

## Transport Engineering

REF: N177910

DATE: 14 August 2019

Catholic Health Care  
Suite 1, Level 5  
15 Talavera Road  
MACQUARIE PARK NSW 2113

Attention: Mr. David Brandon-Cooper

Dear David,

### RE: 2B WEST STREET, LEWISHAM – RESPONSE TO COUNCIL RFI

A Development Application (DA2018/00505) was lodged with Inner West Council (Council) for the proposed redevelopment of the seniors' living development at 2B West Street, Lewisham. The proposal incorporates expansion of the existing facility to deliver 144 beds in the Residential Aged Care Facility (RACF). GTA Consultants (GTA) completed a transport assessment as part of the proposal.

This letter responds to the Request for Information (RFI) received from Council dated 17 July 2019. The RFI requests clarification in relation to several aspects including site access arrangements, internal layout, staffing arrangements, on-street parking impacts and service vehicle arrangements. This also follows a meeting held on Monday 29 July 2019 between the applicant (and project team) and Council.

The RFI relevant to traffic are reproduced below, together with relevant detailed responses.

- The proposed new road looping round the Novitate will require the removal of elements of a high level of significance such as the grotto and sections of the landscaping. The proposed road loop through the site needs to be reconsidered, as it has substantial impacts on the landscaped grounds that are an integral part of the site. Car parking is being provided beneath the new blocks and there is no need to reduce the amount of site landscaping for parking.*
- Advice has previously been provided from the AAP that the road location is unacceptable, as there was an existing drive immediately to the north that could be utilized. The AAP also raised concerns regarding the impact on the heritage-listed garden, as did the previous heritage advice (November 2017)*

The proposed site layout plans have been amended to remove the northern exit only driveway provided the right turn on entry (plus the left turns) at the West Street main southern access is permitted.

- Staffing numbers for the proposed site need to be clarified. In order to assess the Clause 48(d)(ii) of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.*

A total of 48 staff will be required as part of a rotating staff roster typical of RACFs. The shift times are staggered across the day with a summary included in Table 1. Peak staffing periods will be on weekdays between 8:00am and 2:00pm with 29 rostered staff. Weekday demand between 6:00am and 7:00pm will range between 15 and 29 rostered staff. Overnight, (between 10:30pm and 5:45am), a maximum of six staff will be rostered on.

It is noted that these staffing numbers are similar to the current staffing associated with the two existing aged care facilities.

**Table 1: Anticipated staff shift times**

| Shift No. | Days      | Shift time  | Staff per shift |
|-----------|-----------|-------------|-----------------|
| 1         | Mon – Fri | 0830 - 1630 | 9               |
| 2         | Mon – Sun | 0630 - 1445 | 3               |
| 3         |           | 0630 - 1430 | 5               |
| 4         |           | 0630 - 1400 | 2               |
| 5         |           | 0630 - 1330 | 5               |
| 6         |           | 0700 - 1100 | 1               |
| 7         |           | 0700 - 1400 | 3               |
| 8         |           | 0800 - 1430 | 1               |
| 9         |           | 1330 - 1900 | 1               |
| 10        |           | 1430 - 2245 | 2               |
| 11        |           | 1430 - 2100 | 1               |
| 12        |           | 1430 - 2230 | 4               |
| 13        |           | 1430 - 2200 | 1               |
| 14        |           | 1430 - 2000 | 3               |
| 15        |           | 1500 - 1900 | 2               |
| 16        |           | 2230 - 0645 | 2               |
| 17        |           | 2230 - 0630 | 3               |
| 18        |           | 2345 - 0545 | 1               |

The applicant is also committed to implementing a management plan that will, inter alia, require staff that travel by private vehicle to arrive and depart the site via Charles O'Neill Way (the ROW) and Thomas Street, as per existing arrangements. Table 1 indicates that the peak hours will likely be on weekdays between 6:30am and 7:30am and 2:00pm to 3:00pm, with between 24 and 27 staff either arriving or departing. With Journey to Work (JTW) data for the zone indicating 47 per cent of workers drive to work, the proposal would generate between 11 and 13 staff vehicle trips. This is not dissimilar to the existing number of vehicles currently using Charles O'Neill Way to access the site.

- *Vehicle Access arrangements as presented for the proposed development are not supported on road safety grounds. Pre-DA advice has not been realized as vehicular access at the southern main entrance has not been designated exclusively left-in and left-out and the recommended physical media strip along West Street to enforce this requirement has not been proposed as part of this development.*

DA2018/00505 included a southern site access driveway that accommodated a minimum 50m sight distance to vehicles approaching from the south-east on West Street. This access was proposed to permit left turns on entry and exit plus right turns on entry. Right turns on exit were proposed to be banned.

A safety review was completed by GTA<sup>1</sup> as part of the DA (refer Attachment 1) and included tube count data collected by Matrix Traffic and Transport Data on Tuesday 28 November 2017. The tube counter was specifically placed on West Street to capture the speed of northbound vehicles travelling around the bend on approach to the proposed access driveway. The 85th percentile speed was found to be 35 kilometres per hour (km/h), with an average speed of 28 km/h.

A higher speed of 40km/h was used in the assessment of the minimum Stopping Sight Distance (SSD), along with a two second reaction time. On this basis, a minimum SSD of 35m would be required, in accordance with AS2890.1:2004. The

<sup>1</sup> 2B West Street, Lewisham – Stopping Sight Distance Requirement, GTA Consultants, letter dated 23 January 2018.

available SSD of approximately 50m from the site access exceeds this. Furthermore, the perception-reaction times for elderly drivers was also conservatively assessed by adopting a three second reaction time. On this basis an SSD of 44m would be required. This remains less than the available 50m sight distance.

Based on this review, the site access arrangements are appropriate and exceed the minimum SSD requirements, while also conservatively account for additional delay associated with elderly drivers. It is noted too that the left turn on exit would have the least available sight distance of all turning movements, including those turning right on entry. This ensures that the right turn entry significantly exceeds the minimum SSD requirement. While the right turn on exit is proposed to be banned it is unable to be physically removed. In addition to the proposed signage, it is recommended that the existing West Street median be extended approximately 18m further to the north to the southern edge of the proposed access driveway. In combination, these measures would further reduce the likelihood of vehicles attempting to turn right on exit.

Further still, the proposal to convert of the existing at-grade zebra crossing to a wombat crossing (with associated signage) would further limit vehicle speed in both directions on West Street through the local area.

Swept paths have been completed of the largest design vehicles to ensure appropriate outcomes. Should a vehicle be required to wait on West Street when turning right on entry, southbound through vehicles would be able to make use of the adjacent bus zone to pass, if required. Such arrangements are an improvement on those already in place along this section of West Street, including the site adjacent to the north, and the residential development opposite.

The configuration of West Street with these proposed minor measures in place, plus a range of vehicle swept paths illustrating access arrangements as described above are detailed in Attachment 2.

The applicant is also committed to implementing a management plan to limit use of the proposed West Street access to visitors and service vehicles. As discussed, staff access will be limited to Charles O'Neill Way only (the ROW), this being consistent with existing arrangements. Based on this and recognising that visitors to aged care facilities tend to travel outside peak periods, less than five vehicles per hour are expected to turn right into the site from West Street during any peak period. Clearly the West Street access will carry low traffic volumes and would not negatively affect the operation or safety of West Street in the immediate vicinity.

- *Existing on-street parking spaces have the potential to be lost. Removal of any on-street parking is not supported.*

Council and the applicant agreed at the meeting (held on 29 July 2019) that the proposed southern access driveway would result in the loss of up to five on-street parking spaces on West Street. This includes two spaces to allow for the driveway itself, and three immediately to the south to accommodate the necessary sight distances.

It was also agreed that these arrangements are acceptable given existing demand for parking is likely to be associated with the existing site uses. With the proposal including on-site basement parking as required as part of the DA, the removal of on-site parking in this location is not expected to negatively affect other land uses in the area.

- *As per DA advice, an additional two-way entry/exit from Thomas Street to the development site so as to distribute the traffic on the surrounding road network has not been sufficiently pursued. No specific detail is given about the use of Charles O'Neill Way and Thomas Street to share traffic load.*

Given the proposed land uses and elderly visitor demographic, it is critical that the proposal include direct access via West Street. This simplifies the entry and exit path for visitors, limits service vehicle use of local roads on approach and departure and distributes traffic evenly. The Charles O'Neill Way width and geometry is also not conducive for use by all traffic entering and exiting the site.

As discussed, the applicant is committed to implementing a management plan that will require staff that travel by private vehicle to arrive and depart via Charles O'Neill Way (the ROW) and Thomas Street. This would result in 11 to 13 staff vehicle trips and not dissimilar to existing traffic volumes that currently use Charles O'Neill Way to access the site.

Regular use by staff who are aware of such constraints also ensures familiarity while also being able to manage the volume of traffic along this route.

