Cinema Complex Gregory Hills

Traffic and Parking Assessment Report

Prepared for: Gregory Hills Developments

December 2017

Report No: PT17063r01_Final

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1. Introduction

This report has been prepared on behalf of Gregory Hills Developments Pty Ltd to present findings of a traffic and parking assessment of the Cinema Complex and commercial tenancies within the Gregory Hills Corporate Park (GHCP) site.

The study has assessed existing traffic conditions, parking demands, access arrangements, future traffic conditions, service vehicle provision and design compliance.

The remainder of the report is set out as follows:

- Section 2 describes the existing traffic and parking conditions;
- Section 3 presents a background report review of the precinct;
- Section 4 summarises the proposed development;
- Section 5 reviews the potential traffic impacts of the proposal;
- Section 6 provides a compliance assessment of the proposed car park areas and access arrangements; and
- Section 7 presents the conclusions

2. Existing Development / Conditions

The following presents a summary of existing site and traffic conditions.

2.1 Site Location

The proposed development site is located opposite the site that is known as the Gregory Hills Corporate Park (GHCP) which overall has been approved by Camden Council in 14th August 2012 (DA No. 752/2012). The overall site is bounded by Central Hills Drive to the east, Rodeo Road to the south, Steer Road to the west and Lasso Road to the north

The location of the overall GHCP development site is shown in **Figure 1**.

Figure 1 - Site Location

Source: Google maps

Since the approval of the masterplan, redevelopment of sites surrounding the development has occurred including a Masters Home Improvement store, McDonalds and light industrial units which house small retail developments.

The site as a whole has been previously approved for 29,880m^2 of commercial development within three buildings (Building A, B and C) along with provision for 665 parking spaces (1 space per 44.93m^2). The layout of the approved development is shown below.

Figure 2 – Original DA Approved Plan Arrangement

2.2 Classification Criteria

It is usual to classify roads according to a road hierarchy in order to determine their functional role within the road network. Changes to traffic flows on the roads can then be assessed within the context of the road hierarchy. Roads are classified according to the role they fulfil and the volume of traffic they should appropriately carry. The RTA has set down the following guidelines for the functional classification of roads.

- Arterial Road – typically a main road carrying over 15,000 vehicles per day and fulfilling a role as a major inter-regional link (over 1,500 vehicles per hour)

- Sub-arterial Road – defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles per day (500 to 2,000 vehicles per hour)
- Collector Road – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles per day (250 to 1,000 vehicles per hour). At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
- Local Road – provides access to individual allotments, carrying low volumes, typically less than 2,000 vehicles per day (250 vehicles per hour).

2.3 Existing Road Network

Gregory Hills Drive – is the main east-west sub arterial road through the precinct linking Camden Valley Way in the west to the suburb of Gregory Hills in the east. Ultimately the road will be extended east to connect to Badgally Road. Across the frontage of the site the road includes a landscaped divided carriageway which two travel lanes in each direction and a posted speed limit of 60km/hr. No on-street parking is permitted in the road. Major intersections including the intersection with Camden Valley Way are traffic signal controlled along with its intersection with Central Hills Drive to the east.

Rodeo Drive– is a local street linking Camden Valley Way in the west with industrial developments in the east and also links to Gregory Hills Drive via Central Hills Drive and a signalised intersection. In the vicinity of the development Rodeo Drive includes two travel lanes in each direction and no on-street parking with a posted speed limit of 50km/hr.

Lasso Road – is a local industrial street which a wide carriageway of some 14.0m to cater for the high proportion of large vehicles which would access adjacent commercial / industrial developments. The street includes a single travel lane in each direction and unrestricted parallel parking on either side of the street along with a posted speed limit of 50km/hr.

Steer Road – is a local road linking Lasso Road in the north via a roundabout controlled intersection with Rodeo Drive in the south via priority controlled intersection. As with Lasso Road the street includes a wide carriageway of 14.0m kerb to kerb with a posted speed limit of 50km/hr. Unrestricted parallel parking is available along with a single travel lane in each direction.

2.4 Existing Site Traffic Generation

The site is currently a greenfield site and does not generate any traffic in its own right.

2.5 Existing Traffic Flows

As stated above, the Oran Park Precinct has been subject to significant area wide traffic analysis which has been referred to as part of this single site assessment. This is discussed further in Section **3** of this report.

2.6 Public Transport - Buses

The development site is located within 280m walking distance (from the centre of the site) to four (4) existing bus stops. The walking distances to existing bus stops are shown below

Figure 3 – Development Site Proximity to Existing Bus Stops

Bus Route 841 operates at all four (4) bus stops providing a bus service linking Narellan with Leppington via Gregory Hills and Gledswood Hills. The service provides a 30-minute frequency in each direction during the morning and afternoon peak periods.

3. Background Report Review

The proposed development site is located within the Central Hills Business Park (CHBP) located in the Camden Local Government Area (LGA), in the south west. This development site has been subject to a previous DA and associated traffic impact assessment report which is described below.

3.1 Home Centre Central Hills Drive, Gregory Hills Traffic Impact Assessment Report – Cardno August 2012

This report prepared on behalf of Dartwest Developments (developer of the Gregory Hills Precinct) to investigate the traffic impacts / parking needs of a Home Centre (bulky goods retail centre) consisting of 19 units with a total Gross Floor Area (GFA) of 30,056m^2.

The report assessed the potential traffic impacts of the following land holdings.

Figure 4 – Land Holdings subject to Cardno August 2012 Traffic Report

The key findings of the traffic report[1] were as follows:

- Traffic generation rates for the development was not available from the RTA Guide to Traffic Generating Developments and were based on surveys of similar types of developments undertaken by Cardno.
- The report adopted 1.74 trips / 100m^2 / hour for the weekday PM peak hour and 2.37 trips / 100m^2 / hour for the weekend peak hour.
- The report assessed the difference between that which was assumed in the original traffic report for the Central Hills Business Park (in terms of traffic generation assumed for the land on which the development would reside) and that which was proposed.

[1] Home Centre Central Hills Drive, Gregory Hills Traffic Impact Assessment Report – Cardno August 2012

- The proposed development was to provide 669 parking spaces.
- The traffic generated by the development was estimated to be 532 PM peak hour trips and 712 Weekend AM trips.
- This represented a 210-trip difference in the weekday PM peak to that which was originally estimated in the CHBP original traffic report.
- The report assessed the following intersections for future weekday PM peak conditions:
    - Lasso Road/Central Hills Drive.
    - Rodeo Road/Central Hills Drive.
    - Rodeo Road/Steer Road.
    - Steer Road/Lasso Road/Bronco Lane.
- All above intersections would operate at a LOS A or B and thus the traffic impacts of the proposal were considered acceptable.
- Car parking requirements for bulky goods premises and cafes/restaurants are defined in the Camden
- The report adopted Council DCP 2011 parking rates of which required 610 parking spaces (less than the 669 spaces proposed):
    - Bulky Good Premises: 1 space per 50m^2 GFA.
    - Café/Restaurant: 1 space per 30m^2 GFA (where located within a business or industrial zone).

Of note the approved Building B, the subject of this development proposal, included the following retail areas as Bulky Goods retail:

Table 1 - Original Approved Areas for Building B - Bulky Goods Retail

Building B - Approved GFA	
Tenancy 01	4,360
Tenancy 02	600
Tenancy 03	700
Tenancy 04	700
Tenancy 05	1,872
TOTAL	**8,232**

4. The Proposed Development

The key components of the proposed development and associated public works are described below.

- Construction of a retail, indoor recreation, cinema and food court complex within the originally approved area of Building B with the following areas by use:

Table 2 – Proposed Development Use by GFA

Ground Floor		
Tenancy 1		119
Tenancy 2		238
Tenancy 3		294
Tenancy 4		215
Tenancy 5		219
Tenancy 6		146
Tenancy 7		146
Tenancy 8		89
Tenancy 9		506
Tenancy 10		100
Indoor Recreation		3100
	Sub Total	**5,172**
First Floor		
Cinema		4359
Indoor Recreation 2		1605
Indoor Recreation 3		1335
	Sub Total	7299
	TOTAL	**12,512**

- Compared with the original approval for Building B, the proposed development would result in an additional 4,280m^2 of floorspace. Further, the proposed uses would focus on retail / entertainment uses instead of the original bulky goods retail uses.
- Construction of parking areas providing a total of 298 parking spaces of the potential 699 parking spaces anticipated previously for the whole development site.
- Service vehicle parking including two (2) loading bays within the open-air north-south car park for light vehicles, loading dock for an 8.8m Medium Rigid Vehicle and further loading dock with access from Lasso Road with provision for 1 x 12.5m loading bay and 1 x 6.4m loading bay.
- The cinema complex will include nine (9) screens and a total seating provision (including accessible seating) of 1,979 seats.
- The proposed car park includes 17 motorcycle spaces.
- ??? bicycle parking spaces.

Plans of the proposed development can be found in **Appendix A** of this report.

5. Parking, Access and Design Compliance Assessment

5.1 Ground Floor Commercial Tenancy Parking Provision

As stated above the commercial areas on the ground floor will function similar to that of a food court area of a retail development. It is noted that three (3) of the tenancies, 2, 3 and 10 will include drive through facilities. The following parking rates are considered applicable to the commercial components of the proposed development.

Take Away Food and Drink

Developments with no on-site seating

- 12 spaces per 100m^2 GFA

Developments with on-site seating:

- 12 spaces per 100m^2 GFA or greater of
- 1 space per 5 seats (internal and external); or
- 1 space per 2 seats (internal).

Developments with on-site seating and drive through facilities, the greater of:

- 1 space per 2 seats (internal); or
- 1 space per 3 seats (internal and external);
- plus queueing for 5-12 cars

It is noted that the number of internal / external seats are not known. Having regard to the potential seating of each tenancy and the plans provided in **Appendix A**, the following number of internal / external seats has been assumed:

- Tenancy 2: 16 external / 12 internal
- Tenancy 3: 44 external / 20 internal
- Tenancy 10: 8 external / 8 internal

Restaurant & Cafes (where located within a business or industrial zone)

- 1 space per 30m^2 GFA

Therefore, the commercial tenancies which form the food court type arrangement would require the following parking provision:

Table 3 – Parking Needs of Commercial Tenancies – Ground Floor

Ground Floor	No. / Area (m^2)	Parking Rate	No. Spaces Req.
Tenancy 1	119	1 / 30m^2	3.9
Tenancy 2*	16 external / 12 internal	1 space per 3 seats (internal and external)	9.3
Tenancy 3*	44 external / 20 internal	1 space per 3 seats (internal and external)	21.3
Tenancy 4	215	1 / 30m^2	7.2
Tenancy 5	219	1 / 30m^2	7.3
Tenancy 6	146	1 / 30m^2	4.9
Tenancy 7	146	1 / 30m^2	4.9
Tenancy 8	89	1 / 30m^2	3.0
Tenancy 9	506	1 / 30m^2	16.9
Tenancy 10*	8 external / 8 internal	1 space per 3 seats (internal and external)	5.3
		Total	**84**

*includes drive thru

5.2 Ground Floor / First Floor Recreation Areas

The recreation areas have the potential to accommodate a trampoline type recreational development which includes pre-booking of attendees and could accommodate children's birthday parties and other types of groups. Such centres are each distinctive land uses with parking demands affected by adjacent development types, patronage of use by type such as laser skirmish, children's playground and acrobatic trampolines and proximity to public transport.

In the time of writing this report, only the GFA was known and finer details of the actual type of recreational development would be determined once an operator is engaged and subject to a future DA for each internal works.

As suggested by the RTA where parking / traffic generation rates are not known, surveys of a similar type of development are recommended. As a comparison, we note the study undertaken by Lyle Marshall & Associates Pty Ltd (LMA) in November 2010 (relevant extracts reproduced in Annexure D). That study found an amusement centre of 1,576sqm GFA, including laser skirmish, generates weekend demand of 53 parking spaces (1 per 29.7sqm GFA) for staff and patrons, including approximately 60 parents, 90 children and 8 staff. It is noted that this approach was applied to the approved cinema / retail / restaurant / recreational development at 8 Groves Avenue, Mulgrave.

