

Reference: #13S1213000

9 November 2015

JBA Urban
Level 7 / 77 Berry Street
NORTH SYDNEY NSW 2060

Attention: Mr. Michael Rowe

Dear Michael

RE: 1 CARRINGTON STREET, SYDNEY
TRANSPORT ASSESSMENT REVIEW FOR SECTION 96 APPLICATION

Introduction

It is understood that a Section 96 application is to be lodged for the approved development at 1 Carrington Street, Sydney.

In 2014, GTA Consultants (GTA) prepared a transport impact assessment for the now approved development which assessed, in detail, the adequacy and appropriateness of car parking, vehicle access and loading arrangements (amongst other considerations). Subsequently, GTA also prepared a Construction Traffic Management Plan for the development.

From a transport perspective, the design changes associated with the Section 96 application principally relate to the following:

- revisions to the vehicle access arrangements off Wynyard Lane, including:
 - the widening of the northernmost approved crossover such that it is able to accommodate all development related traffic, including loading vehicles,
 - the narrowing of the southernmost approved crossover such that it only provides access to the existing public car park
- revisions to the layout of the loading area, albeit the retention of the same number of loading bays being a total of 7 loading bays at the uppermost basement level including:
 - a total of 4 loading bays designed to accommodate vehicles of a size up to 8.8m long medium rigid vehicles
 - a total of 3 loading bays designed to accommodate vehicles of a size up to 6.4m small rigid vehicles
- revisions to the location and overall provision of car parking within the basement car parking levels
- revisions to the internal vehicle access arrangements to the basement car parking levels including the introduction of split car parking levels.

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Purpose of this Report

This letter has been prepared to assess the appropriateness of these design changes, having regard to the previously approved arrangements, and consider impacts, if any, to the construction traffic management arrangements.

It is noted that the report has been completed referencing the following:

- plans prepared by Make & Architectus for the revised development, dated 25 September 2015 (titled 'Rev 02. S96 Issue)
- endorsed plans prepared by Make & Architectus for the original development, dated 19 March 2014 (titled 'Rev 00. Development Application Submission)
- GTA report 30 April 2014 submitted with the Development Application (titled 'One Carrington Street, State Significant Development Application, Transport Impact Assessment)
- Waste Management Report prepared by The Mack Group dated 2 November 2015
- an inspection of the subject site
- other documents as nominated.

Assessment of Design Revisions

Vehicle Access Arrangements

The approved vehicle access arrangements are depicted in Figure 1 below, extracted from the GTA April 2014 report.

This figure shows that public and loading vehicle traffic on entry to the site were proposed to share the southernmost crossover, with entering and exiting car traffic and exiting loading vehicle traffic proposed to share the northernmost crossover.

Figure 1: Approved Vehicle Access Arrangements

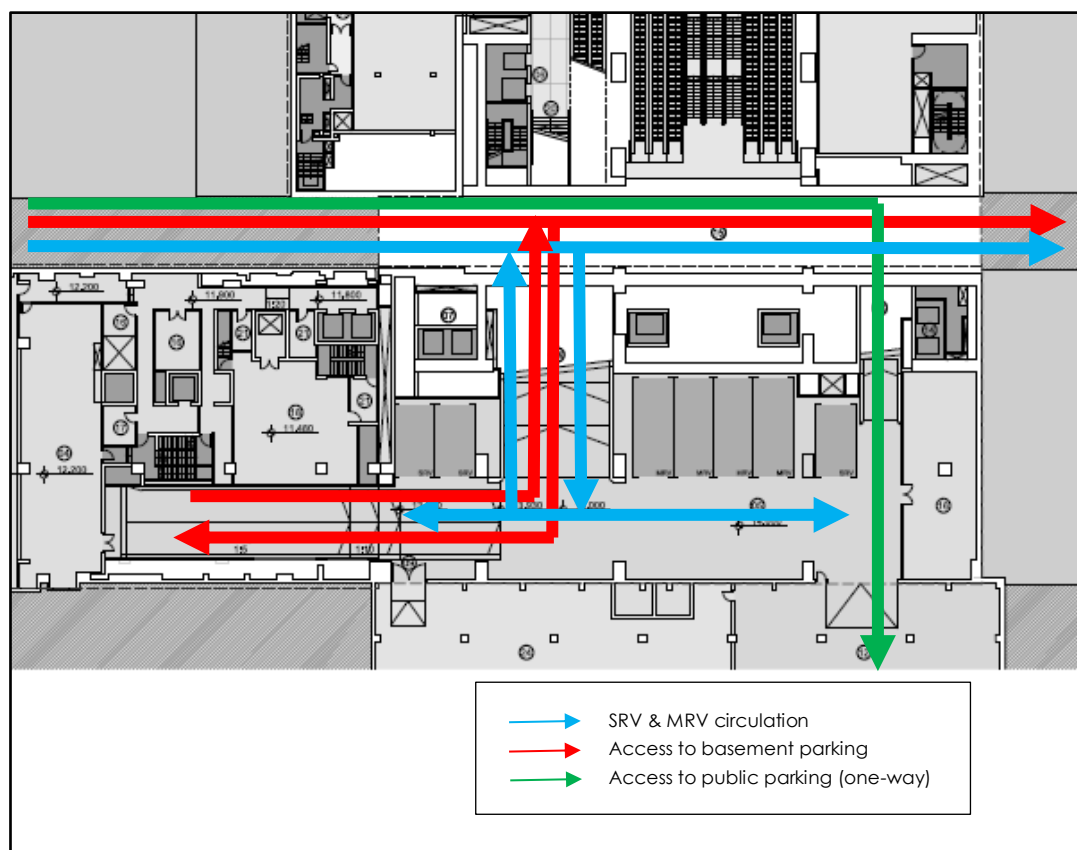


In comparison to the approved arrangement, the revised layout incorporates:

- the widening of the northernmost approved crossover such that it is able to accommodate all development related traffic, including the entering and exiting of cars (for the on-site car parking) and loading vehicles, and
- the narrowing of the southernmost approved crossover such that it only provides access to the existing public car park
- the removal of the area under "signal control", which is no longer necessary given that greater two-way circulation is provided throughout the parking levels.

For reference, the revised access arrangements are shown in Figure 2 on the following page.

Figure 2: Proposed Vehicle Access Arrangements



From a road safety perspective, the proposed separation of public and development related vehicle movements using the southern and northern crossover respectively is considered to represent a positive design change for the following reasons:

- i The users of the northern crossover, being all related to the development, are likely to be more aware of and familiar with the potential presence of adjacent loading vehicles (compared to the public users of the southern crossover), and
- ii The arrival of loading vehicle movements is likely to occur outside of the morning and afternoon peak hours of the development related car parking, and/or could be scheduled to do so if required (whereas such vehicle movements have a higher probability of overlapping with the arrival of public vehicle movements).

