Memorandum



To:	Jamie Gordon	At:	Scentre Group
From:	Kris Stone	At:	SLR Consulting Australia Pty Ltd
Date:	17 May 2021	Ref:	610.18818-M01-v3.0-20210517
Subject:	Westfield Hurstville Shopping Centre Entertainment and Leisure Precinct Response to Request for Information		

CONFIDENTIALITY

This document is confidential and may contain legally privileged information. If you are not a named or authorised recipient you must not read, copy, distribute or act in reliance on it. If you have received this document in error, please telephone our operator immediately and return the document by mail.

1 Introduction

SLR Consulting Pty Ltd (SLR) has been engaged by Scentre Group (SG) to provide traffic and transport advice with respect to the proposed expansion of Westfield Hurstville Shopping Centre (Westfield Hurstville) in Hurstville with an Entertainment and Leisure Precinct (ELP).

A traffic impact assessment (TIA) dated 14/10/2020 was prepared by SLR to accompany the development application (DA) for the ELP which was lodged in late 2020 for the review and assessment of Georges River Council (Council).

It is understood that Council commissioned McLaren Traffic Engineering (MTE) to undertake the traffic report peer-review process. The responses provided herein should be read in conjunction with, and interpreted within the context of, the original Traffic Impact Assessment (TIA) prepared by SLR dated 14/10/2020 that was submitted with the development application.

1.1 Item 1: Car Parking Requirements

"Relies upon GFA and not GLFA to estimate the parking demand and traffic generation of the subject site, resulting in overestimates of parking requirements and traffic generation."

In response to the above, SLR has now undertaken revised parking and traffic calculations based on Gross Leasable Floor Area (GLFA).

The current Westfield Hurstville car parking supply is 2,740 spaces.

The application previously proposed to demolish 69 car parking spaces to accommodate the proposed ELP development. These 69 car parking spaces are illustrated in the development and demolition plans in Attachment A. Subsequently, one additional parking space is now proposed to be deleted to facilitate improved vehicle circulation on the rooftop.

The parking space that is proposed to be removed is illustrated in Figure 1.

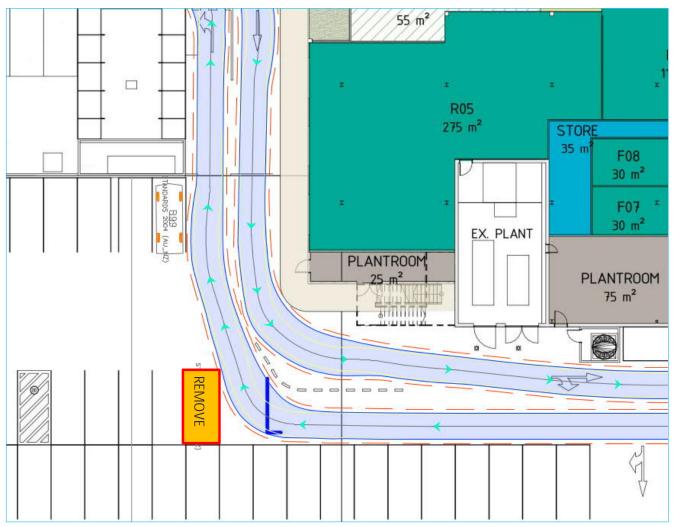


Figure 1: Proposed Removal of a Parking Space to Improve Movement on the Rooftop

Based on the above, the overall parking supply will reduce to 2,670 spaces in association with the ELP expansion. A revised swept path assessment for a B99 design vehicle is also provided in Attachment B.

Table 1 provides a summary of the revised parking assessment which references GLFA.

Table 1	Summary	of Revised	Parking	Assessment
	Jummar	o neviseu	T al Killy	Assessment

Scenario	Council DCP Requirement	GLFA (sqm)	Parking Supply	Parking Required	Surplus of Parking
Existing Development	1 parking space for every 30sqm GLFA	60,653	2,670	2,022	648
Net Change - Restaurants	1 parking space for every 30sqm GLFA	1,467	0	49	-49
Net Change - Ancillary Amusement & Retail	1 parking space for every 30sqm GLFA	915	0	31	-31
Proposed TOTAL		63,035	2,671	2,102	568

Table 1 indicates that the revised parking supply will exceed the requirements of Georges River Council's DCP by 568 spaces. This is consistent with the comments raised by MTE.



1.2 Item 2: Disaggregated Retail Categories for Traffic Generation Estimation

"Does not rely upon disaggregated retail categories to estimate the traffic generation of the shopping centre as a result of the proposed alterations and additions."

It was identified by MTE that the parking demand and traffic generation calculations in SLR's original assessment relied on the GFA instead of the GLFA. SLR agrees with this comment and has undertaken an updated assessment for the traffic generation estimates as per the below.

The RTA Guide to Traffic Generation Developments (2002) and Technical Direction TDT 2013/04a provide a clear direction that the traffic generation of shopping centres are estimated based on their total GLFA, irrespective of the land use categories that form the overall shopping centre (i.e. café, retail and etc.) This shopping centre specific data approach is more appropriate than one that relies on use specific generation rates which do not include any consideration for cross utilisation¹ (trip chaining), passing trade² (drop-in traffic) or temporal variations specific to large retail establishments.

Relevant extracts from the State Government guidelines are provided in Figure 2 and Figure 3.

Figure 2: RMS Technical Direction TDT 2013/04a (2013 - Updated Surveys)

Shopping Centres

Extensive surveys of shopping centres were conducted in 1978, 1990 and again in 2011. The latter survey involved ten larger shopping centres, seven in the Sydney metropolitan area and one each at Mittagong, Shellharbour and Tuggerah. Peak hour trip generation rates are as follows:

Range in Total Floor	Peak Hour Generation Rate (vehicles per 100m ² GLFA)					
Area (GLFA – m ²)	Thursday	Friday	Saturday	Sunday		
	(V(P)/A)	(V(P)/A)	PVT (A)			
0 - 10,000	12.3	12.5	16.3			
10,000 - 20,000	7.6 (6.2)	6.2 (6.7)	7.5 (7.5)	(6.6)		
20,000 - 30,000	5.9 (6.0)	5.6 (5.9)	7.5 (7.0)	(6.3)		
30,000 - 40,000	4.6	3.7	6.1			
40,000 - 70,000	(4.4)	(4.4)	(5.5)	(4.6)		
70,000+	<mark>(3.1</mark>)	(4.0)	(3.6)	(3.2)		

* Figures in brackets refer to 2011 surveys. Other figures are as per 1978 and 1990 surveys. Caution should be used in comparing the data in that they reflect changes in shopping behaviours. Seasonally adjusted rates appear to be in the order of 3-5% higher than the quoted 2011 rates.

² Passing trade (drop-in traffic): people who go into a shop, restaurant, etc. because they see it when walking past, not because they planned to go there.