It is expected there would be a large complimentary use of this facility, especially during the evening periods, and the proposed cinemas. For consistency with the assumptions of the 8 Groves Avenue, Mulgrave traffic report[2], no more than 15% reduction has been applied. Of note the evening demands were found to be less than 32 spaces or 60% of peak trade. These equates to the following peak parking demand rates:

[2] Supplementary Traffic & Parking Advice of Proposed Mixed-Use Development at 8 Groves Avenue, Mulgrave – Mclaren Traffic Engineering 29 January 2016

- Weekday Evening Demand – 1 space per 58.2sqm GFA
- Weekend Midday Demand – 1 space per 34.9sqm GFA

Therefore, the proposed recreational areas of the development would require:

Table 4 – First Principles Parking Needs Assessment of Recreational Areas

Location	Area	Weekday PM Peak	Weekend AM Peak
Ground Floor			
Indoor Recreation	3100	53.2	88.8
First Floor			
Indoor Recreation 2	1605	27.6	58.2
Indoor Recreation 3	1335	22.9	38.3
	Total	**104 spaces**	**186 spaces**

From **Table 4** it is noted the recreational components of the development would require 104 spaces on a weekday evening peak and some 186 parking spaces during the midday weekend peak. These demands would occur when the demands for the cinemas would be low. As a conservative estimate of parking demands during a weekend evening peak, the weekday PM peak demand has been assumed.

5.3 First Floor Cinema

As with the recreational areas, a cinema is not defined within the RTA Guide to Traffic Generating Developments and require a first principles assessment of potential needs.

It is noted that the surveys of the Warriewood complex found that the ancillary uses generated zero additional parking (equivalent of 100% dual use),

The proponent operates the Warriewood Cinema Complex which is a stand-alone site with a total of 1,920 cinema seats, 450sqm dining and 300sqm amusement area. The findings of the surveys of this comparable cinema complex are provided in **Appendix B** of this report.

The RMS 'Guide to Traffic Generating Developments' notes for shopping centres and the like that:

"When it can be demonstrated that the time of peak demand for parking associated with the proposed shopping centre and the adjacent land uses do not coincide, or where common usage reduced total demand, a lower level of parking provision may be acceptable".

The surveys of the Warriewood Cinema Complex[3] found the following parking rates per screen were 16 – 17 spaces on weekday evenings. Further, the weekend midday demand was estimated to be to be 85% of evening trade (based on the TSA survey which found a peak of 111 cars during the day compared to 134 cars in the evening (83%)). This equates to:

- Weekday Evening Demand – 16 spaces per screen (144 spaces)
- Weekend Midday Demand – 14 spaces per screen (126 spaces)

Of note from the surveys of the Warriewood complex, common usage, or dual use, was surveyed in 2016 and found after 5pm that 18% of cinema patrons also utilised the restaurant/bar on the site.

5.4 Overall Parking Demand versus Provision

Having regard to the information presented above, the total peak hour parking demands of the proposal on a Friday evening is shown in **Table 6**.

Table 5 – Overall Development Parking Needs – Weekday PM Peak

Ground Floor	No. / Area (m^2)	Parking Rate	No. Spaces Req.
Tenancy 1	119	1 / 30m^2	3.9
Tenancy 2*	16 external / 12 internal	1 space per 3 seats (internal and external)	9.3
Tenancy 3*	44 external / 20 internal	1 space per 3 seats (internal and external)	21.3
Tenancy 4	215	1 / 30m^2	7.2
Tenancy 5	219	1 / 30m^2	7.3
Tenancy 6	146	1 / 30m^2	4.9
Tenancy 7	146	1 / 30m^2	4.9
Tenancy 8	89	1 / 30m^2	3.0
Tenancy 9	506	1 / 30m^2	16.9
Tenancy 10*	8 external / 8 internal	1 space per 3 seats (internal and external)	5.3
Indoor Recreation	3100		53.2
		Sub Total	**138**
First Floor	**No. / Area (m^2)**	**Parking Rate**	**No. Spaces Req.**
Indoor Recreation 2	1605	---	27.6
Indoor Recreation 3	1335	---	22.9
Cinema	9 Screens	16 spaces / screen	144
		Sub Total	**195**
		Grant Total	**333**
		18% Linked Trip Reduction	**273 spaces**

From **Table 6** it can be seen that a parking provision of 333 spaces would be required to accommodate Friday evening peak demands of all uses combined with no linked trips occurring. Accounting for the surveyed linked trips between cinema / eateries, the expected parking demand would be 273 spaces.

[3] Supplementary Traffic & Parking Advice of Proposed Mixed-Use Development at 8 Groves Avenue, Mulgrave – Mclaren Traffic Engineering 29 January 2016

It is noted that the peak demands of the recreational areas on a weekend AM period would be in the order of 186 parking spaces. However, demands for both dining /cinema uses would be much lower than that which would occur during the weekend evening periods. Overall, the approach to provide parking areas which accommodate the operational requirements and allow for cross over of parking use is a sound one.

Overall, as the development provides 298 spaces with access to future parking areas forming part of the holistic development, the proposed parking provision is considered adequate to accommodate operational weekday demands. Further, the peak demands of recreational uses would not coincide with the peak demands of cinema uses freeing up parking provision for dual use during busier periods for each development type.

5.5 Motorcycle Parking Provision

The Oran Park DCP 2017 does not provide rates for motorcycles. However, the Camden DCP requires the following:

- 1 motorcycle space for every 25 parking spaces in excess of the first 25 parking spaces

Therefore, with 298 parking spaces proposed, the development would require a total of 11 motorcycle spaces. As the development includes 17 motorcycle spaces the provision complies with the DCP and is considered satisfactory.

5.6 Bicycle Parking Provision

The Oran Park 2017 DCP states the following for bicycle parking provision:

- Non-residential development – 1 bicycle parking space per 750m^2 GFA

Thus, the proposed development at 12,512m^2 would require 17 bicycle parking spaces. As the development includes 30 bicycle parking spaces the provision exceeds the minimum requirements of the DCP and is considered satisfactory.

5.7 Service Vehicle Parking Provision

Council's general DCP requires the following service vehicle provision for new developments:

- 1 space per 4,000m^2 GFA or part thereof for areas up 2,000m^2; thereafter
- 1 space per 8,000m^2 GFA or part thereof (50% of spaces adequate for trucks)

Therefore, the proposed development should provide 2-3 service vehicle spaces which include at least one space for trucks. As the development includes:

- Two (2) light vehicle loading bays within the open-air north-south car park
- One loading by for an 8.8m Medium Rigid Vehicle;
- One loading bay for a 12.5m Heavy Rigid Vehicle; and
- One loading bay for a 6.4m Small Rigid Vehicle.

The proposed provision for service vehicles well exceeds the minimum requirements of the DCP and is considered satisfactory. Turning path analysis of each service bay which accommodates trucks are provided in **Appendix C** of this report and found each bay has adequate manoeuvring space available.

5.8 Car Park Design

All elements of the proposed car parking areas design have been reviewed for compliance with AS2890.1 and were found to be satisfactory. All parking space widths, lengths, aisle widths and ramp grades comply with AS2890.1. Overall the car park design is considered satisfactory.

Turning path analysis of all ramps and the vehicle exit in Steer Road is provided in **Appendix D**.

Overall the design of the basement parking area, access ramp complies with the relevant Australian Standards and is considered satisfactory.

5.9 Access Arrangements

To service the take away developments proposed in Steer Road, a number of entry / exit driveways are proposed which results in a driveway provision in the order of 10 overall which is more than the three (3) originally approved.

All proposed driveways in all locations comply in terms of width and placement with the requirements of AS2890.1 and are considered satisfactory.

The location of the driveways in Steer Road will not impact on traffic operations in the street as passing of vehicles waiting to turn right is available within the existing carriageway. It is recommended that a 'No Parking' zone be installed along the eastern side of Lasso Road between the roundabout and the bend to ensure two lanes are available (for travel or passing) southbound.

6. Potential Traffic Impacts

6.1 Original Building B Development Traffic Generation

As stated in Section 3.1, the original approved development traffic report[4] assumed the following traffic generation rates for the development:

- 1.74 trips / 100m^2 / hour for the weekday PM peak hour.
- 2.37 trips / 100m^2 / hour for the weekend peak hour.

Therefore, the 8,232m^2 of bulky goods retail of Building B would generate **144** trips two way in the PM peak period.

6.2 Proposed Development Building B Traffic Generation

6.2.1 Dining

The dining areas would operate as dine-in / takeaway restaurants with peaks occurring during the evening. The RMS suggests a rate of 5 trips per 100m^2 GFA with the majority of the traffic generated occurring after the evening road network peak period. However, the RMS states:

"It is not advisable to assume 100% seat occupancy, when assessing traffic generation. Ideally, the 85-percentile occupancy should be used."

Therefore, to estimate seating capacity 85% of the GFA has been used to calculate peak parking demands. To accommodate for the same 18% reduction for linked trips (as was applied to the parking demands), the resulting peak hour rate would be 3.49 trips per 100m^2 restaurant GFA. Trips are assumed to be 90% IN and 10% OUT based on customer only trips.

6.2.2 Recreation Areas

The RTA does not provide peak hour traffic generation rates for recreational facilities. However, potential traffic demands during the peak can be calculated from considering the turnover of allocated parking.

The parking rate in Section 5.2 of 1 space per 58.2m^2 GFA (104 parking spaces) included parking for staff. It is assumed that the average duration of stay for patrons would be approximately one hour.

A conservative estimate of traffic generation of the recreational uses would be an entry / exit trip per space during a weekday peak hour or 208 vehicle trips. The trip distribution is assumed to be 75% IN and 25% OUT in the evening peak hour.

6.2.3 Cinemas

The RTA does not provide peak hour traffic generation rates for recreational facilities. However, as with the parking rates, the TSA surveys of a comparable cinema complex indicated and evening peak on Thursday and Friday to be 127 trips for the 7-screen development (18.1 trips per screen).

[4] Home Centre, Central Hills Drive, Gregory Hills Traffic Impact Assessment – Cardno August 2012

Therefore, the proposed nine (9) screen development (including the 18% dual use discount) equates to 14.88 road network peak hour trips per screen. Thus, the proposed cinema component of the development would potentially generate 134 peak hour trips two way.

Trips are assumed 75% IN and 25% OUT in the evening peak hour.

6.2.4 Overall Weekday PM Peak Hour Traffic Generation

Having regard to the adopted traffic generation rates above, the proposed development has the potential to generate the following weekday PM peak hour trips by direction.

The following types of retail uses have been assumed for each tenancy on the ground floor:

Table 6 – Total Development Estimated Weekday Peak Hour Traffic Generation by Use

Location	Area	Traffic Generation Rate	Traffic Generation
Tenancy 1	119	3.49 trips per 100m^2 GFA	5
Tenancy 2	238	3.49 trips per 100m^2 GFA	9
Tenancy 3	294	3.49 trips per 100m^2 GFA	11
Tenancy 4	215	3.49 trips per 100m^2 GFA	8
Tenancy 5	219	3.49 trips per 100m^2 GFA	8
Tenancy 6	146	3.49 trips per 100m^2 GFA	5
Tenancy 7	146	3.49 trips per 100m^2 GFA	5
Tenancy 8	89	3.49 trips per 100m^2 GFA	3
Tenancy 9	506	3.49 trips per 100m^2 GFA	18
Tenancy 10	100	3.49 trips per 100m^2 GFA	4
Indoor Recreation	3100	53.2 spaces	106
		Sub Total	**182 trips**
First Floor			
Cinema	4359 (9 screens)	14.88 / screen	134
Indoor Recreation 2	1605	27.6 spaces	56
Indoor Recreation 3	1335	22.9 spaces	46
		Sub Total	**375 trips**
TOTAL	**12,512**	**Grand Total**	**557 trips**

From Table 6 the proposed development is estimated to generate approximately 557 vehicle trips two way during the weekday PM peak. This compares to the approved development for Building B which generated 532 PM peak hour trips.

The net increase of 25 weekday peak hour trips would have a minimal impact on the future intersection operating conditions as found in the approved DA traffic report which are repeated below.