The removal of the need for “signal control” is also considered to represent an improvement to the overall operation of the site, as the potential for vehicle queuing within loading areas, on ramps or even external to the site has been substantially reduced.

Overall, the proposed vehicle access arrangements are considered to be appropriate, if not an improvement to previously approved arrangements, and can be expected to operate safely and efficiently.

Loading Layout

The revised layout of the loading bays at the uppermost basement level is generally consistent with the endorsed layout, apart from the vehicle access arrangements detailed above.

The accessibility of the loading bays has also been confirmed via swept path assessment, with a summary of these assessments presented below (refer also to Appendix A for the relevant swept paths):

- **GTA Plan No. 13S121300-18-01 P3 sheet 1:** shows ingress and egress by 99th percentile vehicles
- **GTA Plan No. 13S121300-18-01 P3 sheet 2:** shows ingress by an 8.8m medium rigid vehicle (MRV) and egress by a 99th percentile vehicle
- **GTA Plan No. 13S121300-18-01 P3 sheet 3:** shows ingress by a 99th percentile vehicle and egress by an 8.8m MRV from the closest MRV loading bay
- **GTA Plan No. 13S121300-18-01 P3 sheet 4 & sheet 5:** shows ingress and egress by an 8.8m MRV to/from the southern MRV loading bay respectively
- **GTA Plan No. 13S121300-18-01 P3 sheet 6/8 & sheet 7/9:** shows ingress and egress by an 8.8m MRV to/from the two central MRV loading bays respectively
- **GTA Plan No. 13S121300-18-01 P3 sheet 10 & sheet 11:** shows ingress and egress by an 8.8m MRV to/from the northern MRV loading bay respectively
- **GTA Plan No. 13S121300-18-01 P3 sheet 12 & sheet 13:** shows ingress and egress by a 6.4m small rigid vehicle (SRV) to/from the southern SRV loading bay respectively
- **GTA Plan No. 13S121300-18-01 P3 sheet 14 & sheet 15:** shows ingress and egress by a 6.4m SRV to/from the central SRV loading bay respectively
- **GTA Plan No. 13S121300-18-01 P3 sheet 16 & sheet 17:** shows ingress and egress by a 6.4m SRV to/from the northern SRV loading bay respectively.

Overall, the swept path assessments indicate that the proposed loading dock layout can be expected to operate safely and efficiently, subject to a minor modification of the pedestrian area on Wynyard Lane between the two crossovers (as shown in the attached plans).

Finally, it is noted that GTA understands that the proposed loading dock has been designed with a minimum height clearance of 3.6m, rather than 3.8m as previously approved. Having reviewed the Waste Management Report prepared for the development, it is noted that waste collection is to occur via private contractors. In this regard, it is expected that suitably sized vehicles will be utilised to collect the waste, given the height clearance of 3.6m. In our experience, a range of waste collection vehicles are available in such circumstances, such as the Site Rear Lift Collection vehicle (refer to specifications in Appendix B).

Car Parking Location & Provision

The revised plans illustrate that a total of 90 car spaces are proposed, compared to a total of 103 car spaces shown in the endorsed plans.

The location of the on-site car spaces has also been revised within the amended plans, with a summary of the revised locations outlined in Table 1.

Table 1: Proposed Car Parking Location & Provision

Endorsed Plan		Revised Plans	
Parking Level	Provision	Parking Level(s) ^[1]	Provision
Lower Basement Level (AHD -1.810)	25 spaces		N/A
Basement Level (AHD +2.390)	64 spaces	Basement Level (AHD +2.290 / + 3.700)	61 spaces
Hunter Connection Level (AHD +5.750)	Nil (Vehicle circulation only)	Hunter Connection Level (AHD +5.080 / +6.550)	15 spaces
Concourse Level (AHD +9.550)	Nil (Vehicle circulation only)	Concourse Level (AHD +7.880 / +9.400)	14 spaces
George Street Level (AHD +12.650)	14 spaces		N/A
Total	103 spaces	Total	90 spaces

[1] Revised layout includes split levels within Shell House building

Table 1 highlights one of the more significant transport related changes is the consolidation of the car parking on three levels (including split levels) and the removal of the two levels of circulating ramps. The benefits of this alternate access strategy are the removal of the one-way ramp system, and traffic control, as discussed below.

Internal Circulation Arrangements

The revised car parking layout incorporates split car parking levels which lead to a single large basement car parking level, as detailed above.

Unlike the previously approved layout which incorporated one-way ramps covering many levels with "traffic control" via signals (to avoid the potential for vehicles travelling in opposite directions meeting on the ramp), the revised layout features a more traditional ramping via 5.5m wide ramps being provided on either side of the split levels.

The accessibility of these ramps has also been confirmed via swept path assessment, with a summary of these assessments presented below (refer also to Appendix C for the relevant swept paths):

- **GTA Plan No. 13S121300-19-01 P5 sheet 1:** shows ingress on the right hand side of the plan and egress on the left hand side of the plan from the lowest basement level, as well as the opportunities at which passing will be possible
- **GTA Plan No. 13S121300-19-01 P5 sheet 2 and 3:** shows ingress on the right hand side of the plan and egress on the left hand side of the plan at the two levels of split car parking, as well as the opportunities at which passing will be possible.

Overall, the swept path assessments indicate that comfortable access will be provided to/from the car parking levels, subject to the provision of signage, convex mirrors and kerbing / line marking (as shown in the attached plans).

It is noted that while the proposed car parking layout does not allow for simultaneous ingress and egress movements at all points of the car park, the proposed arrangements is considered to be acceptable (and better than the previously approved layout) for the following reasons:

- i The probability of vehicles needing to simultaneously pass each other is likely to be very low as:
 - o The overall traffic generation of the 90 car spaces is likely to be in the order of approximately 50 vehicle movements per hour (equal to less than 1 vehicle movement per minute)
 - o The arrival and departure of these vehicle movements is likely to be "tidal" in nature, with the majority (>90%) of vehicles entering in the AM peak period and exiting in the PM peak period
 - o The courier bays, which may generate a higher number of traffic movements in a less "tidal" arrangement", are located on the uppermost level of the car park.
- ii The proposed layout will incorporate convex mirrors and signage to alert drivers of the potential for vehicles traversing the ramps in the other direction, noting that the drivers are also likely to become familiar with this arrangement as regular users of the car park.
- iii The proposed layout facilitates passing at various locations throughout the car park, with vehicles able to prop (or reverse and prop) in these areas to enable another vehicle to pass if required.

Car Parking Layout

The proposed car parking layout has been designed in accordance with AZ/NZS2890.1, with car spaces generally being 2.4m wide, 5.4m long and accessed via aisles of 5.8m to 6.2m wide (which accord with User Classes 1 and 1A).