¹ Cross utilisation (trip-chaining): people who trade at multiple shops, restaurants, etc. within the same trip, rather than having individual trips from home (or work) for each transaction item.

Figure 3: RTA Guide to Traffic Generating Developments (2002 - Original Surveys)

Table 3.1 Peak hour traffic generation rate						
Range in Total Floor Area. (GLFA - m ²).	eak Hour Generation vehicles per 100m ² G					
	Thursday.	Saturday				
	(V(P)/A)	(V(P)/A)	PVT(A)			
0 - 10,000	12.3	12.5	16.3			
10,000 - 20,000	7.6	6.2	7.5			
20,000 - 30,000	5.9	5.6	7.5			
30,000 - 40,000	4.6	3.7	6.1			

SLR has adopted the rates that are provided in RMS Technical Direction TDT 2013/04a (2013 - updated surveys) as they are more conservative and recent in comparison with the original guidance provided by RTA in 2002.

1.3 Item 3: Traffic Impacts

"Does not undertake any intersection modelling as a result of the proposed development to substantiate that the proposed alterations and additions will not have an adverse traffic impact. Noting that it is accepted that the proposal is unlikely to have an adverse impact to the surrounding road network compared to existing operations, but this does not obviate the need to provide modelling to substantiate this finding."

In response to the above, as agreed by MTE, we would like to re-emphasise the marginal traffic increase as part of the proposed ELP.

As shown in Figure 2, rates that are recommended for shopping centres with a GLFA between 40,000 to 70,000sqm are 4.4 and 5.5 vehicle movements (entry and exit combined) per hour per 100sqm GLFA for a typical Thursday afternoon peak hour and a typical midday Saturday peak hour, respectively.

Based on this, the revised trip generation assessment is provided in Table 2.



	N2 - 1-1	Thursday Pl	М	Saturday Midday		
Scenario	Yield (sqm GLFA)	Generation Rate (vph / 100sqm GLFA)	Trips (vph)	Generation Rate (vph / 100sqm GLFA)	Trips (vph)	
Existing Development	60,653		2,669		3336	
Proposed Expansion	2,382	4.4	+105	5.5	+132	
% Increase	3.93%		3.93%		3.93%	
Total	63,035	4.4	2,774	5.5	3,468	

Table 2: Trip Generation Assessment (Relies on GLFA and TDT2013/04a)

Table 2 indicates that the proposed expansion of Westfield Hurstville has the potential to generate an additional 105-132vph which equates to approximately one entry and one exit movement per minute. This is considered a conservative estimate due to the fact that a portion of the new customers of ELP will already be the existing customers of Westfield Hurstville. Furthermore, no passing-trade (drop-in traffic) allowances have been made to ensure a conservative assessment.

Please refer to Attachment C for the detailed breakdown of the traffic generation estimates in the surrounds of Westfield Hurstville for a typical midday Saturday peak hour.

Based on Attachment C, it is understood that:

- Cross Street and Park Road intersection could have an increase of 52 vehicles per hour in the total turning movements in the Saturday midday peak hour,
- Forest Road, Park Road and Alfred Street intersection could have an increase of 44 vehicles per hour in the total turning movements in the Saturday midday peak hour,
- Forest Road and Rose Street intersection could have an increase of 44 vehicles per hour in the total turning movements in the Saturday midday peak hour,
- Forest Road and The Avenue intersection could have an increase of 41 vehicles per hour in the total turning movements in the Saturday midday peak hour,
- All other surrounding intersections will have a lower increase in turning movements compared to the intersections listed above.

Based on the conservative assumptions above and given there are six entries and five exits to and from the subject site, it is expected that the incremental traffic impacts of the proposed development are unlikely to have a significant adverse impact on the surrounding road network, as was noted by MTE. A capacity analysis using a program like SIDRA is accordingly not warranted.

Furthermore, even if capacity upgrades were warranted, improving road capacity beyond that envisaged as part of the TMAP would be counter to good transport planning practices as it would only serve to reinforce private vehicle travel as the predominate transport mode.

1.4 Item 4: Bus Zone in Park Road

"Did not undertake an assessment of the bus zone that is recommended to be relocated for the provision of a deceleration lane, or what impact the relocation of the bus zone may have on existing street parking, in consultation with both Council and bus operators."



In response to the above, discussion on the location of the bus stop in Park Road was provided in SLR's original TIA as a high-level safety review only. It was only noted as a safety matter as part of the existing conditions assessment.

This issue is neither specific to the proposed ELP nor exacerbated materially by the proposed ELP expansion.

The extension of the deceleration lane is one possible solution to address the existing matter which, amongst other solutions, could be explored further by the Council.

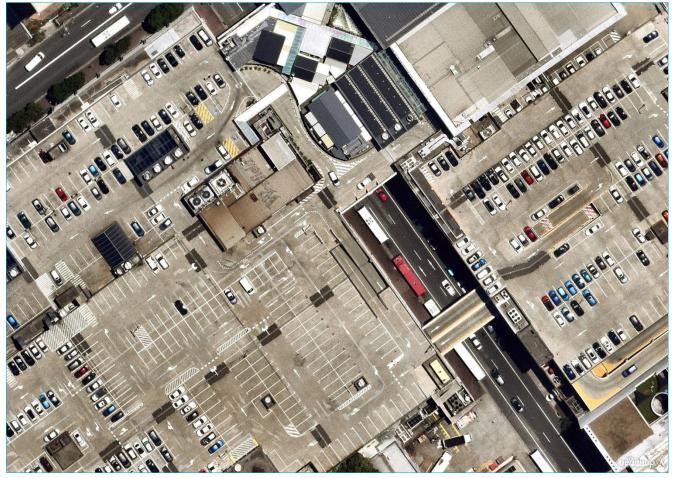
1.5 Item 5: Internal Carpark Design

"No detailed assessment or commentary has been provided of the proposed changes to the internal design in terms of vehicle queuing, circulation within the car park and conflict points as a result of the proposed modifications. Further, the Architectural Plans do not sufficiently detail direction arrow line marking to inform users of correct circulation paths."

In response to the above, no material changes are proposed to the existing internal vehicle circulation and car parking design that could have a material impact on the existing vehicle queueing and circulation. The ELP development obviously requires some parts of the existing layout to be re-purposed, however, the primary access and circulation routes remain consistent with the existing situation.

As indicated in Figure 4, the existing arrow line markings in the rooftop are freshly painted and provide clear guidance to drivers.

Figure 4: Rooftop Parking – Existing Conditions



Source: <u>http://maps.au.nearmap.com/</u> (image captured on 07/12/2020)



Architectural plans of the proposed ELP on the rooftop (please refer to Attachment A for full size plans) also provide clear arrow line markings and inform correct circulation paths. It should also be noted that changes proposed to the rooftop parking area are minimal and mainly demolition work.

An extract of the line marking from the proposed rooftop plan is provided in Figure 5.