Table 3.4 Intersection Analysis Results

Intersection	Intersection Control	Peak Traffic Period			
		Degree of Saturation	Delay (s)	95th %ile Queue (m)	Level of Service
Lasso Road/Central Hills Drive	Roundabout	0.308	13.1	10.5	A
Rodeo Road/Central Hills Drive	Roundabout	0.195	12.4	5.6	A
Rodeo Road/Steer Road	T-Junction	0.537	21.7	23.7	B
Steer Road/Lasso Road/Bronco Lane	Roundabout	0.134	12.1	4.0	A

Overall the future weekday intersection operating conditions surrounding the development would be acceptable.

On the matter of potential weekend AM trips generated by the development, it is noted that this would be markedly less than the 712 Weekend AM trips estimated for the approved development of Building B.

Both the dining and cinema demands during the weekend AM peak would be very low compared to weekend evening periods. The main demands would be generated by the recreational areas which would require some 186 spaces to accommodate potential weekend AM parking demands (see Table 4). Applying the same traffic generation rate of 2 trips per space, this would equate to some 372 weekend AM peak hour trips which would be 48% less than that which was approved.

Overall the traffic impacts of the proposal are considered acceptable and would not result in poor intersection operating conditions immediately surrounding the development.

7. Conclusions

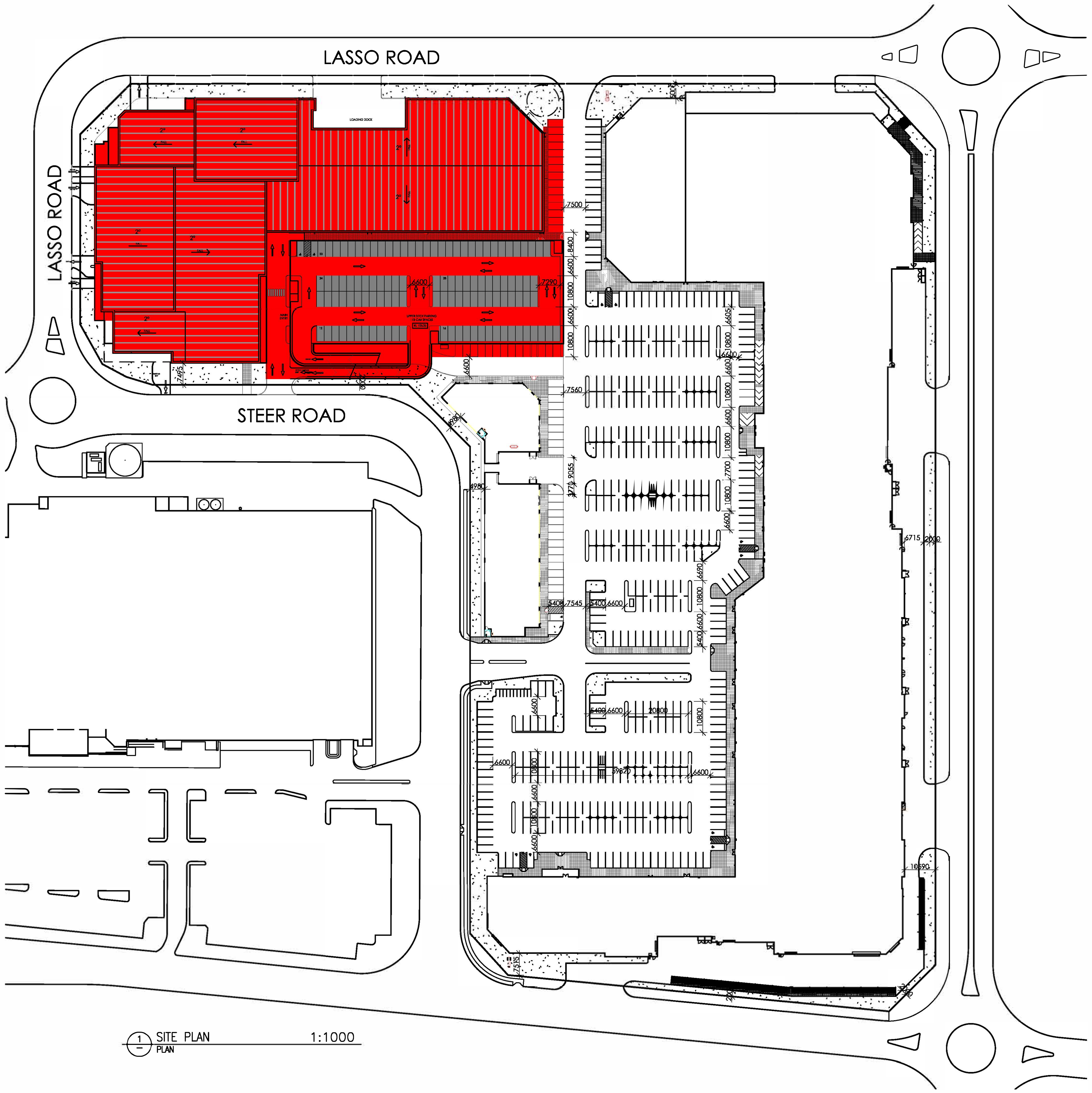
This report has reviewed the potential traffic impacts of the retail / recreational / cinema development within the Central Hills Business Park, Gregory Hills. The findings of this review are presented below:

1. The potential net increase of 25 peak hour trips during the weekday PM peak would not impact on the surrounding road network to a point of detriment.
2. The proposed parking provision of 298 spaces would accommodate both the potential weekday evening peak and weekend evening peak parking demands of the facility as a whole.
3. The potential weekend AM parking demands of the recreational areas would more than be accommodated in the proposed parking areas with demands for other uses during these times very low.
4. The proposed service vehicle parking bay provision of the development exceeds the minimum requirements of the DCP and is considered satisfactory.
5. The design of the car parking areas and access arrangements complies with AS2890.1 and is considered satisfactory.
6. The service vehicle arrangements comply with the requirements of AS2890.2 and enable an all trucks to enter and leave the site in a forward direction.
7. It is recommended that a 'No Parking' zone be installed along the eastern side of Lasso Road between the roundabout and the bend to ensure two lanes are available (for travel or passing) southbound.

Overall the traffic impacts of the proposal are considered acceptable.

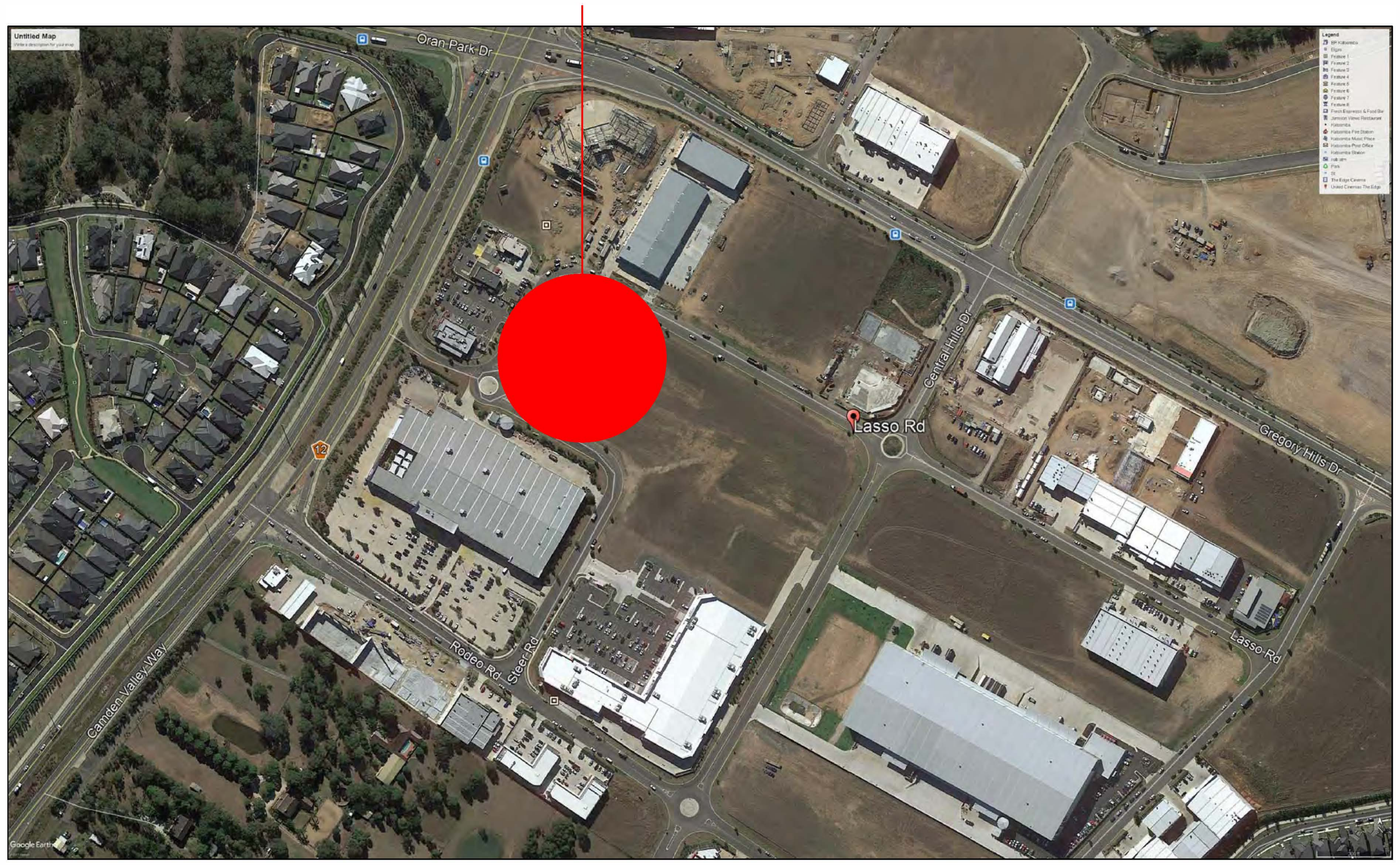
8. Appendix A – Plans of Proposed Development

GREGORY HILLS ENTERTAINMENT PRECINCT



1 SITE PLAN 1:1000
PLAN

SITE



2 AERIAL PHOTO MAP NTS
PLAN

DRAWING LIST

DA00 SITE PLAN

DA10 GROUND FLOOR PLAN
DA11 LEVEL 1 - CINEMA ENTRY PLAN
DA12 LEVEL 2 - BIOBOX FLOOR PLAN
DA13 ROOF PLAN
DA14 CAR PARK GROUND FLOOR PLAN
DA15 CAR PARK LEVEL 1 FLOOR PLAN

DA20 ELEVATION-SHEET 1
DA21 ELEVATION-SHEET 2
DA22 CAR PARK ELEVATIONS
DA25 SECTIONS

DA30 MONTAGE
DA31 COLOURED ELEVATIONS 1
DA32 COLOURED ELEVATIONS 2

Cinema Seat Numbers

Cinema	Recliner	Stadium	Wheelchair	Subtotal
1	178	247	9	**434**
2	116	114	5	**235**
3	61	153	5	**219**
4	62	153	5	**220**
5	47	153	5	**205**
6	40	91	3	**134**
7	44	107	4	**155**
8	40	138	4	**182**
9	53	138	4	**195**
Subtotal	**641**	**1294**	**44**	
			Total	**1979**

AMENDMENTS

IS	DATE	DESCRIPTION	CKD
F	29.11.17	UPDATED DA SUBMISSION	VB
E	-	NOT ISSUED	VB
D	21.11.17	UPDATED LEVELS	VB
C	16.11.17	DA SUBMISSION	VB
B	18.10.17	BCA AMENDMENTS	VB
A	19.09.17	PRELIMINARY ISSUE	VB

AUTHORISED

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DFP PLANNING PTY LTD

TRAFFIC ENGINEER
POSITIVE TRAFFIC PTY LTD

BCA CONSULTANT
GRS BUILDING REPORTS PTY LTD

STORMWATER
CARDNO

ACOUSTIC
ACOUSTIC LOGIC

QUANTITY SURVEYOR
HUGH B GAGE

NORTH

ARCHITECT
ATELIER ARCHITECTS
ABN 94 100 875 125
PO Box 87 Mona Vale NSW 1660
PH: (02) 9970 2617 MOB: 0401 000 075
nominated architect Vanessa Benitez 7446

