

27 April 2021

Stephen Day  
Arrow Capital Partners  
Suite 6  
44 Pitt Street  
Sydney  
NSW 2000

Dear Stephen

## **1. 29-57 Christie Street, St Leonards – Response to Council RFI**

**ptc.** has been engaged by Arrow Capital Partners to provide traffic consultant advice in relation to the subject development located at 29-57 Christie Street, St Leonards.

This letter has been prepared to address the comments in relation to the modelling, vehicular access and waste collection access raised by Lane Cove Council in reference to the following architectural plans, prepared by Fitzpatrick Partners (see Attachment 1):

- Basement 03 (Drawing No. DA-06, Issue No. C, Dated 8 September 2020)
- Basement 02 (Drawing No. DA-07, Issue No. C, Dated 8 September 2020)
- Basement 01 (Drawing No. DA-08, Issue No. C, Dated 8 September 2020)
- Lower Ground Christie St Plan (Drawing No. DA-09, Issue No. D, Dated 21 April 2021)
- Ground Oxley St Plan (Drawing No. DA-10, Issue No. C, Dated 23 September 2020)
- Lower Ground Christie St Loading Area – Opt 2 (Drawing No. RFI-07, Issue No. A, Dated 16 April 2021)

## 1.1 Item 2 - Swept Path Analysis

*Swept Path Analysis is to be submitted to show that waste trucks can enter and exit the loading dock in a forward direction.*

The Council refuse collection vehicle specification has been extracted from the Lane Cove DCP Part Q – Waste Management & Minimisation. The specifications are shown in Figure 1.

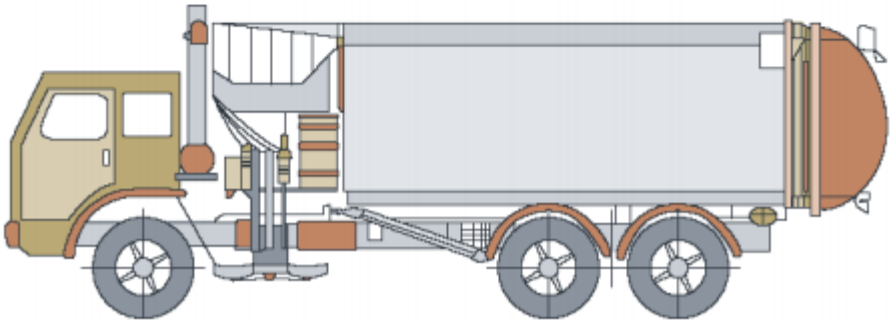
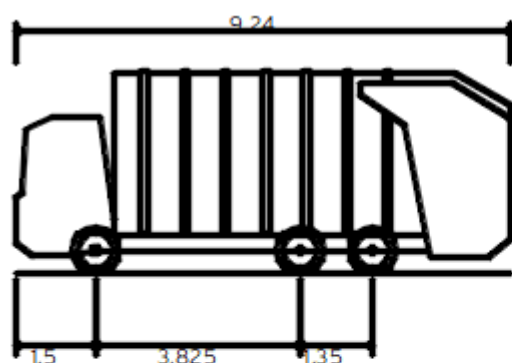
| • Typical Council Garbage Truck used for Domestic Waste Collection – Side Load       |                |
|--|----------------|
| • Length overall   | • 9.64 metres  |
| • Width overall  | • 1.51 metres  |
| • Operational height   | • 5.2 metres   |
| • Travel height  | • 2.93 metres  |
| • Weight (vehicle and load)  | • 22.5 tonnes  |
| • Weight (vehicle only)  | • 13 tonnes    |
| • Turning Circle kerb to kerb  | • 17.86 metres |
| • Turning Circle wall to wall  | • 20.56 metres |
| Side-loading collection vehicle  |                |
|  |                |

Figure 1 - Council Refuse Vehicle (Source: Lane Cove DCP Part Q - Waste Management & Minimisation)

It is noted that a swept path assessment using a 9.24m refuse vehicle was undertaken and provided in the Traffic Impact Assessment submitted to Lane Cove Council. The vehicle specifications for the vehicle are provided in Figure 2.



CoS 9.24m Refuse Vehicle  
 Overall Length  
 Overall Width  
 Overall Body Height  
 Min Body Ground Clearance  
 Track Width  
 Lock-to-lock time  
 Curb to Curb Turning Radius

9.240m  
 2.600m  
 3.800m  
 0.304m  
 2.500m  
 4.00s  
 10.500m

Figure 2 - 9.24m Long Refuse Vehicle

A swept path assessment using the Council refuse vehicle has been undertaken to assess whether the vehicle is able to access and egress the loading dock in a forward direction. The assessment indicates that the refuse vehicle is able to enter the loading dock in a forward direction, manoeuvre within the designated manoeuvrable area and exit in a forward direction. It is noted that the manoeuvrable area lies outside the travel path of the light vehicles therefore it is anticipated that minimal to no vehicular conflict between light and refuse vehicles will occur. The swept path assessment for the 9.24m refuse vehicle and the Lane Cove Council refuse vehicle are shown in Attachment 2.

## 1.2 Item 4 - Traffic Impact Modelling

*The traffic impact is to be assessed in AIMSUN utilising the traffic model prepared by TEF Consulting for the St Leonards South precinct. This model contains the projected traffic volumes for the year 2021 as well as the cumulative traffic impacts of previously approved large-scale developments.*

The potential traffic impact has been assessed using SIDRA in the original Traffic Impact Assessment report prepared by ptc. The summary of the existing and post development performance of the local road network is summarised in Table 1.

Table 1 - Summary of Intersection Performance

| Intersection                      | Time    | Period      | Level of Service | Degree of Saturation (v/c) | Average Delay (s) | 95% Queue Length (m) |
|-----------------------------------|---------|-------------|------------------|----------------------------|-------------------|----------------------|
| Christie Street / Pacific Highway | AM Peak | Existing    | B                | 0.624                      | 15.9              | 101.4                |
|                                   |         | Future      | F                | 1.091                      | 92.2              | 985.8                |
|                                   |         | Development | F                | 1.102                      | 97.2              | 1018.1               |
|                                   | PM Peak | Existing    | B                | 0.686                      | 14.6              | 79.8                 |

