

LEND LEASE DEVELOPMENT P/L

ASSESSMENT OF VEHICULAR
TRANSPORT ASPECTS OF
PLANNING PROPOSAL FOR
LEND LEASE CIRCULAR QUAY, 174-
182 GEORGE STREET AND 33-35
PITT STREET, SYDNEY

OCTOBER 2015

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REF: 9103/5

TABLE OF CONTENTS

1. INTRODUCTION	1
2. TRANSPORT ASPECTS OF PLANNING PROPOSAL	3
3. CONSTRUCTION TRANSPORT ASPECTS OF PLANNING PROPOSAL.....	17

1. INTRODUCTION

- 1.1 Colston Budd Hunt and Kafes Pty Ltd (CBHK) has been commissioned by Lend Lease Development P/L (Lend Lease) to review the vehicular transport aspects of a planning proposal for the Lend Lease Circular Quay development located at 174-182 George Street and 33–35 Pitt Street, Sydney. The site is located within the block bounded by George Street to the west, Alfred Street to the north, Pitt Street to the east and Underwood Street to the south, as shown in Figure 1.
- 1.2 The site is currently occupied by a number of buildings on land parcels including:-
- 182 George Street (Lot 182, DP 606865);
 - 33 – 35 Pitt Street (Lot 7, DP 629694);
 - 174 – 176A George Street (Lot 181, DP 606865), known as Jacksons on George;
 - part of 200 George Street (Lot 1, DP 69466 and Lot 4, DP 57434) known as “Mirvac Triangle”;
 - Crane Lane, including walkway (Lot 1 and 2, DP880891); and
 - Rugby Club (optional site), (Lot 180, DP 606866).
- 1.3 The planning proposal would provide for a commercial development on the amalgamated site of up to some 70,000m² GFA, with commensurate basement parking and loading facilities. Vehicular access to service the new office tower component of the development will be provided from Underwood Street.
- 1.4 As part of the proposal, the existing Secure public car park located on the 33-35 Pitt Street site and serviced from Underwood Street, would cease to operate.
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CBHK understand that Secure, the existing public car park operator, can stack up to 130 public cars within the existing car park. Under the proposal, the traffic generated by the Secure public car park within Underwood Street would cease to exist.

- 1.5 The existing George Street vehicular access servicing both 182 George Street and Jacksons on George is proposed to be closed to vehicles as part of the proposal.
- 1.6 It is proposed that service vehicle access to the existing Jacksons on George loading dock would be amended as part of the proposal from the current George Street and Crane Lane (beneath 182 George Street) arrangement. The amended access is proposed via Rugby Place from Pitt Street.
- 1.7 Existing vehicular access arrangements to Fairfax (19 Pitt Street) and Rugby Club would remain unchanged, while access to the existing loading dock at 1 Alfred Street is proposed from Pitt Street, via Rugby Place, utilising existing rights of way that already benefit 1 Alfred Street and burden both Rugby Club (Lot 180, DP 606866) and Fairfax (Lot 1, DP 537286).
- 1.8 The transport aspects of the proposed development are reviewed in the following chapter.

2. TRANSPORT ASPECTS OF PLANNING PROPOSAL

2.1 The transport aspects of the planning proposal are reviewed through the following sections:

- site location and road network;
- scale of development;
- public transport, walking and cycling;
- parking provision;
- commercial office tower access arrangements;
- commercial office tower internal layout and servicing;
- laneway access arrangements (Jacksons on George, I Alfred Street Service Dock, 19 Pitt Street and Rugby Club);
- commercial office tower traffic generation
- Jacksons on George and laneway retail traffic generation; and
- summary.

Site Location and Road Network

2.2 The site is located in the northern part of the Sydney CBD within the block bounded by George Street to the west, Alfred Street to the north, Pitt Street to the east and Underwood Street to the south, as shown in Figure 1. The site has frontage to George Street, Pitt Street and Underwood Street. The site is currently occupied by a number of commercial buildings, some including commercial office basement parking. The 33-35 Pitt Street site also contains a public Secure car park which is accessed directly from Underwood Street.

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- 2.3 The site has good access to existing public transport and is close to major public transport nodes within the CBD. Wynyard, Martin Place and Circular Quay transport interchanges are within close walking distance to the site. These are major stations on the Cityrail network and provide two of the major stops within the CBD. This makes the site conveniently accessible to train, bus and ferry public transport services which operate from these transport interchanges.
- 2.4 The site will be directly adjacent to both the proposed CBD light rail corridor and the Macquarie Place station of the protected CBDRL corridor.
- 2.5 Numerous bus services operate along many of the streets within the vicinity of the site, with major bus facilities located at Wynyard Park and Circular Quay bus terminus. Bus services provide links to areas north, east, inner west and south. The site is also close to taxi ranks in George Street and Alfred Street.
- 2.6 The road network in the vicinity of the site includes George Street, Bridge Street, Pitt Street, Alfred Street, Underwood Street, Dalley Street, Blue Anchor Lane and Crane Lane. George Street is located to the west of the site and provides the main north-south traffic route through the CBD. It generally provides a four lane undivided carriageway between Lower Fort Street to the north and Railway Square to the south. In the vicinity of the site it generally provides two traffic lanes in each direction and additional lanes for turning vehicles. The intersections of George Street with Grosvenor Street and Essex Street are traffic signal controlled.
- 2.7 George Street will also cater for the proposed light rail through the northern part of the CBD. The route will pass directly in front of the site along George Street (one-way northbound). The route is proposed to incorporate a pedestrian zone
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between Hunter Street and Bathurst Street. Adjacent to the site, two-way traffic arrangements in George Street will be maintained. Between Alfred Street and Hunter Street there will be one traffic lane in each direction, in addition to the light rail alignment in the centre of George Street.

- 2.8 Bridge Street is south of the site and provides an east-west connection between George Street and Macquarie Street. It generally provides a two-way undivided four lane carriageway with kerbside parking permitted clear of intersections and additional lanes for turning vehicles. The intersections of Bridge Street with George Street and Pitt Street are traffic signal controlled.
- 2.9 Pitt Street, located adjacent to the eastern boundary of the site, provides a one-way southbound carriageway between Alfred Street and King Street. It generally provides two traffic lanes with kerbside parking permitted clear of intersections. Alfred Street at the northern end of Pitt Street, is a two-way street west of Pitt Street, between Pitt Street and George Street, and is one-way westbound (bus and taxis only) east of Pitt Street.
- 2.10 In association with the introduction of light rail, Alfred Street will be closed to traffic and the northern part of Pitt Street will be converted to two-way traffic. A turning circle will be provided at the northern end of Pitt Street to provide for traffic circulation. The traffic effects of these proposed changes to the road network are being assessed in association with the overall transport assessment of the light rail project.
- 2.11 Underwood Street and Dalley Street are relatively narrow one-way streets and effectively provide a single traffic lane. They generally provide service access to adjacent developments and access to basement car parks beneath the buildings
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located within the block bounded by George Street, Bridge Street, Pitt Street and Alfred Street. Some on-street parking and loading are permitted on these streets, clear of intersections.