PROJECT
UNITED CINEMAS GREGORY HILLS

10m 20 30 40 50 60 70

SCALES 1:1000@A1 | DRAWN LY | DATE SEP 2017

DRAWING
SITE PLAN

SHEET No. DA00 | ISSUE F

EXIT
COMMERCIAL TENANCY 1 119m2
COMMERCIAL TENANCY 10 100m2
pick up point
pay point
GARBAGE ROOM 1 51 (240L bins)
FIRE ESCAPE
MSB
F
M
ACCESS WC
CLEANER
COMMERCIAL TENANCY 9 506m2
LOADING DOCK
order point
RAMP UP TO FIRST FLOOR
1.23
FIRE ESCAPE CORRIDOR
CENTRE SEATING
SMOKE EXHAUST RISER OVER
COMMERCIAL TENANCY 8 89 m2
COMMERCIAL TENANCY 2 238m2
RL 102.00
COMMERCIAL TENANCY 7 146m2
COMMERCIAL TENANCY 6 146m2
MAIN ENTRY
WAITING BAY
COMMERCIAL TENANCY 3 294m2
AWNING OVER
FIRE ESCAPE CORRIDOR
COMMERCIAL TENANCY 4 215m2
COMMERCIAL TENANCY 5 219m2
480
LOADING BAY
9266 FIRE WALL
GARBAGE ROOM 2 40 (240L bins)
ACCESS
CLEANER
INDOOR RECREATION 1 3100 m2
RL 102.00
SPRINKLER BOOSTER VALVE
SPRINKLER PUMP ROOM
SPRINKLER TANK
PROPOSED CAR PARK OVER SHOWN DASHED
GROUND FLOOR CARPARK - AS APPROVED DA
RL 101.85
6600
25450mm 1:8.5
3000mm 1:12
UPPER CARPARK ENTRY
UPPER CARPARK EXIT
2

AMENDMENTS			
F	29.11.17	UPDATED DA SUBMISSION	VB
E	23.11.17	BIN ROOM ADDED	VB
D	21.11.17	UPDATED LEVELS	VB
C	16.11.17	DA SUBMISSION	VB
B	18.10.17	BCA AMENDMENTS	VB
A	19.09.17	PRELIMINARY ISSUE	VB
IS	DATE	DESCRIPTION	CKD

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BCA CONSULTANT GRS BUILDING REPORTS PTY LTD	QUANTITY SURVEYOR HUGH B GAGE

NORTH

ARCHITECT
ATELIER ARCHITECTS
ABN 94 100 875 125
PO Box 87 Mona Vale NSW 1660
PH: (02) 9970 2617 MOB: 0401 000 075
nominated architect Vanessa Benitez 7446

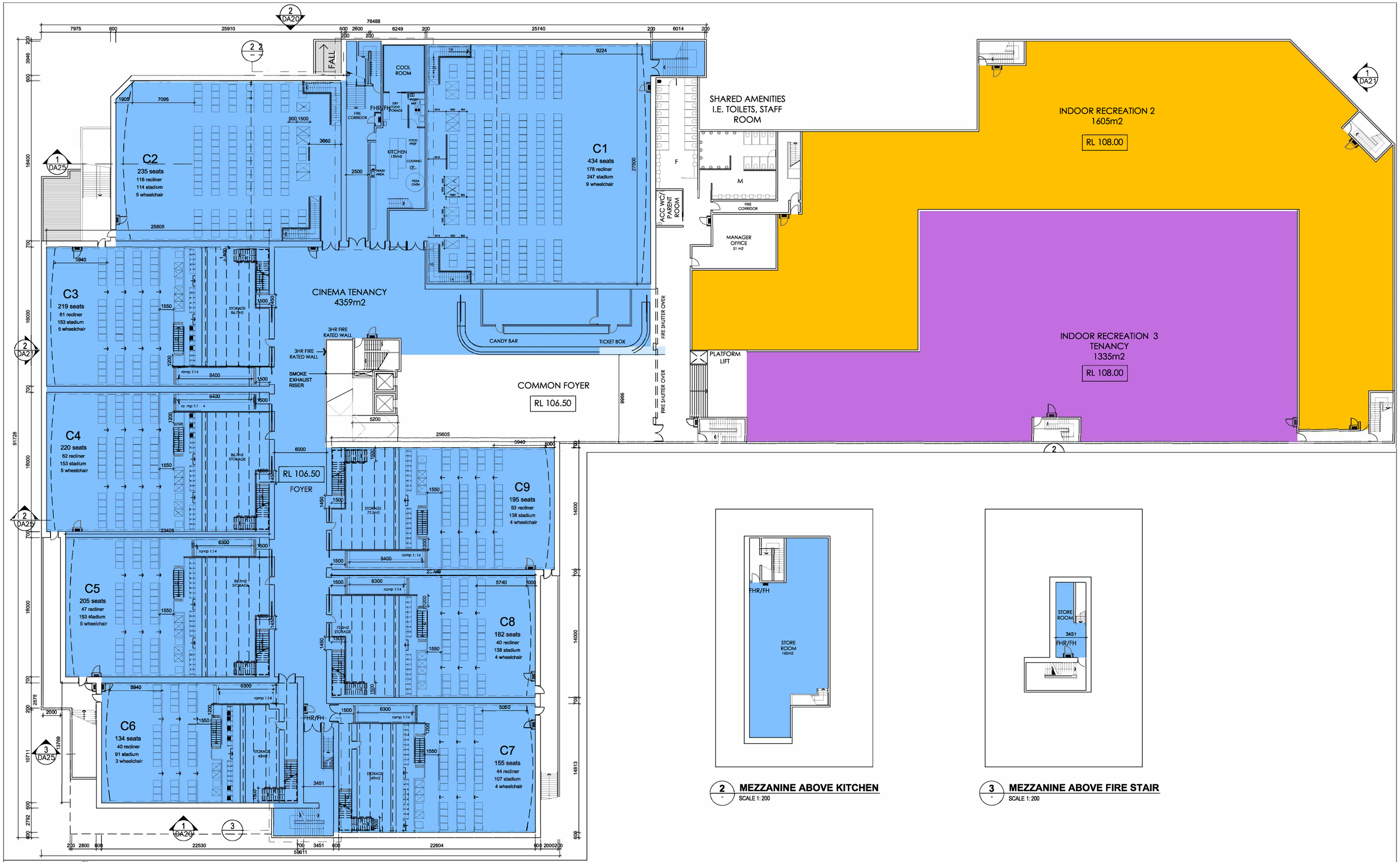
PROJECT
UNITED CINEMAS GREGORY HILLS

2m 4 6 8 10 12 14

SCALES	DRAWN	DATE
1:200@A1	LY	SEP 2017

DRAWING
GROUND FLOOR PLAN

SHEET No.	ISSUE
DA10	F



1 CINEMA ENTRY LEVEL
SCALE 1: 200

2 MEZZANINE ABOVE KITCHEN
SCALE 1: 200

3 MEZZANINE ABOVE FIRE STAIR
SCALE 1: 200

AMENDMENTS			
F	29.11.17	UPDATED DA SUBMISSION	VB
E	-	NOT ISSUED	VB
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C	16.11.17	DA SUBMISSION	VB
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NORTH

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ATELIER ARCHITECTS
ABN 94 100 875 125
PO Box 87 Mona Vale NSW 1660
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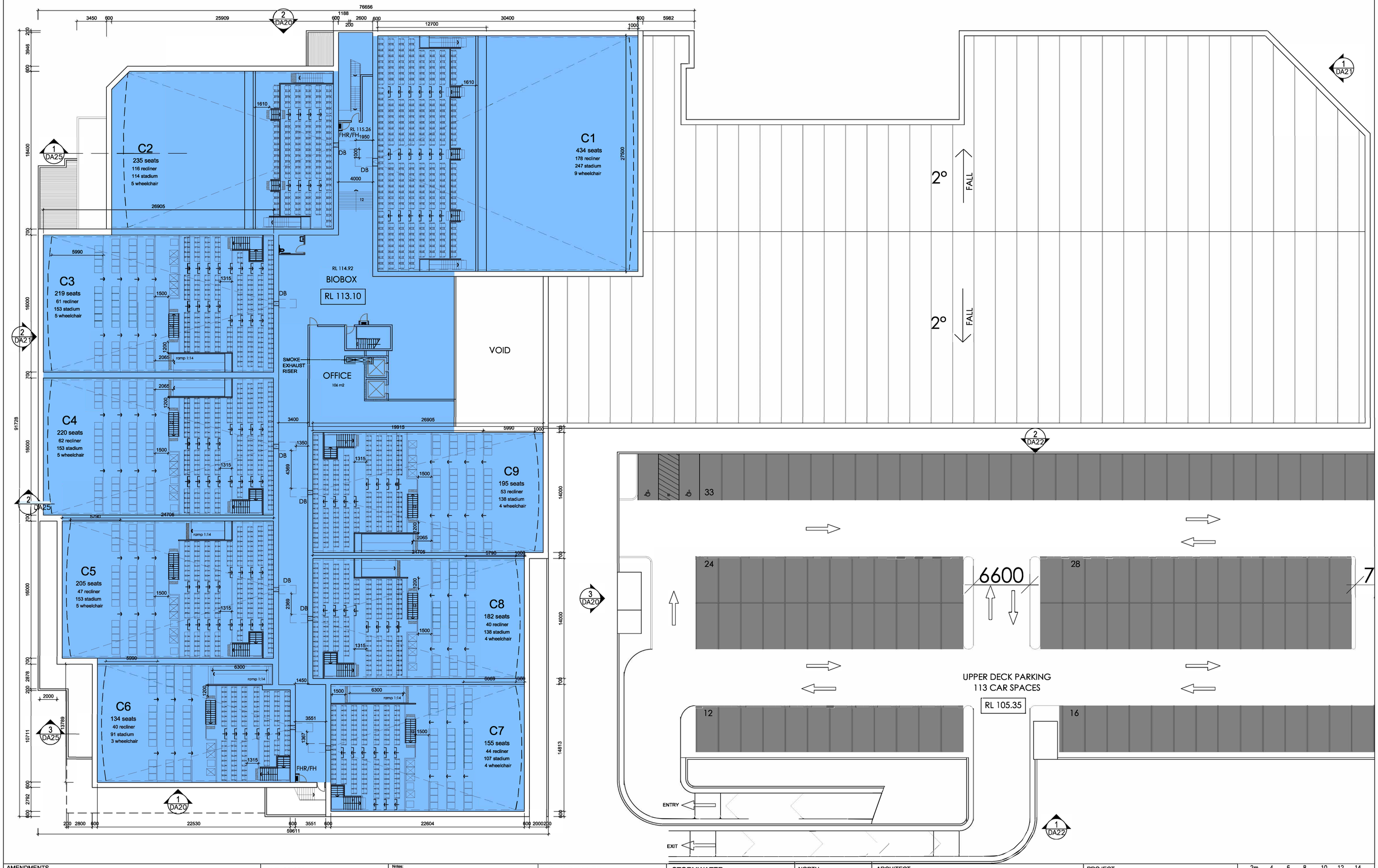
2m 4 6 8 10 12 14