| Intersection                               | Time    | Period      | Level of Service | Degree of Saturation (v/c) | Average Delay (s) | 95% Queue Length (m) |
|--|---------|-------------|------------------|----------------------------|-------------------|----------------------|
|  |         | Future      | C                | 0.832                      | 33.2              | 297.9                |
|  |         | Development | C                | 0.837                      | 33.3              | 303.0                |
| <b>Albany Street / Pacific Highway</b>     | AM Peak | Existing    | C                | 0.602                      | 23.0              | 78.4                 |
|  |         | Future      | C                | 1.014                      | 41.6              | 241.2                |
|  |         | Development | C                | 1.015                      | 41.5              | 241.7                |
|  | PM Peak | Existing    | C                | 0.601                      | 29.7              | 110.8                |
|  |         | Future      | B                | 0.733                      | 26.8              | 202.4                |
|  |         | Development | B                | 0.773                      | 25.7              | 206.3                |
| <b>Oxley Street / Pacific Highway</b>      | AM Peak | Existing    | B                | 0.436                      | 12.9              | 73.5                 |
|  |         | Future      | B                | 0.879                      | 14.7              | 173.1                |
|  |         | Development | B                | 0.898                      | 17.5              | 208.5                |
|  | PM Peak | Existing    | B                | 0.491                      | 14.1              | 43.6                 |
|  |         | Future      | A                | 0.733                      | 8.3               | 54.9                 |
|  |         | Development | A                | 0.619                      | 9.9               | 55.5                 |
| <b>Nicholson Street / Oxley Street*</b>    | AM Peak | Existing    | A                | 0.136                      | 7.0               | 1.8                  |
|  |         | Future      | A                | 0.270                      | 8.2               | 7.0                  |
|  |         | Development | A                | 0.349                      | 9.4               | 7.4                  |
|  | PM Peak | Existing    | A                | 0.209                      | 7.4               | 2.5                  |
|  |         | Future      | A                | 0.181                      | 6.5               | 5.2                  |
|  |         | Development | A                | 0.199                      | 7.2               | 5.7                  |
| <b>Christie Street / Nicholson Street*</b> | AM Peak | Existing    | A                | 0.110                      | 6.2               | 1.0                  |
|  |         | Future      | A                | 0.115                      | 6.0               | 4.4                  |
|  |         | Development | A                | 0.115                      | 4.2               | 4.4                  |
|  | PM Peak | Existing    | A                | 0.086                      | 5.9               | 1.3                  |
|  |         | Future      | A                | 0.094                      | 5.1               | 3.3                  |
|  |         | Development | A                | 0.094                      | 5.1               | 3.3                  |
|  | AM Peak | Existing    | B                | 0.540                      | 13.4              | 12.8                 |



| Intersection                         | Time    | Period      | Level of Service | Degree of Saturation (v/c) | Average Delay (s) | 95% Queue Length (m) |
|--------------------------------------|---------|-------------|------------------|----------------------------|-------------------|----------------------|
| <b>Albany Street / Oxley Street*</b> |         | Future      | C                | 0.951                      | 39.5              | 89.9                 |
|                                      |         | Development | D                | 0.988                      | 55.6              | 122.2                |
|                                      | PM Peak | Existing    | B                | 0.617                      | 16.1              | 16.9                 |
|                                      |         | Future      | B                | 0.617                      | 15.0              | 41.8                 |
|                                      |         | Development | B                | 0.627                      | 15.3              | 42.7                 |
| <b>Clarke Street / Oxley Street*</b> | AM Peak | Existing    | A                | 0.165                      | 6.8               | 2.6                  |
|                                      |         | Future      | A                | 0.151                      | 6.7               | 3.0                  |
|                                      |         | Development | A                | 0.174                      | 7.0               | 3.0                  |
|                                      | PM Peak | Existing    | A                | 0.232                      | 7.5               | 3.7                  |
|                                      |         | Future      | A                | 0.219                      | 6.7               | 4.2                  |
|                                      |         | Development | A                | 0.225                      | 6.8               | 4.2                  |

For the purpose of analysing the potential impact of the proposed development on the local road network, the use of Aimsun is unnecessarily onerous. Additionally, the combination of compliance with TfNSW TTD 2017/001 and the Modelling Guidelines would add significant time and cost to develop the model scenarios when it is noted that similar scale neighbouring developments e.g. 88 Christie Street, St Leonards have provided their assessment through the use of SIDRA under the endorsement of TfNSW. Therefore, for the purpose of identifying the potential impact of the proposed development with respect to traffic, it is considered appropriate to use SIDRA modelling.

### 1.3 Item 4 - On-site Accessible Parking Provision

*The development has a shortfall of 15 accessible parking spaces and is required to be provided as per Lane Cove Council's DCP Part R.*

The proposal involves the provision of 12 accessible parking spaces which results in a shortfall of 15 accessible parking spaces in accordance with the Lane Cove DCP. It should be noted that the accessible parking rate stipulated in the Lane Cove DCP does not provide an accurate representation of the likely parking demand that would be generated by a large-scale development. The rates are more suited to smaller-scale developments.

The following justification for the provision of 12 accessible car parking spaces has been extracted from the original Traffic Impact Assessment previously prepared by ptc dated 9 September 2020.

*The Lane Cove DCP stipulates that for a typical office or business premises type development, the accessible car parking rate is 10% of the car parking provision. The St Leonards precinct is currently governed by Lane Cove Council, North Sydney Council and Willoughby City Council. Therefore, to gain a better understanding of the practical parking requirement for these types of development, a comparison analysis has been undertaken with the parking rates extracted from the DCPs for the neighbouring Councils.*

*The following are parking rates in relation to accessible parking which have been extracted from the DCPs of neighbouring Councils:*

North Sydney Council

Provided at the rates specified in Table D3.5 to the BCA

Willoughby City Council

3% of total car parking spaces

The North Sydney DCP states that reference is to be made to the BCA. Therefore, the following has been extracted from the BCA in relation to accessible parking provision for an office type development:

Building Code of Australia

1 space for every 100 car parking spaces or part thereof

The above-mentioned parking rates have been used to calculate the accessible parking provision requirement for the proposed development. The accessible parking requirements are summarised in Table 2.

Table 2 - Accessible Parking Requirement – Varying Planning Documents

| Planning Documents | No. Car Parking Spaces | Parking Rate   | Parking Provision Requirement |
|--------------------|------------------------|--|-------------------------------|
| Lane Cove DCP      | 227                    | 1 space / 10 car spaces                                  | 23 (22.7)                     |
| North Sydney DCP   | 227                    | Refer to BCA   | -                             |
| Willoughby DCP     | 227                    | 3% of total car parking spaces                           | 7 (6.81)                      |
| BCA                | 227                    | 1 space for every 100 car parking spaces or part thereof | 3 (2.27)                      |

It is noted that the St Leonards precinct is governed by Lane Cove Council, North Sydney Council and Willoughby City Council. The rates and accessible parking requirements summarised in Table 2 are requirements stipulated by the neighbouring Councils for the St Leonards precinct. Therefore, taking into consideration the requirements of the neighbouring Councils, the proposal involves the provision of seven (7) accessible spaces for the office and business components of the proposed development.

The proposed accessible parking provision and the requirements for the proposed development are summarised in Table 3.

Table 3 - Accessible Car Parking Provision

| Land Use     | No. Car Parking Spaces | Parking Rate            | Parking Provision Requirement | Proposed Parking Provision |
|--------------|------------------------|-------------------------|-------------------------------|----------------------------|
| Office       | 228                    | 3% of total car parking | 7 (6.84)                      | 8                          |
| Cafeteria    | 5                      | 1 space / 20 car        | 1 (0.25)                      | 4                          |
| Gymnasium    | 42                     | 1 space / 20 car        | 2 (2.1)                       |                            |
| Retail       | 10                     | 3% of total car parking | 1 (0.3)                       |                            |
| <b>TOTAL</b> |                        |                         | 11                            | 12                         |

## **1.4 Item 4 – Driveway**

*Details of the driveway profile are to be provided.*

The details of the driveway profile has been prepared by Fitzpatrick & Partners Architects (see Attachment 1).

## **1.5 Item 4 - Vertical Clearance**

*Vertical clearance for the waste collection vehicle(s) is to be provided in accordance with relevant standards.*

It is noted the vehicle specifications within the Lane Cove DCP Part Q is insufficient to provide an accurate vertical clearance assessment. Therefore, the 9.24m refuse vehicle, which is greater in height in comparison with the Council refuse vehicle, has been used to undertake the assessment and will provide a more conservative assessment.

The assessment indicates that the refuse collection vehicle is able to access/egress the site without any underbody scraping or overhead clearance issues. It is noted that the operational height of the Council refuse vehicle is 5.2m. The loading dock has been provided with a 5.8m headroom clearance hence it is anticipated that vertical clearance will not be an issue for the refuse vehicle.