Figure 5: Proposed Architectural Plans of ELP (Rooftop)

Any new car parking space or circulation aisle that is reconfigured should be consistent with the Australian Standards.

A modified swept path assessment for the rooftop is also provided for a B99 design vehicle in Attachment B, as requested by MTE.



1.6 Item 6: Car Parking Requirements

"The SLR Report only assesses the parking requirements for the development under a retail car parking rate. It is expected that some land uses within the Hurstville Westfield Shopping centre would not fall under the retail or commercial car parking requirement. As such the SLR Report is required to refer to the relevant DCP requirement within HDCP No.2 Amendment 5 – Section 6: General Planning Considerations for uses that fall outside the retail and commercial categories".

In response to the above, SLR re-emphasises that there are site specific parking rates for the existing Westfield Hurstville Shopping Centre in Hurstville DCP No. 2 Amendment 5³ (Site 18A in Page 119).

Section 1.1 of this memorandum provides a detailed analysis for the relevant parking requirements of the existing development and the proposed expansion.

Hurstville City Centre TMAP (2018) Action Plan recommends a range of improvements to public transport and active transport infrastructure in and at the surrounds of Hurstville. Given the achieved surplus of 568 parking spaces within Westfield Hurstville, in our view the provision of additional car parking would contradict the Action Plan recommended by Hurstville City Centre TMAP (2018).

SLR has however undertaken a sensitivity check calculation in Table 3 to demonstrate that the proposed ELP expansion would still have a significant surplus in parking provision if a rate of 1 parking space for every 6sqm GLFA⁴ was adopted for the proposed restaurants within the ELP, as noted by MTE.

Scenario	Council DCP Requirement	GLFA (sqm)	Parking Supply	Parking Required
Existing	1 parking space for every 30sqm GLFA	60,653	2,670	2,022
Net Change - Restaurants	1 parking space for every 6sqm GLFA	1,467	0	245
Net Change - Ancillary Amusement & Retail	1 parking space for every 30sqm GLFA	915	0	31
Proposed TOTAL		63,035	2,671	2,298

Table 3: Sensitivity Check Calculation for Parking Assessment

Notwithstanding with the surplus demonstrated in Table 3, this method of calculation is only documented for the sake of conservatism and has been identified for theoretic capacity reasons only. Parking rates for shopping centres are determined in consideration of a mixture of land uses and this determination takes restaurants within the shopping centres into consideration along with all other land uses. Breaking down the land uses in shopping centres is an impractical and uncommon way to determine parking provision in shopping centres.

As a matter of fact, there are several commercial land uses in the upper levels of Westfield Hurstville which could possibly be subject to a parking rate of 1 space for every 60sqm GLFA as per the relevant DCP, however for a conservative assessment, SLR adopted 1 space for every 30sqm GLFA for these land uses, along with all others.

Based on the above, SLR emphasises that the site-specific parking rates provided in Hurstville DCP No. 2 Amendment 5 (Site 18A in Page 119) should still apply as detailed in Table 1.

⁴ It is assumed that this figure was referenced by MTE based on the refreshment room (including restaurants) rates provided in Page 8 of HDCP No.2 Amendment 5 Section 6.1.



³ <u>http://www.georgesriver.nsw.gov.au/StGeorge/media/Documents/Development%20control%20plan/Adopted-DCP-2-Section-4-Built-Form-Controls-9-August-2012.pdf</u>

1.7 Item 7: Car Parking Surplus

"Considering the changes to the planning controls, specifically the reduction in required car parking. The subject proposal is likely to comply with the HDCP car parking requirements when assessed as GLFA and when assessed as additional categories other than just retail".

In line with MTE comments, car parking requirements have now been assessed based on GLFA as opposed to the earlier method of GFA based calculation.

Table 1 in Section 1.1 of this memorandum demonstrates that the proposed expansion complies with Council's DCP and a car parking surplus of 568 spaces, as agreed by MTE.

1.8 Item 8: Car Parking Surplus

"To achieve the performance criteria of the HDCP No.2 Amendment 5 – Section 6.1.2.1 Car Parking it is recommended that parking counts be undertaken during the PM peak hour periods on Thursday and Midday on weekends (not within December or January). To ensure that the removal of 69 car parking spaces will not have an adverse impact to capacity of the existing development. It should be noted that consideration should be made to providing 10% additional car parking (Austroads Guide to Traffic Management Part 11: Parking) over required car parking demand as this provides for optimum efficiency.".

In response to the above, SLR has reviewed Council's relevant DCP⁵ – Section 6.1.2.1. The performance criteria of the car parking provision for shops (CBD Core) is consistent with the specific parking rates set for Westfield Hurstville Shopping Centre in Hurstville DCP No. 2 Amendment 5 (Site 18A in Page 119).

Considering this consistency in parking rates in Council's site specific and general DCPs and a somewhat large 568 space surplus in the parking provision, undertaking parking counts is not considered necessary.

⁵ <u>http://www.georgesriver.nsw.gov.au/StGeorge/media/Documents/Development%20control%20plan/Hurstville-DCP-2-</u> Section-6-General-Planning-Considerations-9-August-2012.pdf



2 Conclusions and Recommendations

SLR has been engaged by Scentre Group to provide traffic and transport advice with respect to the proposed expansion of Westfield Hurstville Shopping Centre in Hurstville with an Entertainment and Leisure Precinct. A traffic impact assessment dated 14/10/2020 prepared by SLR to accompany the development application was lodged in late 2020 for the review and assessment of Georges River Council.

SLR has received the comments raised on the development application. The purpose of this memorandum is to respond to these comments and provide supplementary technical information to SLR's original traffic impact assessment. This supplementary traffic engineering advice details all eight comments raised with the respect to the development application documentation.

The following dot-points summarise the outcome of this advice:

- The parking and traffic generation estimates were revised so that the calculations would rely on the GLFA instead of the GFA. This resulted in a significant increase in the car parking surplus of Westfield Hurstville Shopping Centre. The revised calculation also resulted in a decrease in the traffic generation estimates for the Thursday evening peak hour however a slight increase in traffic generation estimate was determined for the Saturday midday peak hour.
- It is expected that the proposed ELP will generate approximately 105 and 132 additional trips in the wider network in Thursday and Saturday peak hours. This equates to an approximate increase of 4% in the traffic generated by the existing Westfield Hurstville. It should however be noted that this is a conservative assessment due to the fact that a portion of the new customers of ELP will already be the existing customers of Westfield Hurstville. Furthermore, no passing-trade (drop-in traffic) allowances have been made to ensure a conservative assessment.
- It is expected that there will be a surplus of 568 parking spaces within the Westfield Hurstville car park compared to the minimum requirements of Council's DCP. Even with the proposed ELP expansion, Westfield Hurstville would provide a car parking supply that is 27% greater than the requirements of the DCP.