SCALES	DRAWN	DATE
1:200@A1	LY	SEP 2017

DRAWING
LEVEL 1 - CINEMA ENTRY PLAN

SHEET No.
DA11

ISSUE
F



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C	16.11.17	DA SUBMISSION	VB
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PO Box 87 Mona Vale NSW 1660
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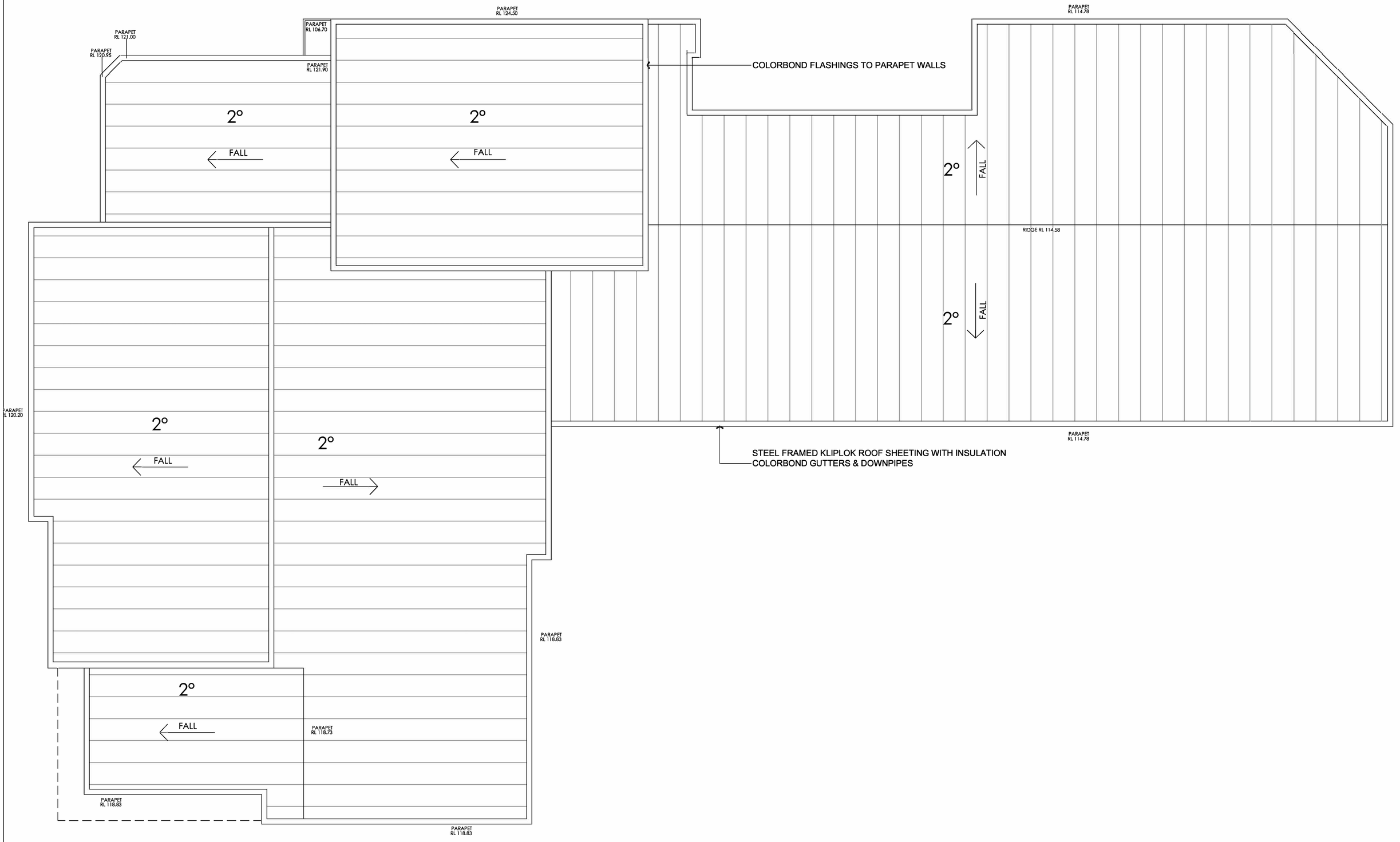
PROJECT UNITED CINEMAS GREGORY HILLS			
SCALES 1:200@A1	DRAWN LY	DATE SEP 2017	
DRAWING LEVEL 2 - BIOBOX FLOOR PLAN	SHEET No. DA12	ISSUE F	

2m 4 6 8 10 12 14



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C	16.11.17	DA SUBMISSION	VB
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NORTH

ARCHITECT
ATELIER ARCHITECTS
ABN 94 100 875 125
PO Box 87 Mona Vale NSW 1660
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PROJECT
UNITED CINEMAS GREGORY HILLS

2m 4 6 8 10 12 14

SCALES	DRAWN	DATE
1:200@A1	LY	SEP 2017

DRAWING
ROOF PLAN

SHEET No.	ISSUE
DA13	F

RAMP UP
TO FIRST FLOOR
1.23
FIRE ESCAPE CORRIDOR
1ST
COMMERCIAL
TENANCY 8
89 m2
COMMERCIAL
TENANCY 7
146m2
COMMERCIAL
TENANCY 6
146m2
MAIN
ENTRY
RCIAL
CY 4
n2
COMMERCIAL
TENANCY 5
219m2
PROPOSED CAR PARK OVER
SHOWN DASHED
GROUND FLOOR CARPARK -
AS APPROVED DA
RL 101.85
6600
7500
8400
6600
10800
6600
UPPER CARPARK
ENTRY
25450mm
1:8.5
3000mm
1:12
UPPER CARPARK
EXIT
2000
6600
7560
4980
055
STEER ROAD

AMENDMENTS			
F	29.11.17	UPDATED DA SUBMISSION	VB
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D	21.11.17	UPDATED LEVELS	VB
C	16.11.17	DA SUBMISSION	VB
B	18.10.17	BCA AMENDMENTS	VB
A	19.09.17	PRELIMINARY ISSUE	VB
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NORTH

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PO Box 87 Mona Vale NSW 1660
PH: (02) 9970 2617 MOB: 0401 000 075
nominated architect Vanessa Benitez 7446

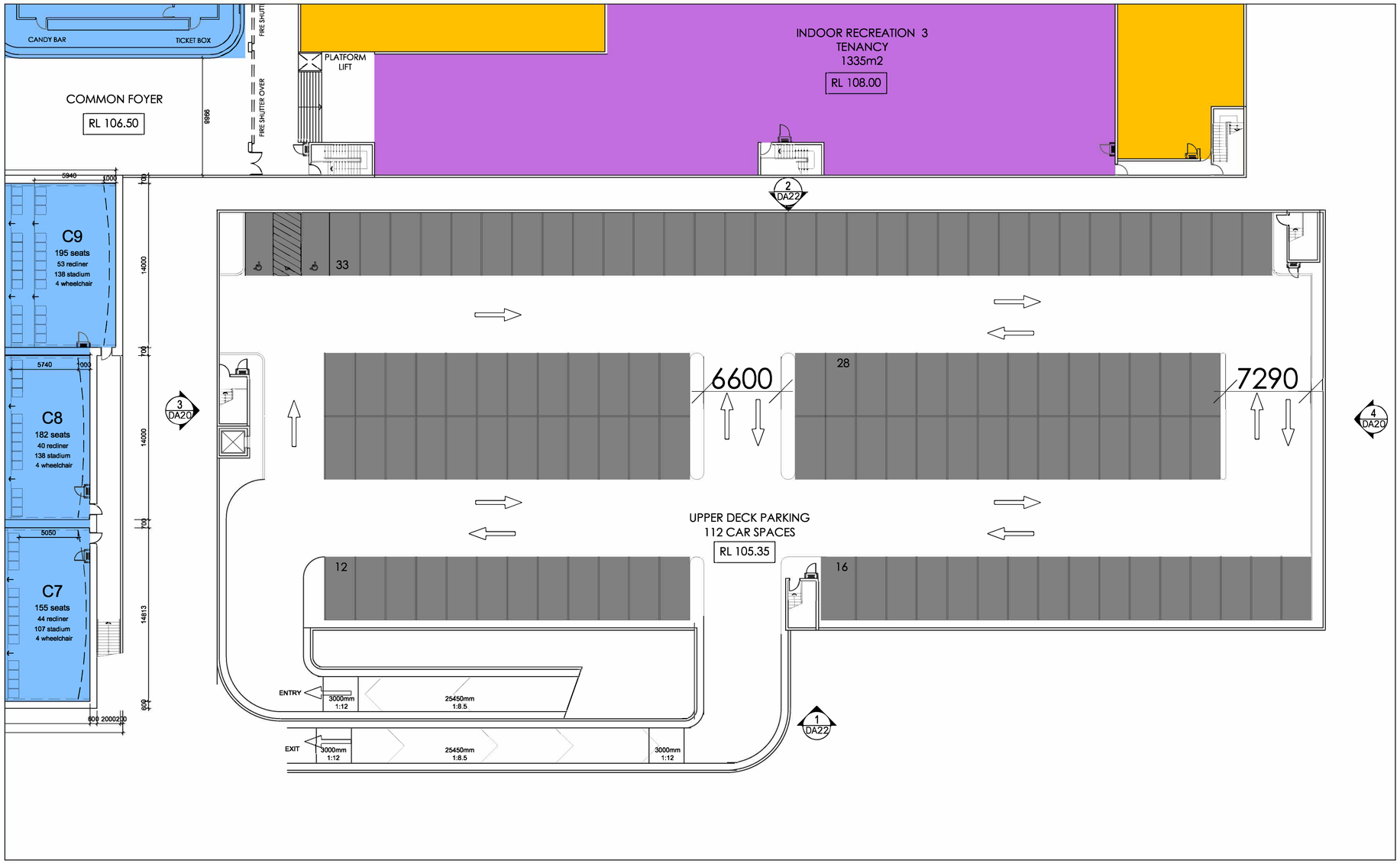
PROJECT
UNITED CINEMAS GREGORY HILLS

DRAWING
CAR PARK GROUND FLOOR PLAN

2m 4 6 8 10 12 14

SCALES	DRAWN	DATE
1:200@A1	LY	SEP 2017

SHEET No.	ISSUE
DA14	F



1 / — CAR PARK LEVEL 1 FLOOR PLAN

PLAN

AMENDMENTS			
F	29.11.17	UPDATED DA SUBMISSION	VB
E	-	NOT ISSUED	VB
D	21.11.17	UPDATED LEVELS	VB
C	16.11.17	DA SUBMISSION	VB
B	18.10.17	BCA AMENDMENTS	VB
A	19.09.17	PRELIMINARY ISSUE	VB
IS	DATE	DESCRIPTION	CKD

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NORTH

ARCHITECT
ATELIER ARCHITECTS
ABN 94 100 875 125
PO Box 87 Mona Vale NSW 1660
PH: (02) 9970 2617 MOB: 0401 000 075
nominated architect Vanessa Benitez 7446

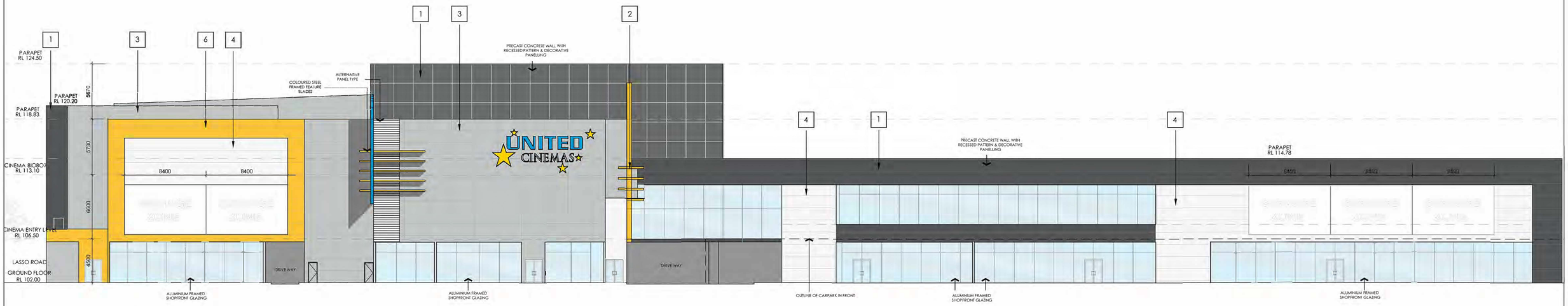
PROJECT
UNITED CINEMAS GREGORY HILLS

2m 4 6 8 10 12 14

SCALES	DRAWN	DATE
1:200@A1	LY	SEP 2017

DRAWING
CAR PARK LEVEL 1 FLOOR PLAN

SHEET No.	ISSUE
DA15	F



1 South West Elevation(Steer Road) 1:200
Elevation

2 North East (Lasso Road)Elevation 1:200
Elevation

FINISHES LEGEND (OR SIMILAR PRODUCT FINISH)