- 2.12 Underwood Street, located adjacent to the southern boundary of the site, provides a one-way connection between Pitt Street and Dalley Street. All vehicles entering Underwood Street from Pitt Street are required to exit onto Pitt Street, via Dalley Street. Dalley Street south of the site provides a one-way eastbound connection between George Street and Pitt Street. The intersections of Pitt Street/Underwood Street, Pitt Street/Dalley Street and George Street/Dalley Street are priority controlled intersections, with Pitt Street and George Street having priority.
- 2.13 Blue Anchor Lane, located at the north western corner of the site, provides a two-way service road and pedestrian connection through to Rugby Place. It effectively provides two traffic lanes with some on-street parking and loading permitted near George Street. Crane Lane is at the eastern end of Blue Anchor Lane. The southern section of Crane Lane provides a pedestrian connection to George Street.
- 2.14 There are strong pedestrian desire lines and pedestrian travel paths along George Street, Pitt Street, Bridge Street and Alfred Street in the vicinity of the site. There are pedestrian connections linking George Street to Pitt Street via Blue Anchor Lane, Crane Lane and Rugby Place.
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Scale of Development

- 2.15 The planning proposal would provide for a commercial development of up to 70,000m² GFA, with commensurate basement parking and loading facilities where relevant. Vehicular access for the purpose of servicing the commercial office tower (including retail immediately beneath the tower), will be provided via a combined entry/exit driveway located at the eastern end of Underwood Street, adjacent Pitt Street.
- 2.16 The existing George Street vehicular access (Blue Anchor Lane) servicing both 182 George Street and Jacksons on George is proposed to be closed to vehicles as part of the proposal and replaced with a new public plaza.
- 2.17 It is proposed that service vehicle access to the existing Jacksons on George loading dock would be amended as part of the proposal from the current George Street and Blue Anchor Lane (beneath 182 George Street) arrangement. The amended service vehicle access to the Jacksons on George dock is proposed at grade via either existing shared pedestrian/vehicular Rugby Place from Pitt Street or proposed new shared pedestrian/vehicular north/south lane from Underwood Street.
- 2.18 Existing vehicular access arrangements to Fairfax (19 Pitt Street) and Rugby Club, would remain unchanged, whilst access to the existing loading dock at 1 Alfred Street is proposed from Pitt Street, via Rugby Place, utilizing existing Rights of Way that already benefit 1 Alfred Street and burden both Rugby Club (Lot 180, DP 606866) and Fairfax (Lot 1, DP 537286).
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- 2.19 Laneway retail is proposed in part to be front loaded from the new north/south laneway network.
- 2.20 Rugby Place is to remain a shared pedestrian/vehicular laneway.

Public Transport, Walking and Cycling

- 2.21 The site is well served by public transport. It is located close to Circular Quay and Wynyard railway stations. Both of these stations provide good connections to rail services throughout Sydney. The site is also accessible to ferry services that operate from Circular Quay.
- 2.22 Bus services from major bus facilities at Circular Quay and Wynyard Park link the site to areas to the north, east, inner west and south. A number of services also operate along George Street, York Street, Clarence Street, Phillip Street and Elizabeth Street.
- 2.23 The provision of light rail through the CBD, currently on exhibition, incorporates a loop service running along George Street and Sussex Street. The route would be one directional flow northbound along George Street. The route would pass directly in front of the site and would connect to major transport facilities.
- 2.24 The light rail route will provide a high frequency, high capacity service through the CBD linking to Barangaroo, The Rocks, Circular Quay, Wynyard, Town Hall and Central. The proposed facility will enhance and improve access to public transport services.
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- 2.25 The proposed development provides opportunities to strengthen demand for these public transport services. Public transport services offer viable alternatives to travel by modes other than car.
- 2.26 The proposed development includes integration with the existing pedestrian and cycle links in the area. Pedestrian connections through the site linking to George Street, Pitt Street and Underwood Street will be enhanced to improve pedestrian accessibility in the area.
- 2.27 To support accessibility by bicycles, appropriate bicycle parking and end-of-trip facilities will be provided in accordance with the requirements of the LEP.
- 2.28 The site is therefore located to provide future employees with a choice of mode of travel. This is consistent with government objectives of:-
- providing accessibility to employment by public transport;
 - providing choice of transport mode and reducing dependence solely on cars for travel purposes;
 - restricting the amount of on-site parking. This will encourage public transport use and increase the proportion of journey to work trips by public transport;
 - being located within the CBD, which is readily accessible by public transport;
 - moderating growth in demand for travel and the distance travelled, especially by car;
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- increasing employment density to provide more potential customers for the existing public transport services and hence support their efficient and viable operation.
- encourage cycling by providing safe and secure bicycle parking, including the provision of lockers and change facilities for employees and visitors;
- provide a restrictive parking provision, consistent with appropriate Council/RMS controls and the objective of reducing traffic generation.

Parking Provision

2.29 The City of Sydney LEP 2012 specifies a maximum on-site parking provision for commercial developments of one space per 50m² of site area. With a total combined site area (inclusive of the optional Rugby Club site) of 4,809m², the allowable on-site parking provision would be a maximum of 96 spaces (excluding service vehicles).

2.30 The City of Sydney DCP 2012 has the following requirements for bicycle and motorcycle parking for commercial developments:-

- Bicycle parking
 - one space per 150m² GFA for employees;
 - one space per 400m² GFA for visitors;
- Motorcycle parking
 - one car space for every 50 car parking spaces or part thereof.

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- 2.31 On-site bicycle and motorcycle parking, including lockers and change facilities for employees and visitors, will be provided in accordance with the above requirements.
- 2.32 With regards to service vehicles, Council's DCP 2012 for commercial developments requires one spaces per 3,300m² GFA, or part thereof, for the first 50,000m², plus one space per 6,600m² GFA, or part thereof, for additional floor area over 50,000m². Application of this rate results in a requirement of circa 16 service vehicles.
- 2.33 Lend Lease proposes a managed basement loading dock with full time dock supervision. An engineered solution that provides suitable capacity for service vehicles will be prepared at the development application phase.
- 2.34 The proposed on-site loading bays will comprise a mix of courier, small commercial and medium rigid truck spaces. Small commercial and medium rigid trucks together with courier spaces are proposed to be accommodated within the basement loading dock within basement level 1.

Commercial Office Tower Access Arrangements

- 2.35 Vehicular access to the basement parking and servicing will be provided via a combined entry and exit driveway onto Underwood Street adjacent Pitt Street. The location of the driveway has been investigated taking into consideration traffic arrangements along Underwood Street, site constraints as a result of the proposed development in terms of services and building side core location (against Underwood Street), and traffic and pedestrian implications in the vicinity of the site both on Underwood and Pitt Streets. The preferred location of the driveway
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is at the eastern end of Underwood Street, with a ramp located on northern side of the building side core accessing the basement car park and loading dock.

- 2.36 The proposed driveway on Underwood Street will be located clear of the intersection of Pitt Street and Underwood Street, and will be provided in accordance with the Australian Standard for Parking Facilities (Part 1: Off-Street Car Parking) AS2890.1-2004 and (Part 2: Commercial Vehicle Facilities) AS2890.2-2002. Appropriate sight lines will be provided at the access driveway to provide for pedestrian safety.
- 2.37 The driveway configuration will cater for the swept path of service vehicles ranging from small commercial vehicles to medium rigid trucks. Underwood Street is one-way westbound and service vehicles accessing the site will enter via Pitt Street and Underwood Street, and exit via Underwood Street and Dalley Street, as shown on Figures 2 to 4.
- 2.38 In correspondence to LLD dated 22 May 2014, the City of Sydney requested further swept paths of Council's waste vehicle, assessing access arrangements for the proposed development with Underwood Street one-way eastbound. Under this arrangement, vehicles accessing the site will enter via Dalley Street and Underwood Street, and exit via Underwood Street and Pitt Street, as shown on Figure 5.
- 2.39 The driveway and ramp accessing the basement car park and loading dock will incorporate a 1 in 20 grade for the first 12 metres into the site. This will allow vehicles to effectively exit the site at-grade with appropriate sight lines to traffic and pedestrian movements along Pitt Street at Underwood Street.
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- 2.40 The design of the driveway will cater for both existing traffic arrangements in Underwood Street (one-way westbound traffic flow) and the possible future change in the direction (contemplated under the DCP alternate strategic controls) of traffic to one-way eastbound. Access arrangements onto Underwood Street will therefore be able to accommodate Underwood Street being either one-way eastbound or one-way westbound.