This strategy would ensure equitable distribution of traffic across the site and frontage streets. All staff would use Charles O'Neill Way and all visitors and service vehicles, the proposed West Street access driveway.

- *Stating that "Additional at grade visitor parking is also provided along Charles O'Neill Way" is also not adequately substantiated. It is noted that Charles O'Neill Way is not a Council road.*

Such at-grade parking aims to largely retain the quantum and layout of existing parking along this section of Charles O'Neill Way. The porte cochere also accommodates set-down/ pick-up arrangements by car and shuttle bus.

- *The vehicle servicing arrangements may need re-examining as proposed as they are not separated from car movements, which is one of Council's design principles for service areas.*

The site has two accesses which cars can use and only the West Street access is delegated for commercial vehicle access. Since cars are able to access the site from another driveway, the current proposed arrangement should mitigate conflicts between cars and commercial vehicles. Additionally, the commercial vehicle loading bay does not need to access the basement carpark and affect its circulation.

- *There is some doubt whether the internal circulation roadways are adequate for the largest vehicle anticipated to use the site, and moreover for ingress and egress movements on the access ramp.*

The architectural plans have been amended to address several Council queries. Swept paths of a range of vehicles have been run to ensure appropriate internal layout and access arrangements. The internal roads are a minimum 6.3m wide and adequate to accommodate passing vehicles. Coupled with low traffic volumes, the internal roads will adequately cater for all vehicles. A range of vehicle swept paths are included in Attachment 2.

The intended service vehicle schedule is detailed in Table 2.

**Table 2: Service vehicle activity**

| Purpose                | Vehicle size            | Frequency       | Delivery time |
|------------------------|-------------------------|-----------------|---------------|
| General Waste          | 8.0m medium rigid truck | 5 per week      | 7am - 8am     |
| Co-mingled             |                         | 1 per week      | 7am - 8am     |
| Recycling              |                         | 1 per week      | 7am - 8am     |
| Milk                   |                         | 5 per week      | 6am - 7am     |
| Bread/ Pastries        |                         | 5 per week      | 6am - 7am     |
| Poultry                | 6.4m small rigid truck  | 3 per week      | 8am - 5pm     |
| Meat                   |                         | 3 per week      | 8am - 5pm     |
| Fruit                  |                         | 3 per week      | 8am - 5pm     |
| Dry-Frozen Goods       |                         | 3 per week      | 8am - 5pm     |
| Janitorial Consumables |                         | 1 per fortnight | 8am - 5pm     |
| Medical Supplies       |                         | 1 per fortnight | 8am - 5pm     |
| Ecolab                 |                         | 1 per month     | 8am - 5pm     |
| Stationary             |                         | 1 per month     | 8am - 5pm     |

The proposal will clearly generate low service vehicle activity with no more than one to two service vehicles per hour requiring access to the site. Where service vehicles are scheduled in the same hour, such as for medium rigid vehicles delivering milk and bread, more detailed scheduling will ensure these do not overlap.

The loading dock is also able to accommodate up to two service vehicles at any one time, more than adequate capacity to accommodate the servicing requirements of the site. 20-30 minute delivery windows may need to be applied where medium rigid trucks are scheduled to ensure there is no more than one medium rigid vehicle on-site at any one time. Garbage trucks will use the loading dock (or the dedicated space adjacent to the loading dock access) for waste collection, with bins wheeled from the waste storage room for collection. These details will form part of a basic dock management plan for the site.

Swept paths have been completed and included in Attachment 2.

- *The traffic signal system proposed at the loading dock needs to be detailed fully. Holding locations for waiting service vehicles also needs to be detailed.*

The revised loading dock layout and access arrangements that separates cars from service vehicles generally negates the need for a traffic signal system. With low volumes and minimum 6.4m wide access, the operation of the loading dock and movement of service vehicle on-site will be able to be adequately managed by a dock management system. Swept paths included in Attachment 1 confirm such appropriate service vehicle activity.

Should larger service vehicles such as a 9.8m long garbage truck be required to access the site, swept paths confirm that such vehicles would be able to enter the site via the proposed West Street access driveway, access the garbage collection area external to the loading dock and exit via Charles O'Neill Way.

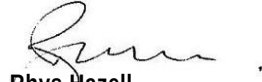
- *The SIDRA analysis needs to be extended to include the West Street and Brighton Street intersection / West Street and Thomas Street intersection. All intersections in the wider area need to be considered as some are at capacity.*

Council and the applicant were in agreement at the meeting (held on 29 July 2019) that additional traffic surveys and SIDRA modelling is not necessary.

I trust this provides the information you require. Naturally, should you have any questions or require further clarification, please do not hesitate to contact me on (02) 8448 1800.

Yours sincerely

**GTA CONSULTANTS**



**Rhys Hazell**  
**Director**

encl.

Attachment 1 – Safety review

Attachment 2 – West Street configuration and vehicle swept paths

# ATTACHMENT 1

## Safety review

Reference: #16S1431000

23 January 2018

Catholic Healthcare Ltd  
Suite 1, Level 5  
15 Talavera Road  
MACQUARIE PARK NSW 2113

**Attention: Mr. Adil Georgis (Development Manager)**

Dear Adil

## RE: 2B WEST STREET, LEWISHAM – STOPPING SIGHT DISTANCE REQUIREMENT

GTA has completed a speed survey along West Street in the vicinity of the sweeping bend, south of Brighton Street on Tuesday, 28 November 2017. The speed survey was commissioned to understand the existing 85<sup>th</sup> percentile operating speed of vehicles traversing the bend. The location of the tube is shown in Figure 1.

**Figure 1: Automatic tube count location**



Source: Matrix Traffic and Transport Data, accessed 29/11/17

The 85<sup>th</sup> percentile speed informs a more detailed stopping sight distance calculation, to support the southernmost left-in/ left-out only access driveway for the proposed seniors living development at 2B West Street, Lewisham. The proposed development layout is shown in Figure 2, with the full concept plan included as Attachment 1.

melbourne  
sydney  
brisbane  
canberra  
adelaide  
gold coast  
townsville  
perth

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[www.gta.com.au](http://www.gta.com.au)

Figure 2: Masterplan and Landscape Concept



Source: Jackson Teece, Drawing No. DA-005 (Masterplan and Landscape Concept), dated 23 January 2017

This access driveway is located approximately 50m north (departure side) of the sweeping bend and associated priority controlled intersection of West Street and Brighton Street.

The speed survey results are presented in Table 1.

**Table 1: Speed Survey Results**

| Hour Starting | Vehicle Speed Bins (kph) |       |       |       |       |       |       |       |        |         |         |      | Speed |                      |
|---------------|--------------------------|-------|-------|-------|-------|-------|-------|-------|--------|---------|---------|------|-------|----------------------|
|               | 10-20                    | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | 100-110 | 110-120 | 120+ | Ave   | 85 <sup>th</sup> ile |
| 0:00          | 0                        | 2     | 4     | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 33.6  | 37.6                 |
| 1:00          | 0                        | 1     | 5     | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 34.1  | 38.5                 |
| 2:00          | 0                        | 1     | 5     | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 34.0  | 38.2                 |
| 3:00          | 0                        | 2     | 8     | 2     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 34.9  | 40.6                 |
| 4:00          | 1                        | 4     | 16    | 4     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 34.3  | 40.2                 |
| 5:00          | 12                       | 24    | 15    | 2     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 25.9  | 34.6                 |
| 6:00          | 13                       | 30    | 19    | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 26.3  | 34.0                 |
| 7:00          | 9                        | 29    | 23    | 3     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 27.9  | 35.3                 |
| 8:00          | 24                       | 38    | 19    | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 24.4  | 31.7                 |
| 9:00          | 23                       | 28    | 10    | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 22.8  | 30.9                 |
| 10:00         | 18                       | 25    | 15    | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 24.5  | 32.2                 |
| 11:00         | 14                       | 32    | 20    | 2     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 26.8  | 34.3                 |
| 12:00         | 15                       | 26    | 20    | 2     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 26.6  | 34.7                 |
| 13:00         | 8                        | 29    | 25    | 2     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 28.2  | 35.1                 |
| 14:00         | 7                        | 24    | 40    | 3     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 30.3  | 36.8                 |
| 15:00         | 13                       | 38    | 34    | 3     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 28.0  | 34.8                 |
| 16:00         | 10                       | 33    | 34    | 3     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 28.8  | 35.5                 |
| 17:00         | 17                       | 44    | 33    | 2     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 27.2  | 34.7                 |
| 18:00         | 8                        | 33    | 41    | 4     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 29.7  | 35.9                 |
| 19:00         | 6                        | 28    | 32    | 3     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 29.5  | 36.5                 |
| 20:00         | 3                        | 12    | 33    | 2     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 31.8  | 37.5                 |
| 21:00         | 2                        | 18    | 25    | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 30.6  | 36.3                 |
| 22:00         | 0                        | 7     | 20    | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 33.3  | 37.9                 |
| 23:00         | 0                        | 4     | 15    | 1     | 0     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 33.6  | 38.0                 |
| Total         | 201                      | 511   | 508   | 44    | 1     | 0     | 0     | 0     | 0      | 0       | 0       | 0    | 28.1  | 35.1                 |

Based on Table 1, the 85<sup>th</sup> percentile speed is observed to be 35 kilometres per hour (km/h) for the 7-day period surveyed, with an average vehicle speed of 28 km/h.