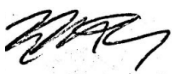
## **2. Conclusion**

**ptc.** has assessed the proposal in light of Council's comments and based on the items above, we conclude that the development is appropriate in context with AS2890.1 and AS2890.2.

We trust that the information provided will assist in the assessment of the Development Application.

If you have any enquiries relating to parking or traffic matter, please contact our office on (02) 8920 0800.

Kind Regards,



**Jae Jeon**

Post Graduate Traffic Engineer

On Behalf Of,



**Dan Budai**

Senior Team Leader

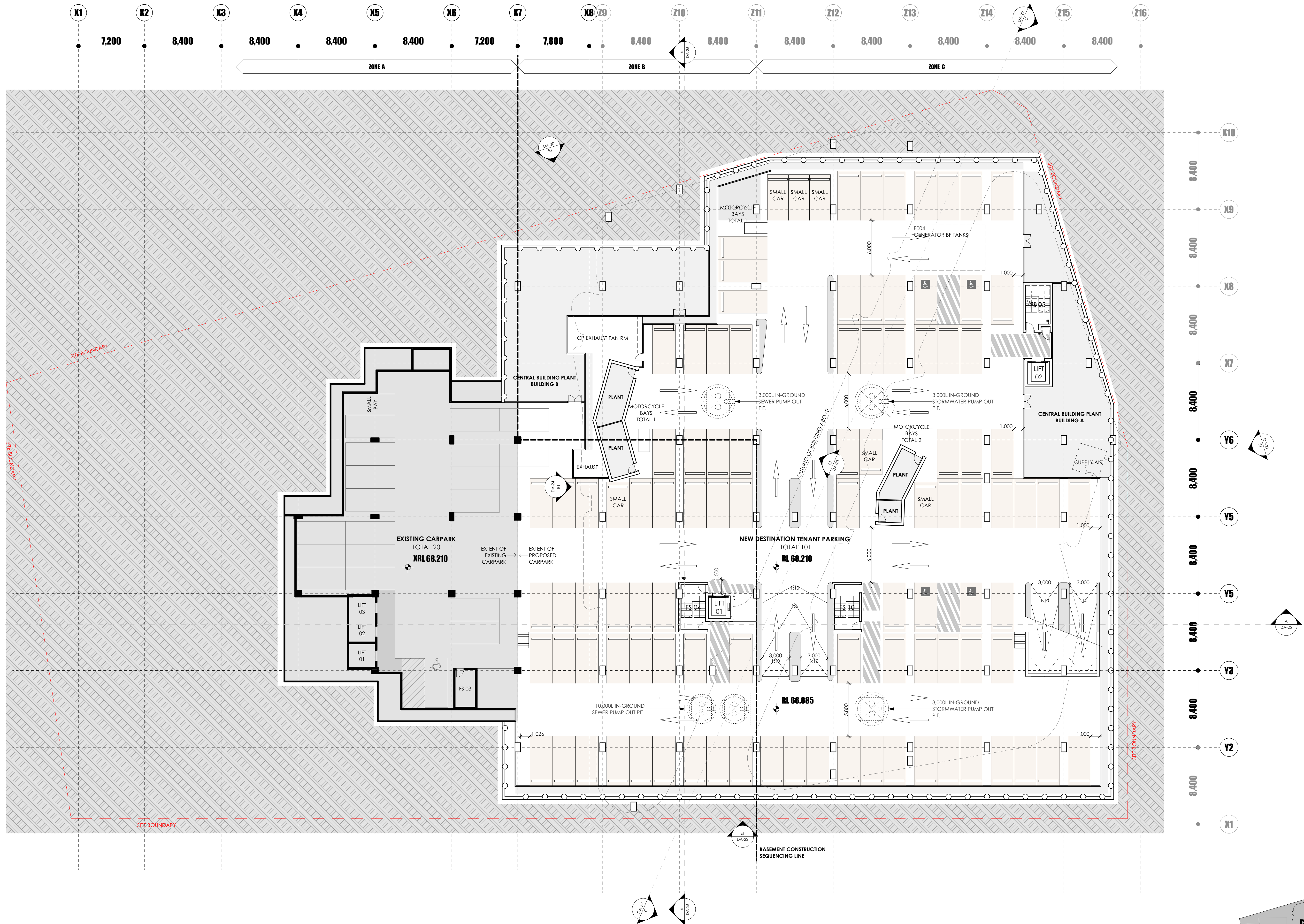
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**Document Control:** Prepared by JJ on 21 April 2021. Reviewed by DB on 21 April 2021.

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## Attachment 1 Architectural Plans





fitzpatrick+partners

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p. +61 (0)2 8274 8200 w. www.fitzpatrickpartners.com  
a. LEVEL 6, 156 CLARENCE STREET, SYDNEY 2000, AUSTRALIA

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| REV. | DATE       | DESCRIPTION    |
|------|------------|----------------|
| A    | 09.05.2020 | PRE DA ISSUE   |
| B    | 31.07.2020 | DRAFT DA ISSUE |
| C    | 04.09.2020 | DA ISSUE       |