Commercial Office Tower Internal Layout and Servicing

- 2.41 Car parking for the proposed development will be provided in basement parking levels beneath the building. The basement levels will be linked to the proposed Underwood Street access driveway via an internal ramp. Within the basement levels, parking space dimensions, aisle widths, ramp widths, ramp grades and transitions, column locations and height clearances will be provided generally in accordance with the Australian Standard (AS2890.1-2004).
- 2.42 The ramp to the basement loading dock will be designed to cater for the swept paths and height clearances of the service vehicles, as generally shown on Figure 6. The ramp grades and transitions have been investigated to ensure appropriate ground clearances will be maintained, to prevent vehicles scrapping, and to minimise the impact of the ramp on adjacent structure. Service vehicle access on the ramp and within the loading dock will be managed. The ramp will be signalised with appropriate waiting bays and passing opportunities at the top and bottom of the ramp. The traffic signal system will only be required to control access to and from the site by medium rigid trucks and Council's waste vehicle. The traffic signal system will not be required for general cars and small commercial vehicles.
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- 2.43 The service area and loading docks will be designed to cater for service vehicles ranging from couriers and small commercial vehicles to medium rigid trucks with a height clearance of 3.8 metres. A height clearance of 3.8 metres is typical of commercial developments in the city, including the recently approved development at 200 George Street. The height clearance will cater for the range of service vehicles that will service the development, including Council's waste vehicle.

Laneway Access Arrangements (Jacksons on George, I Alfred Street Service Dock, 19 Pitt Street and Rugby Club)

- 2.44 It is proposed that Jacksons on George, I Alfred Street service dock, 19 Pitt Street and Rugby Club will be serviced via the existing shared pedestrian/vehicular Rugby Place and, where relevant, the new north-south lane spine created as part of the proposed LLCQ redevelopment.
- 2.45 I Alfred Street (Valad), 19 Pitt Street (Fairfax) and Rugby Club are all beneficiaries of existing rights of way to utilise Rugby Place for the purpose of vehicular access to existing loading dock arrangements. It is proposed that laneway retail may also be serviced via front loading from the augmented laneway network.

Commercial Office Tower Traffic Generation

- 2.46 Traffic generated by the proposed development will have its greatest effects during weekday morning and afternoon peak periods when it combines with other traffic on the surrounding road network. Typically tenant car parks within the CBD generate between 0.2 to 0.3 trips per spaces during peak periods. The proposed development would therefore generate some 20 to 30 vehicles per
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hour two-way (in plus out) during peak periods. This is a low traffic generation, equivalent to less than one vehicle every two to three minutes at peak times.

- 2.47 It should be noted that the existing Secure public car park on the site, which will be replaced by the proposed development, currently generates some 25 to 30 vehicles per hour at peak times. Hence the proposed development would have a similar traffic generation to the existing development on the site.
- 2.48 The proposed development would therefore not result in an increase in traffic generation. The proposed development would therefore not have an effect on the operation of the surrounding road network. Intersections in the vicinity of the site will continue to operate at their current levels of service during peak periods.

Jacksons on George and Laneway Retail Traffic Generation

- 2.49 Jacksons on George and laneway retail will be serviced via both existing/augmented Rugby Place and the proposed north/south laneway. Both Rugby Place and the proposed north/south laneway have the capacity to accommodate the revised arrangements.

Summary

- 2.50 In summary, the main points relating to the vehicular transport aspects of the planning proposal are as follows:
- i) as part of the proposal, the existing Secure public car park located on the 33-35 Pitt Street site and serviced from Underwood Street, would cease to operate. The existing public car park can stack up to 130 public cars. The

removal of the Secure commercial car park will significantly improve traffic capacity on Underwood and Pitt Streets;

- ii) the planning proposal would provide for a commercial development of up to 70,000m² GFA pending participation of the Rugby Club optional site;
 - iii) the site is highly accessible to existing public transport services. The proposed development will strength demand for existing public transport services;
 - iv) parking provision (including bicycle and motorcycle parking) will be provided generally in accordance with Council's requirements;
 - v) access to/from Underwood Street for the purpose of servicing the commercial office tower has been assessed and is appropriate;
 - vi) commercial office tower access, internal circulation and layout would be provided generally in accordance with Australian Standards;
 - vii) amended vehicular/pedestrian shared access arrangements for Jacksons on George and Laneway retail described in this report are considered appropriate;
 - viii) the proposed development would have a similar traffic generation to the existing development on the site;
 - ix) the proposed development would not result in an increase in traffic generation. The proposed development would therefore not have an effect on the operation of the surrounding road network.
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3. CONSTRUCTION TRANSPORT ASPECTS OF PLANNING PROPOSAL

Access Arrangements and Truck Numbers

□ Demolition Phase

Demolition truck site entry will be from Pitt Street, Underwood Street and George Street and staged to suit the demolition sequencing of the works.

During demolition, it is estimated that there would be some 120-150 truck visits per week, with up to 20-25 trucks per day, and around a maximum of 4-5 trucks per hour.

□ Excavation Phase

Excavation will involve a primary site access from Pitt Street and Underwood Street with egress via George Street.

Excavation is estimated to involve a maximum of 300 trucks per week with around 50 trucks per day and a maximum of 5 per hour.

□ Construction Phase

During construction, primary site access will be from Pitt Street and Underwood Street and egress initially onto George Street. Following completion of the basement structure, the site egress will be via Underwood Street.

There will be secondary access and egress from George Street.

It is estimated that there will be a maximum of 250-300 truck visits per week with an average of around 50 trucks per day and a maximum of 7 per hour.

During construction it is envisaged that there could be 2-3 cranes to assist in moving construction materials, and various hoisting systems to the relevant work forces.

□ Works Zone

It is proposed that there be work zones on both George and Pitt Streets, for the unloading of materials by crane.

Adjoining Landowners and Light Rail Issues

□ Adjoining Landowners Access

The site shares access from both Pitt Street and George Street with the following neighbours:

- Jacksons on George
- Goldfields House
- Rugby Club
- Fairfax House.

The existing access routes for third party landowners in accordance with existing rights benefiting these land parcels will be maintained at all times.

- Light Rail Construction

It is understood that the construction of the proposed light rail will impact on the access available from George St, however, consultation to date with TfNSW has indicated that existing access arrangements to the basement of 182 George Street (via Blue Anchor Lane) will be maintained. This existing 182 George Street access will be required for the purpose of constructing the proposed LLCQ development throughout the redevelopment works.

Access Routes

Proposed access routes are intended to take advantage of the sites location on the periphery of the CBD and minimize the intrusion of trucks into City Streets.

Main proposed access routes are:

- Entry

- From South and East Via Macquarie Street – Bridge Street – Loftus Street – Reiby Place to Pitt Street

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- From the North via Cahill Expressway – Macquarie Street - Bridge St – Loftus Street – Reiby Place

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- From the west via King St – Macquarie Street - Bridge St – Loftus Street – Reiby Place

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- For George St entry the route will be from Bridge Street to George Street.