*COLOURS SHOWN ARE INDICATIVE FOR ILLUSTRATIVE PURPOSES

1	DARK FEATURE WALLS	"WESTERN MYALL" DULUX PAINT
2	FEATURE BLADES	"GOLDEN MARGUERITE" DULUX PAINT
3	WALLS GENERALLY	"PLATINUM CLASS" DULUX PAINT
4	LIGHT FEATURE WALLS	"LEXICON HALF" DULUX PAINT
5	ROOF SHEETING	"SURFMIST" COLORBOND PAINT
6	DECORATIVE FEATURE WALLS	"GOLDEN MARGUERITE" DULUX PAINT
7	DECORATIVE FACADE FEATURE	ILLUMINATED GLASS PANELS

AMENDMENTS

F	28.11.17	DA SUBMISSION	VB
E	-	NOT ISSUED	VB
D	-	NOT ISSUED	VB
C	-	NOT ISSUED	VB
B	-	NOT ISSUED	VB
A	-	NOT ISSUED	VB
IS	DATE	DESCRIPTION	CKD

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NORTH

ARCHITECT
ATELIER ARCHITECTS
ABN 94 100 875 125
PO Box 87 Mona Vale NSW 1660
PH: (02) 9970 2617 MOB: 0401 000 075
nominated architect Vanessa Benitez 7445

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UNITED CINEMAS GREGORY HILLS

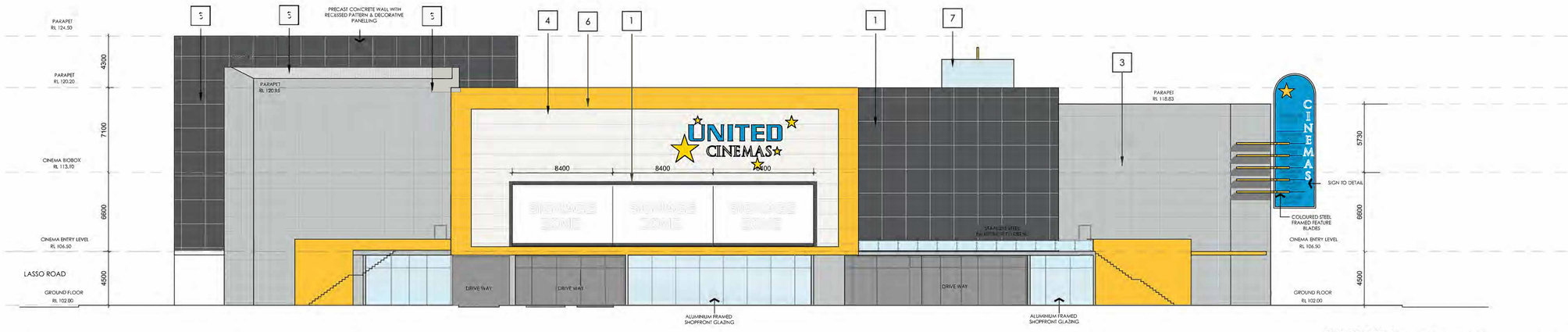
2m 4 6 8 10 12 14

SCALES	DRAWN	DATE
1:200@A1	LY	SEP 2017

DRAWING
COLOURED ELEVATION - SHEET 1

SHEET No.	ISSUE
DA31	F

DA22 North East Elevation



DA22 South West Elevation (Lasso Road)

FINISHES LEGEND (OR SIMILAR PRODUCT FINISH)

*COLOURS SHOWN ARE INDICATIVE FOR ILLUSTRATIVE PURPOSES

1	DARK FEATURE WALLS	"WESTERN MYALL" DULUX PAINT
2	FEATURE BLADES	"GOLDEN MARGUERITE" DULUX PAINT
3	WALLS GENERALLY	"PLATINUM CLASS" DULUX PAINT
4	LIGHT FEATURE WALLS	"LEXICON HALF" DULUX PAINT
5	ROOF SHEETING	"SURFMIST" COLORBOND PAINT
6	DECORATIVE FEATURE WALLS	"GOLDEN MARGUERITE" DULUX PAINT
7	DECORATIVE FACADE FEATURE	ILLUMINATED GLASS PANELS

AMENDMENTS			
F	28.11.17	DA SUBMISSION	VB
E	-	NOT ISSUED	VB
D	-	NOT ISSUED	VB
C	-	NOT ISSUED	VB
B	-	NOT ISSUED	VB
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NORTH

ARCHITECT
ATELIER ARCHITECTS
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PO Box 87 Mona Vale NSW 1660
PH: (02) 9970 2617 MOB: 0401 000 075
nominated architect Vanessa Benitez 7446

PROJECT
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2m 4 6 8 10 12 14

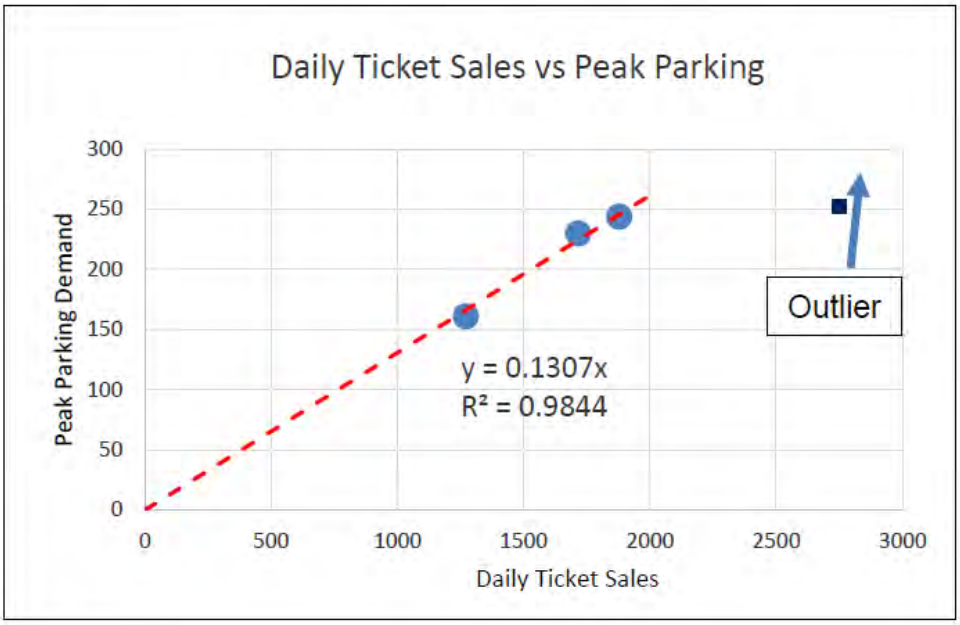
SCALES	DRAWN	DATE
1:200@A1	LY	SEP 2017

DRAWING
ELEVATION - SHEET 2

SHEET No.	ISSUE
DA32	F

9. Appendix B – Warriewood Cinemas Surveys

Day/Date	Maximum Parking Demand	Time Of Maximum Parking	Daily Ticket Sales
Friday – 08/01/2016	161	9:00PM	1271
Saturday – 09/01/2016	244	7:00PM	1879
Friday – 15/01/2016	252	7:30PM	2750
Saturday – 16/01/2016	230	7:30PM	1716



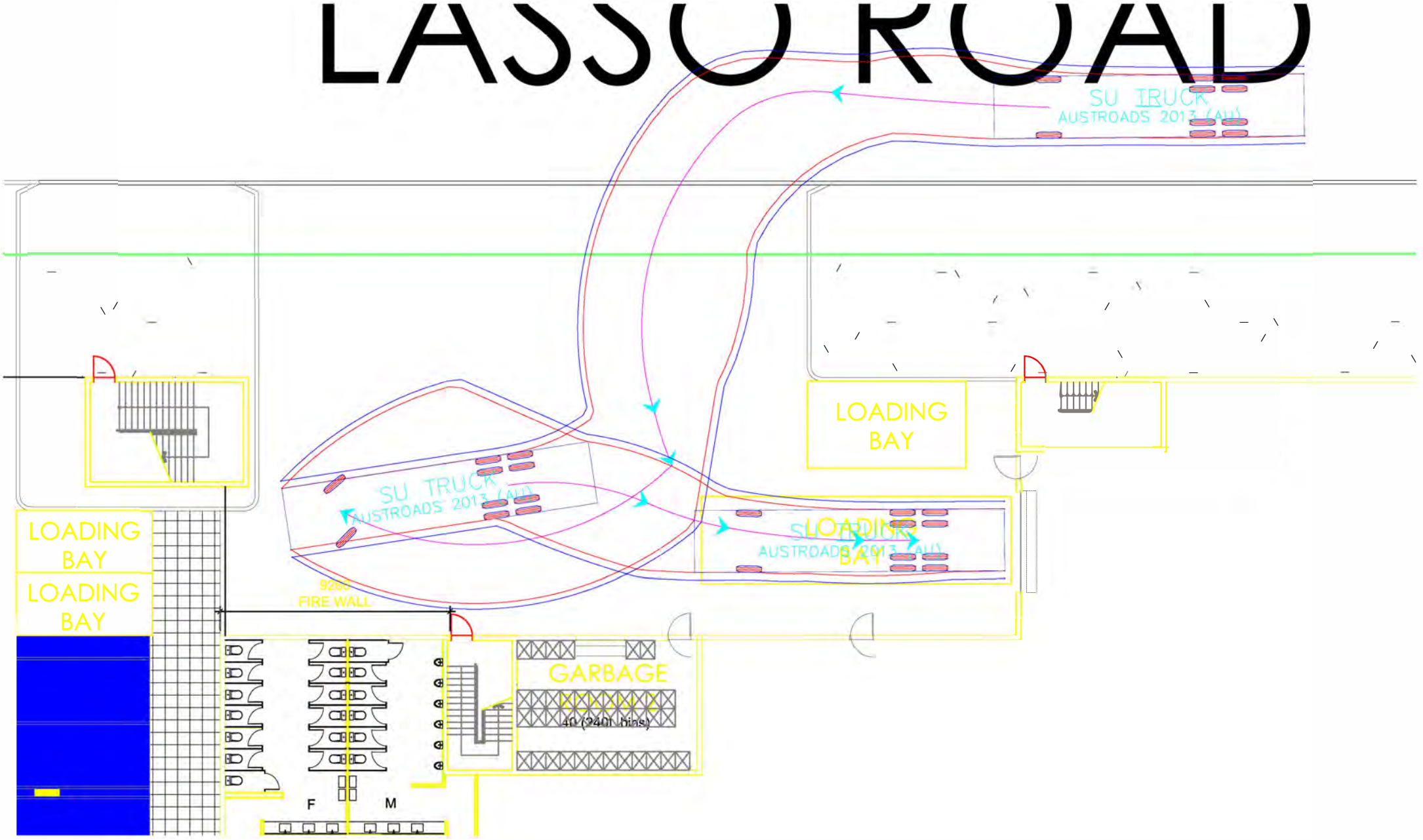
Day/Date	Tickets sold after 5pm	Restaurant Patrons after 5pm	Dual Use
Friday – 08/01/2016	530	95	18%

Curtis Traffic Surveys		Patrons in venue
Job:	160101mcl	
Day, date	08/01/16	
Location:	United Cinemas 4 Vuko Pl	
Weather:	Fine	
Client:	McLaren Traffic Engineering	
Time	Baroccobar	Funfair
17:00	Grey denotes no headcount	
17:15	0	7
17:30	0	3
17:45	2	0
18:00	10	1
18:15	14	2
18:30	9	0
18:45	13	4
19:00	8	4
19:15	8	3
19:30	8	2
19:45	10	0
20:00	10	0
20:15	12	0
20:30	14	2
20:45	10	2
21:00	4	9
21:15	4	15
21:30	4	5
21:45	4	0
22:00	2	0

