: Mullins Rd (W)														
10	L2	80	2	84	2.5	0.302	12.2	LOS A	1.8	13.0	0.95	0.97	0.95	51.8
11	T1	62	0	65	0.0	0.302	13.6	LOS A	1.8	13.0	0.92	0.97	0.94	49.4
12	R2	34	4	36	11.8	0.302	21.3	LOS B	1.5	11.3	0.90	0.97	0.94	47.9
12u	U	1	0	1	0.0	0.302	22.6	LOS B	1.5	11.3	0.90	0.97	0.94	49.3
Approach		177	6	186	3.4	0.302	14.5	LOS A	1.8	13.0	0.93	0.97	0.95	50.3
All Vehicles		3730	144	3926	3.9	0.898	12.8	LOS A	16.9	122.8	0.91	1.06	1.29	52.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [1. Castlereagh Rd / Andrews Rd / Old Castlereagh Rd - AM Development (Site Folder: Development AM)]

Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Castlereagh Rd (S)														
1	L2	11	1	12	9.1	0.504	4.5	LOS A	3.7	27.1	0.58	0.39	0.58	55.3
2	T1	565	35	595	6.2	0.504	3.8	LOS A	3.9	28.1	0.58	0.41	0.58	57.2
3	R2	426	25	448	5.9	0.504	10.8	LOS A	3.9	28.1	0.56	0.67	0.56	54.1
3u	U	173	4	182	2.3	0.504	13.4	LOS A	3.9	28.1	0.56	0.67	0.56	56.3
Approach		1175	65	1237	5.5	0.504	7.8	LOS A	3.9	28.1	0.57	0.54	0.57	55.9
East: Andrews Rd (E)														
4	L2	601	31	633	5.2	0.924	25.8	LOS B	14.2	103.7	1.00	1.49	2.34	43.9
5	T1	87	16	92	18.4	0.469	9.5	LOS A	2.8	23.5	0.88	0.99	1.03	52.1
6	R2	106	32	112	30.2	0.469	17.4	LOS B	2.8	23.5	0.88	0.99	1.03	52.4
6u	U	1	0	1	0.0	0.469	18.6	LOS B	2.8	23.5	0.88	0.99	1.03	55.2
Approach		795	79	837	9.9	0.924	22.9	LOS B	14.2	103.7	0.97	1.36	2.02	45.6
North: Castlereagh Rd (N)														
7	L2	145	24	153	16.6	0.860	16.7	LOS B	14.1	104.2	1.00	1.31	1.77	48.3
8	T1	1181	49	1243	4.1	0.860	16.5	LOS B	14.1	104.2	1.00	1.32	1.79	50.6
9	R2	27	6	28	22.2	0.860	25.5	LOS B	13.2	96.1	1.00	1.32	1.82	49.6
9u	U	1	0	1	0.0	0.860	27.1	LOS B	13.2	96.1	1.00	1.32	1.82	51.9
Approach		1354	79	1425	5.8	0.860	16.7	LOS B	14.1	104.2	1.00	1.32	1.79	50.3
West: Old Castlereagh Rd (W)														
10	L2	29	13	31	44.8	0.066	6.9	LOS A	0.3	3.0	0.71	0.72	0.71	53.9
11	T1	30	14	32	46.7	0.066	7.3	LOS A	0.3	3.0	0.71	0.78	0.71	54.7
12	R2	9	2	9	22.2	0.066	14.3	LOS A	0.3	2.6	0.71	0.81	0.71	54.9
12u	U	1	0	1	0.0	0.066	16.1	LOS B	0.3	2.6	0.71	0.81	0.71	57.2
Approach		69	29	73	42.0	0.066	8.2	LOS A	0.3	3.0	0.71	0.76	0.71	54.4
All Vehicles		3393	252	3572	7.4	0.924	14.9	LOS B	14.2	104.2	0.84	1.05	1.40	51.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 103 [4. Castlereagh Rd / Coreen Ave / Mullins Rd - AM Development (Site Folder: Development AM)]

New Site
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Castlereagh Rd (S)														
1	L2	39	8	41	20.5	0.711	7.9	LOS A	7.8	57.4	0.79	0.79	0.91	51.9
2	T1	1064	51	1120	4.8	0.711	7.8	LOS A	7.8	57.4	0.79	0.82	0.93	54.6
3	R2	347	40	365	11.5	0.711	14.0	LOS A	7.6	57.2	0.80	0.88	0.97	51.9
3u	U	17	2	18	11.8	0.711	16.4	LOS B	7.6	57.2	0.80	0.88	0.97	53.2
Approach		1467	101	1544	6.9	0.711	9.4	LOS A	7.8	57.4	0.79	0.83	0.94	54.0
East: Coreen Ave (E)														
4	L2	269	55	283	20.4	0.718	17.5	LOS B	5.2	43.0	0.95	1.11	1.36	46.4
5	T1	36	3	38	8.3	0.718	18.9	LOS B	5.2	43.0	0.94	1.11	1.35	44.9
6	R2	195	15	205	7.7	0.718	24.6	LOS B	4.9	36.2	0.93	1.11	1.35	47.2
6u	U	1	0	1	0.0	0.718	26.4	LOS B	4.9	36.2	0.93	1.11	1.35	45.9
Approach		501	73	527	14.6	0.718	20.4	LOS B	5.2	43.0	0.94	1.11	1.36	46.7
North: Castlereagh Rd (N)														
7	L2	355	17	374	4.8	0.919	16.5	LOS B	20.3	148.6	1.00	1.24	1.75	49.4
8	T1	1285	71	1353	5.5	0.919	17.5	LOS B	20.3	148.6	1.00	1.28	1.79	49.9
9	R2	81	7	85	8.6	0.919	24.1	LOS B	19.4	142.8	1.00	1.30	1.83	49.3
9u	U	34	2	36	5.9	0.919	26.4	LOS B	19.4	142.8	1.00	1.30	1.83	51.7
Approach		1755	97	1847	5.5	0.919	17.8	LOS B	20.3	148.6	1.00	1.27	1.79	49.8
West: Mullins Rd (W)														
10	L2	45	6	47	13.3	0.115	8.9	LOS A	0.6	4.6	0.82	0.89	0.82	53.4
11	T1	27	3	28	11.1	0.115	9.9	LOS A	0.6	4.6	0.81	0.90	0.81	51.6
12	R2	18	5	19	27.8	0.115	17.0	LOS B	0.5	4.2	0.80	0.91	0.80	50.2
12u	U	1	0	1	0.0	0.115	17.7	LOS B	0.5	4.2	0.80	0.91	0.80	52.2
Approach		91	14	96	15.4	0.115	10.9	LOS A	0.6	4.6	0.81	0.90	0.81	52.3
All Vehicles		3814	285	4015	7.5	0.919	14.7	LOS B	20.3	148.6	0.91	1.07	1.38	50.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
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Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [1. Castlereagh Rd / Andrews Rd / Old Castlereagh Rd - PM Development (Site Folder: Development PM)]