Construction Traffic Management Considerations

In May 2015, GTA prepared a final Construction Traffic Management Plan for the proposed development (refer to report titled 'One Carrington Street, Wynyard – Construction Pedestrian and Traffic Management Plan', dated 15 May 2015).

Having regard to the relatively minor nature of the changes associated with the development and the assumption that the construction methodology / program remains broadly consistent with the previous proposal, GTA considers that this previous report remain valid for the Section 96 application development.

Naturally, should you have any questions or require further information, please do not hesitate to contact me.

Yours sincerely

GTA CONSULTANTS



Tim De Young
Director

encl.

Appendix A – Loading Dock Swept Path Assessments
Appendix B – Example Specifications for a Waste Collection Vehicle
Appendix C – Car Park Ramping Swept Path Assessments

Appendix A

Loading Dock Swept Path Assessments

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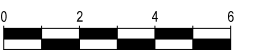
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PRELIMINARY PLAN
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1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
B99 CAR

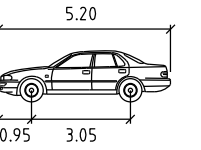
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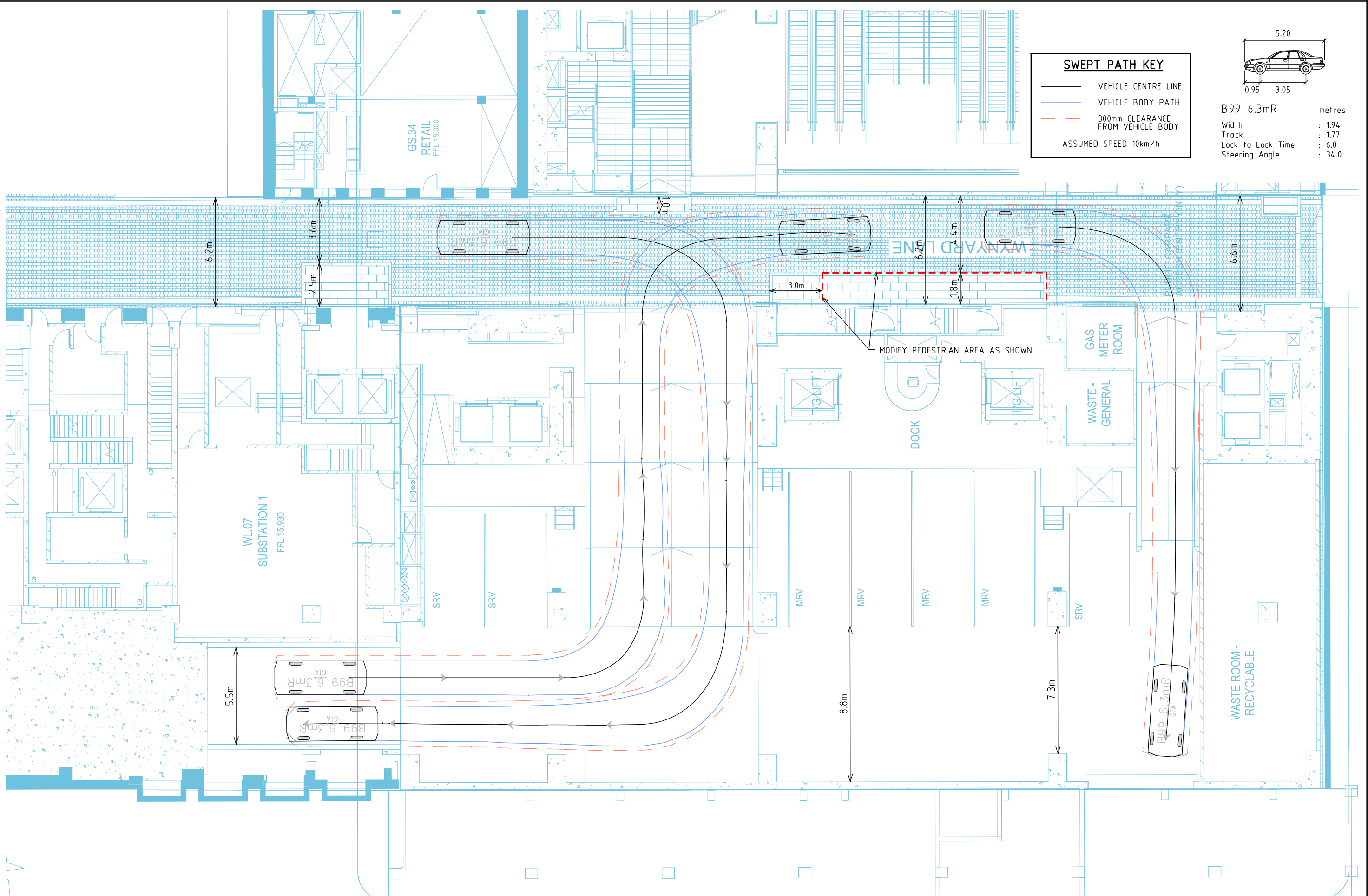
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SWEPT PATH KEY

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



B99 6.3mR metres
Width : 1.94
Track : 1.77
Lock to Lock Time : 6.0
Steering Angle : 34.0



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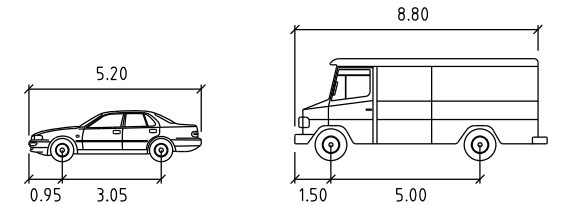
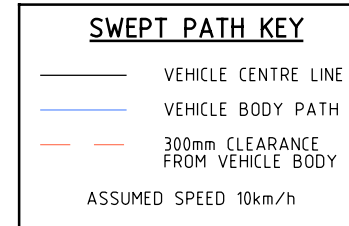
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SWEEP PATH ASSESSMENT
B99 CAR AND 8.8m MRV ON RAMP