A higher speed of 40km/h has been conservatively used in the assessment of the minimum Stopping Sight Distance (SSD), along with a two second reaction time. On this basis, a minimum SSD of 3.5m is required, in accordance with AS 2890.1:2004. An available SSD of approximately 50m from the southernmost site access exceeds the minimum SSD of 35m.

The perception-reaction times for elderly drivers have not been found to be significantly longer than those for the average younger driver. However, the changes in physical and cognitive abilities for the elderly could have significant impacts on their abilities to understand conditions and react safely. As such, an assessment of the minimum SSD based on a three second reaction time as recommended by the American Association of State Highway and Transportation Officials (AASHTO)<sup>1</sup> has been completed.

The equation for calculating SSD is detailed in Figure 3 with a summary of the analysis presented below.

**Figure 3: Equation for Calculating SSD**

$$SSD = 0.278Vt + 0.039 \frac{V^2}{a}$$

Where:

SSD = stopping sight distance, m

V = design speed, mph (km/h)

t = brake reaction time, 3 s

a = driver deceleration, m/s<sup>2</sup>

<sup>1</sup> Synthesis of Human Factors Research on Older Drivers and Highway Safety, Vol. 1, FHWA-RD-97-094, FHWA, USDOT, Washington, DC, 1997.

Using equation in Figure 3, adopting the actual 85<sup>th</sup> percentile speed of 35.1 km/h as the design speed and a deceleration rate of 3.4 metres per second, results in an SSD of 44m. This SSD is achievable with the available SSD of approximately 50m for the southernmost site access.

On this basis, the proposed left-in, left-out only site access is considered to be functional, with an appropriate level of safety.

We trust the above provides you with the additional information required to consider the traffic and transport implications of the proposed seniors living development. Should you have any questions or require any further information, please do not hesitate to contact me in our Sydney office on (02) 8448 1800.

Yours sincerely

**GTA CONSULTANTS**

A handwritten signature in black ink that reads "B. Maynard".

**Brett Maynard**

**Director**

encl.