CHK  
JF  
JF

FOR

Arrow  
CAPITAL PARTNERS

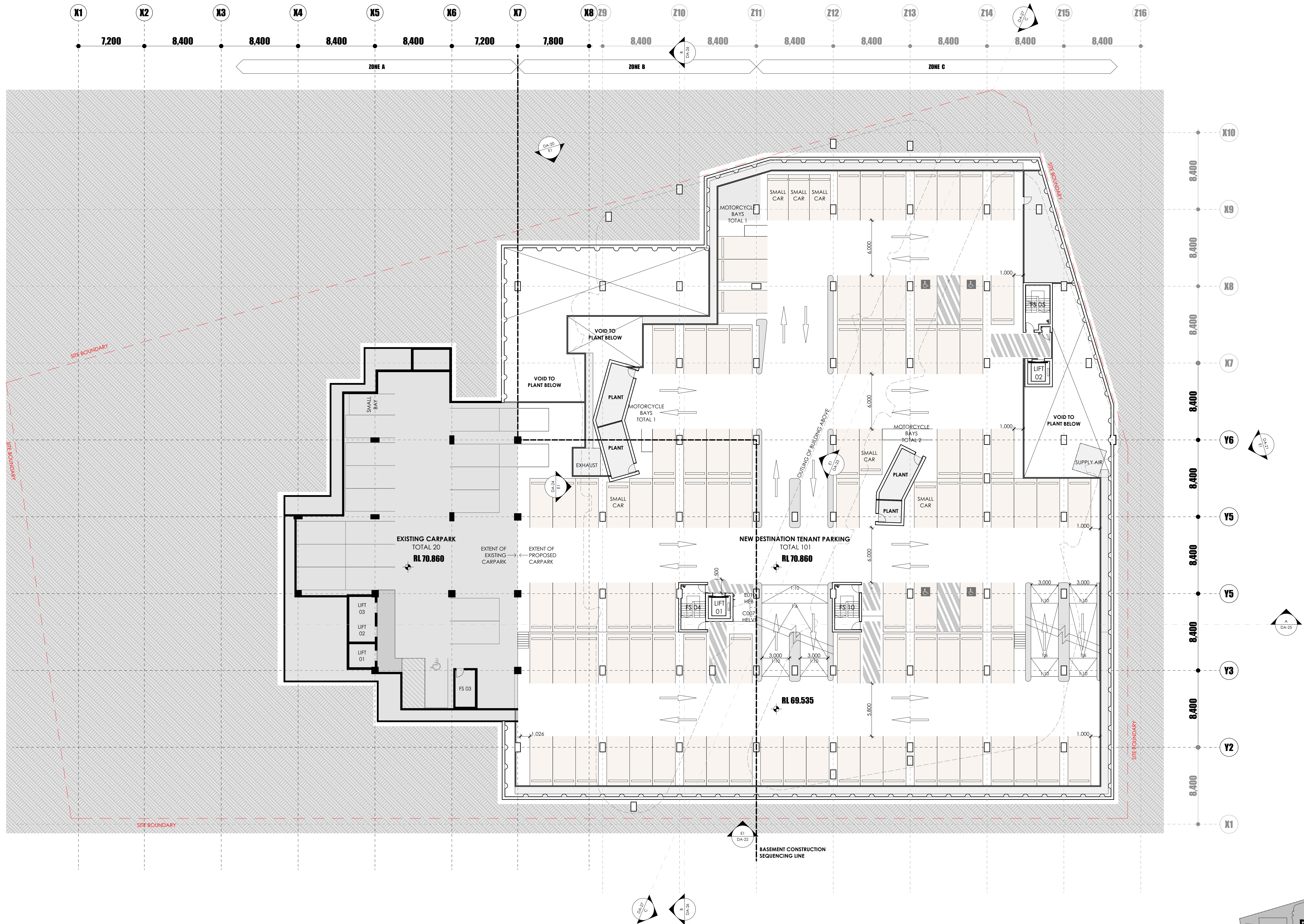
STARWOOD  
CAPITAL GROUP

PROJECT  
29-57 CHRISTIE STREET  
COMMERCIAL DEVELOPMENT  
29-57 CHRISTIE STREET, ST LEONARDS NSW 2065  
PROJECT NORTH

30mm ON ORIGINAL

| DRAWN               | APPROVED     | PRINT DATE           | DRAWING                                |
|---------------------|--------------|----------------------|--|
| MA                  | JF           | 8/09/2020            | DEVELOPMENT APPLICATION<br>BASEMENT 03 |
| SCALE @ A1<br>1:200 | STATUS<br>DA | PROJECT NO.<br>21811 | DRAWING NO.<br>DA-06<br>ISSUE<br>C     |