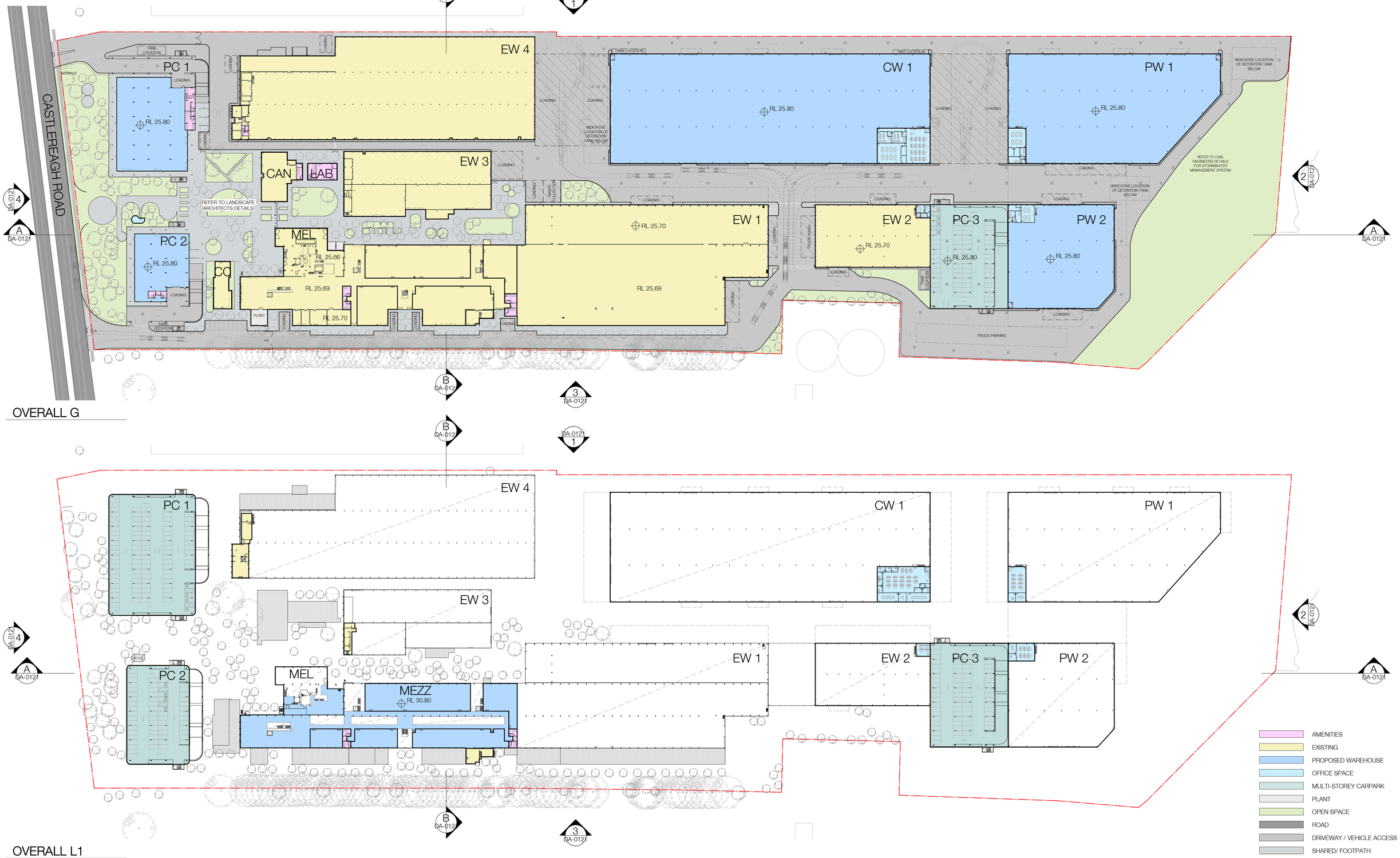
Site Category: Existing Design
Roundabout

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Castlereagh Rd (S)														
1	L2	26	0	27	0.0	0.775	5.6	LOS A	10.0	71.9	0.77	0.57	0.84	54.4
2	T1	987	30	1039	3.0	0.775	5.1	LOS A	10.0	71.9	0.77	0.57	0.84	56.5
3	R2	826	15	869	1.8	0.775	13.2	LOS A	10.1	72.2	0.80	0.79	0.91	53.4
3u	U	48	2	51	4.2	0.775	16.0	LOS B	10.1	72.2	0.80	0.79	0.91	55.5
Approach		1887	47	1986	2.5	0.775	8.9	LOS A	10.1	72.2	0.78	0.67	0.87	55.0
East: Andrews Rd (E)														
4	L2	379	12	399	3.2	0.386	4.7	LOS A	2.3	16.6	0.72	0.58	0.72	55.2
5	T1	90	1	95	1.1	0.301	4.7	LOS A	1.5	11.3	0.70	0.73	0.70	54.5
6	R2	127	11	134	8.7	0.301	12.2	LOS A	1.5	11.3	0.70	0.73	0.70	55.4
6u	U	1	0	1	0.0	0.301	14.6	LOS B	1.5	11.3	0.70	0.73	0.70	57.8
Approach		597	24	628	4.0	0.386	6.3	LOS A	2.3	16.6	0.71	0.64	0.71	55.2
North: Castlereagh Rd (N)														
7	L2	108	9	114	8.3	0.772	19.1	LOS B	9.7	71.2	1.00	1.25	1.64	46.7
8	T1	689	30	725	4.4	0.772	19.5	LOS B	9.7	71.2	1.00	1.24	1.64	48.9
9	R2	15	1	16	6.7	0.772	27.8	LOS B	8.7	63.0	1.00	1.24	1.65	48.0
9u	U	1	0	1	0.0	0.772	30.1	LOS C	8.7	63.0	1.00	1.24	1.65	49.8
Approach		813	40	856	4.9	0.772	19.6	LOS B	9.7	71.2	1.00	1.24	1.64	48.6
West: Old Castlereagh Rd (W)														
10	L2	57	2	60	3.5	0.131	7.9	LOS A	0.8	5.6	0.89	0.88	0.89	53.6
11	T1	47	1	49	2.1	0.131	8.8	LOS A	0.8	5.6	0.85	0.90	0.85	54.4
12	R2	9	0	9	0.0	0.131	16.4	LOS B	0.6	4.6	0.84	0.90	0.84	55.4
12u	U	1	0	1	0.0	0.131	19.0	LOS B	0.6	4.6	0.84	0.90	0.84	57.1
Approach		114	3	120	2.6	0.131	9.0	LOS A	0.8	5.6	0.87	0.89	0.87	54.1
All Vehicles		3411	114	3591	3.3	0.775	11.0	LOS A	10.1	72.2	0.83	0.81	1.03	53.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Attachment 2 Architectural Plan



OVERALL G

OVERALL L1

- AMENITIES
- EXISTING
- PROPOSED WAREHOUSE
- OFFICE SPACE
- MULTI-STOREY CARPARK
- PLANT
- OPEN SPACE
- ROAD
- DRIVEWAY / VEHICLE ACCESS
- SHARED/ FOOTPATH

FOR APPROVAL

0 10 20 50m
1:1000 @A1

Rev	Date	Revision	By	Chk.
1	08.12.2020	For Information	TM	ML
2	17.12.2020	For Information	TM	ML
3	25.01.2021	For Information	TM	ML
4	08.02.2021	For Information	TM	ML
5	11.02.2021	For Information	TM	ML
6	18.02.2021	Development Application	TM	ML
7	24.02.2021	Updated DA Drawings	TM	ML
8	01.03.2021	Updated DA Drawings	TM	ML

Location Key

Client
AonAri•Property

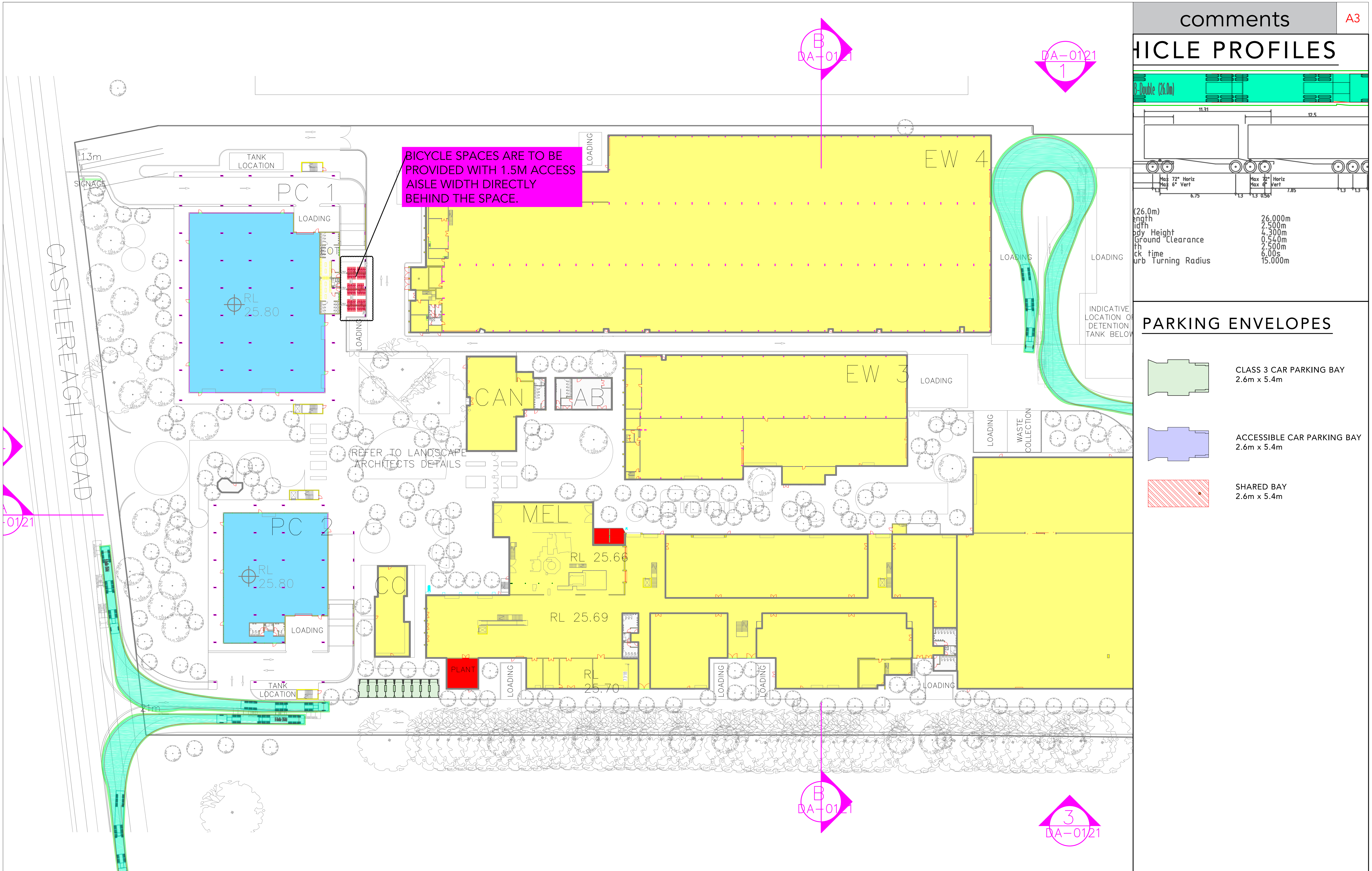
Project
Manufactor
2115 Castlereagh Rd,
Penrith