Attachment 1 – Concept Masterplan

# Attachment 1

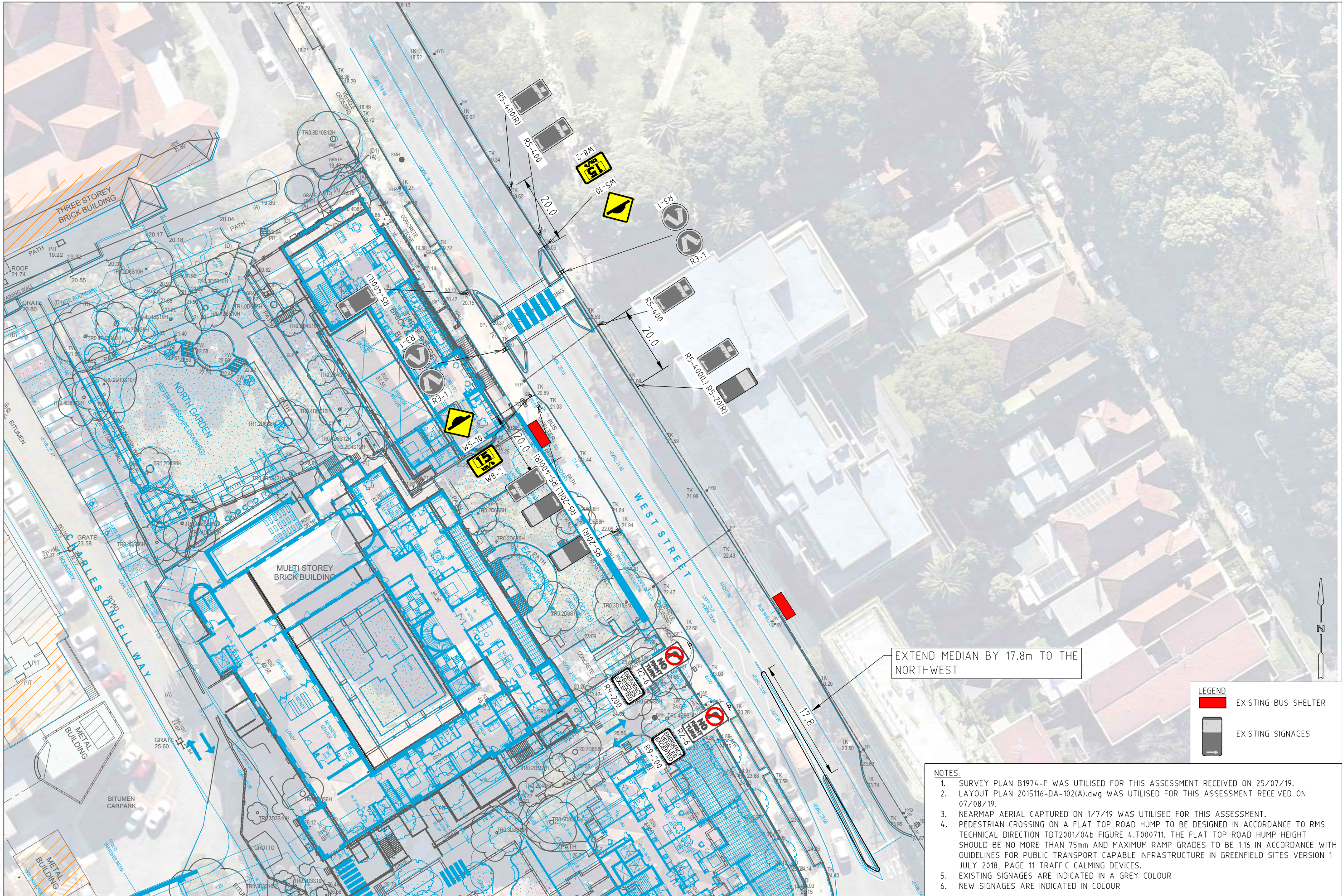
## Concept Masterplan



## CONCEPT MASTER PLAN

# ATTACHMENT 2

## West Street configuration and vehicle swept paths

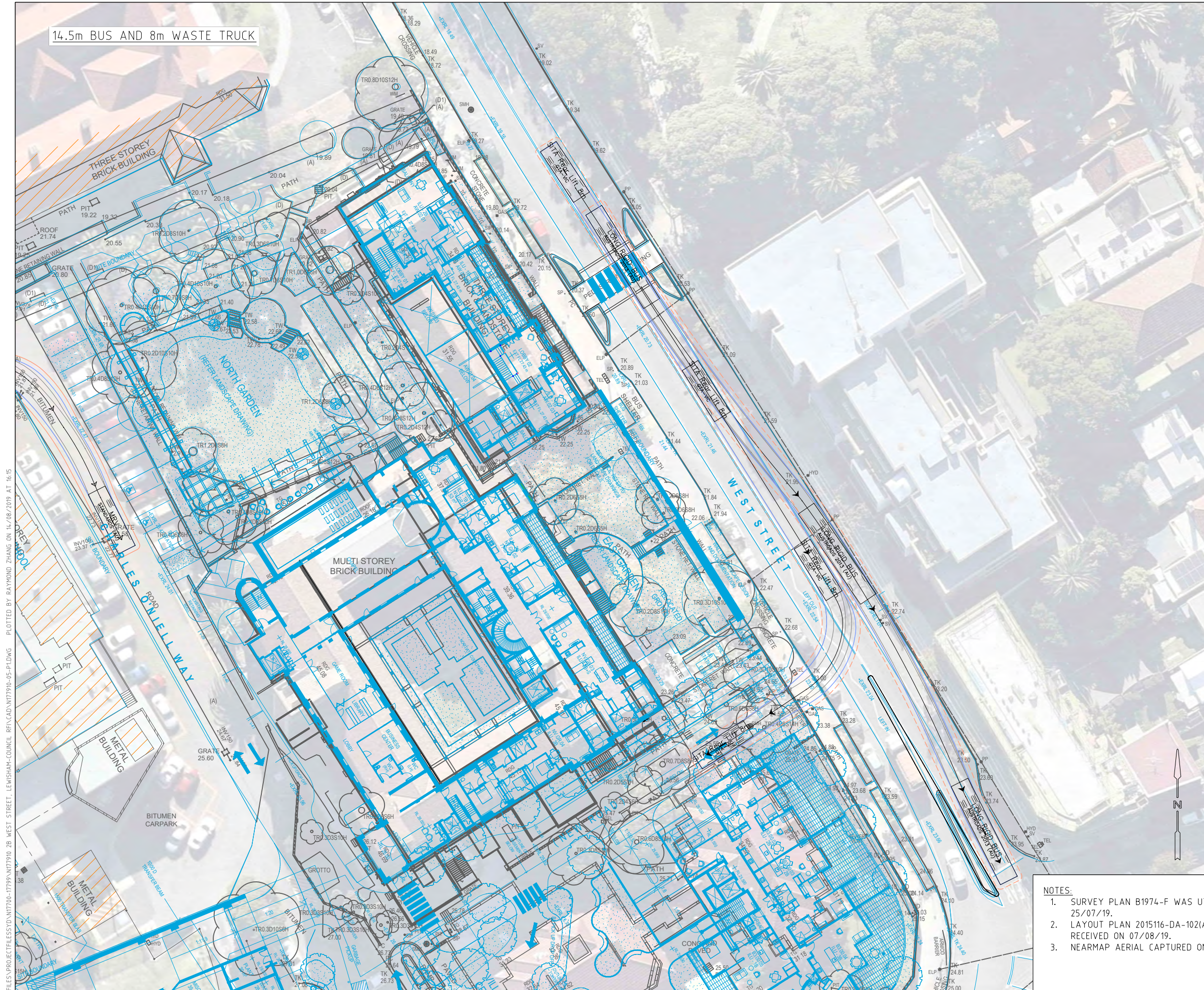


EXTEND MEDIAN BY 17.8m TO THE NORTHWEST

**LEGEND**

-  EXISTING BUS SHELTER
-  EXISTING SIGNAGES

- NOTES:**
1. SURVEY PLAN B1974-F WAS UTILISED FOR THIS ASSESSMENT RECEIVED ON 25/07/19.
  2. LAYOUT PLAN 2015116-DA-102(A).dwg WAS UTILISED FOR THIS ASSESSMENT RECEIVED ON 07/08/19.
  3. NEARMAP AERIAL CAPTURED ON 1/7/19 WAS UTILISED FOR THIS ASSESSMENT.
  4. PEDESTRIAN CROSSING ON A FLAT TOP ROAD HUMP TO BE DESIGNED IN ACCORDANCE TO RMS TECHNICAL DIRECTION TDT2001/04b FIGURE 4.T000711. THE FLAT TOP ROAD HUMP HEIGHT SHOULD BE NO MORE THAN 75mm AND MAXIMUM RAMP GRADES TO BE 1:16 IN ACCORDANCE WITH GUIDELINES FOR PUBLIC TRANSPORT CAPABLE INFRASTRUCTURE IN GREENFIELD SITES VERSION 1 JULY 2018, PAGE 11 TRAFFIC CALMING DEVICES.
  5. EXISTING SIGNAGES ARE INDICATED IN A GREY COLOUR
  6. NEW SIGNAGES ARE INDICATED IN COLOUR

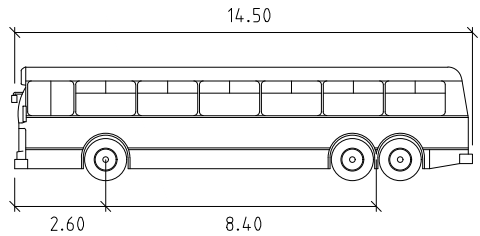


14.5m BUS AND 8m WASTE TRUCK

**SWEPT PATH KEY**

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h



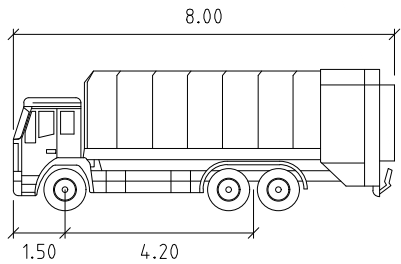
LONG RIGID BUS

|                   |        |
|-------------------|--------|
|                   | metres |
| Width             | : 2.50 |
| Track             | : 2.50 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 46.4 |

**SWEPT PATH KEY**

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 600mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h



SITA Rear Lift 8m

|                   |        |
|-------------------|--------|
|                   | metres |
| Width             | : 2.50 |
| Track             | : 2.50 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 23.0 |

- NOTES:
1. SURVEY PLAN B1974-F WAS UTILISED FOR THIS SWEPT PATH ASSESSMENT RECEIVED ON 25/07/19.
  2. LAYOUT PLAN 2015116-DA-102(A).dwg WAS UTILISED FOR THIS SWEPT PATH ASSESSMENT RECEIVED ON 07/08/19.
  3. NEARMAP AERIAL CAPTURED ON 1/7/19 WAS UTILISED FOR THIS SWEPT PATH ASSESSMENT.



Melbourne 03 9851 9600  
Sydney 02 8448 1800  
Brisbane 07 3113 5000  
Adelaide 08 8334 3600  
Perth 08 6169 1000



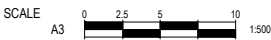
**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT  
NOTIFICATION

DESIGNED  
R.ZHANG

DESIGN CHECK  
R.HAZELL

APPROVED BY  
R.HAZELL

DATE ISSUED  
14 AUGUST 2019



CAD FILE NO.  
N177910-05-P1.DWG

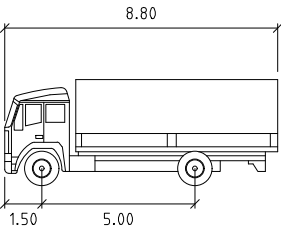
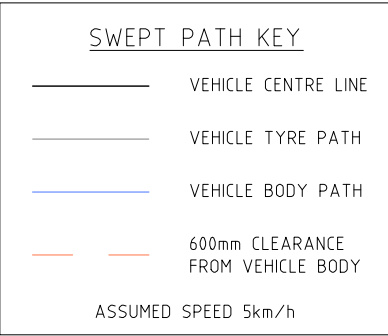
2B WEST STREET, LEWISHAM

SWEPT PATH ASSESSMENT

DRAWING NO. N177910-05-02

SHEET 02 OF 05

ISSUE P1



MRV

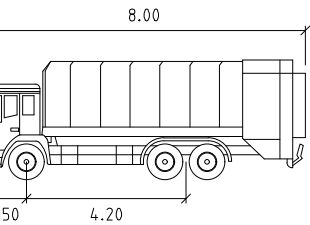
meters

Width : 2.50

Track : 2.50

Lock to Lock Time : 6.0

Steering Angle : 34.0



SITA Rear Lift 8m

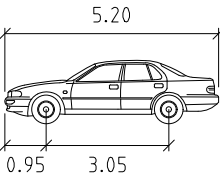
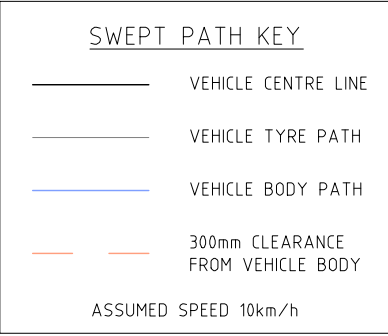
meters