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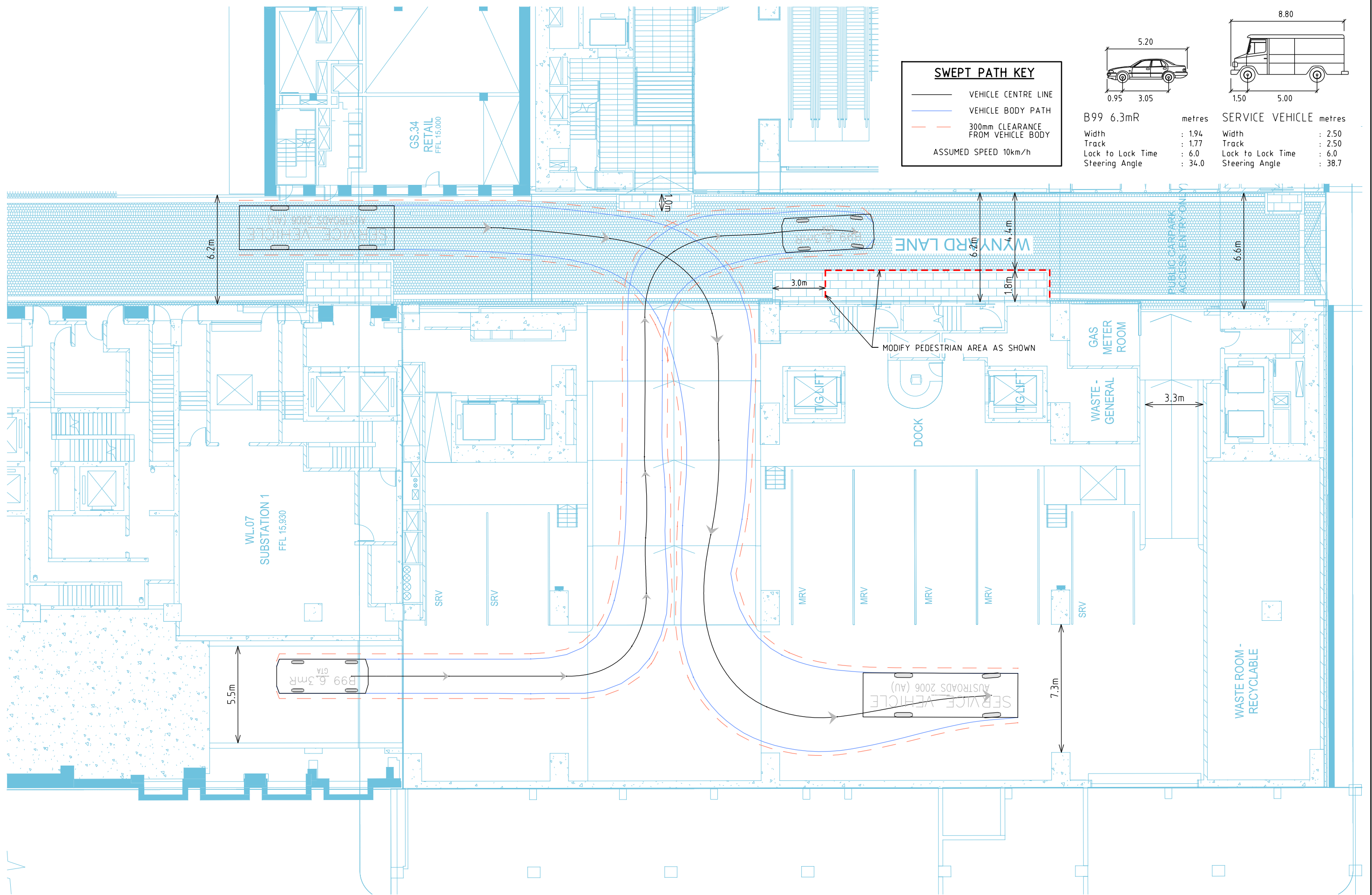
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	metres	SERVICE VEHICLE	metres
B99 6.3mR			
Width	: 1.94	Width	: 2.50
Track	: 1.77	Track	: 2.50
Lock to Lock Time	: 6.0	Lock to Lock Time	: 6.0
Steering Angle	: 34.0	Steering Angle	: 38.7



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1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
B99 CAR AND 8.8m MRV ON RAMP

DATE:
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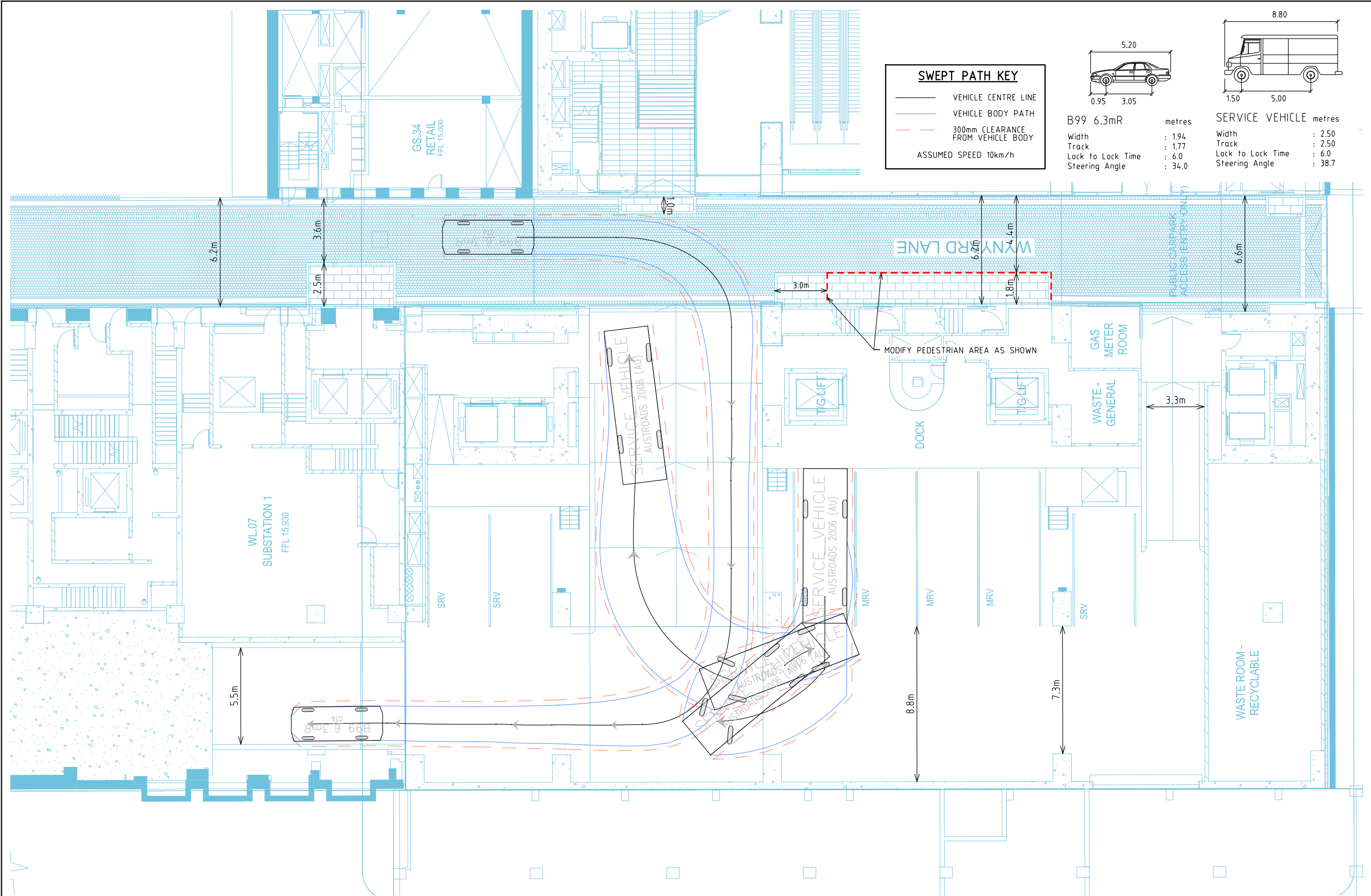
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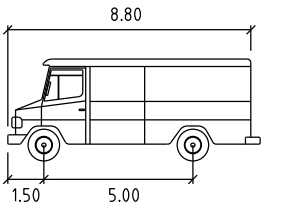