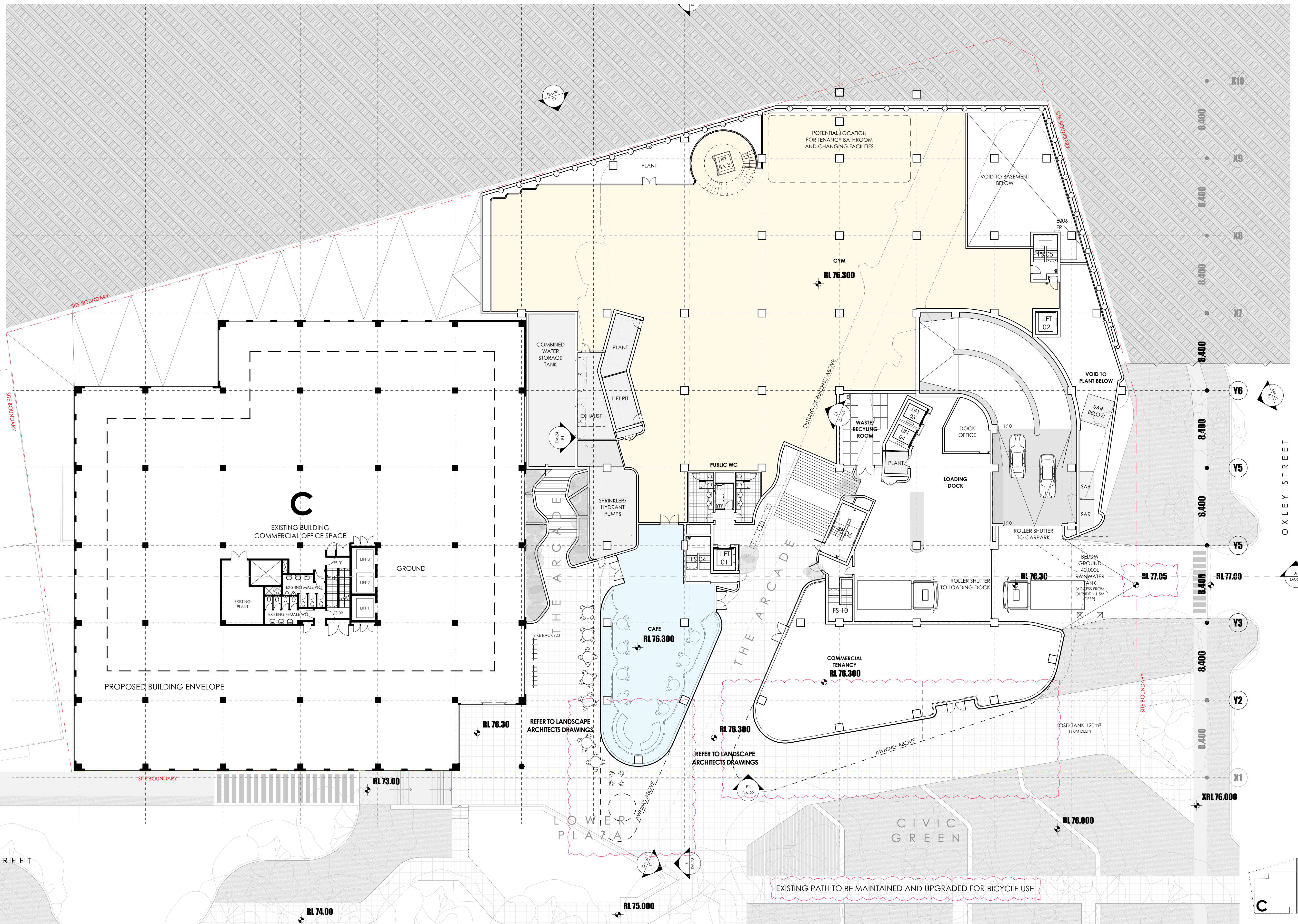




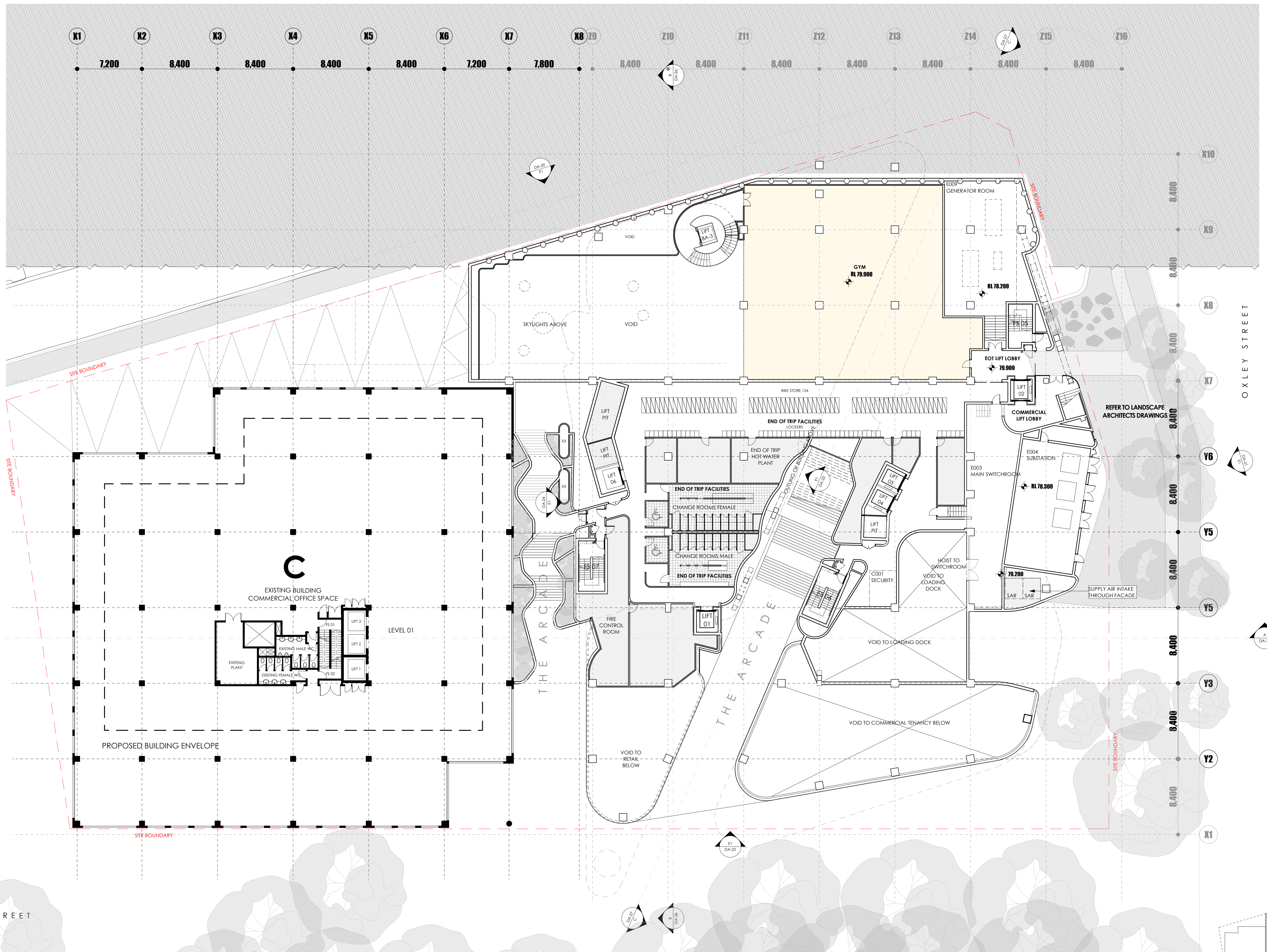






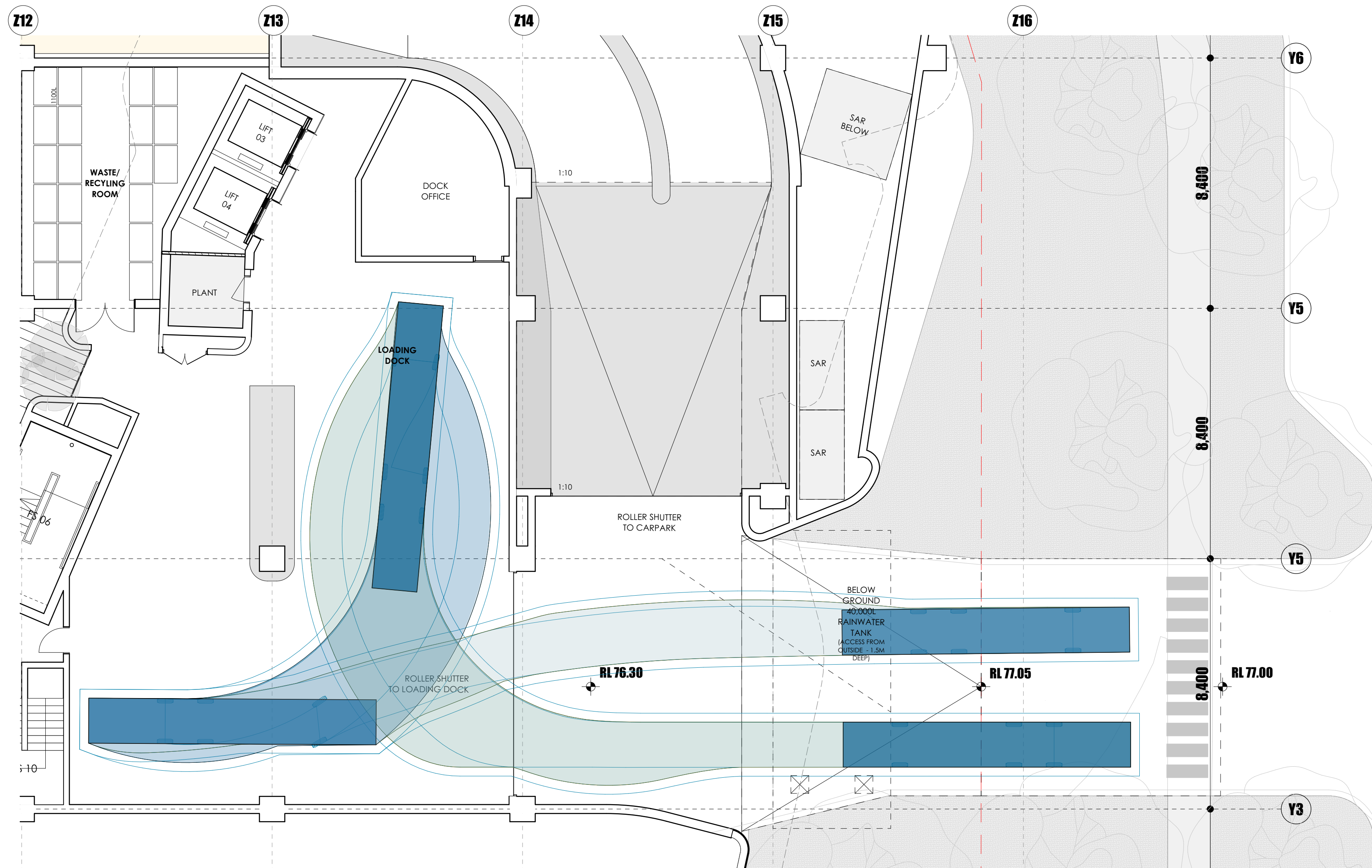








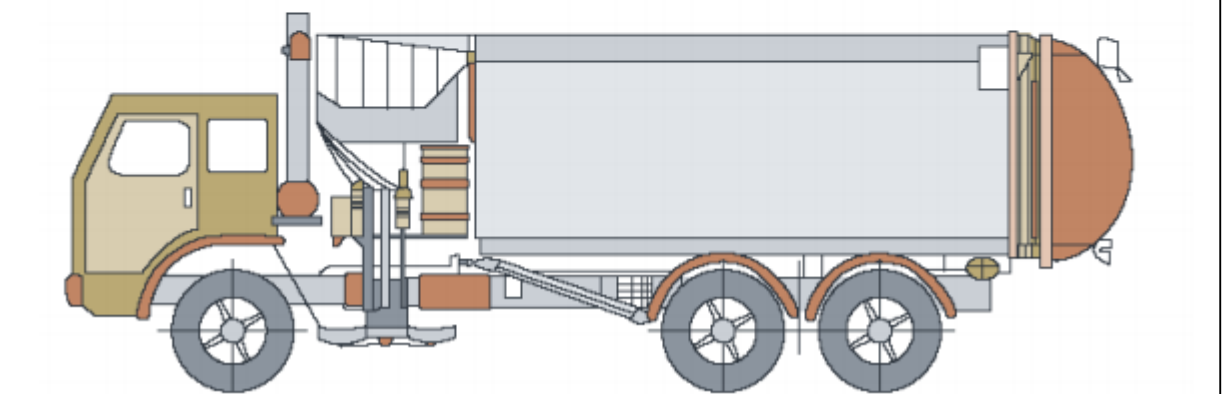
01 PLAN  
SCALE - 1:100



• Typical Council Garbage Truck used for Domestic Waste Collection – Side Load

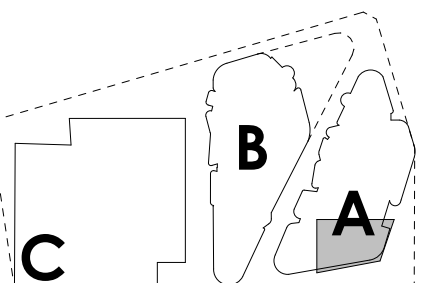
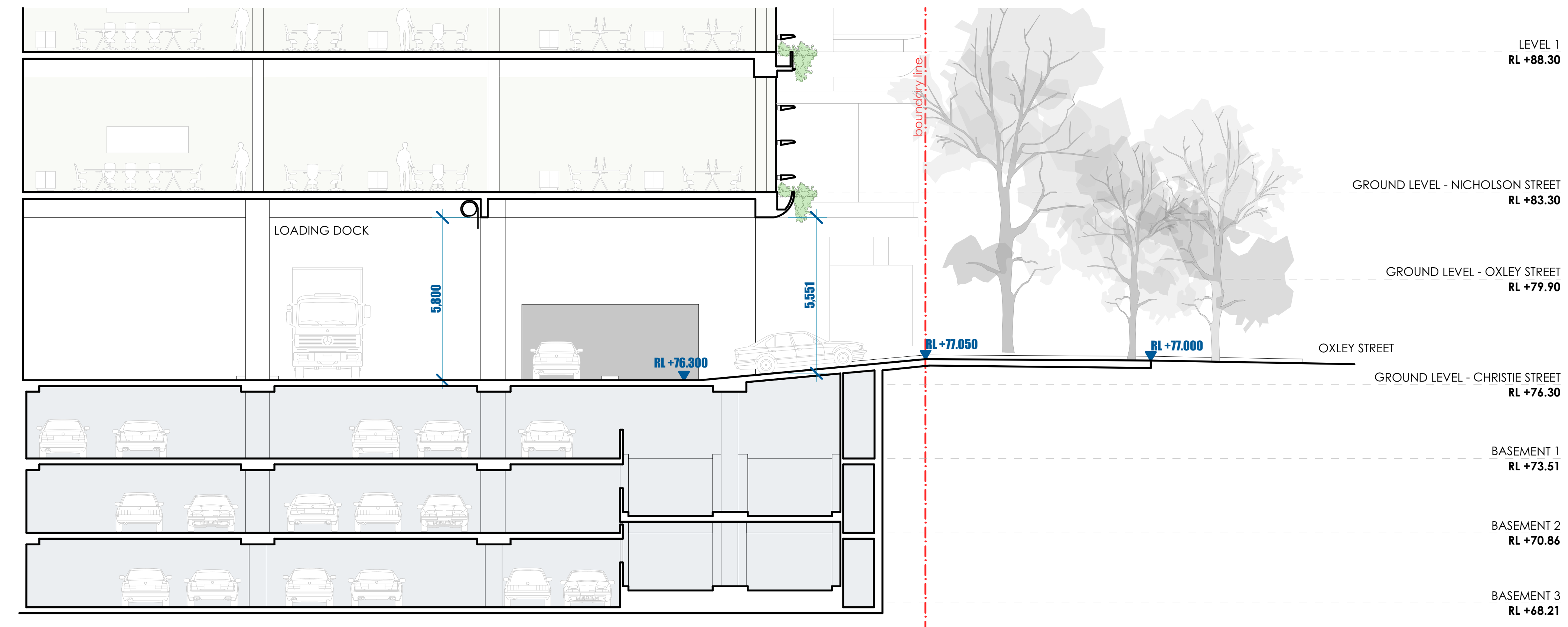
- Length overall • 9.64 metres
- Width overall • 1.51 metres
- Operational height • 5.2 metres
- Travel height • 2.93 metres
- Weight (vehicle and load) • 22.5 tonnes
- Weight (vehicle only) • 13 tonnes
- Turning Circle kerb to kerb • 17.86 metres
- Turning Circle wall to wall • 20.56 metres

Side-loading collection vehicle



Vehicles as shown in extract from from the Lane Cove DCP Part Q

02 ELEVATION  
SCALE - 1:100



## Attachment 2 Swept Path Assessment

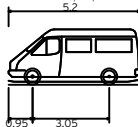




VEHICLE SPECIFICATIONS

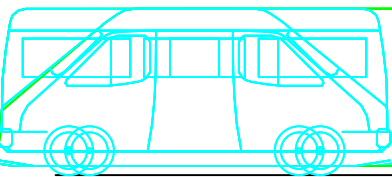


B99 Vert Clearance (2004)

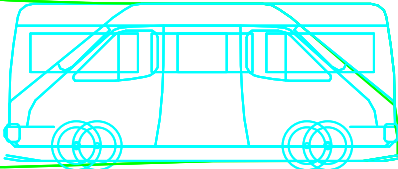


|                             |        |
|-----------------------------|--------|
| B99 Vert Clearance (2004)   | 5.200m |
| Overall Length              | 1.940m |
| Overall Width               | 2.200m |
| Min Body Ground Clearance   | 0.120m |
| Track Width                 | 1.840m |
| Lock-to-lock time           | 4.00s  |
| Curb to Curb Turning Radius | 8.000m |

RL 76.3



B99 Vert Clearance (2004)



B99 Vert Clearance (2004)

RL 73.510

8300

4300

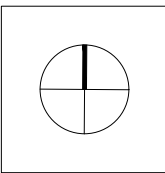
6750

4650



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| rev | date     | comment / description | drawn | reviewed |
|-----|----------|-----------------------|-------|----------|
| 7   | 22/04/21 | for review            | JJ    | DB       |
| 6   | 21/04/21 | for review            | JJ    | DB       |
| 5   | 19/04/21 | for review            | JJ    | DB       |
| 4   | 13/04/21 | for review            | JJ    | AP       |
| 3   | 08/09/20 | for review            | AP/JJ | SW       |
| 2   | 15/04/20 | For Review            | JJ    | SW       |
| 1   | 26/03/20 | For Review            | JJ    | AP       |