Width : 2.50

Track : 2.50

Lock to Lock Time : 6.0

Steering Angle : 23.0



B99

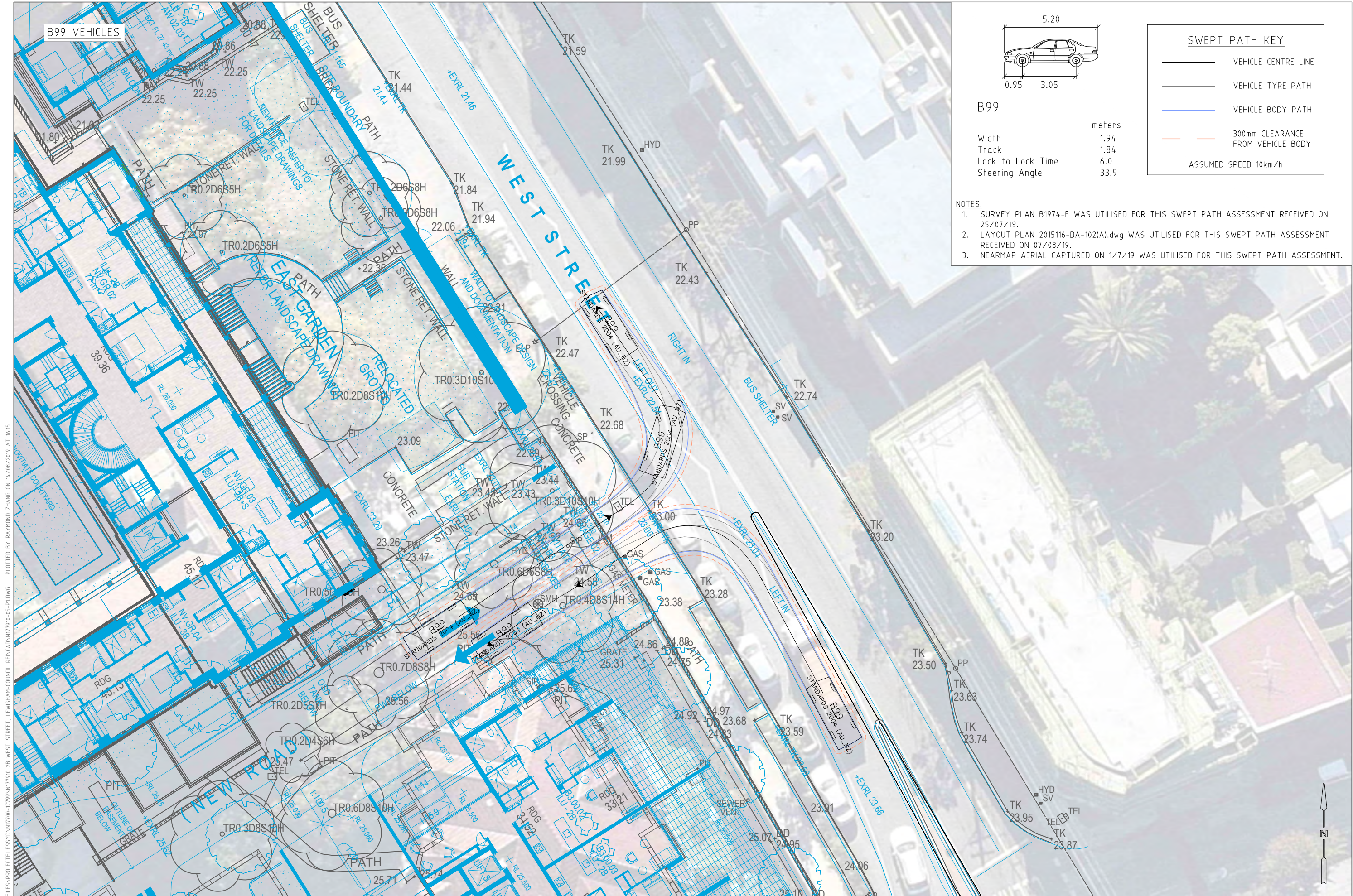
meters

Width : 1.94

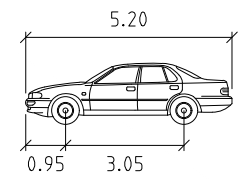
Track : 1.84

Lock to Lock Time : 6.0

Steering Angle : 33.9



B99 VEHICLES

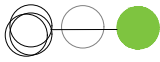


| SWEEP PATH KEY       |                                   |
|----------------------|-----------------------------------|
|                      | VEHICLE CENTRE LINE               |
|                      | VEHICLE TYRE PATH                 |
|                      | VEHICLE BODY PATH                 |
|                      | 300mm CLEARANCE FROM VEHICLE BODY |
| ASSUMED SPEED 10km/h |                                   |

|                   |        |
|-------------------|--------|
| B99               | metres |
| Width             | : 1.94 |
| Track             | : 1.84 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 33.9 |

- NOTES:
1. SURVEY PLAN B1974-F WAS UTILISED FOR THIS SWEEP PATH ASSESSMENT RECEIVED ON 25/07/19.
  2. LAYOUT PLAN 2015116-DA-102(A).dwg WAS UTILISED FOR THIS SWEEP PATH ASSESSMENT RECEIVED ON 07/08/19.
  3. NEARMAP AERIAL CAPTURED ON 1/7/19 WAS UTILISED FOR THIS SWEEP PATH ASSESSMENT.

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**PRELIMINARY PLAN**  
FOR DISCUSSION PURPOSES ONLY  
SUBJECT TO CHANGE WITHOUT  
NOTIFICATION

DESIGNED  
R.ZHANG

APPROVED BY  
R.HAZELL

DESIGN CHECK  
R.HAZELL

DATE ISSUED  
14 AUGUST 2019

SCALE  
A3



CAD FILE NO.  
N177910-05-P1.DWG

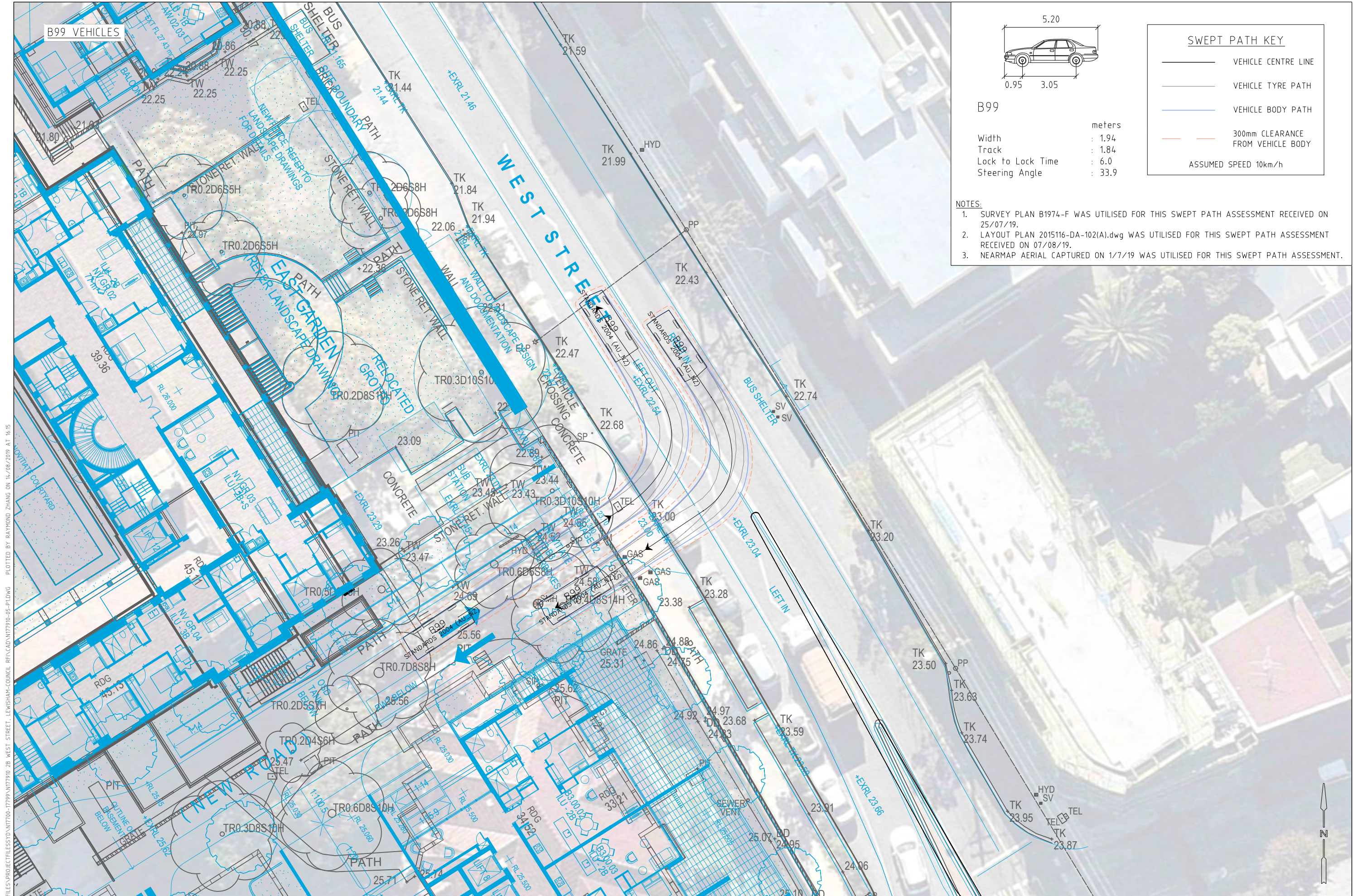
**2B WEST STREET, LEWISHAM**

**SWEEP PATH ASSESSMENT**

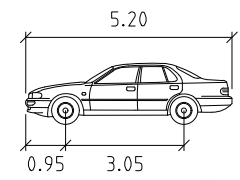
DRAWING NO. **N177910-05-04**

SHEET **04 OF 05**

ISSUE **P1**



B99 VEHICLES

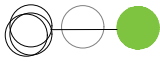


| SWEEP PATH KEY       |                                   |
|----------------------|-----------------------------------|
|                      | VEHICLE CENTRE LINE               |
|                      | VEHICLE TYRE PATH                 |
|                      | VEHICLE BODY PATH                 |
|                      | 300mm CLEARANCE FROM VEHICLE BODY |
| ASSUMED SPEED 10km/h |                                   |

|                   |        |
|-------------------|--------|
| B99               | metres |
| Width             | : 1.94 |
| Track             | : 1.84 |
| Lock to Lock Time | : 6.0  |
| Steering Angle    | : 33.9 |

- NOTES:
1. SURVEY PLAN B1974-F WAS UTILISED FOR THIS SWEEP PATH ASSESSMENT RECEIVED ON 25/07/19.
  2. LAYOUT PLAN 2015116-DA-102(A).dwg WAS UTILISED FOR THIS SWEEP PATH ASSESSMENT RECEIVED ON 07/08/19.
  3. NEARMAP AERIAL CAPTURED ON 1/7/19 WAS UTILISED FOR THIS SWEEP PATH ASSESSMENT.