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1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
8.8m MRV ACCESSING LOADING BAY

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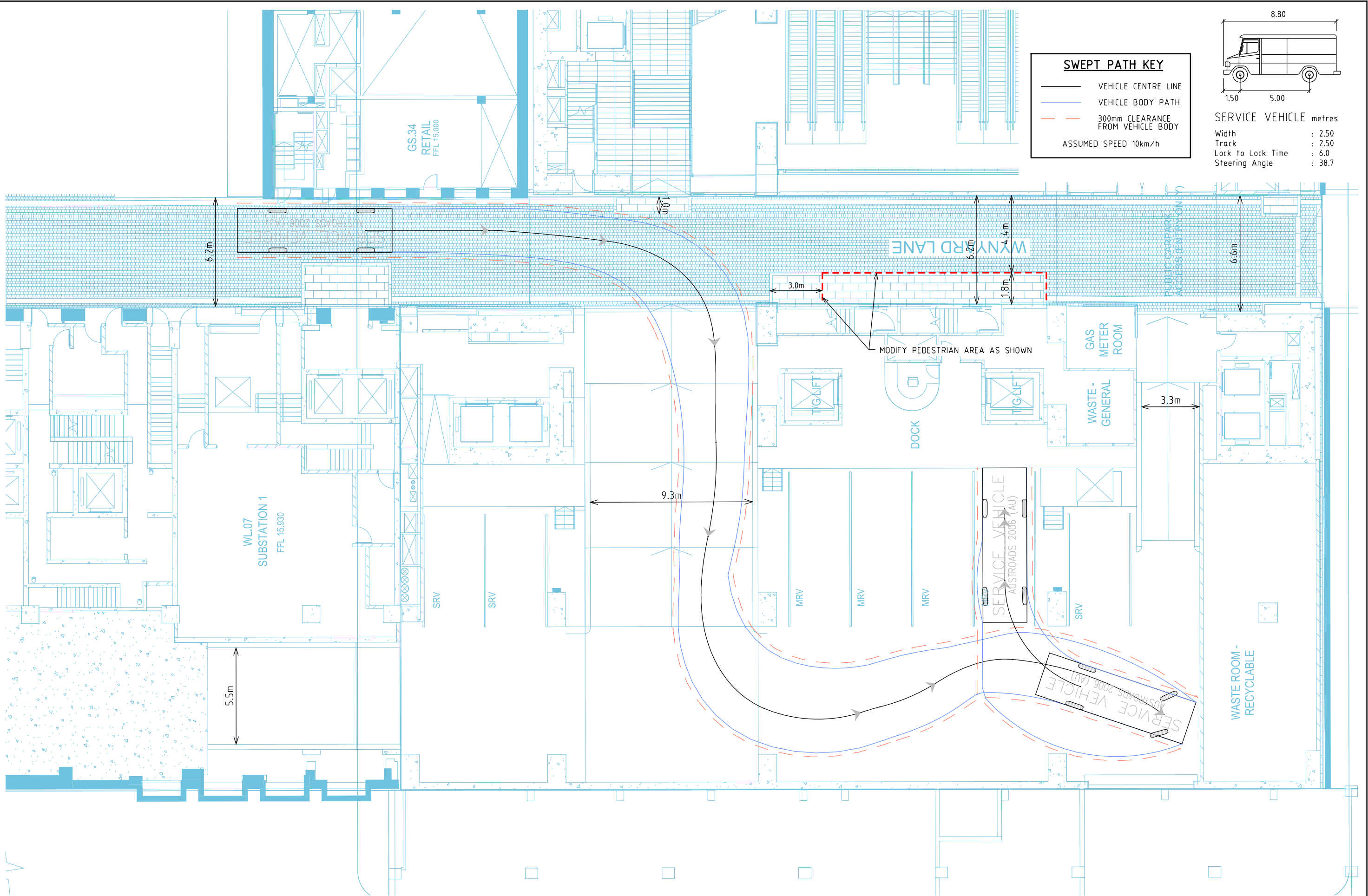


SERVICE VEHICLE metres
Width : 2.50
Track : 2.50
Lock to Lock Time : 6.0
Steering Angle : 38.7