Drawing Name
OVERALL G-L1

Date	Scale	Sheet Size
01.03.2021	1 : 1000	@ A1
Drawn	Chk.	Job No.
TM	ML	6348
Drawing No.		Revision
DA-0111		/ 8

SJB Architects
L2, 490 Crown St
Surry Hills NSW
2010 Australia
T 61 2 9380 9911
www.sjb.com.au

Attachment 3 Car Park Design Assessment



REV	DATE	COMMENT / DESCRIPTION	DRAWN	REVIEWED
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

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ptcconsultants.co

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

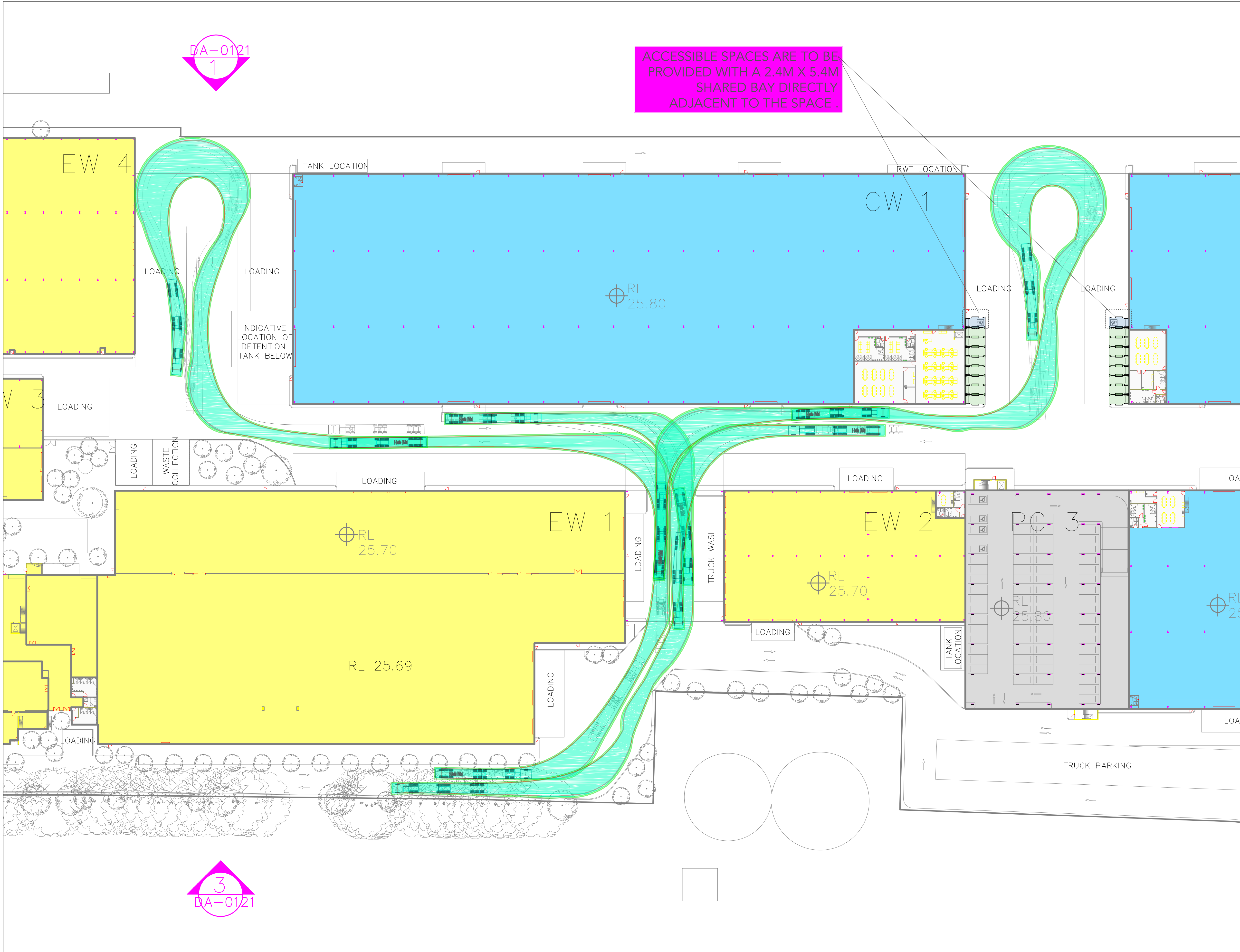
DRAWING TITLE
Design Review
Site Plan

CLIENT AON ARI PROPERTY FUND CONCEPT
DRAWING # PTC-001
PROJECT # DB-2938
SCALE 1 : 1000

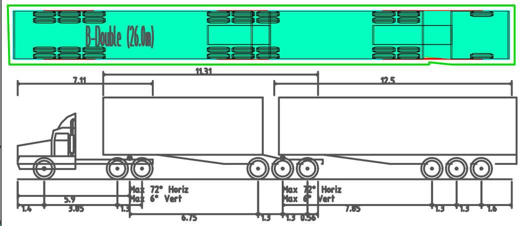
REV 2

Document Set ID: 9577424
Version: 1, Version Date: 06/05/2021

comments A3



VEHICLE PROFILES



B-Double (26.0m)	
Overall Length	26.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-Lock time	6.00s
Curb to Curb Turning Radius	15.000m

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY 2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY 2.6m x 5.4m

SHARED BAY 2.6m x 5.4m

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2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Design Review
Site Plan

CLIENT	AON ARI PROPERTY FUND
DRAWING #	PTC-002
PROJECT #	DB-2938
SCALE	1 : 1000

CONCEPT

REV 2

SSIBLE SPACES ARE TO BE
VIDED WITH A 2.4M X 5.4M
SHARED BAY DIRECTLY
DJACENT TO THE SPACE .