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**2B WEST STREET, LEWISHAM**

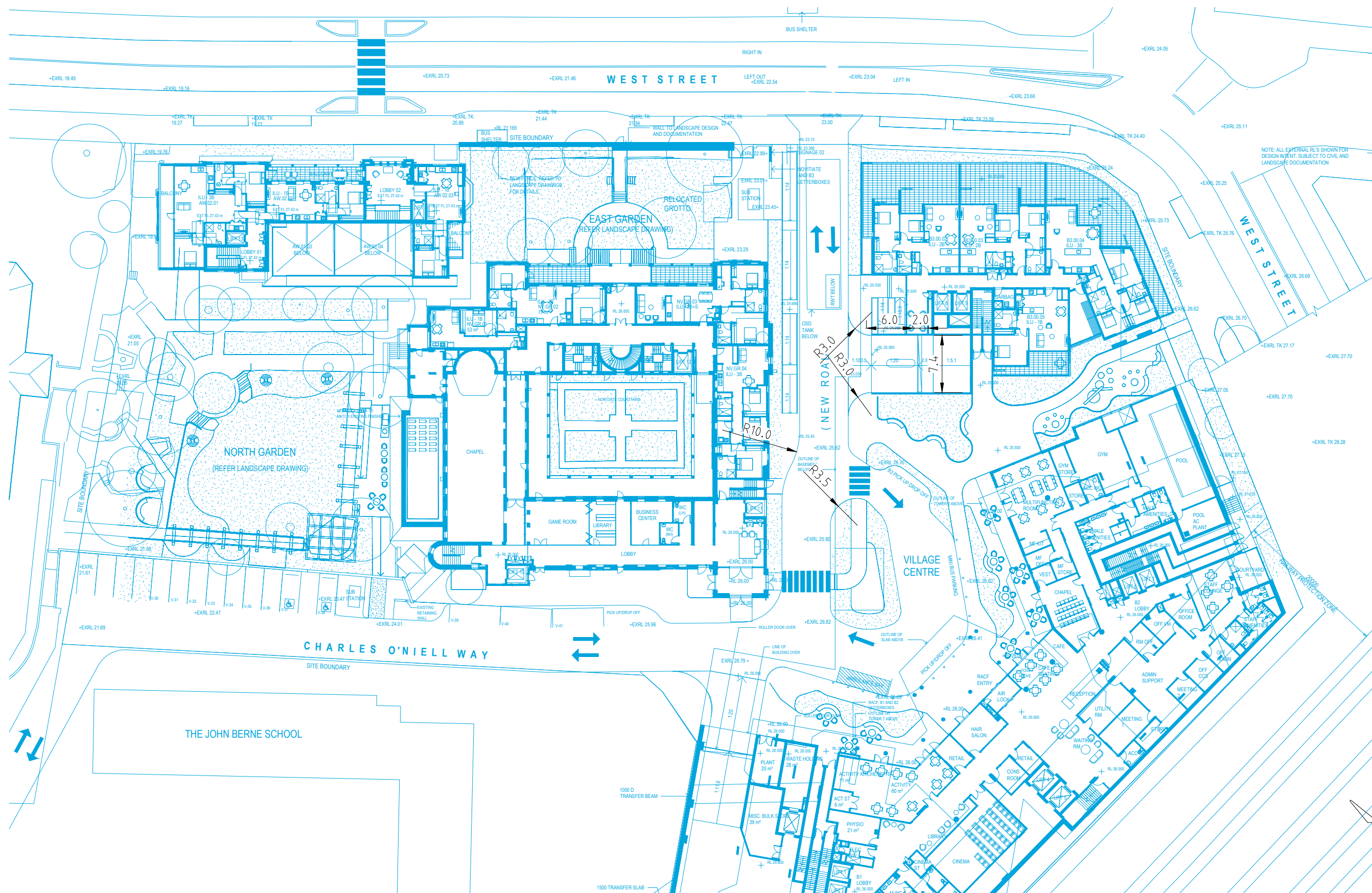
**SWEEP PATH ASSESSMENT**

DRAWING NO. **N177910-05-05**

SHEET **05 OF 05**

ISSUE **P1**

- DRAWING KEY
- NEW WALLS
  - EXISTING WALLS
  - EXISTING TR
  - REFER DEM
  - PROPOSED
  - REFER LAND
  - EXISTING TR
  - REFER DEM