□ Exit

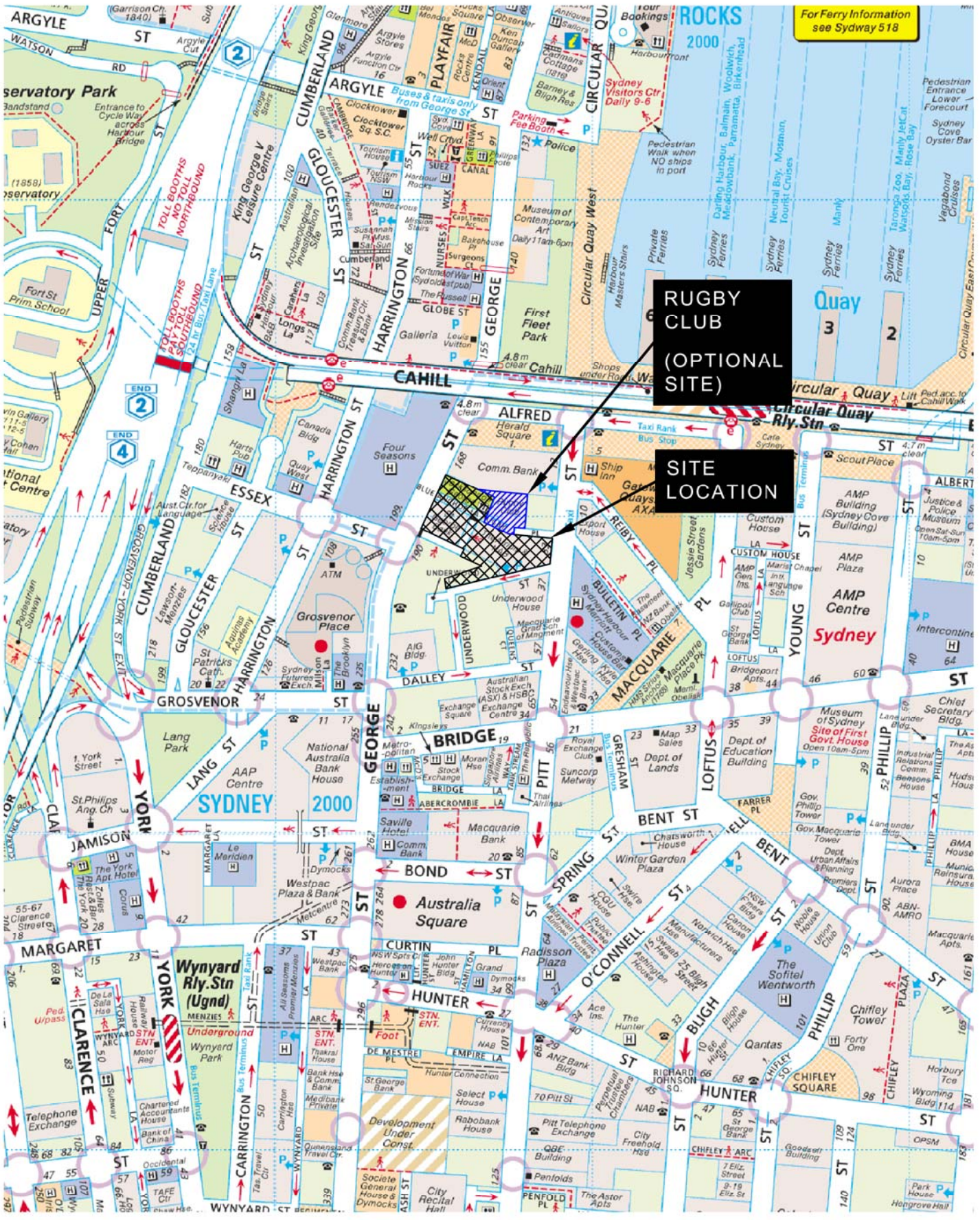
Pitt Street side to Bridge Street and return as per entry

George St side to