SWEPT PATH KEY

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

ASSUMED SPEED 10km/h



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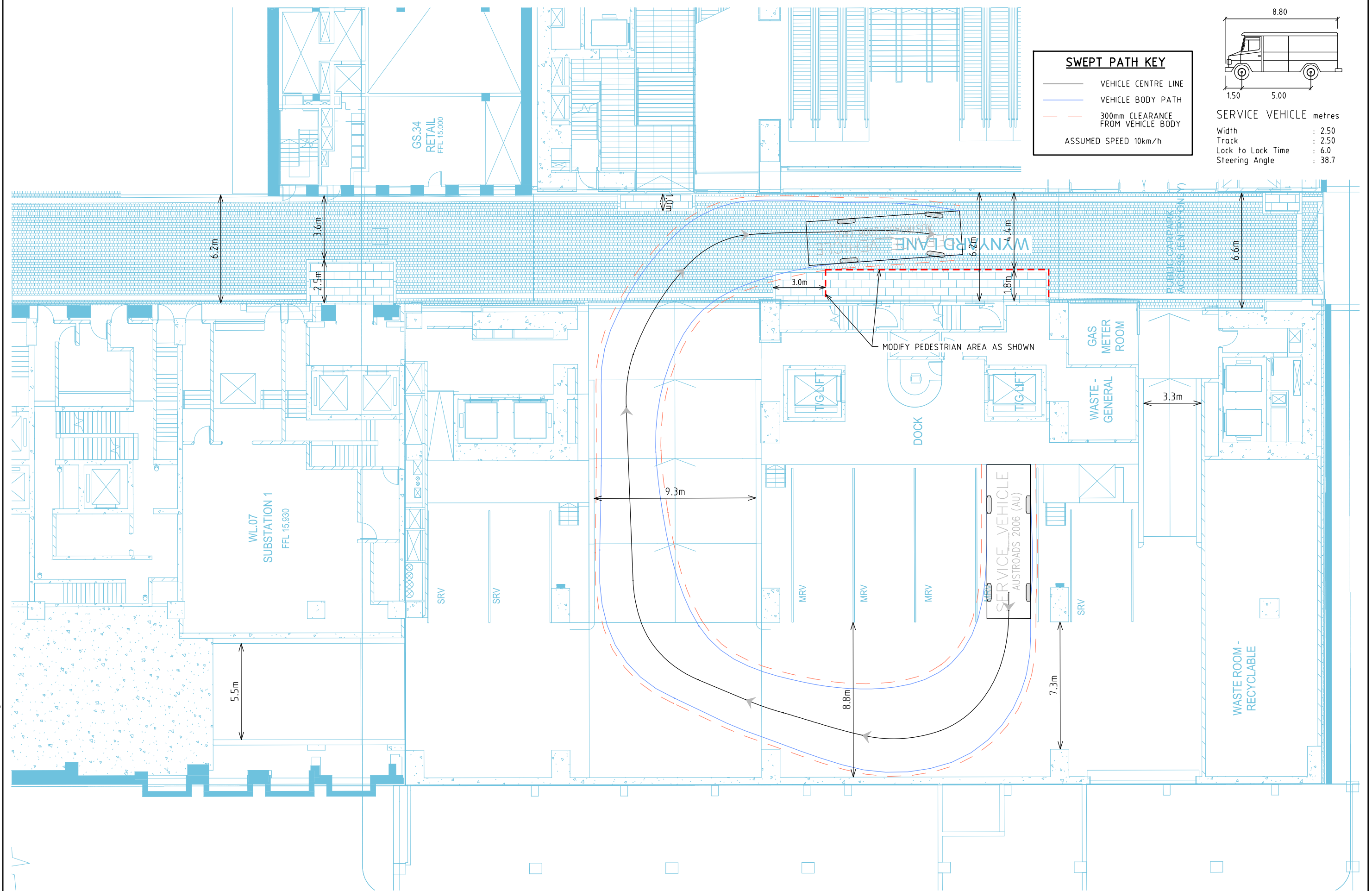
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1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
8.8m MRV LEAVING LOADING BAY

DATE: 04.11.2015
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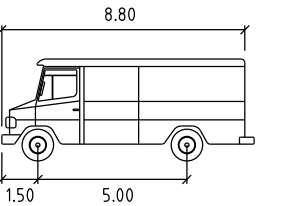
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SWEPT PATH KEY

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

ASSUMED SPEED 10km/h



SERVICE VEHICLE metres

Width : 2.50
Track : 2.50
Lock to Lock Time : 6.0
Steering Angle : 38.7

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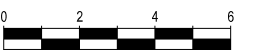


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1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
8.8m MRV ACCESSING LOADING BAY

DATE: 04.11.2015
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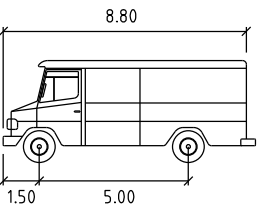
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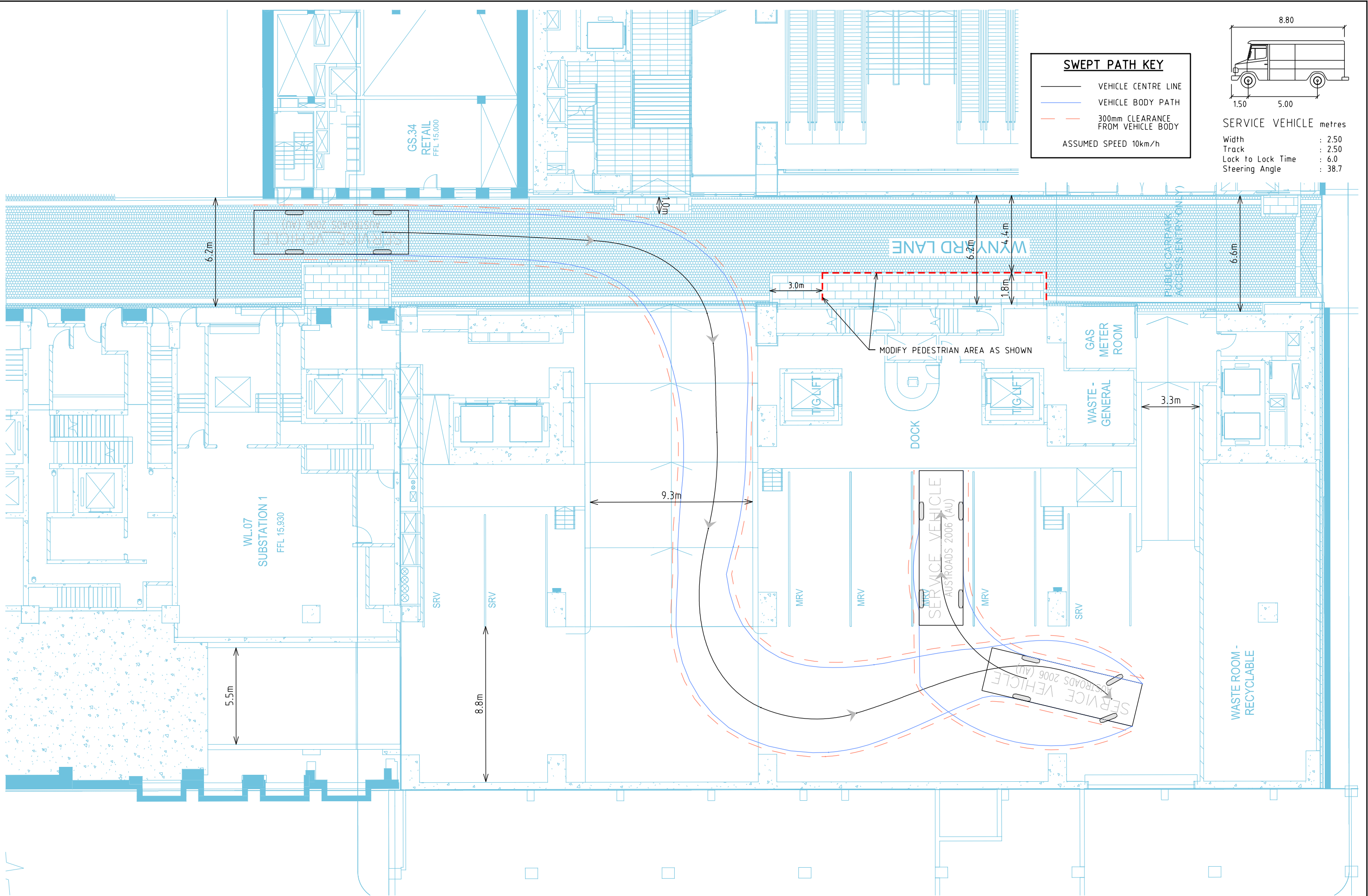
- VEHICLE CENTRE LINE
- VEHICLE BODY PATH
- - - 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h