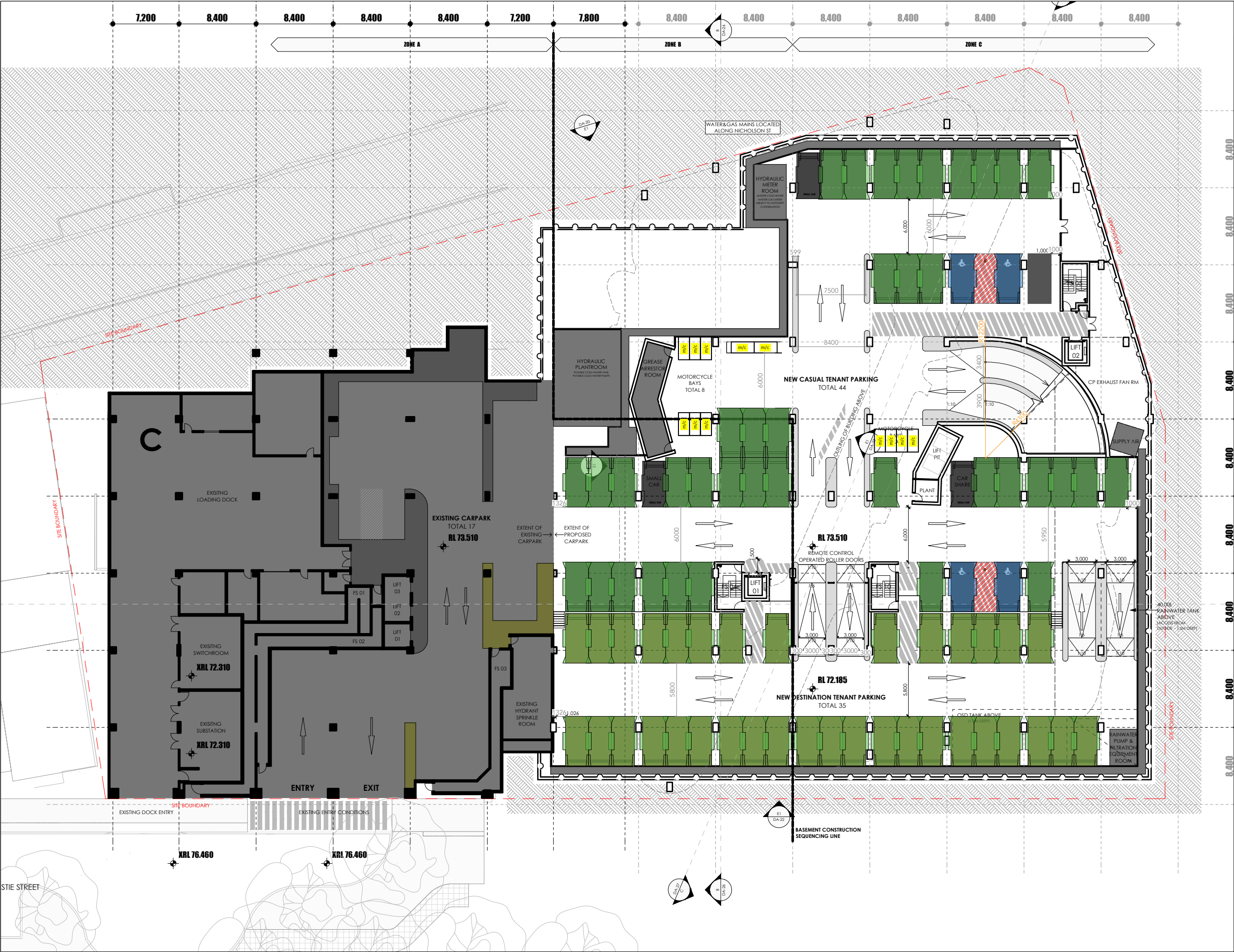
project  
29-57 Christie Street, St Leonards

drawing title  
Vertical Clearance Assessment - Access  
Ramp Grade - Typical B99 Vehicle

|           |                        |
|-----------|------------------------|
| client    | Arrow Capital Partners |
| drawing # | ptc-002                |
| project # | AP-2745                |
| scale     | 1 : 100                |

rev 7





comments

A3

VEHICLE SPECIFICATIONS

IN

OUT

5.2

1.94

0.27

1.84

4.00

6.25

B99 Vehicle (Realistic min radius) (2004)

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock-to-lock time

Curb to Curb Turning Radius

5.200m

1.940m

1.878m

0.272m

1.840m

4.00s

6.250m

CLASS 2 FACILITY

WIDTH: 2.5M

LENGTH: 5.4M

ACCESSIBLE PARKING SPACE

WIDTH: 2.5M

LENGTH: 5.4M

SHARED BAY

WIDTH: 2.5M

LENGTH: 5.4M

SMALL CAR SPACE

WIDTH: 2.3M

LENGTH: 5.0M

MOTORCYCLE BAY

WIDTH: 1.2M

LENGTH: 2.5M

rev

date

comment / description

drawn

reviewed

7

22/04/21

for review

JJ

DB

6

21/04/21

for review

JJ

DB

5

19/04/21

for review

JJ

DB

4

13/04/21

for review

JJ

AP

3

08/09/20

for review

AP/JJ

SW

2

15/04/20

For Review

JJ

SW

1

26/03/20

For Review

JJ

AP

project

29-57 Christie Street, St Leonards

drawing title

Compliance Assessment - Basement Level 1

client

Arrow Capital Partners

drawing #

ptc-003

project #

AP-2745

scale

1 : 400

rev

7

ptc.

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North Sydney NSW 2060  
t +61 2 8920 0800  
ptcconsultants.co



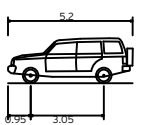
VEHICLE SPECIFICATIONS



IN



OUT



B99 Vehicle (Realistic min radius) (2004)  
Overall Length 5.200m  
Overall Width 1.940m  
Overall Body Height 1.878m  
Min Body Ground Clearance 0.272m  
Track Width 1.840m  
Lock-to-lock time 4.00s  
Curb to Curb Turning Radius 6.250m



CLASS 2 FACILITY

WIDTH: 2.5M  
LENGTH: 5.4M



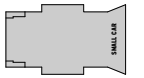
ACCESSIBLE PARKING SPACE

WIDTH: 2.5M  
LENGTH: 5.4M



SHARED BAY

WIDTH: 2.5M  
LENGTH: 5.4M



SMALL CAR SPACE

WIDTH: 2.3M  
LENGTH: 5.0M



MOTORCYCLE BAY

WIDTH: 1.2M  
LENGTH: 2.5M



| rev | date     | comment / description | drawn | reviewed |
|-----|----------|-----------------------|-------|----------|
| 7   | 22/04/21 | for review            | JJ    | DB       |
| 6   | 21/04/21 | for review            | JJ    | DB       |
| 5   | 19/04/21 | for review            | JJ    | DB       |
| 4   | 13/04/21 | for review            | JJ    | AP       |
| 3   | 08/09/20 | for review            | AP/JJ | SW       |
| 2   | 15/04/20 | For Review            | JJ    | SW       |
| 1   | 26/03/20 | For Review            | JJ    | AP       |