Bridge Street and return as per entry

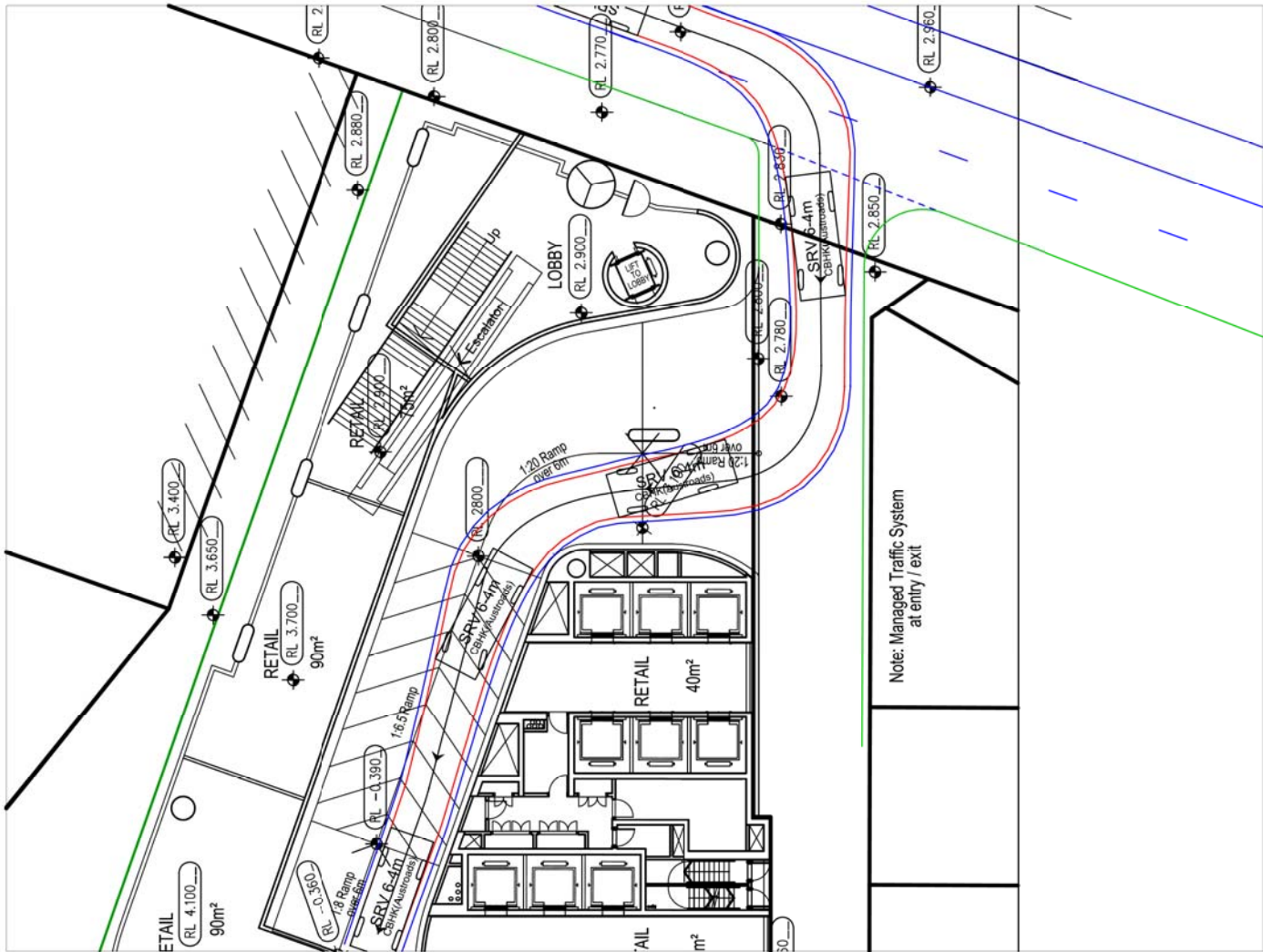
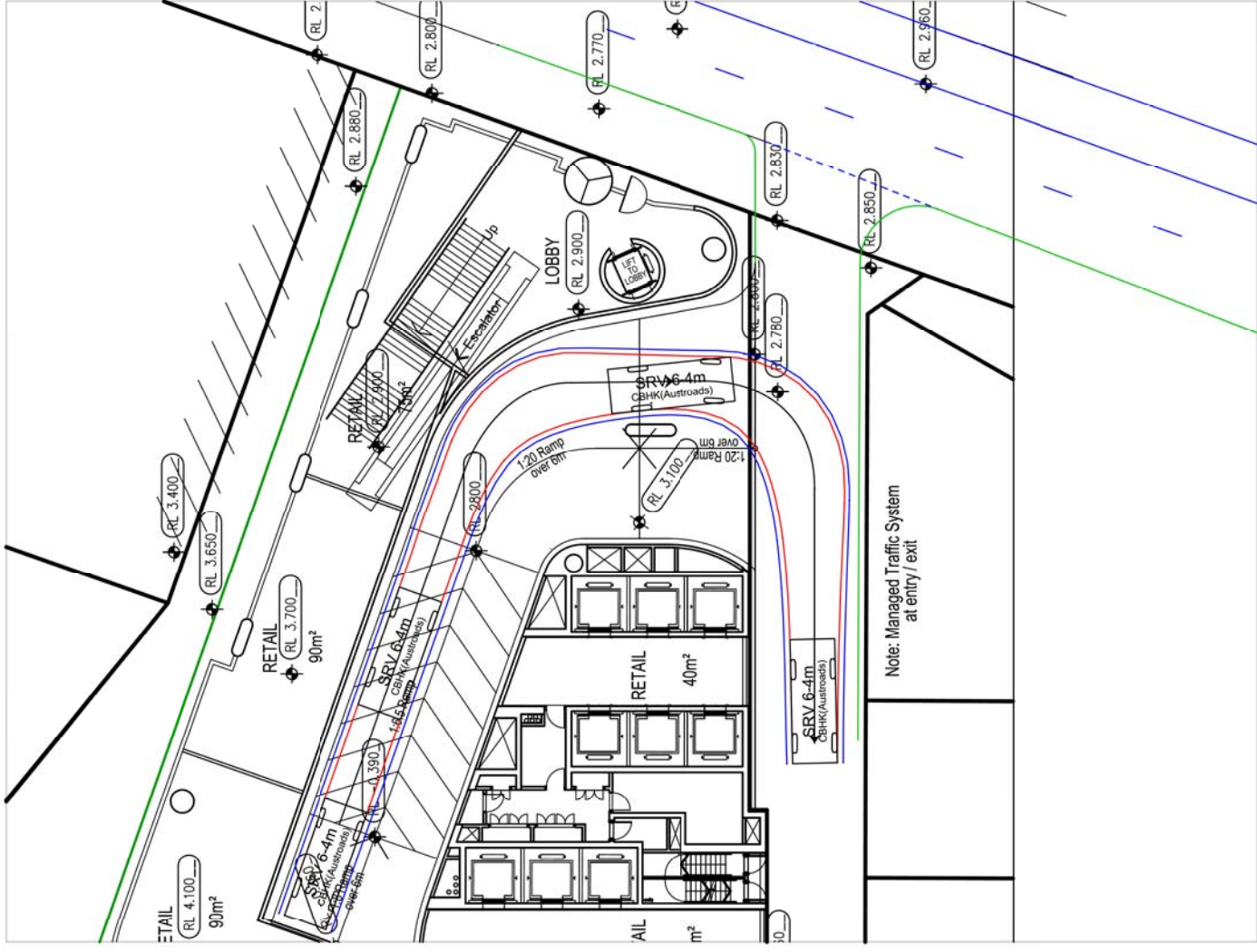
Conclusion