Hurstville City Centre TMAP (2018) Action Plan recommends a range of improvements to public transport and active transport infrastructure in and at the surrounds of Hurstville. Given the achieved surplus of 568 parking spaces within Westfield Hurstville, in our view the provision of additional car parking would contradict the Action Plan recommended by Hurstville City Centre TMAP (2018).

• A revised swept path analysis for the rooftop is provided for a B99 design vehicle.

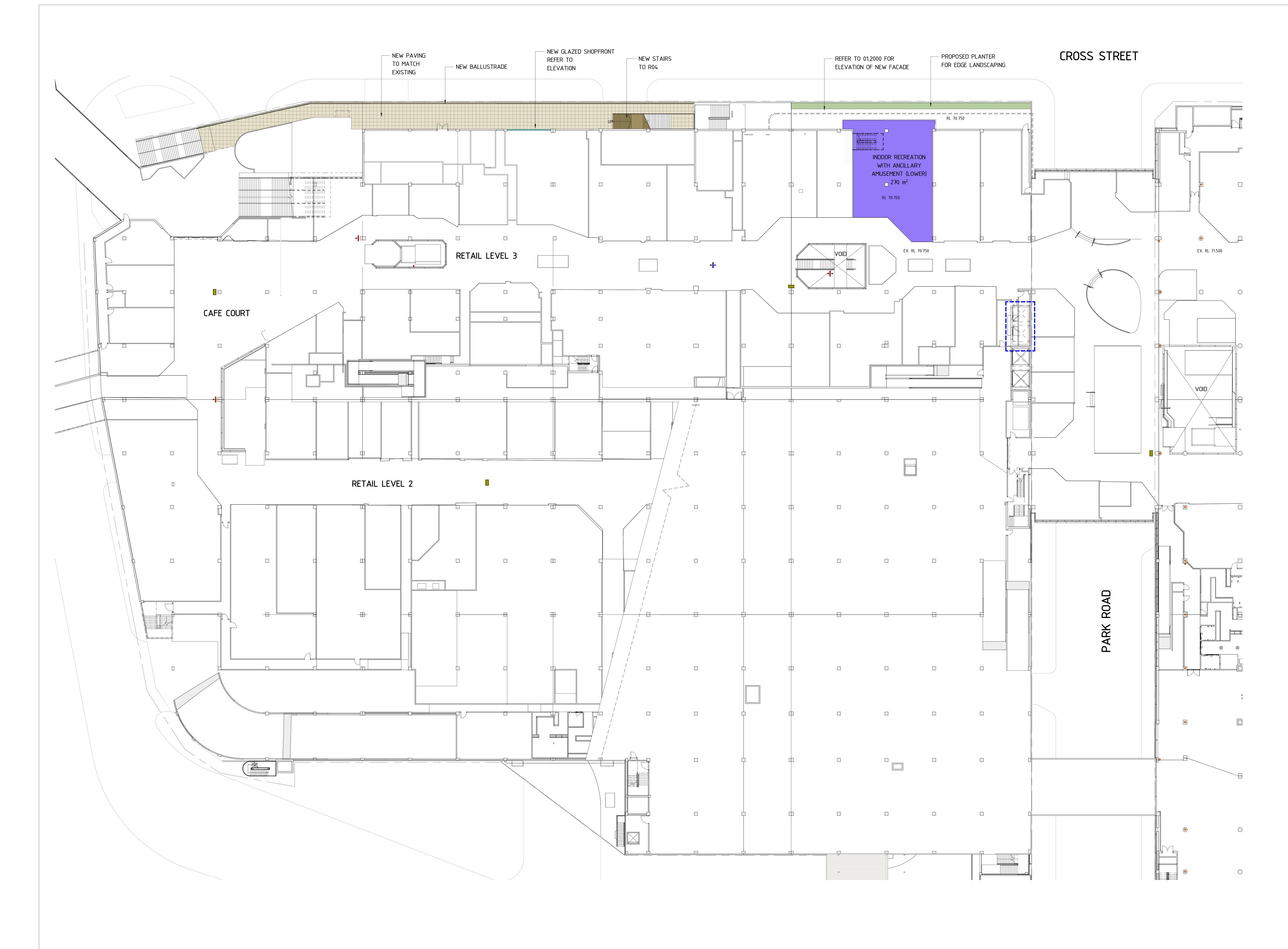
Prepared by: Charlie Seventekin Reviewed by: Kris Stone Authorised by: Kris Stone

Enclosed – Attachment A to C



ATTACHMENT A

Proposed ELP and Demolition Plans



WORKS NOT PART of this da Key Plan This document describes a Design Intent only Written dimensions take precedence over scaling and are to be checked on site Refer to all project documentation before commencing work Copyright is retained by Scentre Design and Construction Written authority is required for any reproduction CROSS STREET HUMPHREYS LANF dexus SCENTRE GROUP WESTFIELD HURSTVILLE DEVELOPMENT APPLICATION Scentre Design & Construction Pty Limited 85 Castlereagh Street. Sydney NSW 2000 Phone (02) 9358 7000 Fax (02) 9028 8500 GPO Box 4004 Sydney NSW 2001 ACN 000 267 265 PROPOSED PLAN LEVEL RETAIL 03 Drawing Scale Scale Bar 1:1 Drawing No.