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A3 0 2.5 5 10 1:500

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N177910-04-P1.DWG

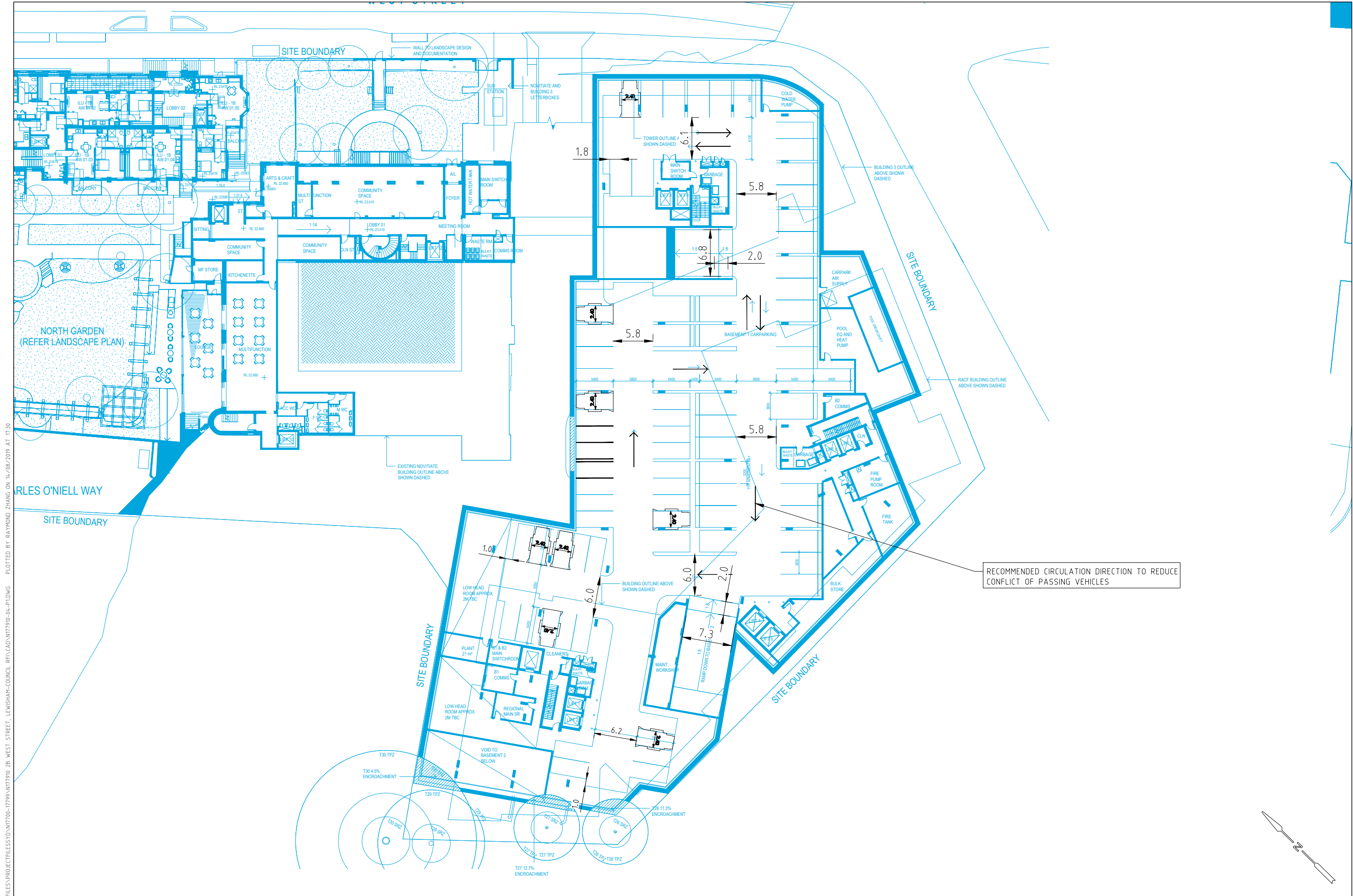
2B WEST STREET, LEWISHAM  
GROUND

ROADWAY COMMENTS

DRAWING NO. N177910-04-01

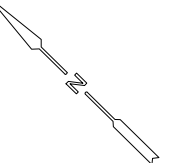
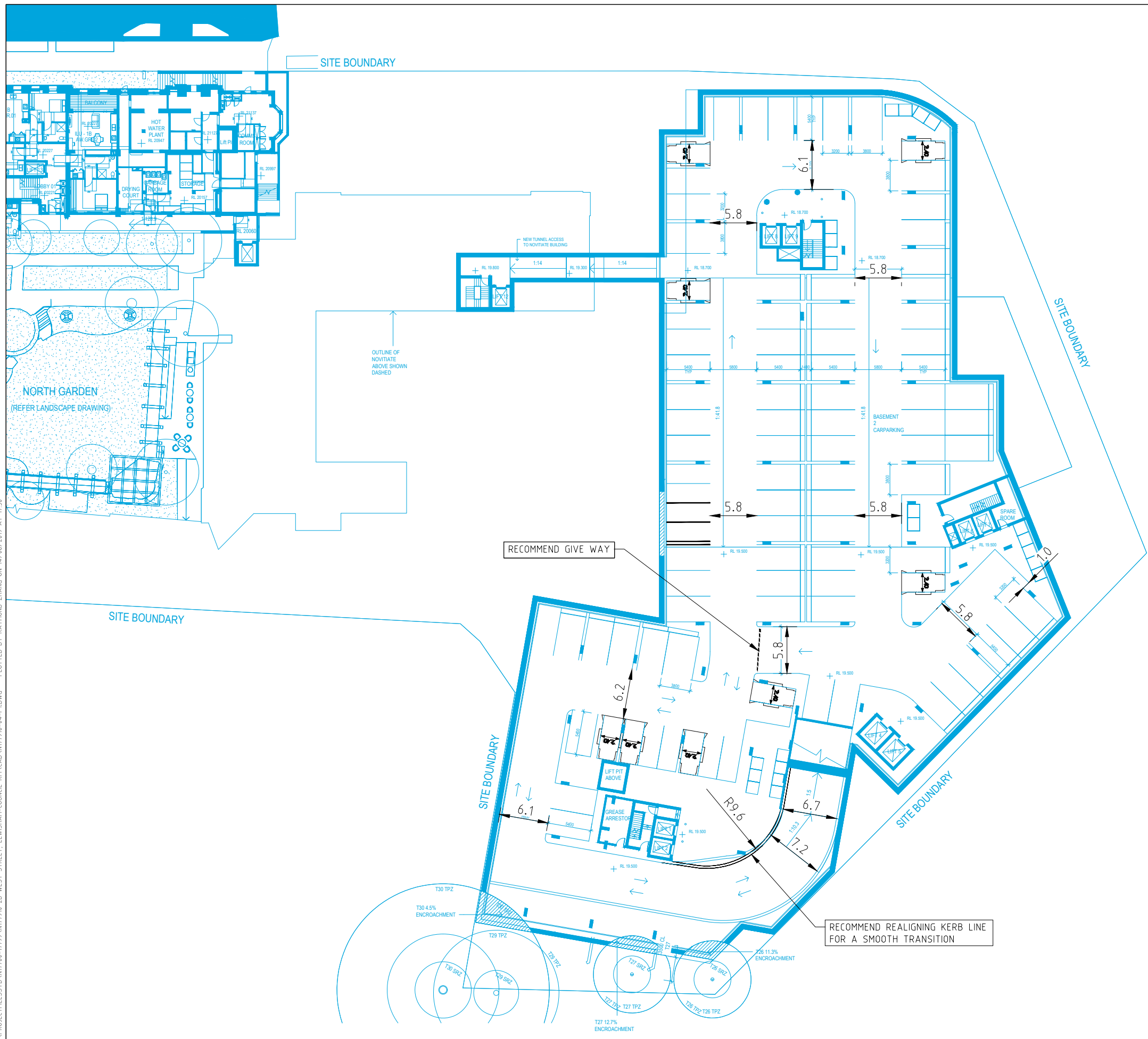
SHEET 01 OF 08

ISSUE P1



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SCALE  
A3 0 2.5 5 10 1:500

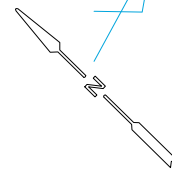
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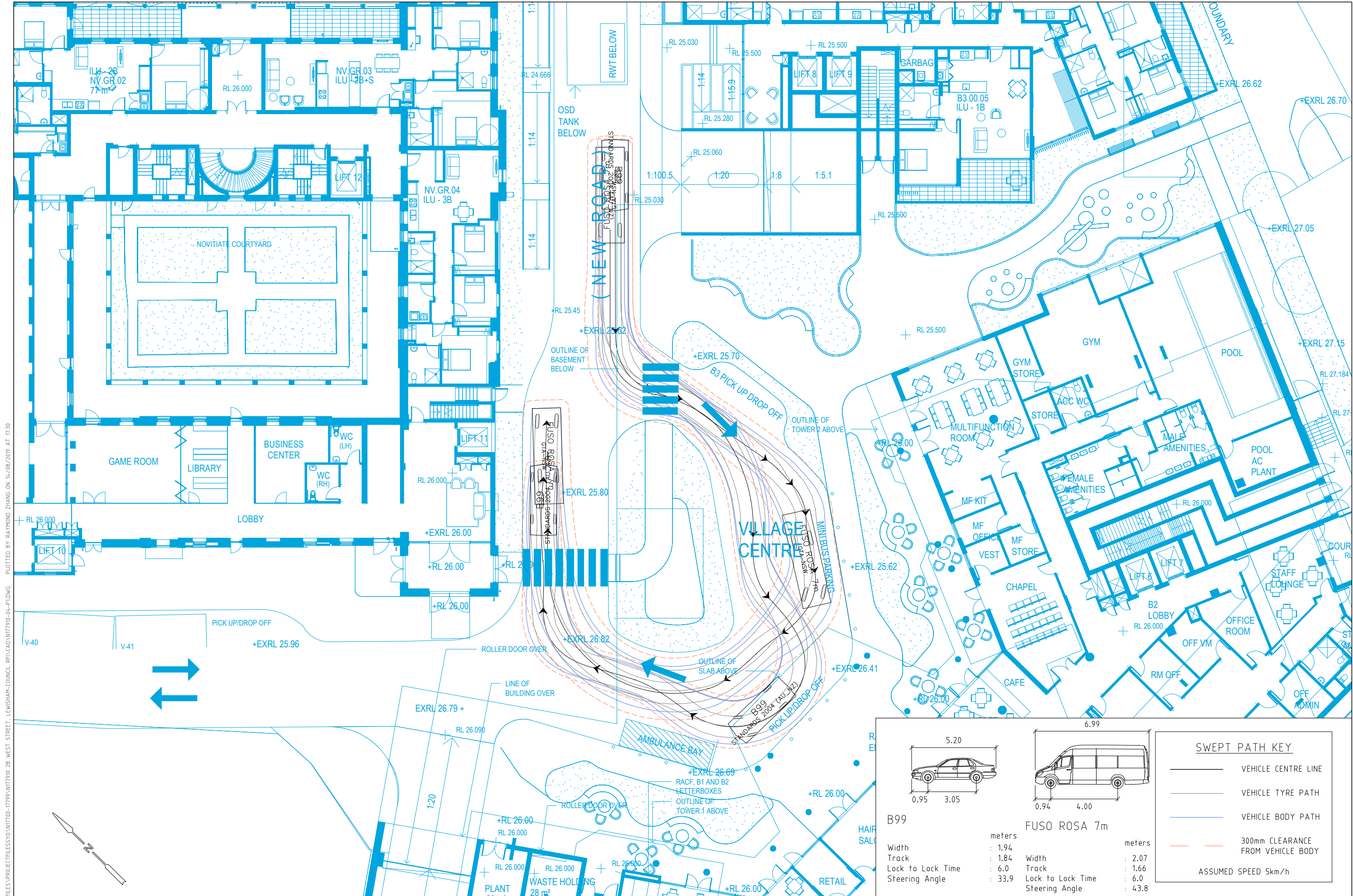
2B WEST STREET, LEWISHAM  
BASEMENT 2

COMPLIANCE REVIEW  
DRAWING NO. N177910-04-03

SHEET 03 OF 08

ISSUE P1





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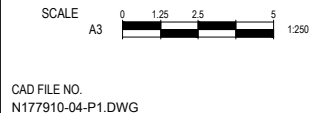
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2B WEST STREET, LEWISHAM  
GROUND