Curtis Traffic Surveys		Patrons in venue
Job:	160101mcl	
Day, date	09/01/16	
Location:	United Cinemas 4 Vuko Pl	
Weather:	Fine	
Client:	McLaren Traffic Engineering	
Time	Baroccobar	Funfair
09:00		
09:15		
09:30		
09:45		
10:00	0	0
10:15	0	0
10:30	1	0
10:45	0	0
11:00	0	0
11:15	0	2
11:30	0	8
11:45	2	4
12:00	0	5
12:15	0	5
12:30	0	5
12:45	0	5
13:00	0	6
13:15	6	6
13:30	9	5
13:45	5	2
14:00	8	3
14:15	10	4
14:30	4	0
14:45	3	0
15:00	5	6
15:15	3	11
15:30	5	4
15:45	8	0
16:00	7	1
16:15	8	2
16:30	14	3
16:45	15	13
17:00	8	4
17:15	8	3
17:30	7	2
17:45	9	0
18:00	13	0
18:15	21	2
18:30	28	5
18:45	20	4
19:00	17	4
19:15	10	5
19:30	9	5
19:45	9	5
20:00	8	7
20:15	6	6
20:30	5	8
20:45	6	2
21:00	7	0
21:15	11	2
21:30	12	3
21:45	9	0
22:00	5	0

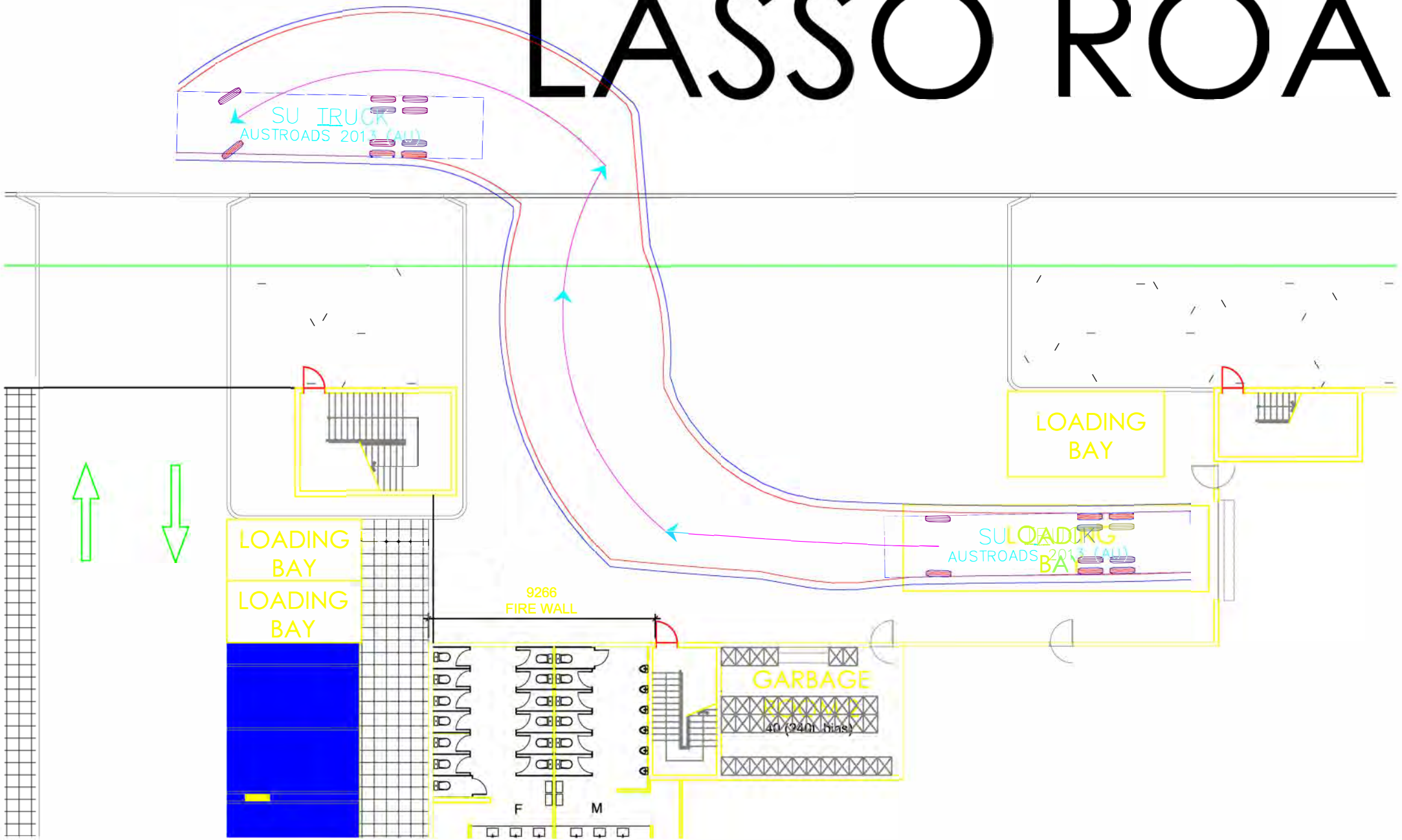
10. Appendix C – Loading Bays Turning Path Analysis

Scale 1:200 @ A4



Scale 1:200 @ A4

LASSO ROA



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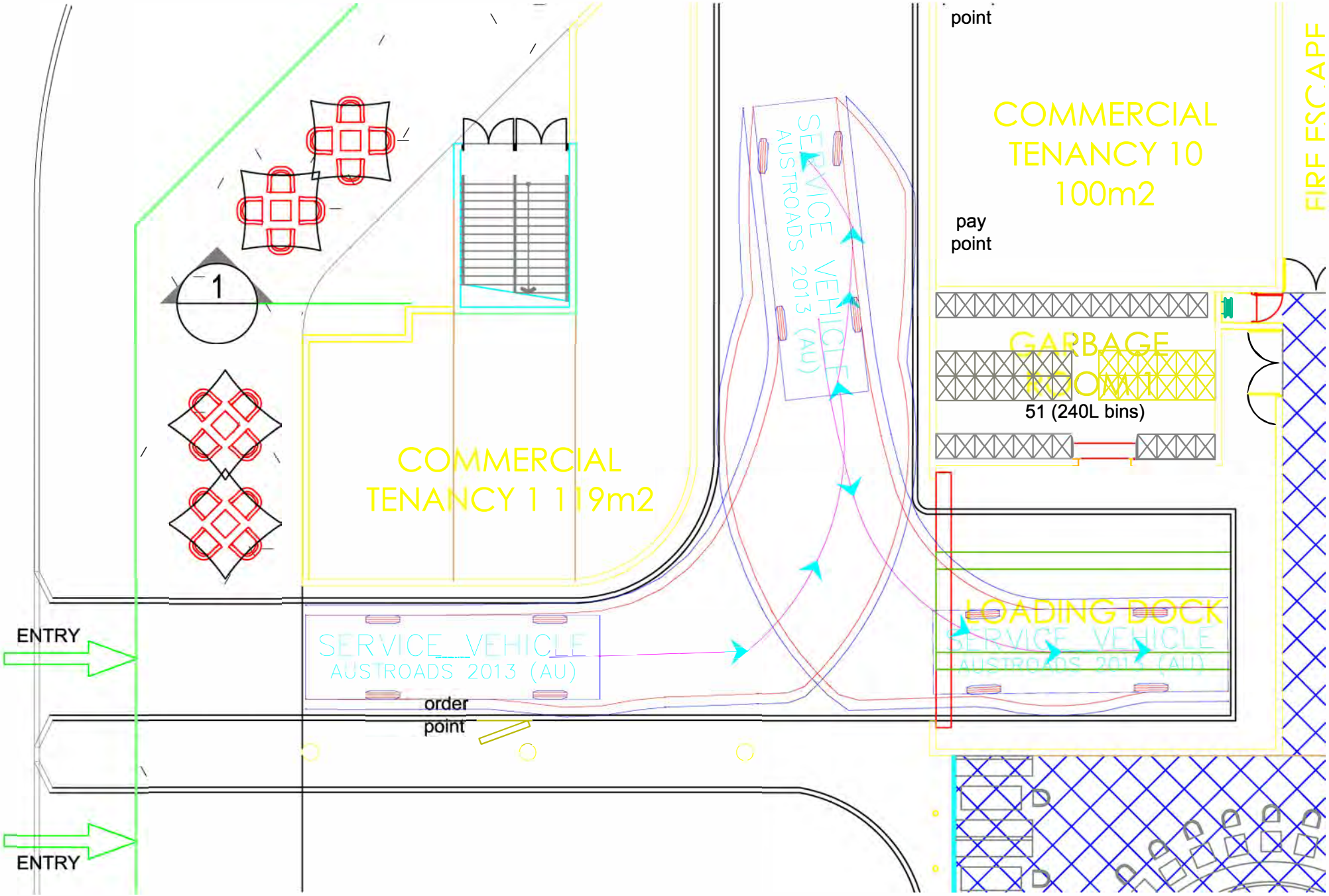
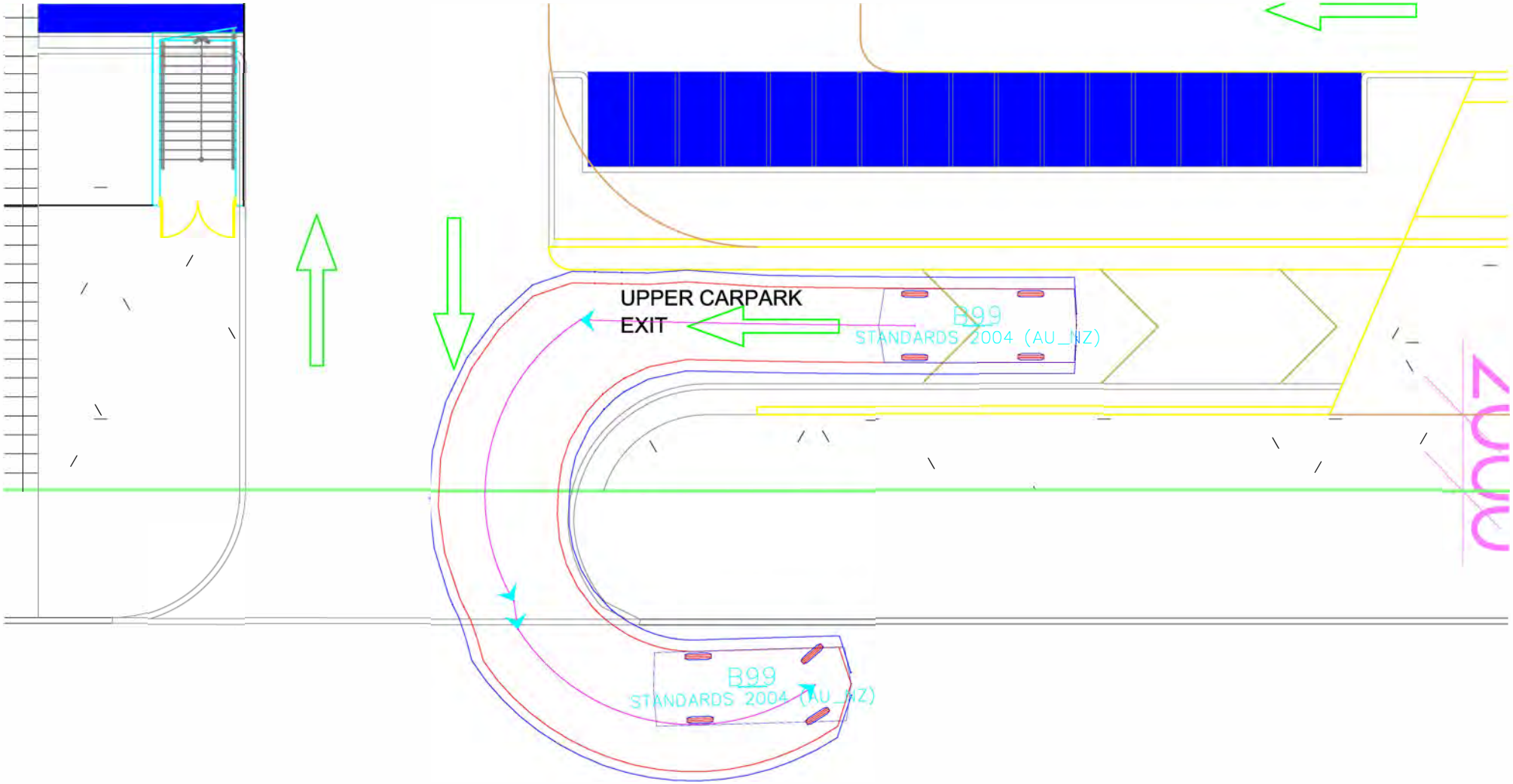