01.1003

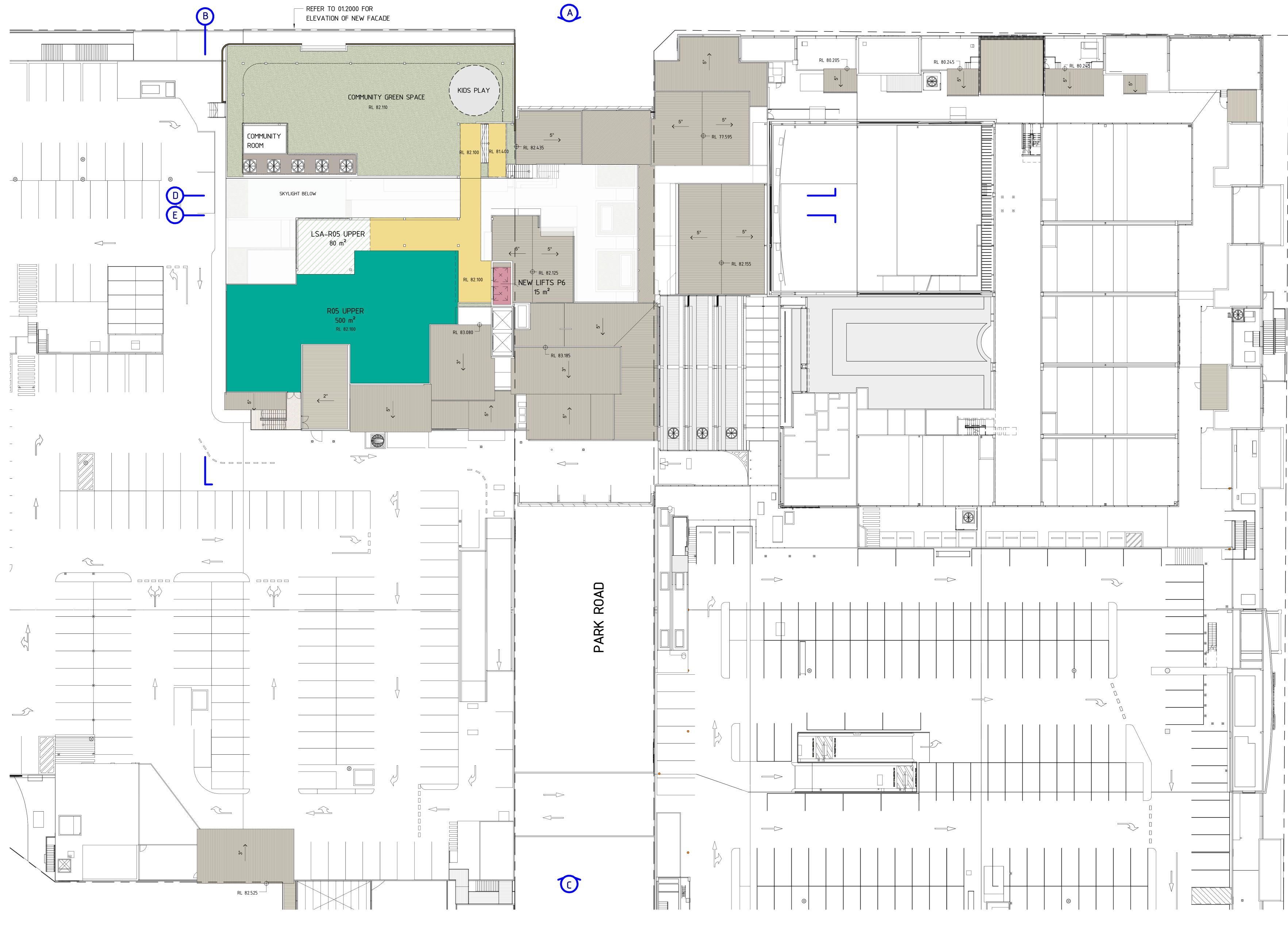
4639

Α

PROPOSED AREAS LEGEND

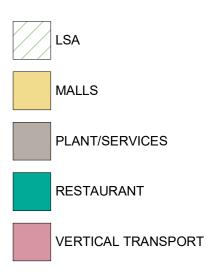
ENTERTAINMENT





CROSS STREET

PROPOSED AREAS LEGEND



Key Plan - This document describes a Design Intent only - Written dimensions take precedence over scaling and are to Written dimensions take precedence over scaling and are to be checked on site
Refer to all project documentation before commencing work
Copyright is retained by Scentre Design and Construction
Written authority is required for any reproduction