RWT LOCATION

CW 1

PW 1

RL 25.80

LOADING

LOADING

LOADING

INDICATIVE LOCATION OF DETENTION TANK BELOW

REFER TO CIVIL ENGINEERS DETAILS FOR STORMWATER MANAGEMENT SYSTEM

INDICATIVE LOCATION OF DETENTION TANK BELOW

LOADING

LOADING

TRUCK WASH

EW 2

RL 25.70

PC 3

RL 25.80

PW 2

RL 25.80

LOADING

TANK LOCATION

LOADING

TRUCK PARKING

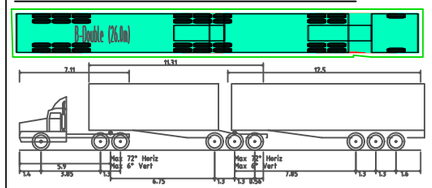
2 DA-0121

A DA-01

comments

A3

VEHICLE PROFILES



B-Double (26.0m)	
Overall Length	26.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-Lock time	6.00s
Curb to Curb Turning Radius	15.000m

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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REV	DATE	COMMENT / DESCRIPTION	DRAWN	REVIEWED
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Design Review
Site Plan

CLIENT	AON ARI PROPERTY FUND	CONCEPT	
DRAWING #	PTC-002	REV 2	
PROJECT #	DB-2938		
SCALE	1 : 1000		

TANK LOCATION

300 6900 300

LOADING

1
DA-0601

PROPOSED NORTH WAREHOUSE
2047 m²
RL 25.80

EOT
147 m²

BICYCLE PARKING

69050

PROPOSED CARPARK 1

LOADING

8
DA-0501

1
DA-0901

1
DA-0901

comments

A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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REV	DATE	COMMENT / DESCRIPTION	DRAWN	REVIEWED
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC1 - Ground

CLIENT	AON ARI PROPERTY FUND
DRAWING #	PTC-101
PROJECT #	DB-2938
SCALE	1 : 300

CONCEPT

REV 2

300MM KERB EXTENSION TO BE PROVIDED FROM COLUMN.

PROPOSED CARPARK 1
3409 m²

5695

69050

PROPOSED CARPARK 1

7000 7000 7000

RL 30.20

300 6900 200

7850

DA-0601 1

DA-0601 8

SHARED BAY TO BE PROVIDED DIRECTLY ADJACENT TO THE ACCESSIBLE SPACE.

comments

A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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REV	DATE	COMMENT / DESCRIPTION	DRAWN	REVIEWED
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC1 - Level 1

CLIENT	AON ARI PROPERTY FUND
DRAWING #	PTC-102
PROJECT #	DB-2938
SCALE	1 : 300

CONCEPT

REV 2

300MM KERB EXTENSION TO BE PROVIDED FROM COLUMN.

PROPOSED CARPARK 1
3409 m²

5695

69050

PROPOSED CARPARK 1

7000 7000 7000

RL 30.20

300 6900 200

7850

DA-0601 1

DA-0601 8

DA-0601 1

SHARED BAY TO BE PROVIDED DIRECTLY ADJACENT TO THE ACCESSIBLE SPACE.

comments

A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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REV	DATE	COMMENT / DESCRIPTION	DRAWN	REVIEWED
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

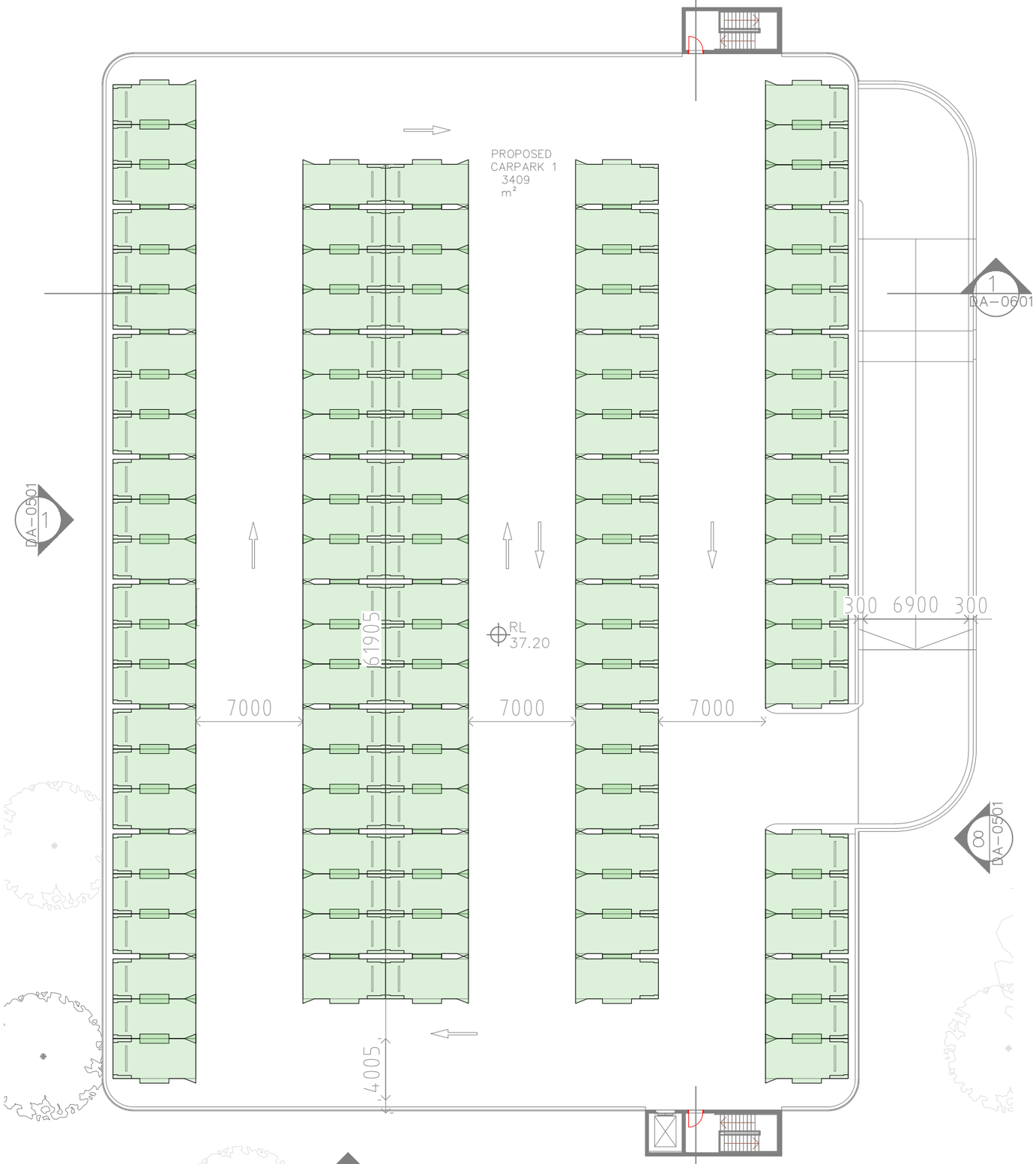
PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC1 - Level 2

CLIENT	AON ARI PROPERTY FUND
DRAWING #	PTC-103
PROJECT #	DB-2938
SCALE	1 : 300

CONCEPT

REV 2



comments A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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REV	DATE	COMMENT / DESCRIPTION	DRAWN	REVIEWED
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC1 - Level 3

CLIENT	AON ARI PROPERTY FUND	CONCEPT	
DRAWING #	PTC-104	REV 2	
PROJECT #	DB-2938		
SCALE	1 : 300		

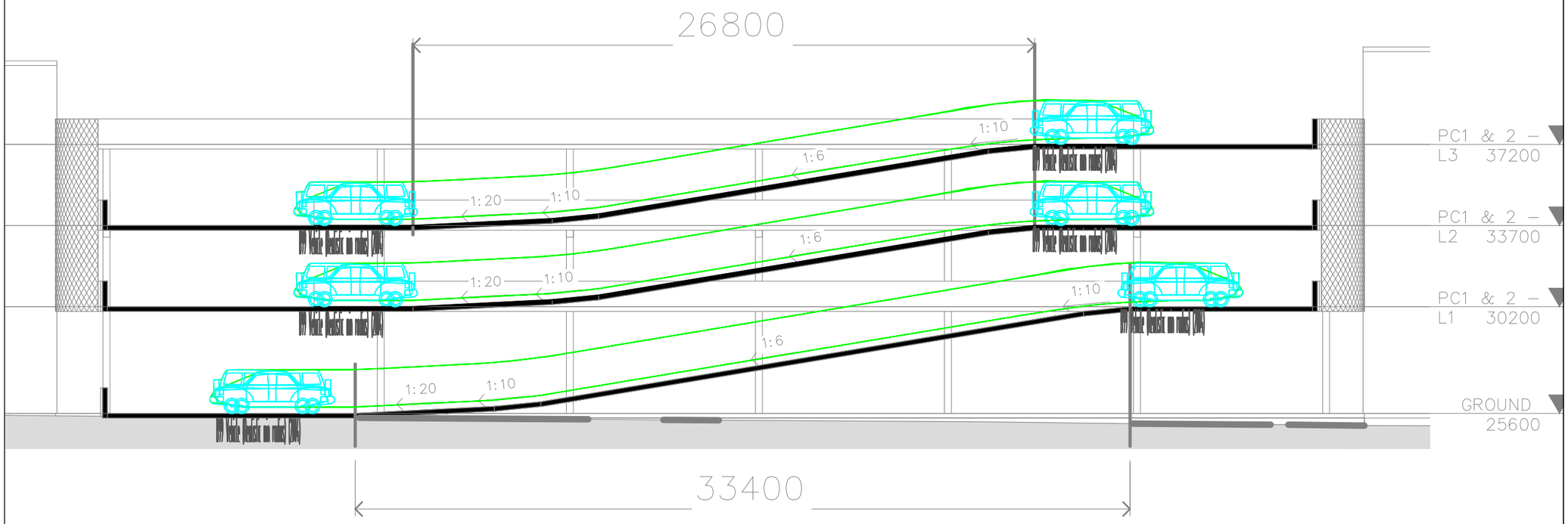
comments A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m