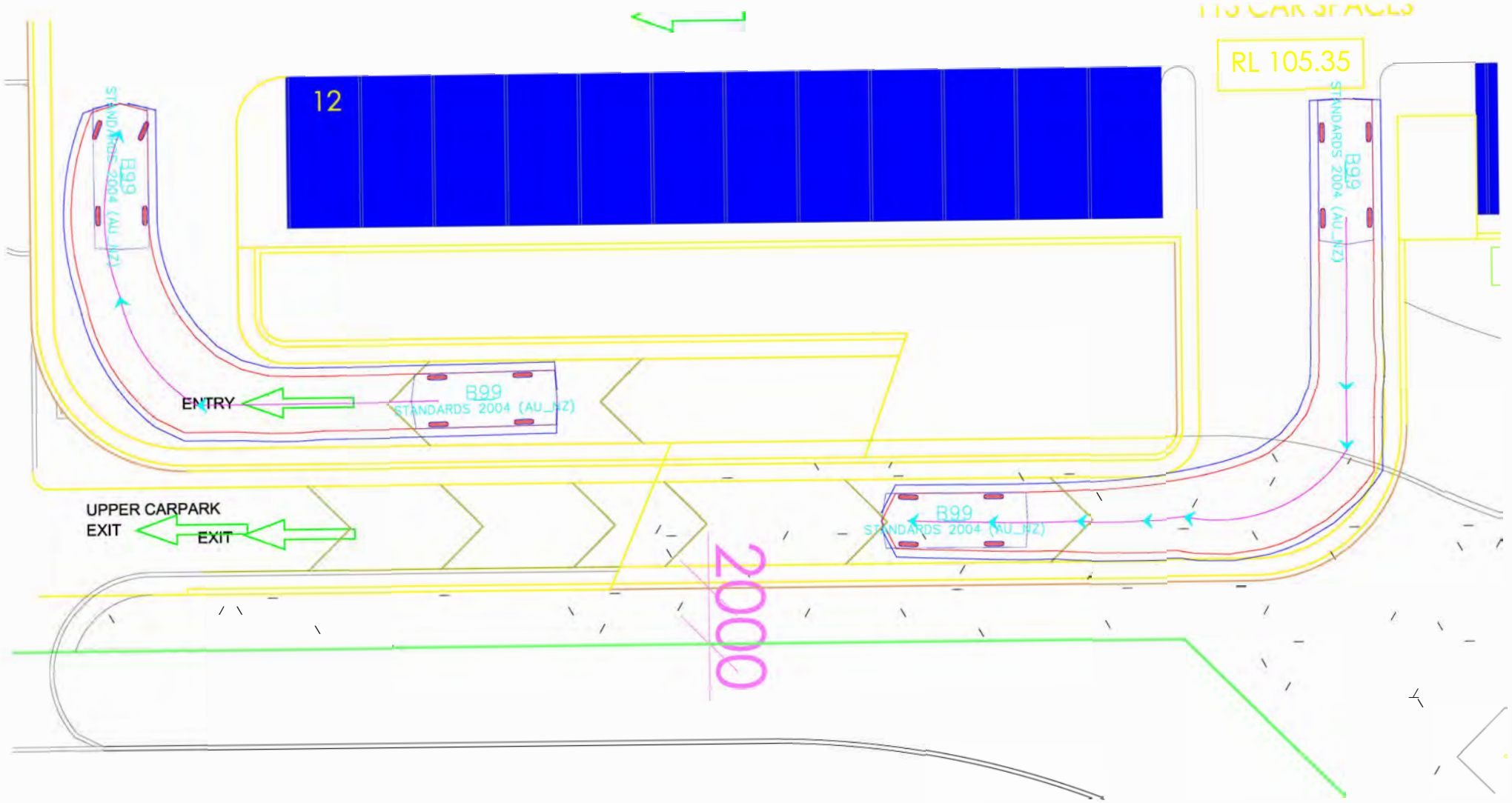
11. Appendix D – Car Park Ramp / Access Turning Path Analysis

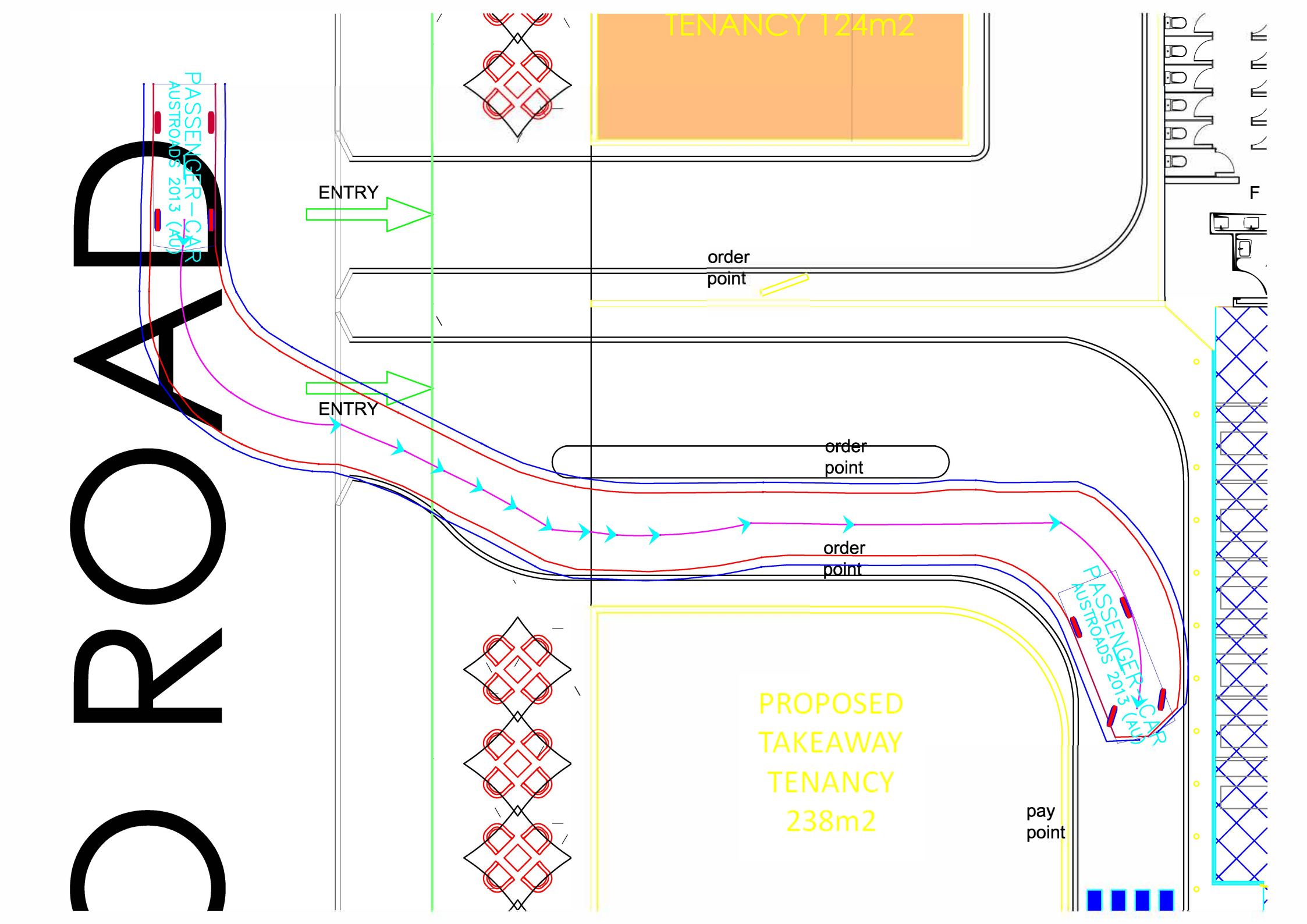
Scale 1:150 @ A4

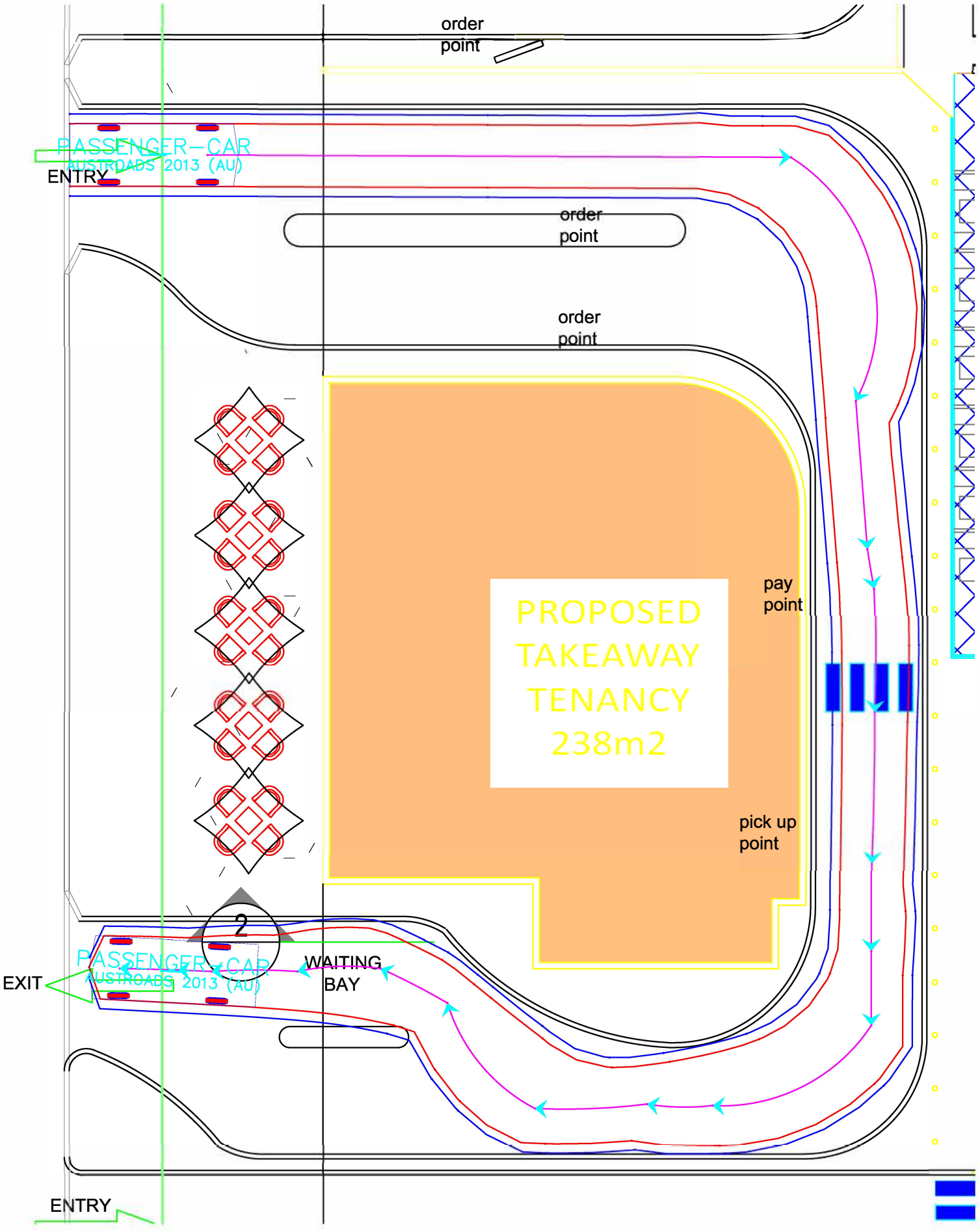


TEER ROAD

Scale 1:200 @ A4




TENANCY 124m2
ENTRY
ENTRY
order
point
order
point
order
point
PROPOSED
TAKEAWAY
TENANCY
238m2
pay
point
PASSENGER – CAR
AUSTROADS 2013 (AU)
PASSENGER – CAR
AUSTROADS 2013 (AU)
F


order
point
PASSENGER—CAR
AUSTROADS 2013 (AU)
ENTRY
order
point
order
point
PROPOSED
TAKEAWAY
TENANCY
238m2
pay
point
pick up
point
2
PASSENGER—CAR
AUSTROADS 2013 (AU)
EXIT
WAITING
BAY
ENTRY