ш

4

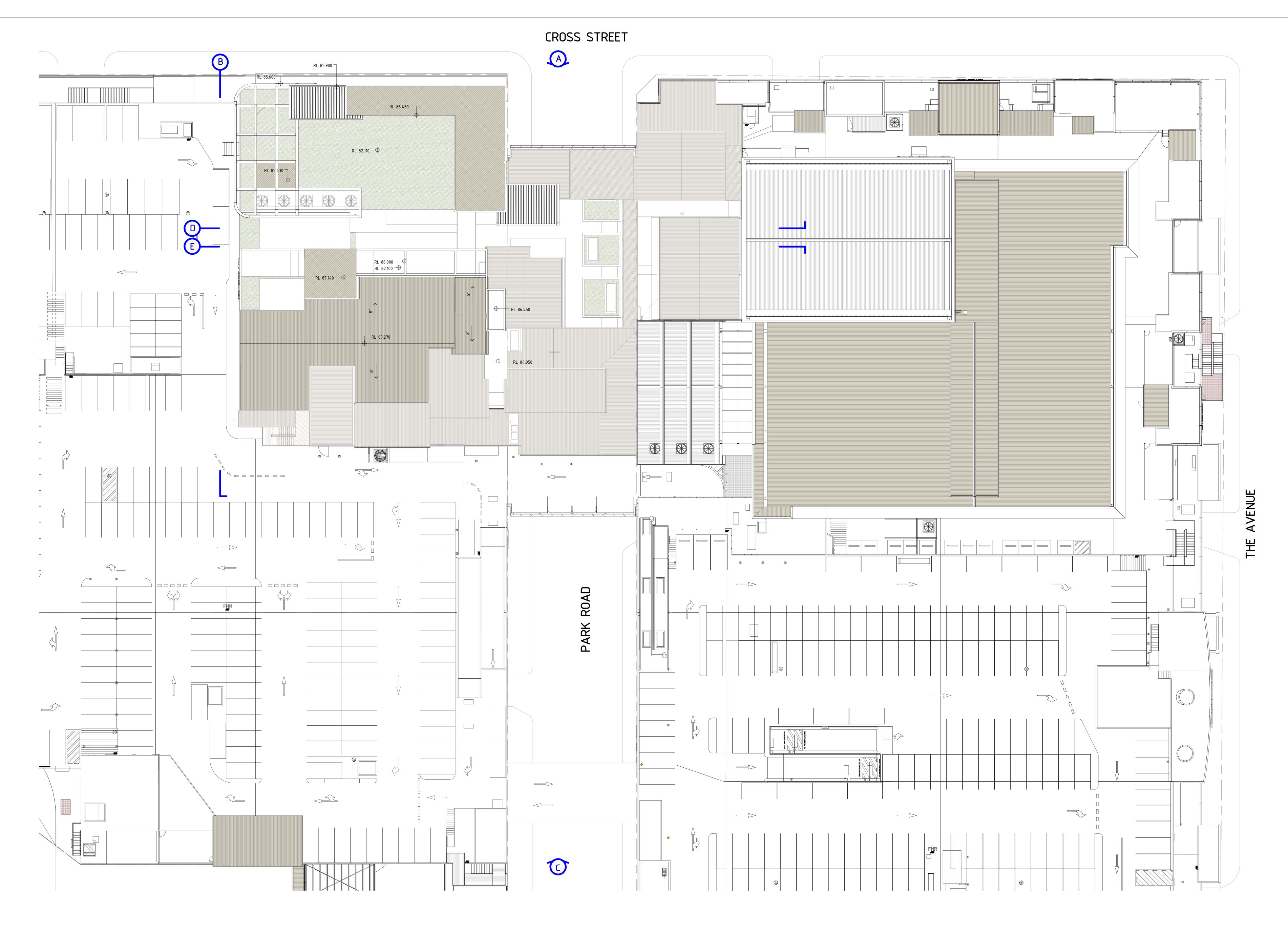
ШЩ



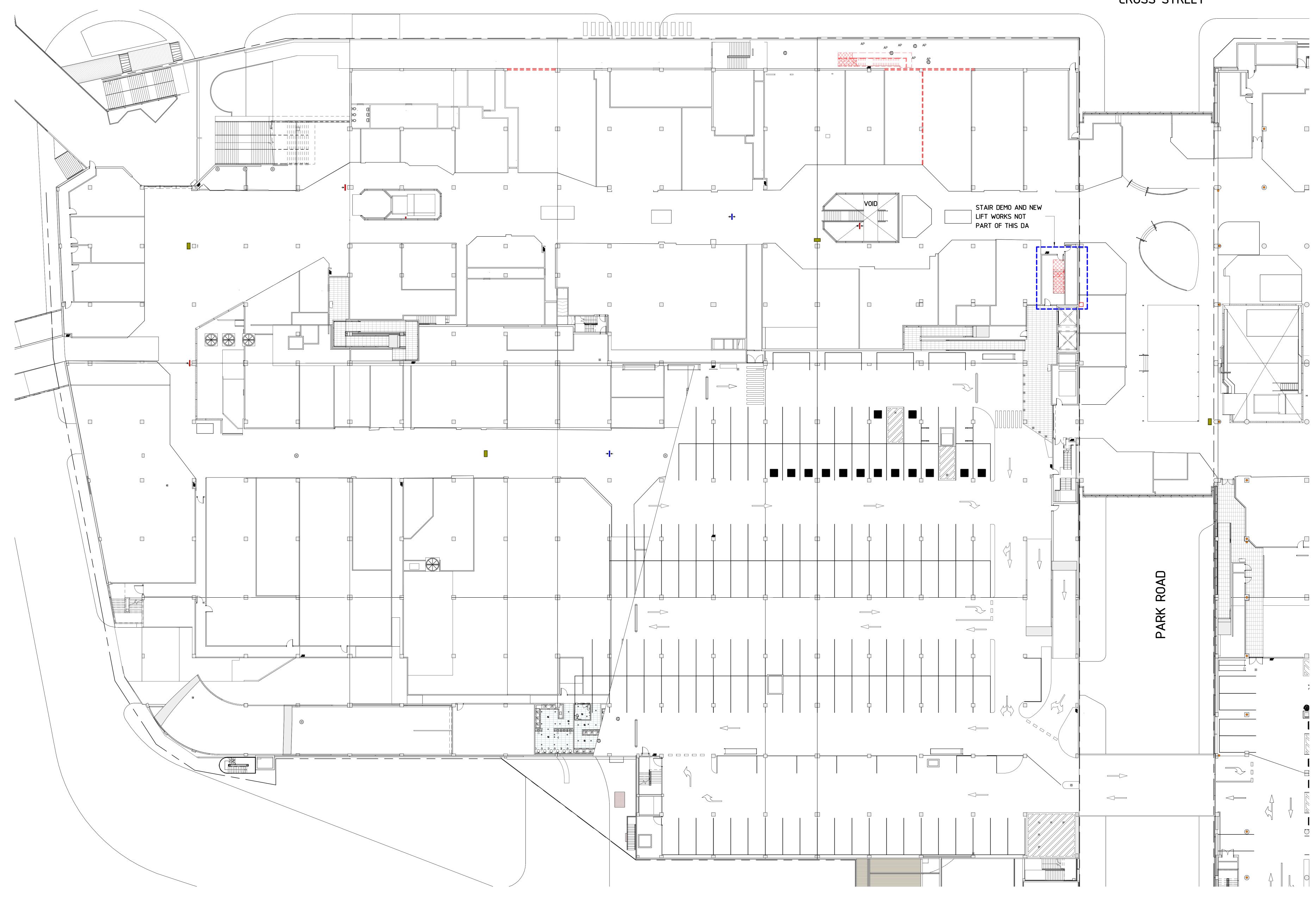
4639

Α

01.1005









LEGEND

DEMOLITION -----

DEMOLITION NOTES

1. DEMOLITION TO COMPLY WITH THE REQUIREMENTS OF GEORGES RIVER CITY COUNCIL & AS 2601-1991.

2. WITH THE EXCEPTION OF MATERIALS TO BE RE-USED OR RETAINED BY THE OWNER, TAKE Possession of Demolished MATERIALS AND REMOVE THEM FROM THE SITE. DO NOT BURY OR BURN MATERIALS ON SITE.

3. DEMOLISHED MATERIALS, WITH THE EXCEPTION OF HAZARDOUS WASTE, TO BE TRANSPORTED TO A LICENSED LANDFILL SITE. HAZARDOUS MATERIALS WILL BE DISPOSED BY LICENSED CONTRACTOR TO A LANDFILL SITE LICENSED TO ACCEPT SUCH WASTE.

4. HOARDING TO BE ACCORDING TO AUSTRALIAN STANDARDS AND SCENTRE GROUP DESIGN STANDARD.

5. MAKE SURE ALL EXISTING SERVICES BELOW GROUND THAT ARE TO BE RETAINED BE PROTECTED AND IDENTIFIED FOR FUTURE USE DURING AND AFTER DEMOLITION WORKS.

Key Plan
This document describes a Design Intent only
Written dimensions take precedence over scaling and are to be checked on site
Refer to all project documentation before commencing work
Copyright is retained by Scentre Design and Construction
Written authority is required for any reproduction