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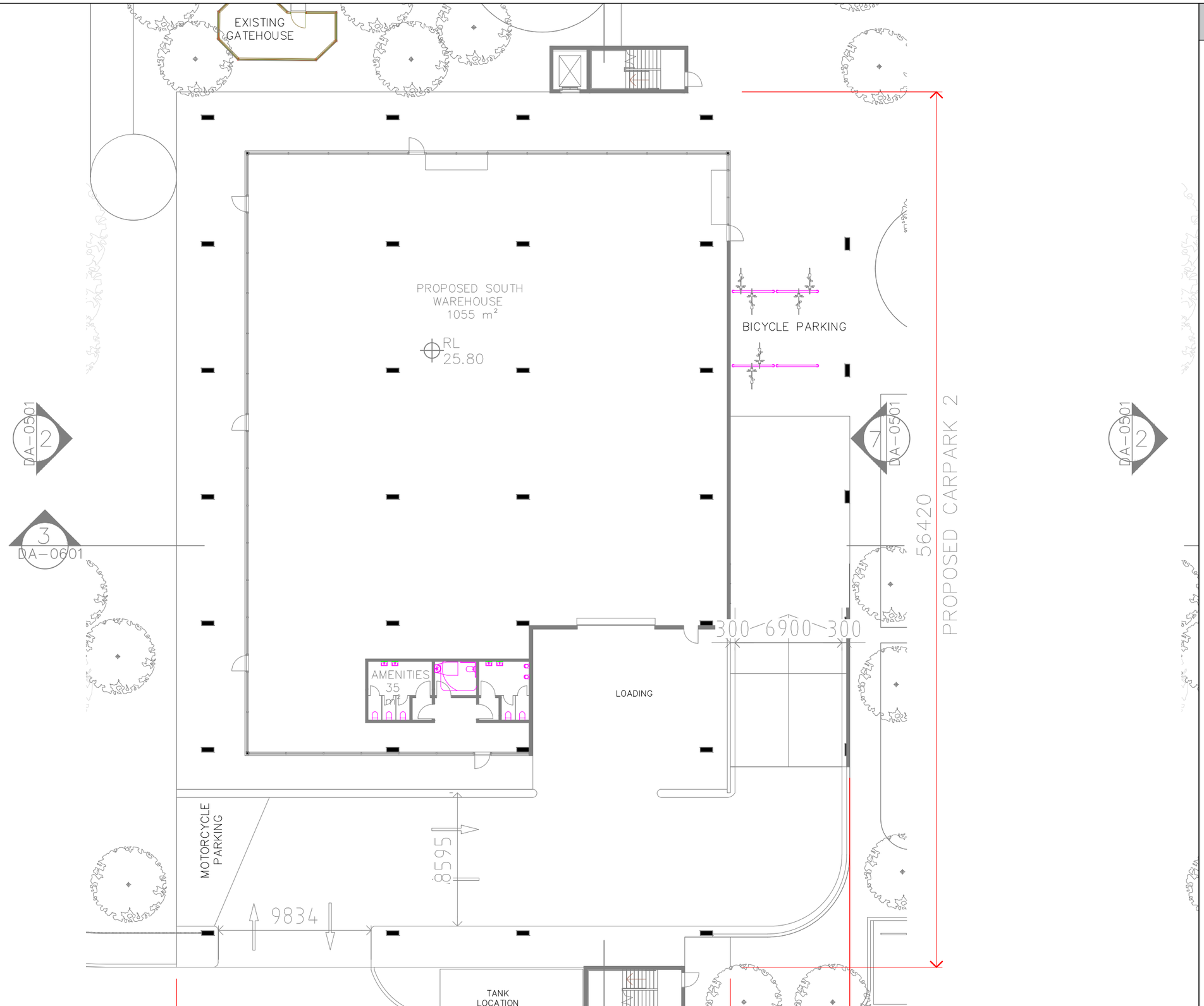
REV	DATE	COMMENT / DESCRIPTION	DRAWN	REVIEWED
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC1 - Ramp Sections

CLIENT	AON ARI PROPERTY FUND		CONCEPT
DRAWING #	PTC-105	REV	2
PROJECT #	DB-2938		
SCALE	1 : 200		



comments A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC2 - Ground

CLIENT	AON ARI PROPERTY	FUND	CONCEPT
DRAWING #	PTC-201		
PROJECT #	DB-2938		REV 2
SCALE	1 : 250		

SHARED BAY TO BE PROVIDED DIRECTLY ADJACENT TO THE ACCESSIBLE SPACE.

PROPOSED CARPARK 2

PROPOSED CARPARK 2
2015 m²

300 6900 300

6600

6600

5995

DA-0501 2

DA-0501 7

DA-0501 2

comments

A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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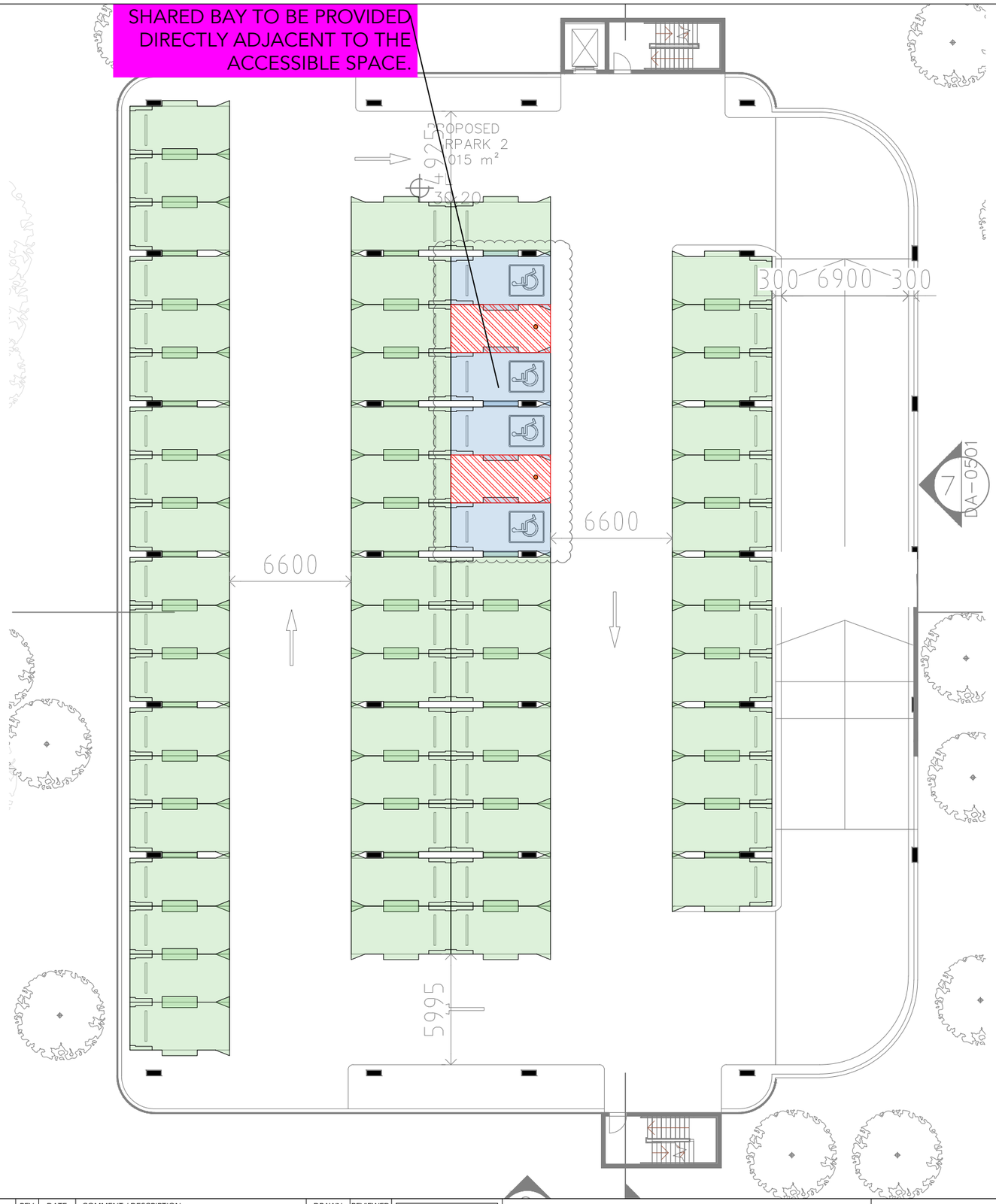
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC2 - Level 1