Colston Budd Hunt and Kafes Pty Ltd has been commissioned by Lend Lease Development P/L (Lend Lease) to review the vehicular transport aspects of a planning proposal for the Lend Lease Circular Quay development located at 174-182 George Street and 33–35 Pitt Street, Sydney.

CBHK have assessed the Lend Lease planning proposal scheme and conclude that vehicular transport issues commensurate with the proposal can be adequately managed within the constraints of both the existing (or as amended) local and boarder CBD road network.



Location Plan



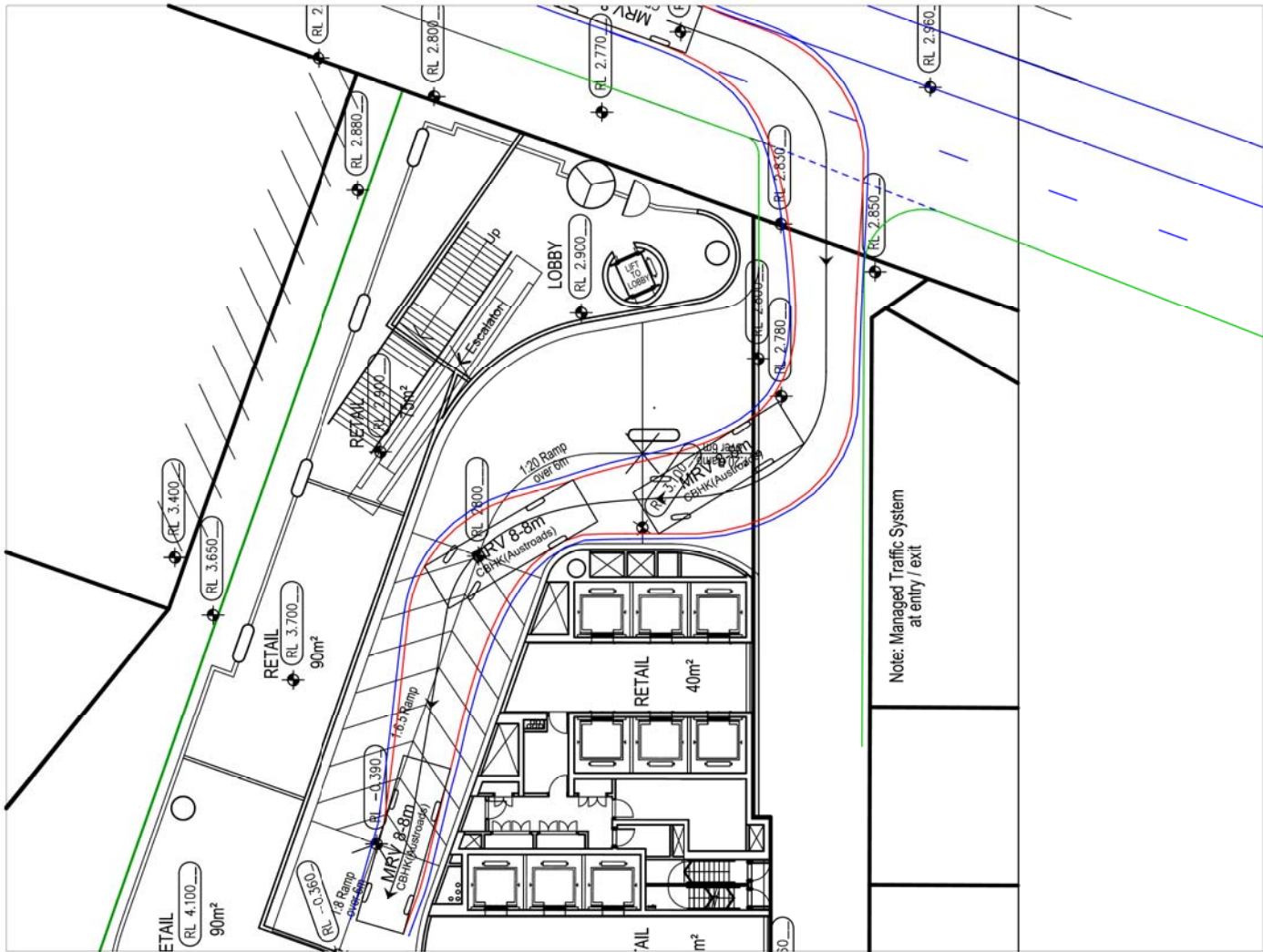
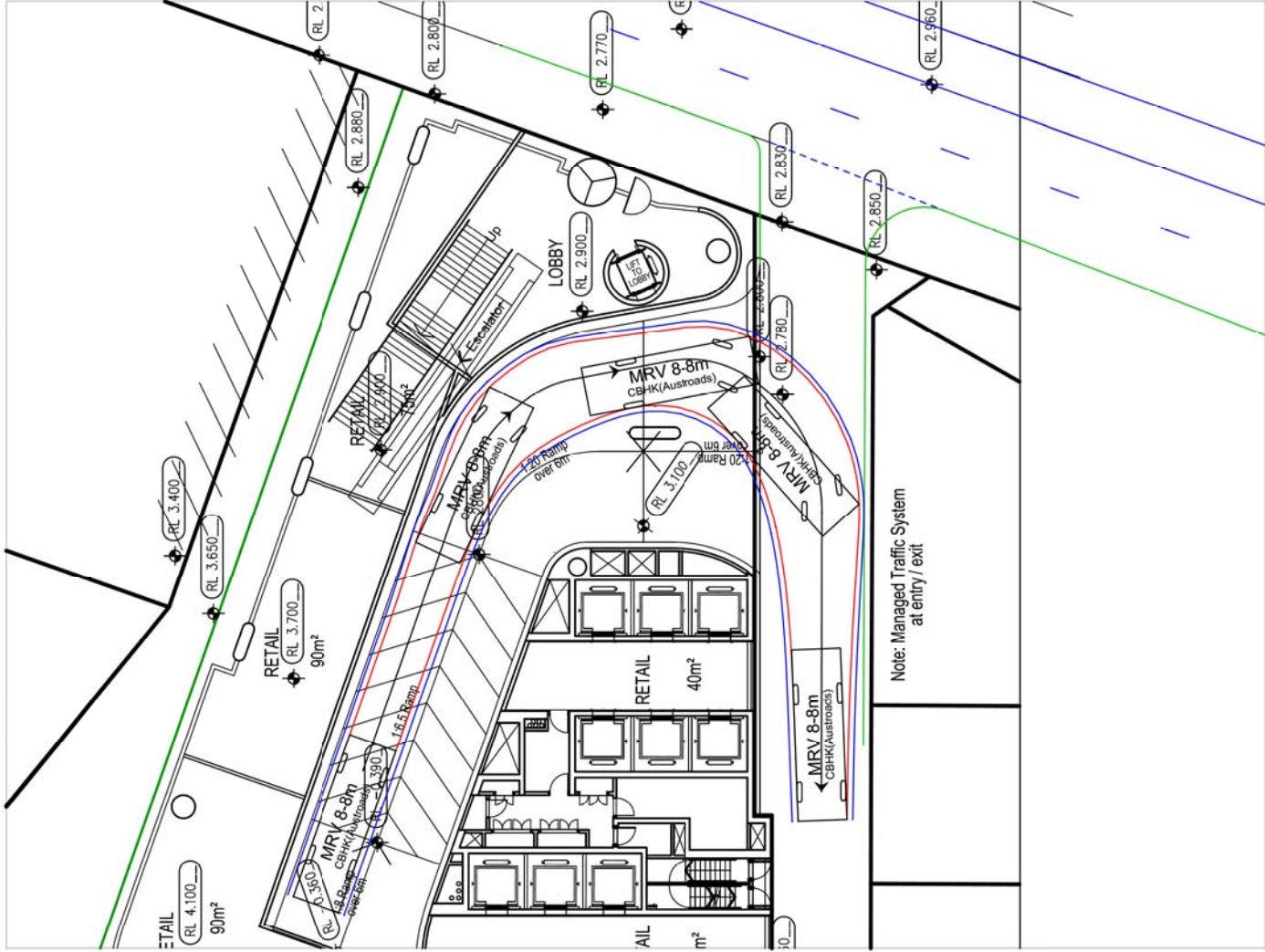
Note: Managed Traffic System at entry / exit