**SWEPT PATH ASSESSMENT**  
DRAWING NO. N177910-04-05

SHEET 05 OF 08  
ISSUE P1

**B99**

Width : 1.94  
Track : 1.84  
Lock to Lock Time : 6.0  
Steering Angle : 33.9

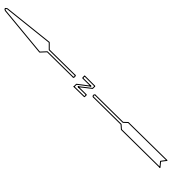
**FUSO ROSA 7m**

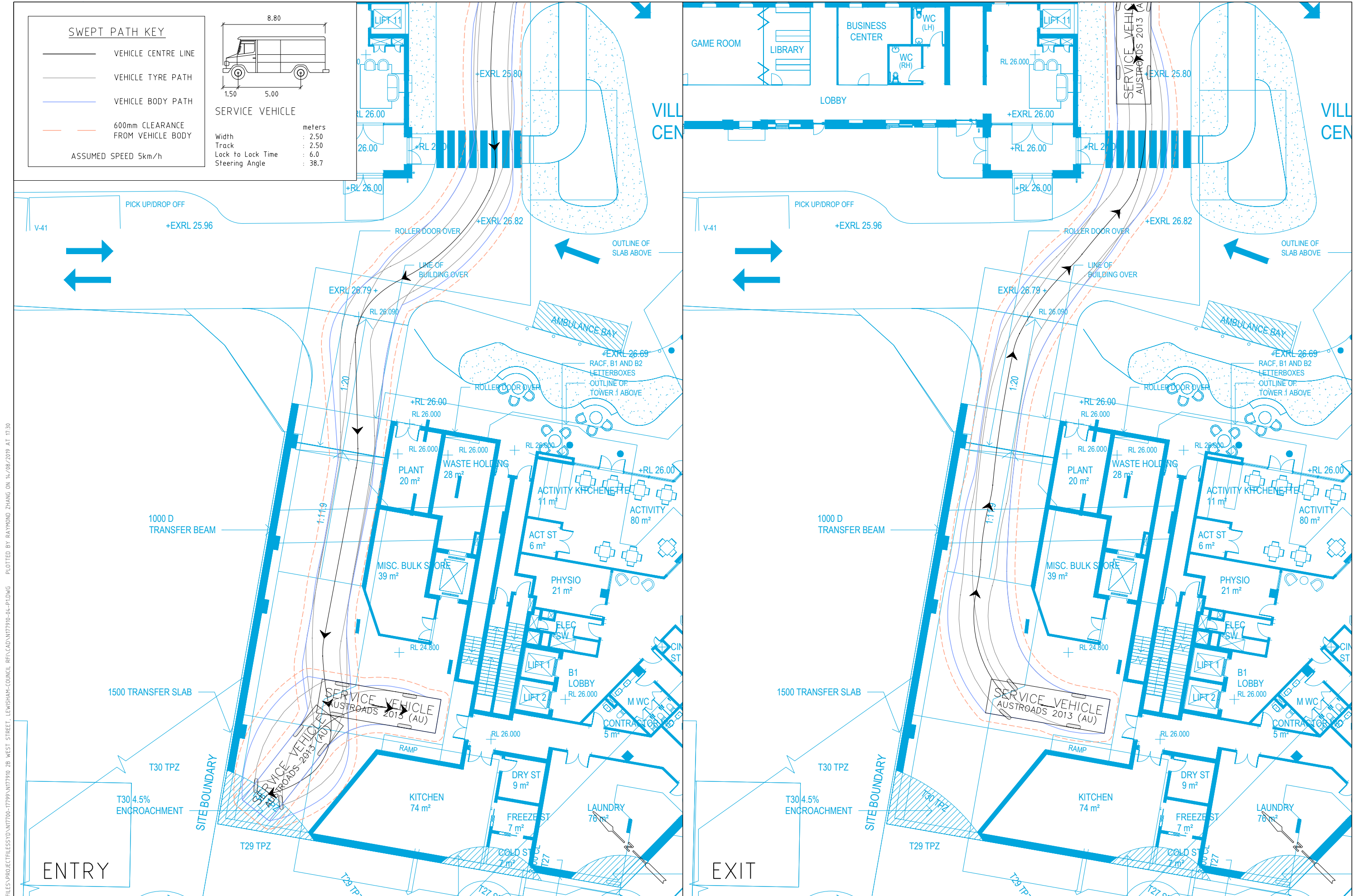
Width : 2.07  
Track : 1.66  
Lock to Lock Time : 6.0  
Steering Angle : 43.8

**SWEPT PATH KEY**

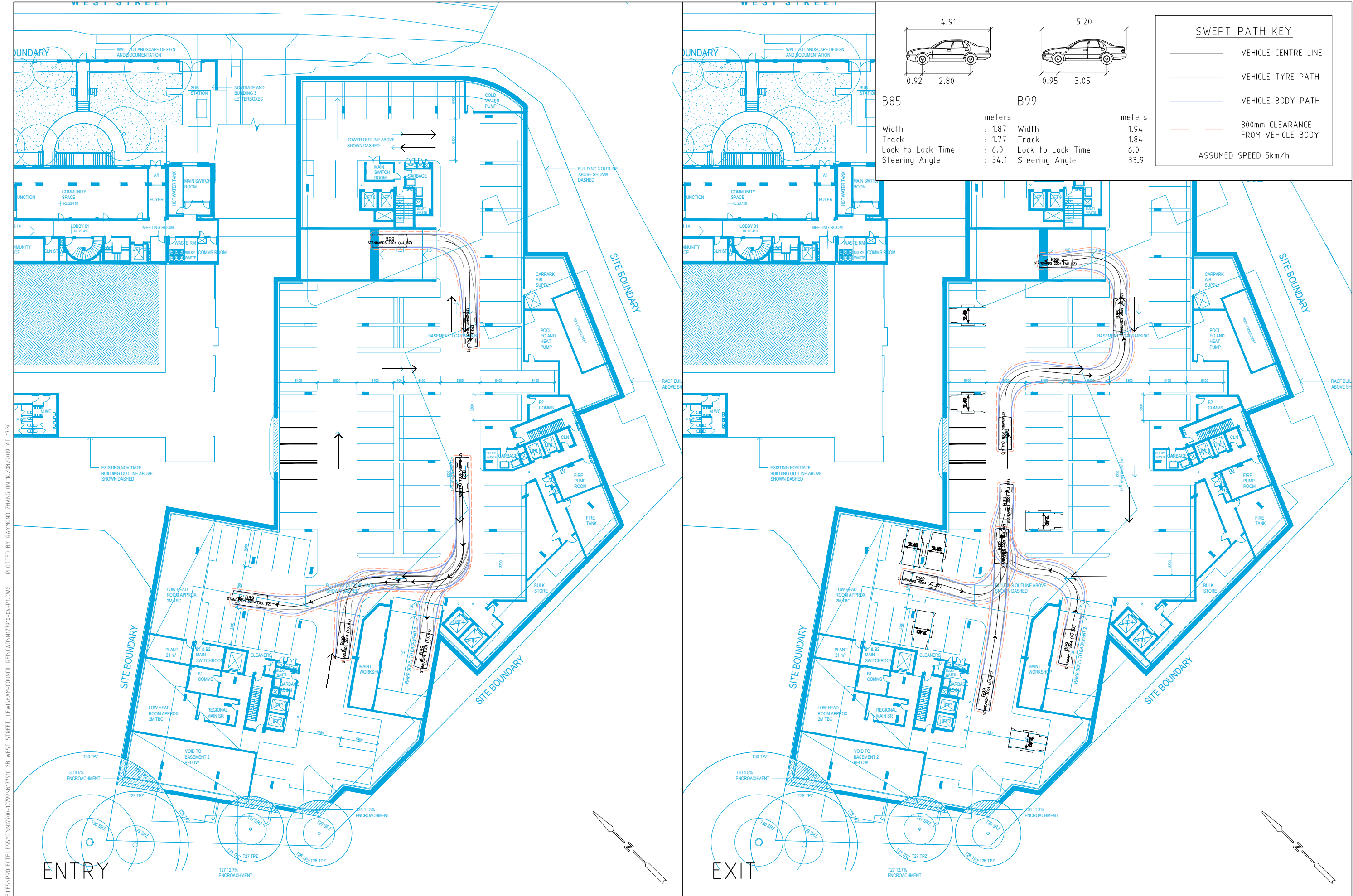
- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 5km/h





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R.HAZELL

DATE ISSUED  
14 AUGUST 2019

SCALE  
A3 0 2.5 5 10 1:500

CAD FILE NO.  
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2B WEST STREET, LEWISHAM  
BASEMENT 1

SWEPT PATH ASSESSMENT

DRAWING NO. N177910-04-07

SHEET 07 OF 08

ISSUE P1