CLIENT	AON ARI PROPERTY	FUND	CONCEPT
DRAWING #	PTC-202		
PROJECT #	DB-2938		REV 2
SCALE	1 : 250		

SHARED BAY TO BE PROVIDED DIRECTLY ADJACENT TO THE ACCESSIBLE SPACE.



comments

A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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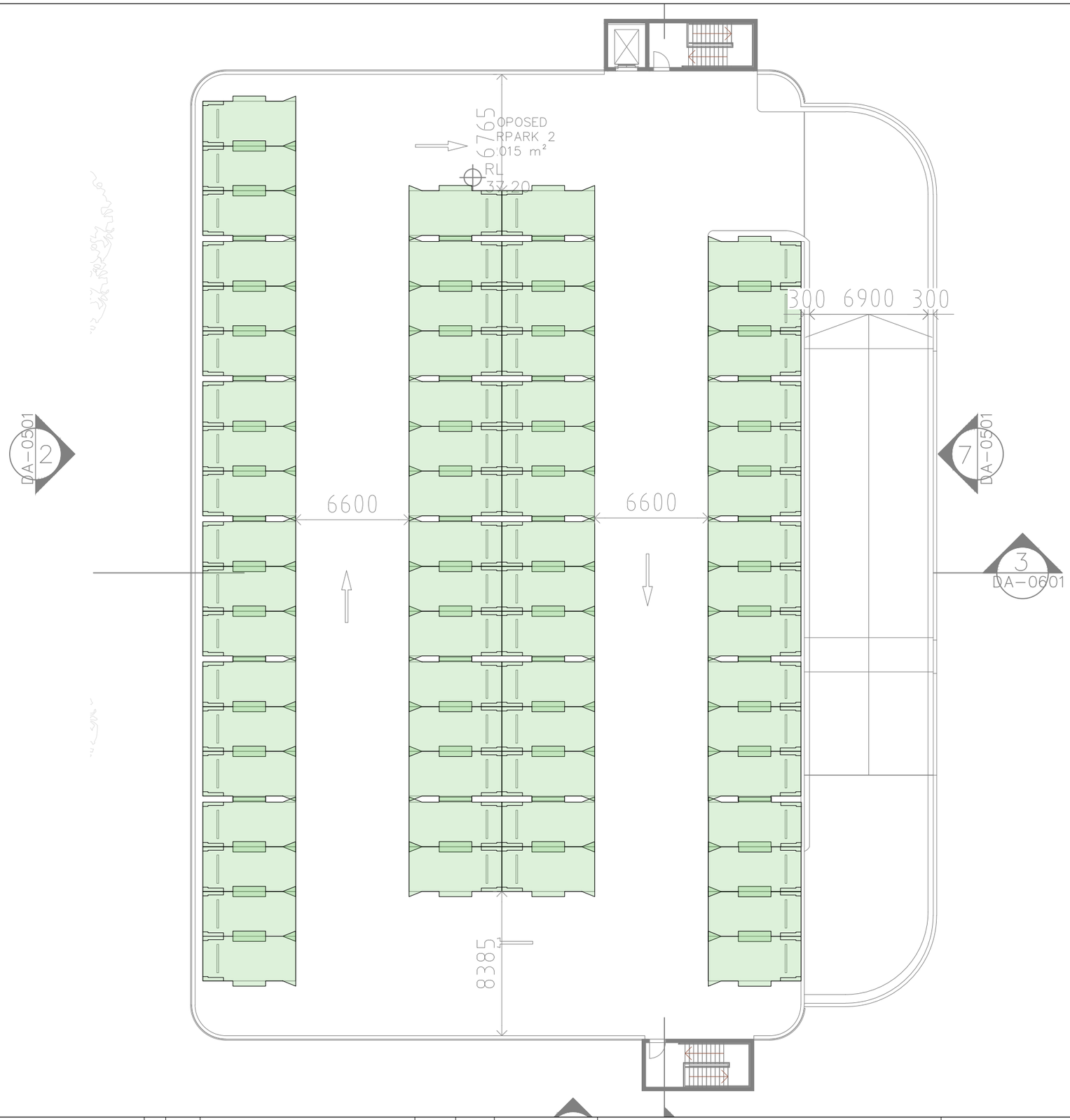
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC2 - Level 2

CLIENT	AON ARI PROPERTY	FUND	CONCEPT
DRAWING #	PTC-203		
PROJECT #	DB-2938		REV 2
SCALE	1 : 250		



comments

A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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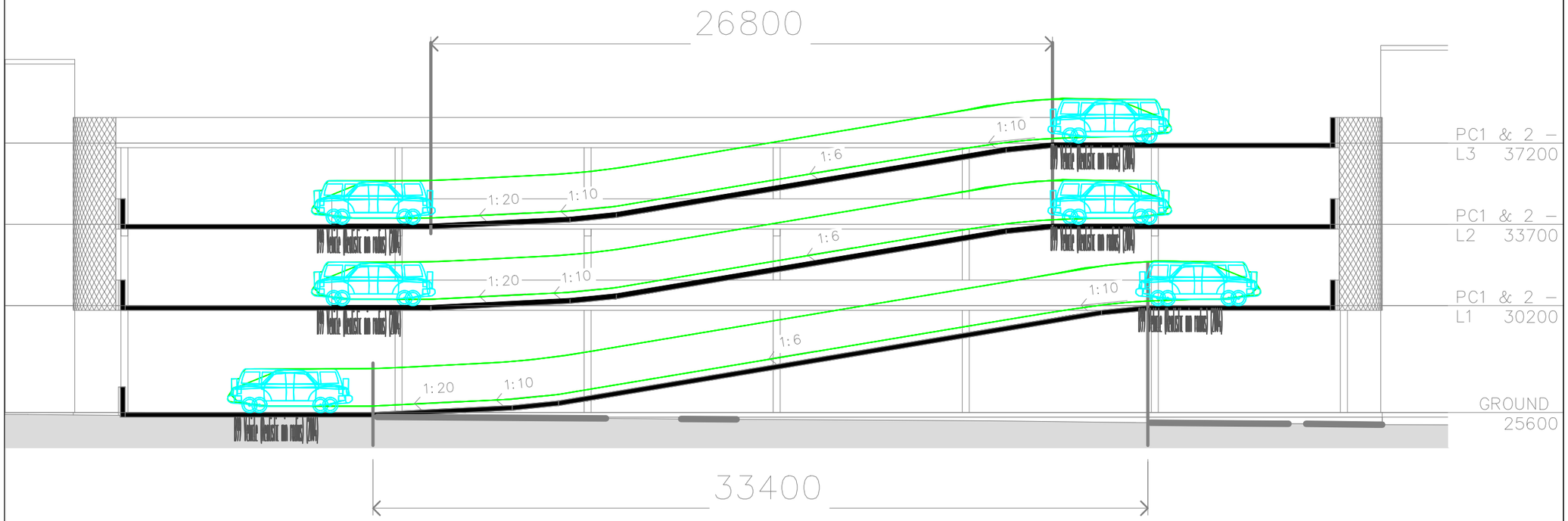
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC2 - Level 3