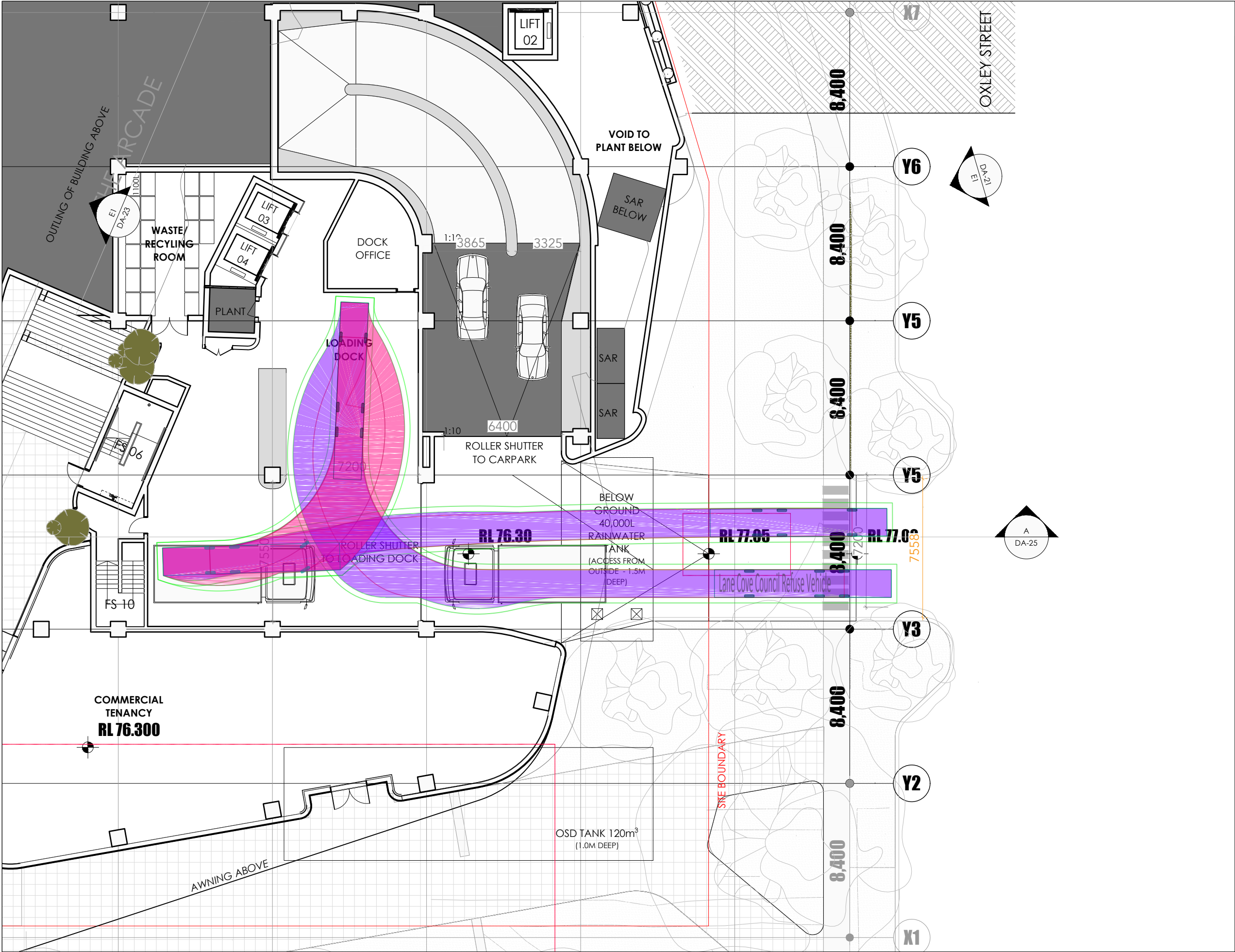












comments

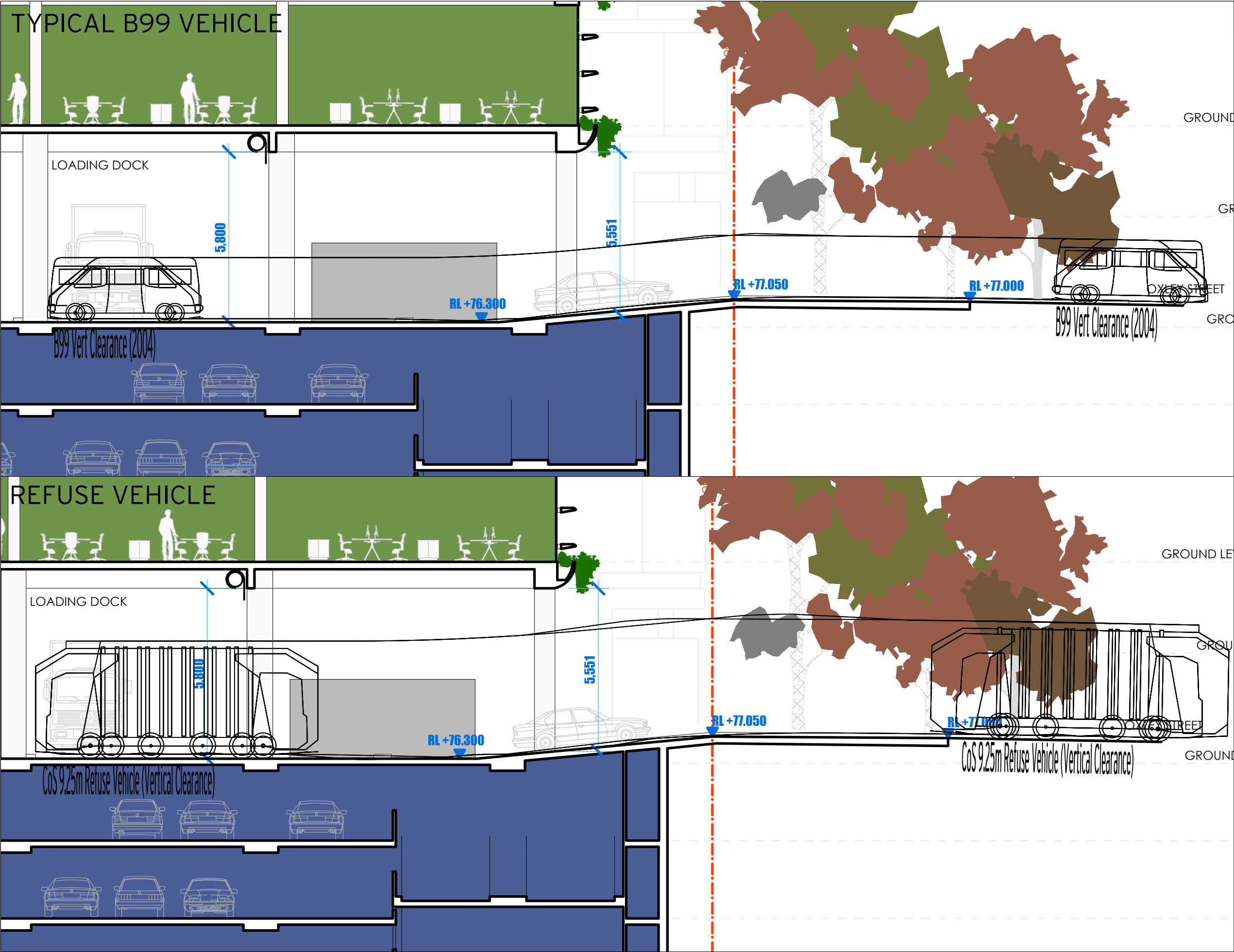
A3

VEHICLE SPECIFICATIONS

Lane Cove Council Refuse Vehicle

|                             |        |
|-----------------------------|--------|
| Overall Length              | 9.640m |
| Overall Width               | 1.510m |
| Overall Body Height         | 3.800m |
| Min Body Ground Clearance   | 0.130m |
| Track Width                 | 1.510m |
| Lock-to-lock time           | 4.00s  |
| Curb to Curb Turning Radius | 8.930m |





comments

A3

VEHICLE SPECIFICATIONS

B99 Vert Clearance (2004)

5.2

0.95 3.05

B99 Vert Clearance (2004)

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock-to-lock time

Curb to Curb Turning Radius

5.200m

1.940m

2.200m

0.120m

1.840m

4.00s

8.000m

CoS 9.25m Refuse Vehicle (Vertical Clearance)

9.25

1.51 3.825 1.33 4.5

CoS 9.25m Refuse Vehicle (Vertical Clearance)

Overall Length

Overall Width

Overall Body Height

Min Body Ground Clearance

Track Width

Lock-to-lock time

Curb to Curb Turning Radius

9.250m

2.600m

4.000m

0.150m

2.500m

4.00s

10.500m