SERVICE VEHICLE metres

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Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



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1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
8.8m MRV ACCESSING LOADING BAY

DATE: 04.11.2015
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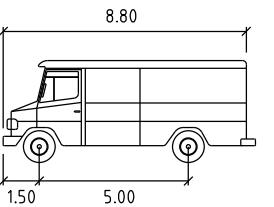
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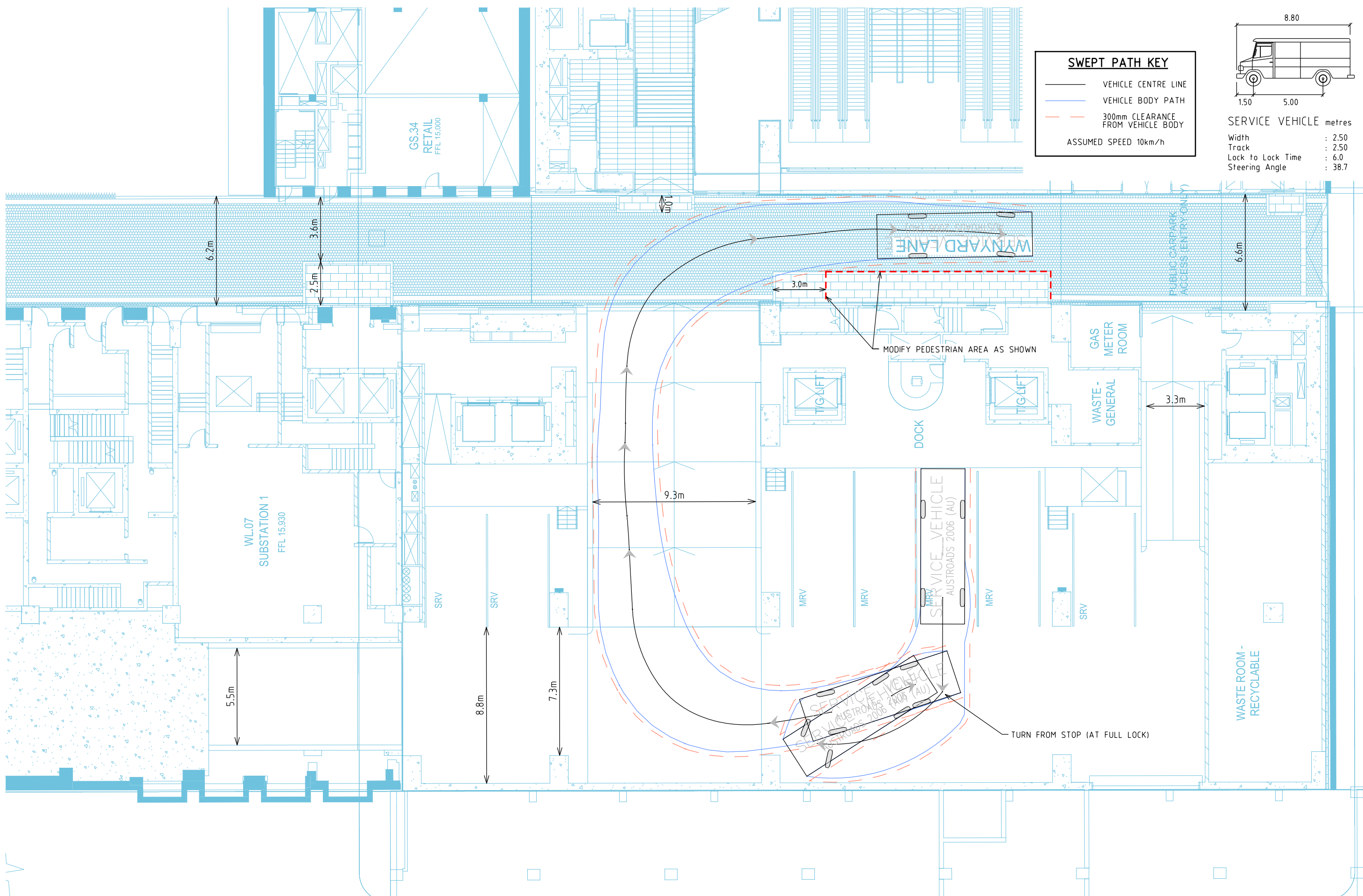
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- VEHICLE BODY PATH
- - - 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h



SERVICE VEHICLE metres

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Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



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1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
8.8m MRV ACCESSING LOADING BAY

DATE: 04.11.2015
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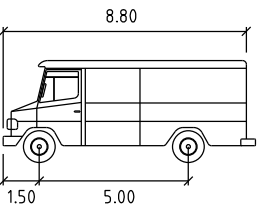
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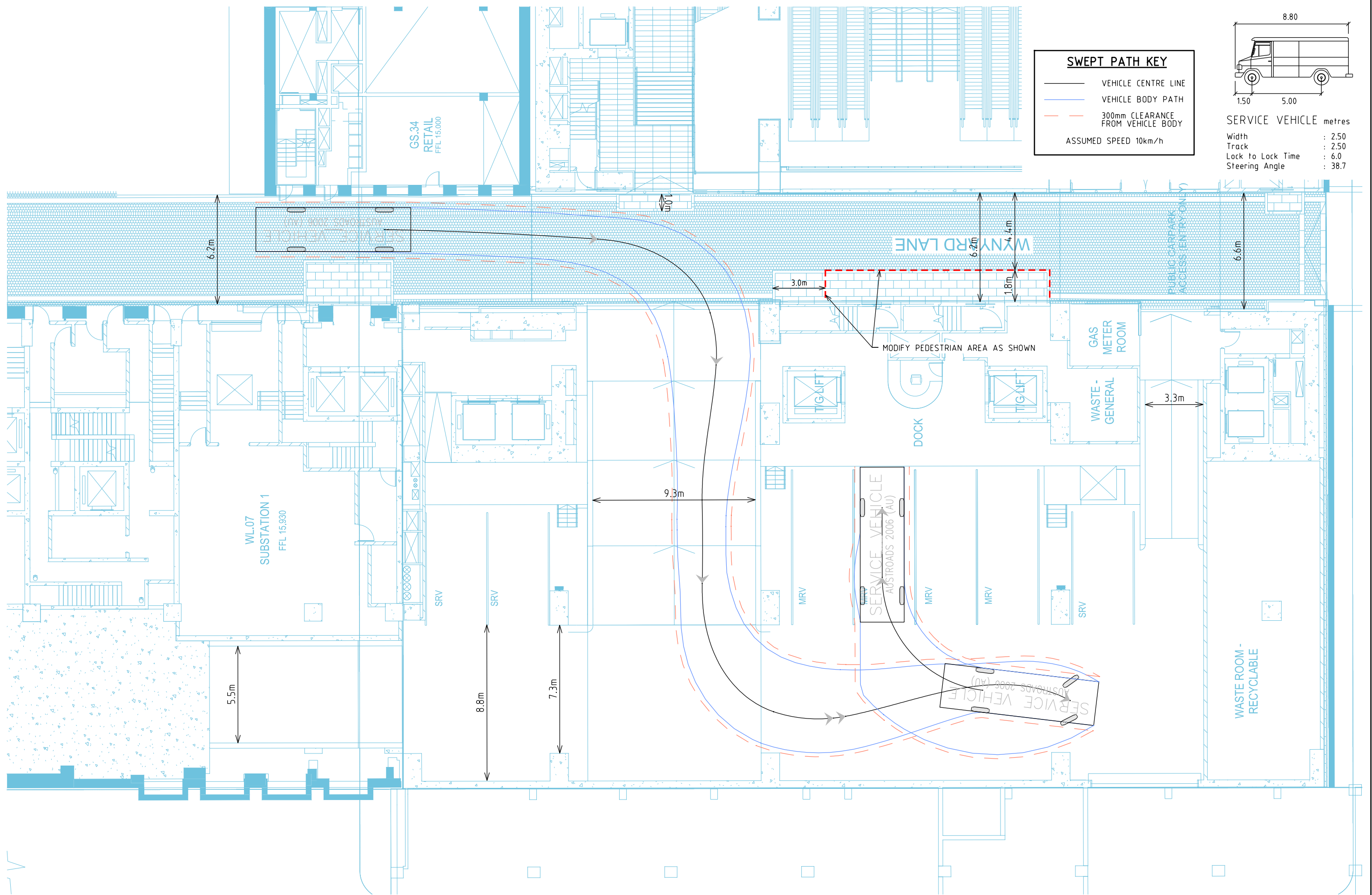
- VEHICLE CENTRE LINE
- VEHICLE BODY PATH
- - - 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h