CLIENT	AON ARI PROPERTY FUND	CONCEPT	
DRAWING #	PTC-204	REV 2	
PROJECT #	DB-2938		
SCALE	1 : 250		



comments

A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
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ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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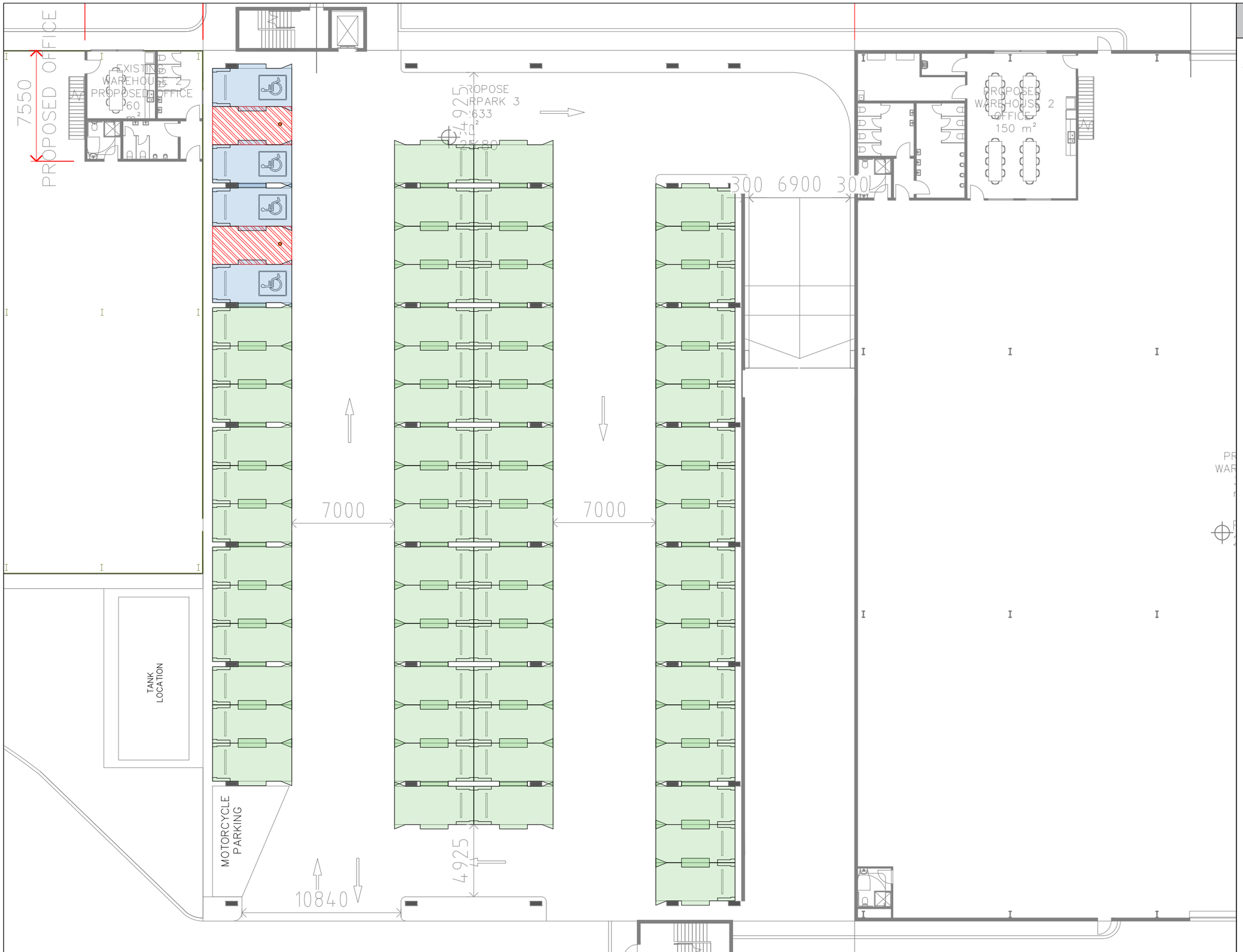
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC2 - Ramp Sections

CLIENT	AON ARI PROPERTY FUND		CONCEPT
DRAWING #	PTC-105	REV	2
PROJECT #	DB-2938		
SCALE	1 : 200		



comments A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC3 - Ground

CLIENT	AON ARI PROPERTY FUND	CONCEPT	
DRAWING #	PTC-301	REV 2	
PROJECT #	DB-2938		
SCALE	1 : 250		

comments A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC3 - Level 1

CLIENT	AON ARI PROPERTY FUND CONCEPT
DRAWING #	PTC-302
PROJECT #	DB-2938
SCALE	1 : 250

REV 2

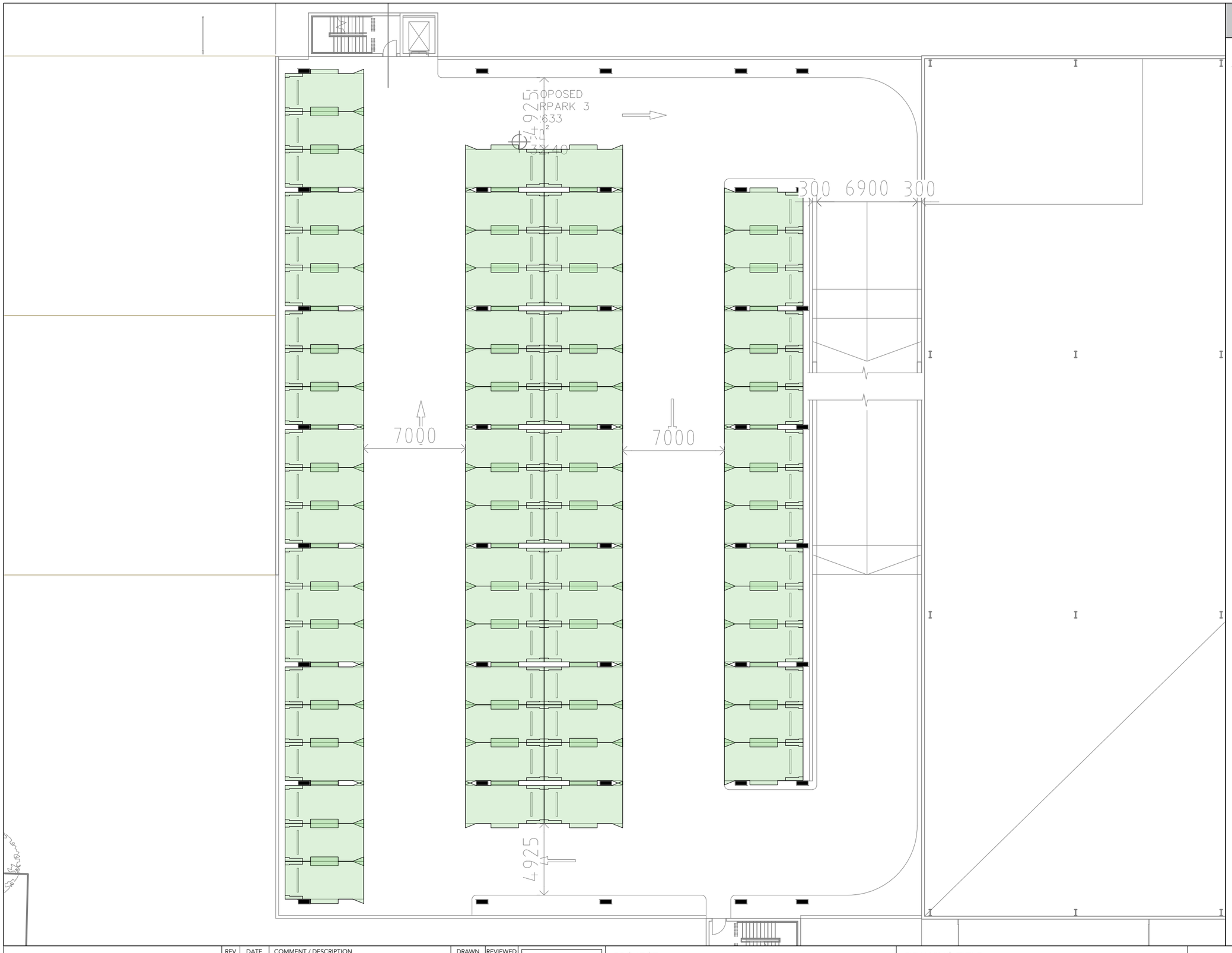
comments A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m