Note: Managed Traffic System at entry / exit

NOTE: SKETCH PLAN ONLY. PROPERTY BOUNDARIES, UTILITIES, KERBLINES & DIMENSIONS ARE SUBJECT TO SURVEY AND FINAL DESIGN. TRAFFIC MEASURES PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND ARE SUBJECT TO FINAL DESIGN BY CIVIL ENGINEERS.

— Swept Path of Vehicle Body
 — Swept Path of Clearance to Vehicle Body

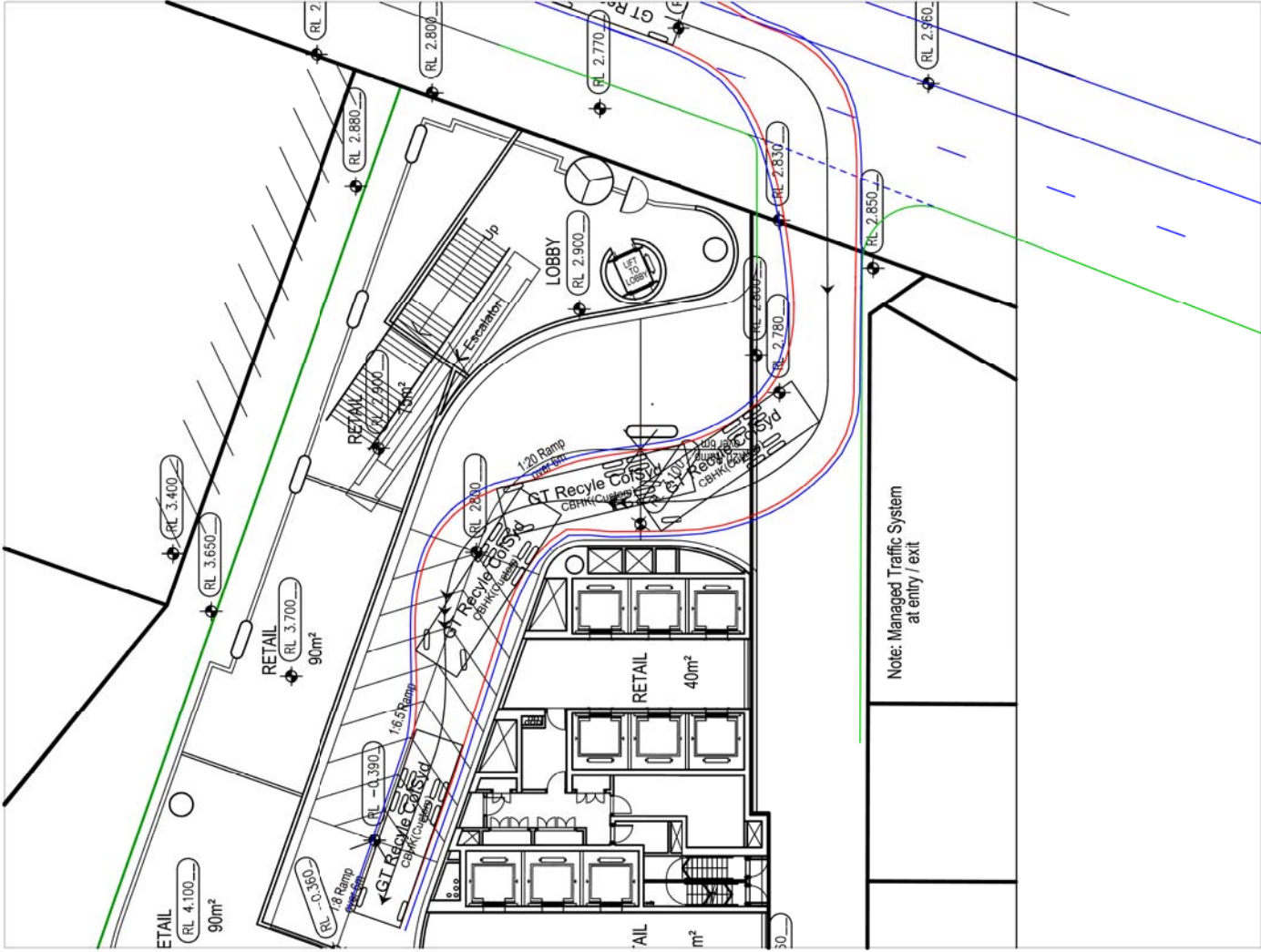
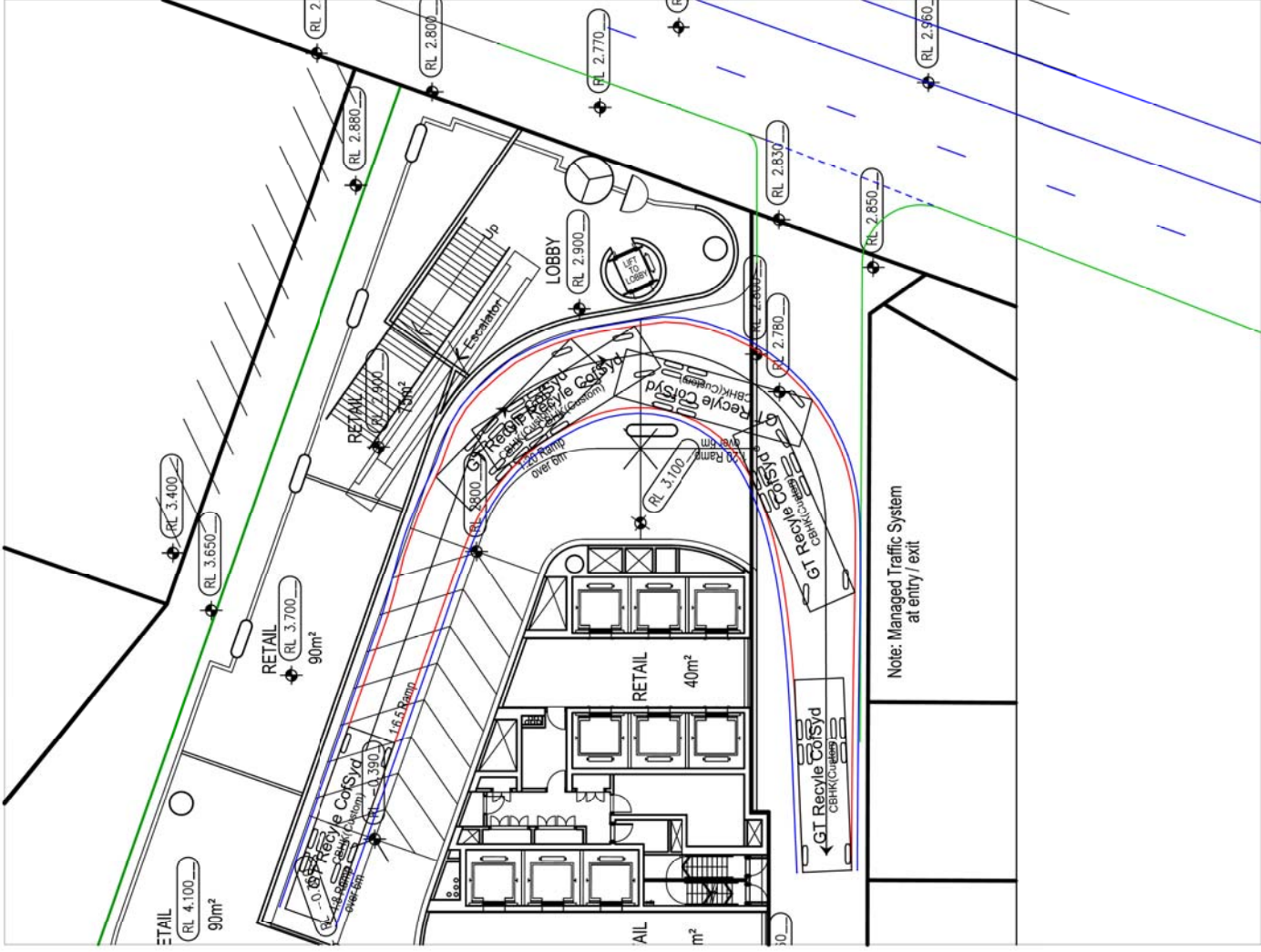
6.4m SMALL RIGID VEHICLE SWEEP PATHS - UNDERWOOD STREET ONE-WAY WESTBOUND



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— Swept Path of Vehicle Body
 — Swept Path of Clearance to Vehicle Body