As 10 20 30 40 50 indicated@A0

01.0503

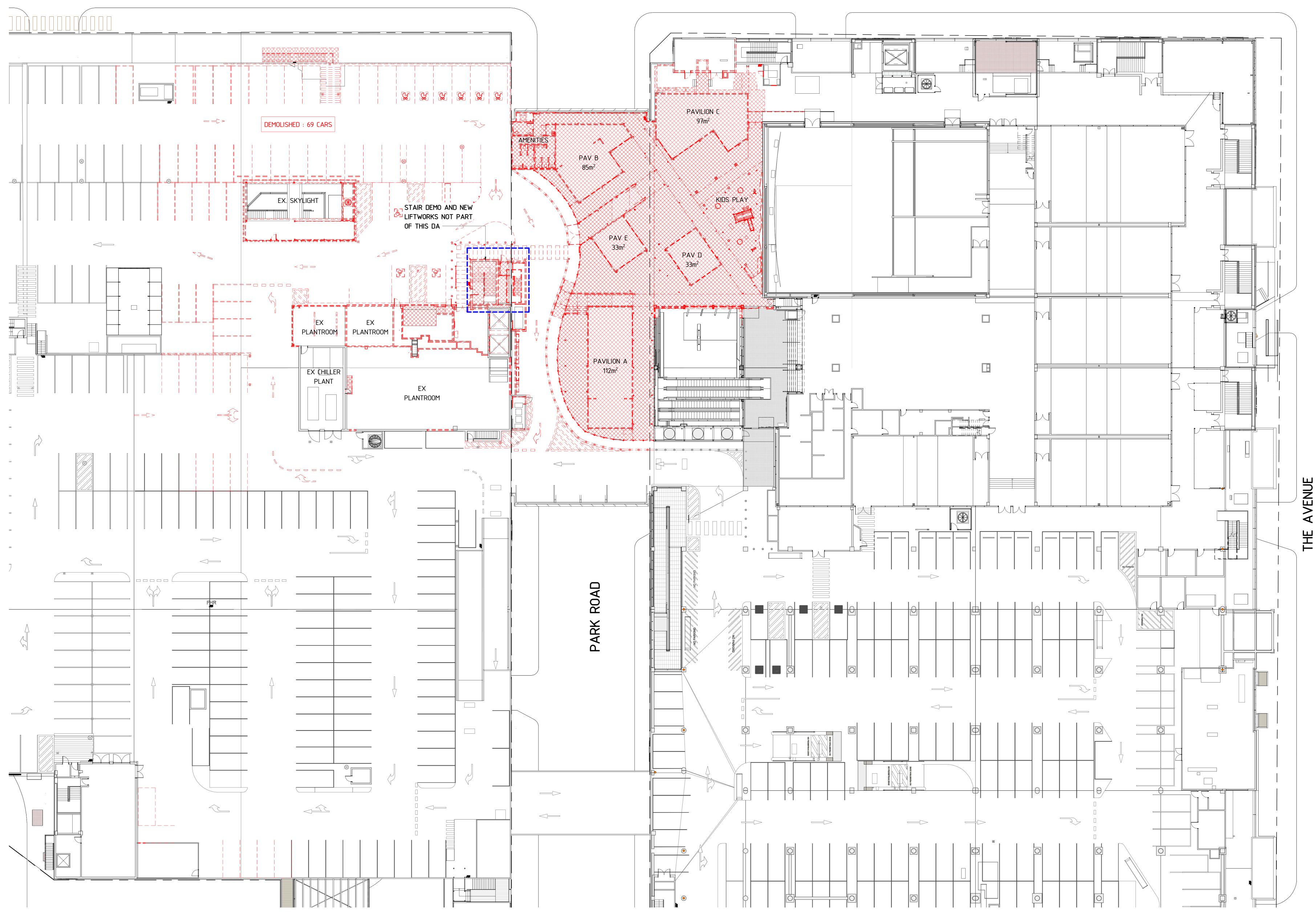
Α

Drawing No.

4639

Project No.

Drawing Scale Scale Bar 1:1



CROSS STREET

LEGEND

DEMOLITION -----

DEMOLITION NOTES

1. DEMOLITION TO COMPLY WITH THE REQUIREMENTS OF GEORGES RIVER CITY COUNCIL & AS 2601-1991.

2. WITH THE EXCEPTION OF MATERIALS TO BE RE-USED OR RETAINED BY THE OWNER, TAKE POSSESSION OF DEMOLISHED MATERIALS AND REMOVE THEM FROM THE SITE. DO NOT BURY OR BURN MATERIALS ON SITE.

3. DEMOLISHED MATERIALS, WITH THE EXCEPTION OF HAZARDOUS WASTE, TO BE TRANSPORTED TO A LICENSED LANDFILL SITE. HAZARDOUS MATERIALS WILL BE DISPOSED BY LICENSED CONTRACTOR TO A LANDFILL SITE LICENSED TO ACCEPT SUCH WASTE.

4. HOARDING TO BE ACCORDING TO AUSTRALIAN STANDARDS AND SCENTRE GROUP DESIGN STANDARD.

5. MAKE SURE ALL EXISTING SERVICES BELOW GROUND THAT ARE TO BE RETAINED BE PROTECTED AND IDENTIFIED FOR FUTURE USE DURING AND AFTER DEMOLITION WORKS.

Key Plan - This document describes a Design Intent only - Written dimensions take precedence over scaling and are to

Writer failer store breedeniee over sealing and are to be checked on site
Refer to all project documentation before commencing work
Copyright is retained by Scentre Design and Construction
Written authority is required for any reproduction