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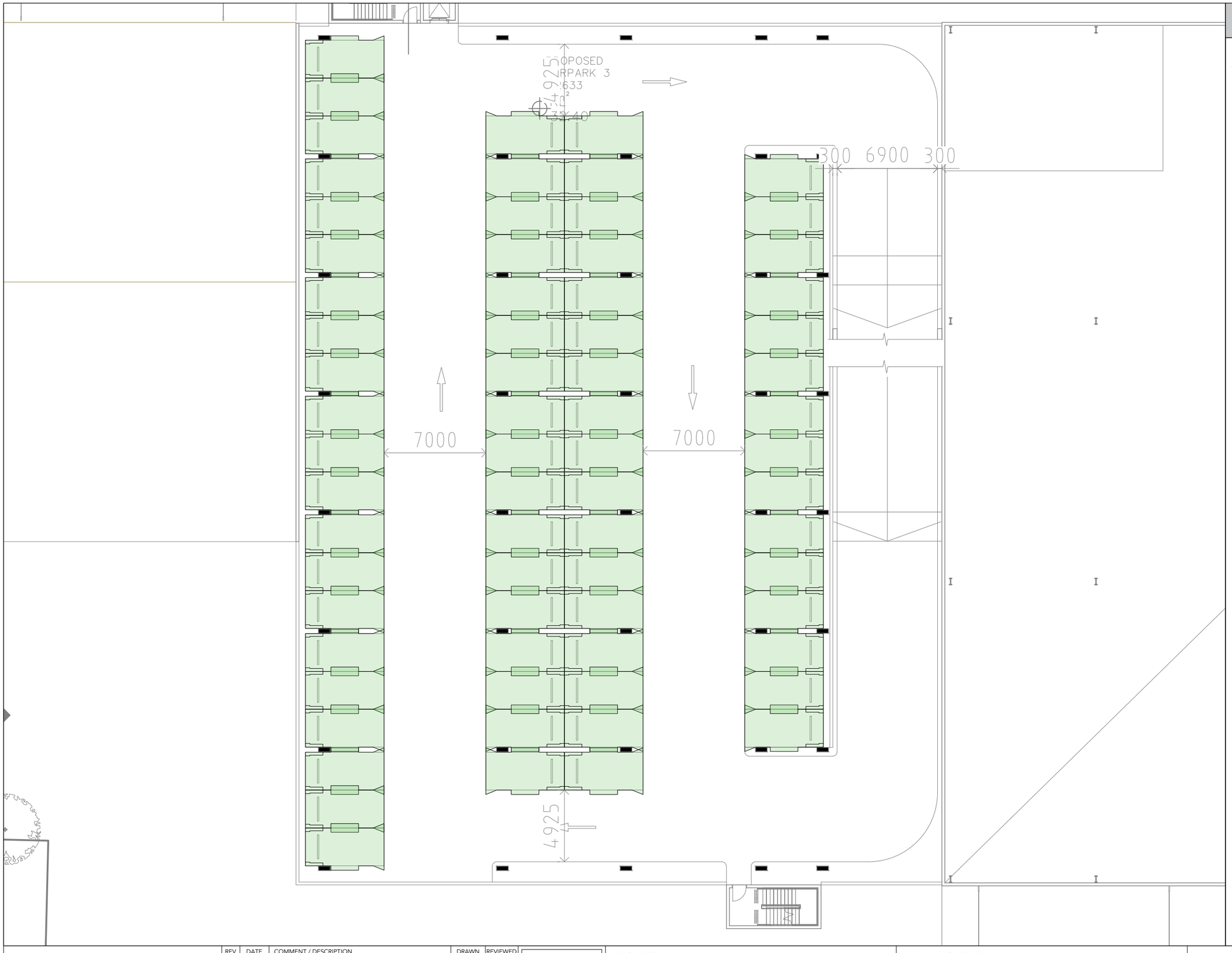
PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC3 - Level 2

CLIENT	AON ARI PROPERTY FUND	CONCEPT	
DRAWING #	PTC-303	REV 2	
PROJECT #	DB-2938		
SCALE	1 : 250		



comments A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m

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1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC3 - Level 3

CLIENT	AON ARI PROPERTY	FUND	CONCEPT
DRAWING #	PTC-304		
PROJECT #	DB-2938		REV 2
SCALE	1 : 250		

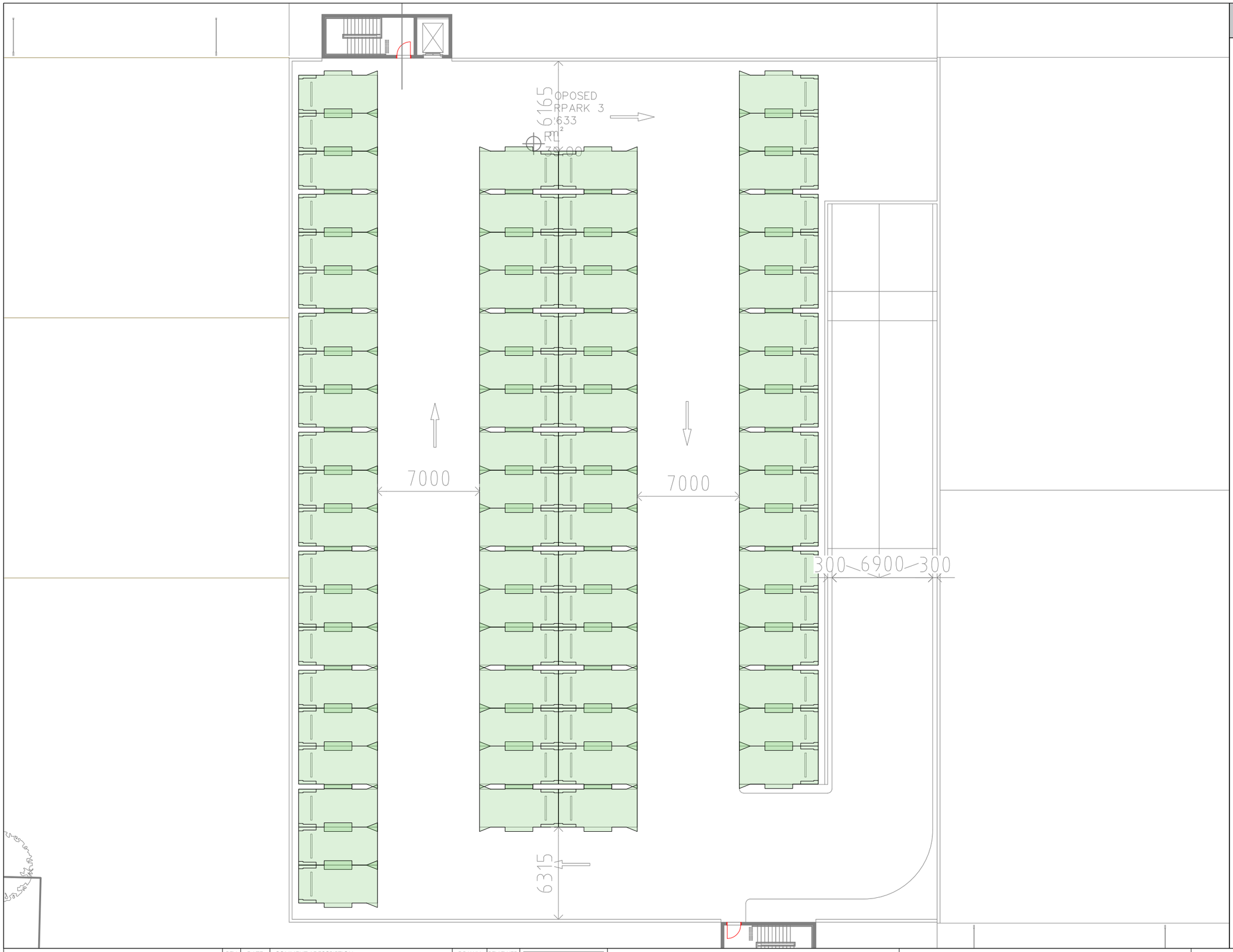
comments A3

PARKING ENVELOPES

CLASS 3 CAR PARKING BAY
2.6m x 5.4m

ACCESSIBLE CAR PARKING BAY
2.6m x 5.4m

SHARED BAY
2.6m x 5.4m



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REV	DATE	COMMENT / DESCRIPTION	DRAWN	REVIEWED
2	02/03/21	FOR REVIEW	JJ	AP
1	05/02/21	FOR INFORMATION	AP	DB

PROJECT
2115 CASTLEREAGH ROAD, PENRITH

DRAWING TITLE
Car Park Design Review
PC3 - Level 4

CLIENT	AON ARI PROPERTY	FUND	CONCEPT
DRAWING #	PTC-305		REV 2
PROJECT #	DB-2938		
SCALE	1 : 250		