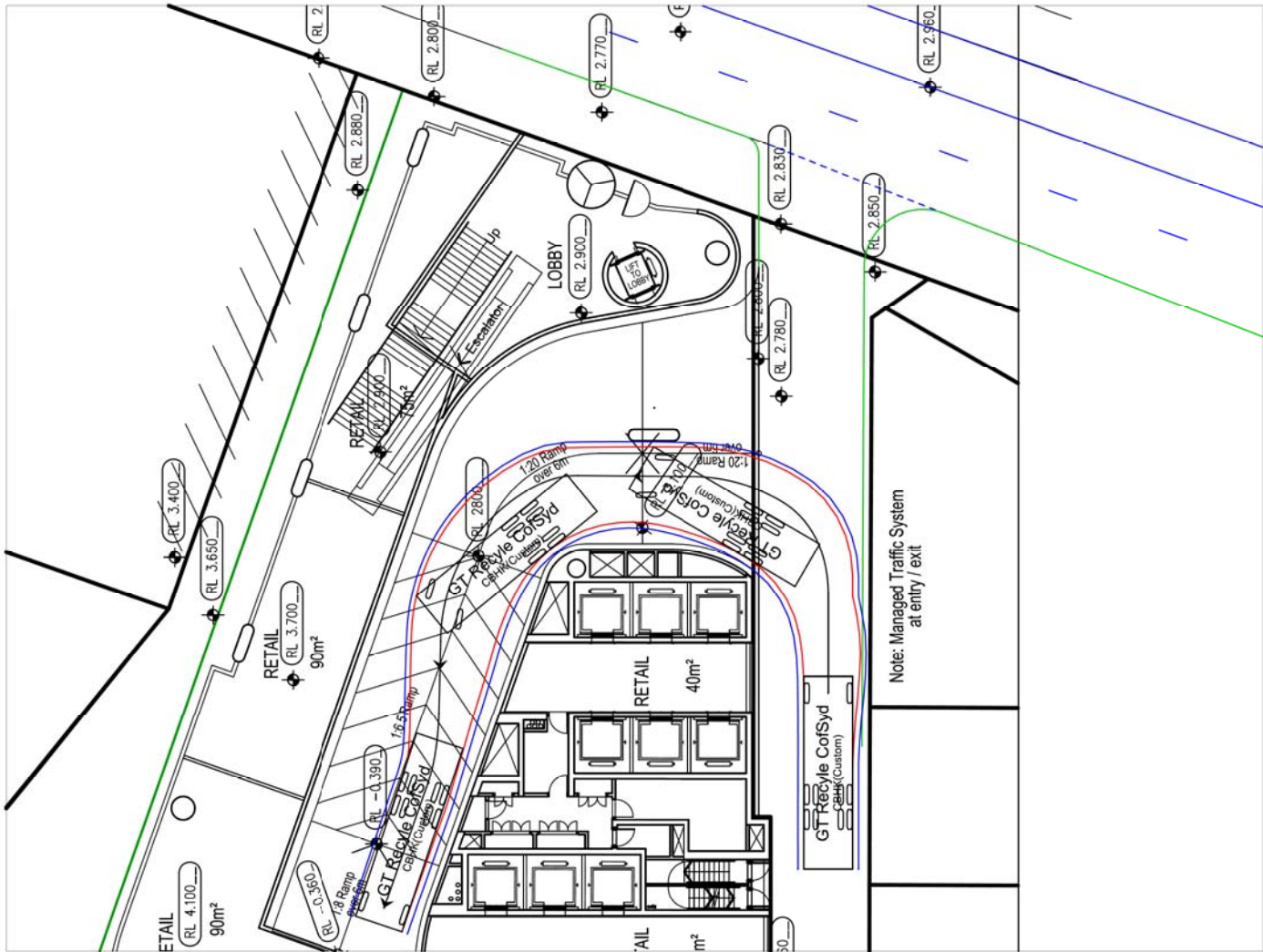
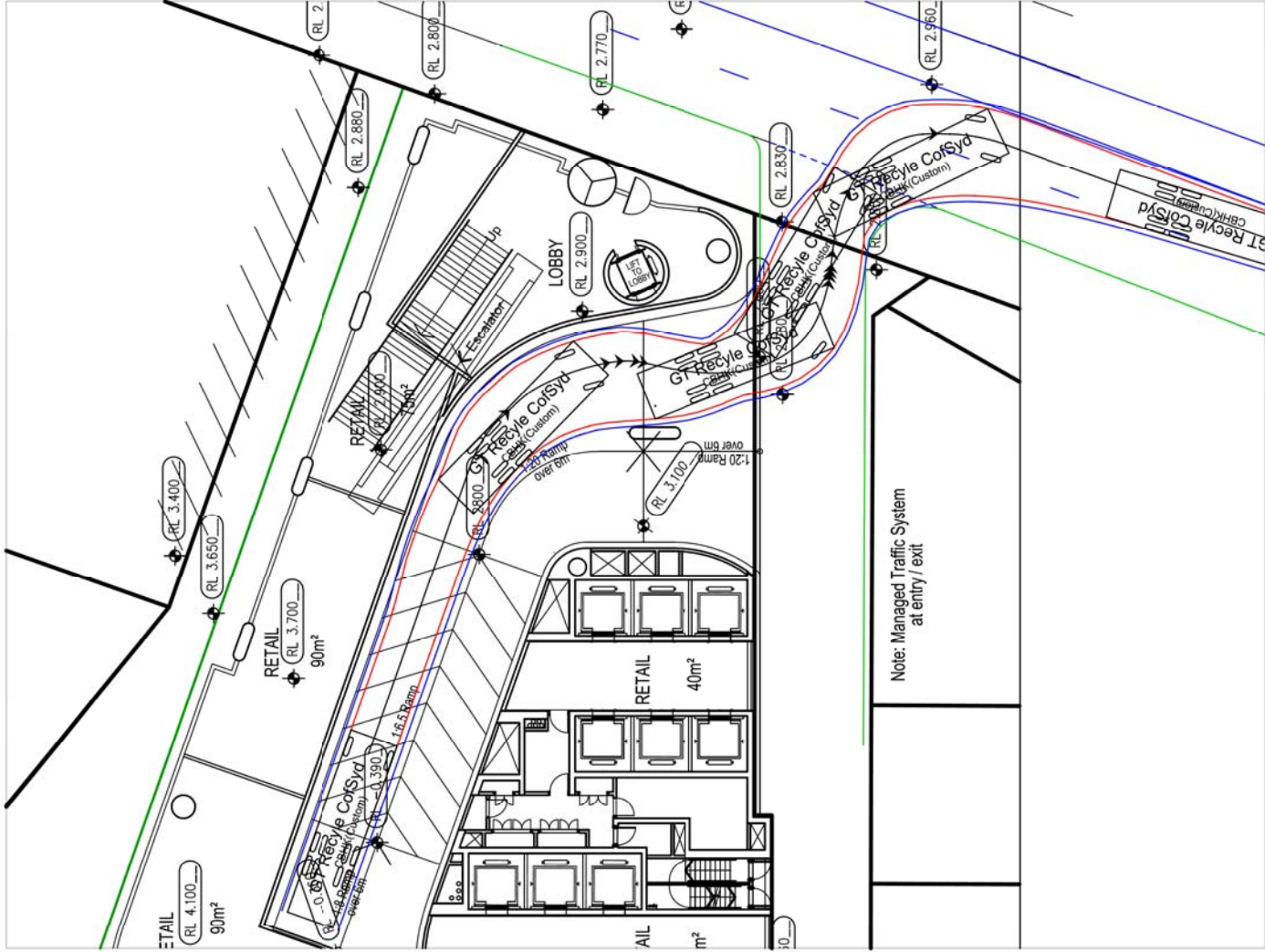
**8.8m MEDIUM RIGID VEHICLE SWEEP PATHS
 - UNDERWOOD STREET ONE-WAY
 WESTBOUND**



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— Swept Path of Vehicle Body
 — Swept Path of Clearance to Vehicle Body

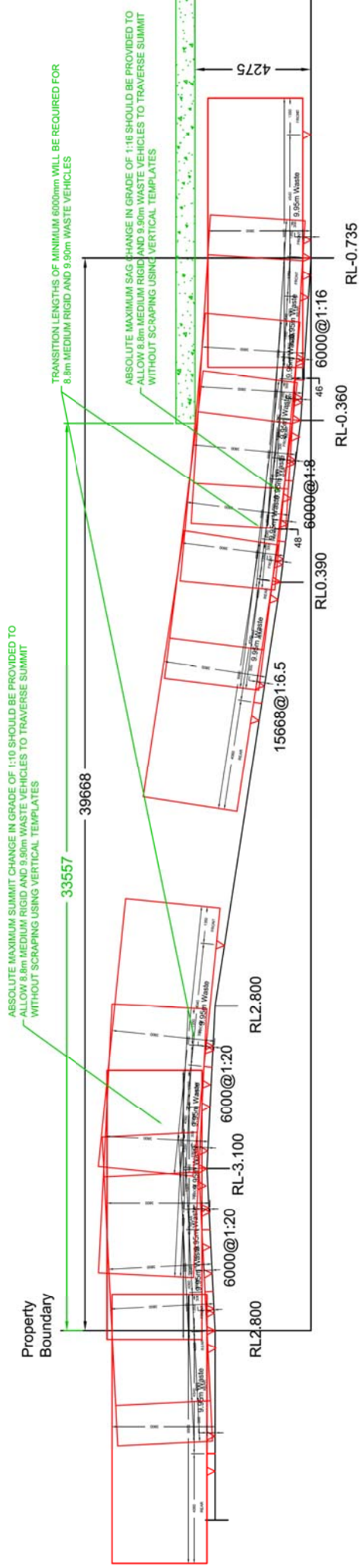
9.90m COUNCIL WASTE VEHICLE
SWEPT PATHS
- UNDERWOOD STREET ONE-WAY WESTBOUND
DRAWN BY: CBH/KC/PLJ/30 Ref: P103 11 JUNE 2014



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— Swept Path of Vehicle Body
 — Swept Path of Clearance to Vehicle Body

9.90m COUNCIL WASTE VEHICLE
SWEEP PATHS
- UNDERWOOD STREET ONE-WAY EASTBOUND
DRAWN BY: CBHRC Pty Ltd. No. Ref: 9103 11 JUNE 2014



ASSUMPTIONS ON LEVELS

- Start RL2.80 (Road Level)
(two possible RLs for two designs, RL3.09 & RL2.87)
- Dock Level RL-0.735
- Height Clearance to structure 4275mm in Loading Dock
- Services, slab and beams to be located with a clearance of 3800mm

MAXIMUM RAMP GRADES - FOR 9.95m CITY OF SYDNEY WASTE VEHICLE TEMPLATES-AS2898.2-2002

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**MINIMUM RAMP LENGTH
 -9.90m COUNCIL WASTE VEHICLE
 VERTICAL TEMPLATES**