Drawing Scale Scale Bar 1:1 As 0 10 20 30 40 50 indicated@A0

01.0504

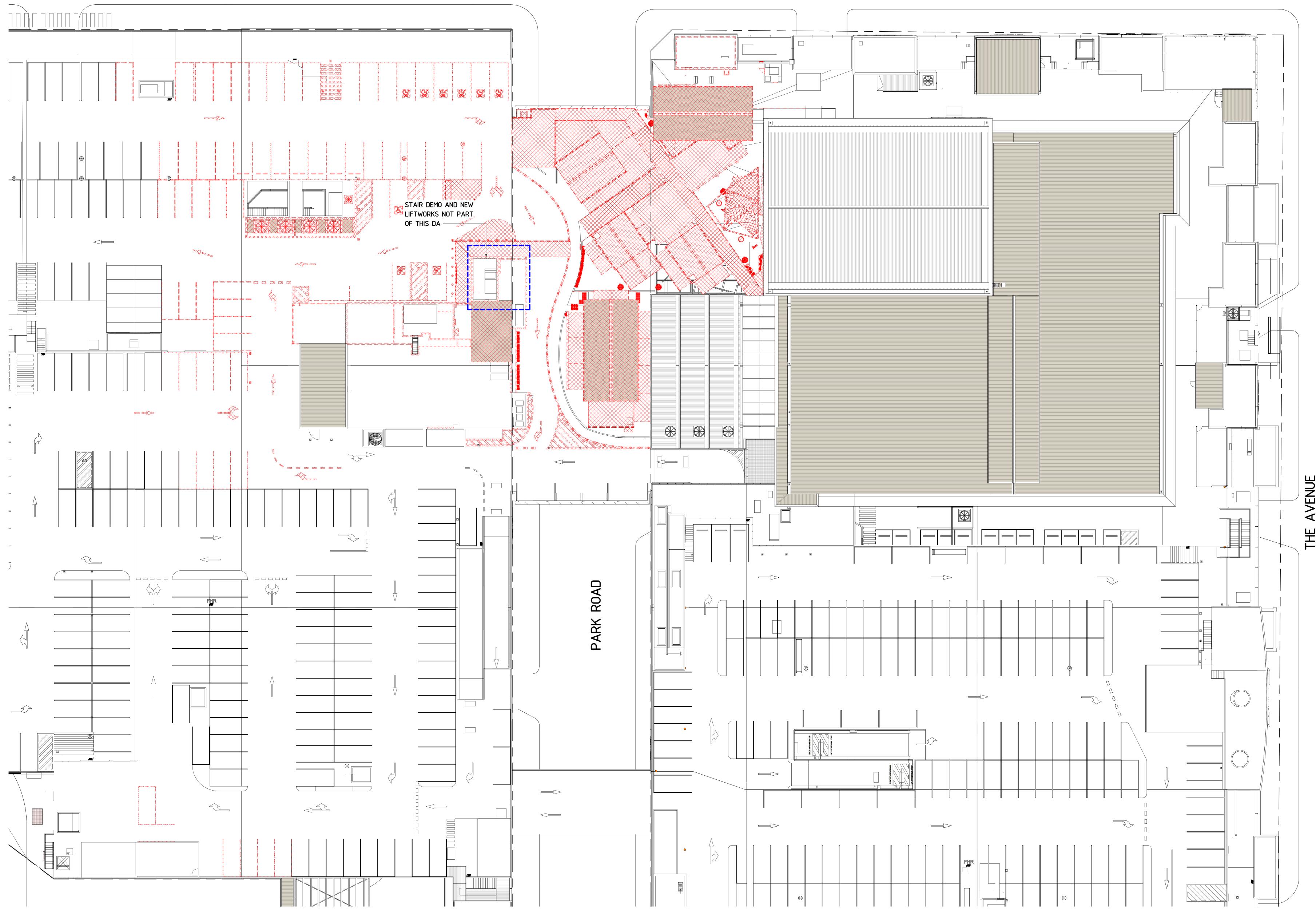
Α

Drawing No.

4639

Project No.





CROSS STREET

<u>LEGEND</u>

DEMOLITION -----

DEMOLITION NOTES

1. DEMOLITION TO COMPLY WITH THE REQUIREMENTS OF GEORGES RIVER CITY COUNCIL & AS 2601-1991.

2. WITH THE EXCEPTION OF MATERIALS TO BE RE-USED OR RETAINED BY THE OWNER, TAKE Possession of Demolished MATERIALS AND REMOVE THEM FROM THE SITE. DO NOT BURY OR BURN MATERIALS ON SITE.

3. DEMOLISHED MATERIALS, WITH THE EXCEPTION OF HAZARDOUS WASTE, TO BE TRANSPORTED TO A LICENSED LANDFILL SITE. HAZARDOUS MATERIALS WILL BE DISPOSED BY LICENSED CONTRACTOR TO A LANDFILL SITE LICENSED TO ACCEPT SUCH WASTE.

4. HOARDING TO BE ACCORDING TO AUSTRALIAN STANDARDS AND SCENTRE GROUP DESIGN STANDARD.

5. MAKE SURE ALL EXISTING SERVICES BELOW GROUND THAT ARE TO BE RETAINED BE PROTECTED AND IDENTIFIED FOR FUTURE USE DURING AND AFTER DEMOLITION WORKS.

Key Plan - This document describes a Design Intent only - Written dimensions take precedence over scaling and are to

be checked on site Refer to all project documentation before commencing work
Copyright is retained by Scentre Design and Construction
Written authority is required for any reproduction



As 0 10 20 30 40 50 indicated@A0

01.0506

Drawing No.

4639

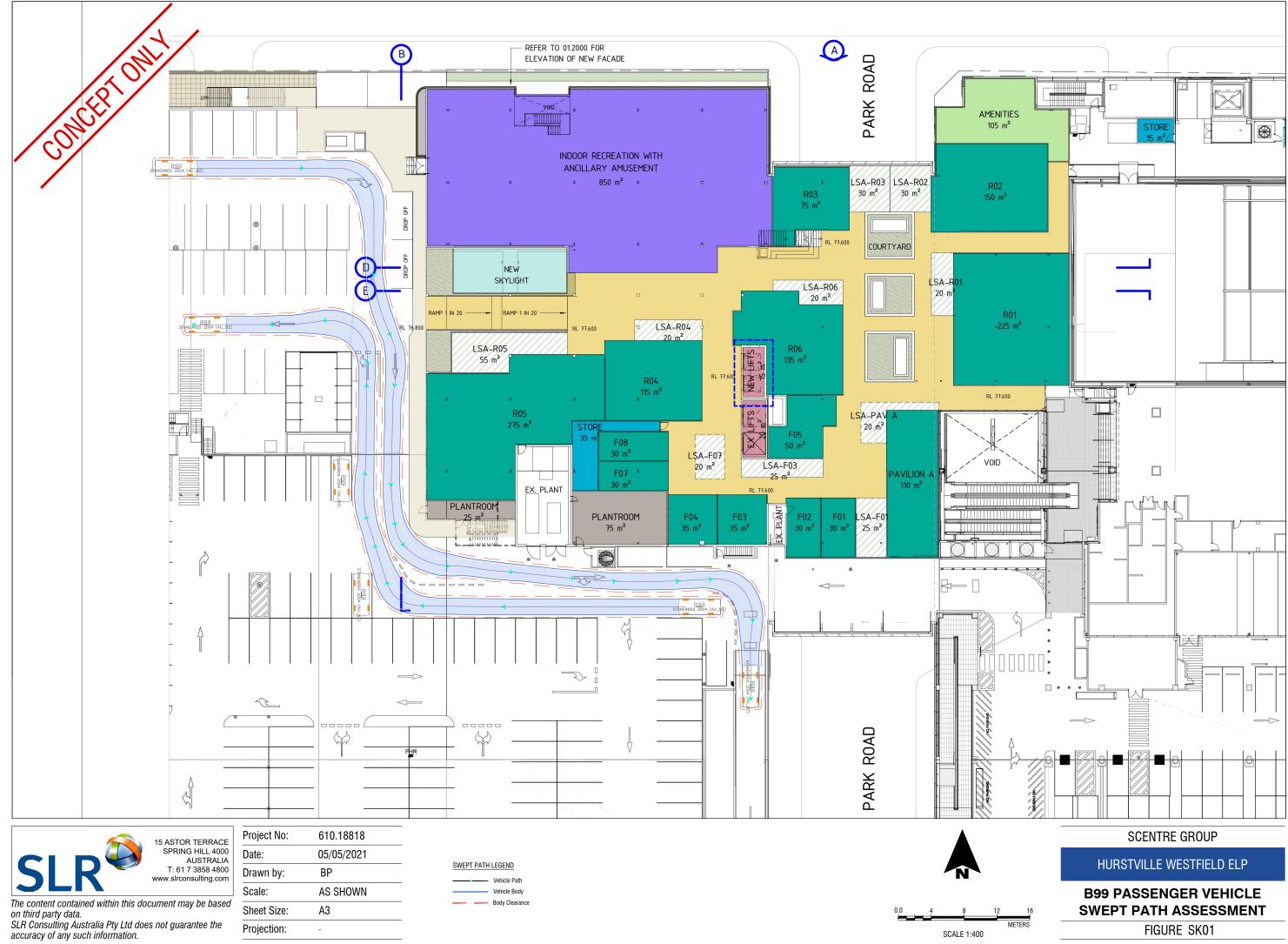
Project No.

Drawing Scale Scale Bar 1:1



ATTACHMENT B

Swept Path Assessment – B99 Design Vehicle



APPENDIX C

Traffic Generation Estimate