SERVICE VEHICLE metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



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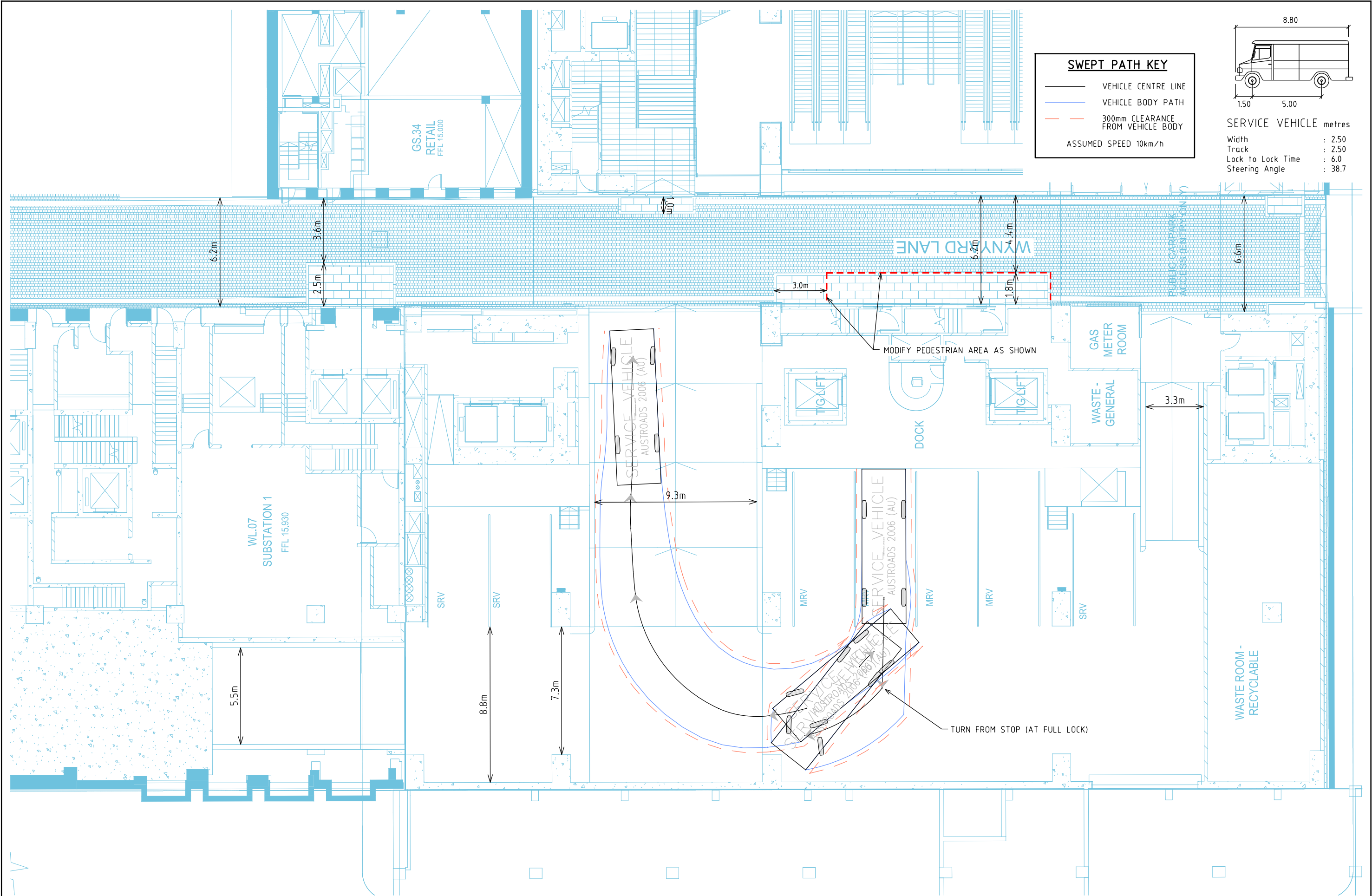
1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
8.8m MRV ACCESSING LOADING BAY

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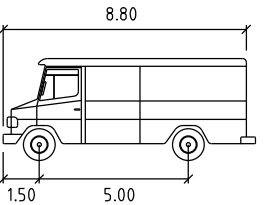
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SWEPT PATH KEY

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- VEHICLE BODY PATH
- - - 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h



SERVICE VEHICLE metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

PLOTTED BY: Tom.Napiorkowski ON: 4/11/2015 AT 6:12:04 PM 13S1213000-18-P3.dgn

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1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
8.8m MRV ACCESSING LOADING BAY

DATE: 04.11.2015
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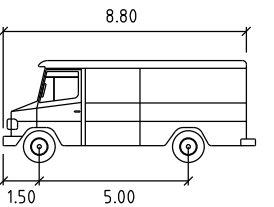
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SWEPT PATH KEY

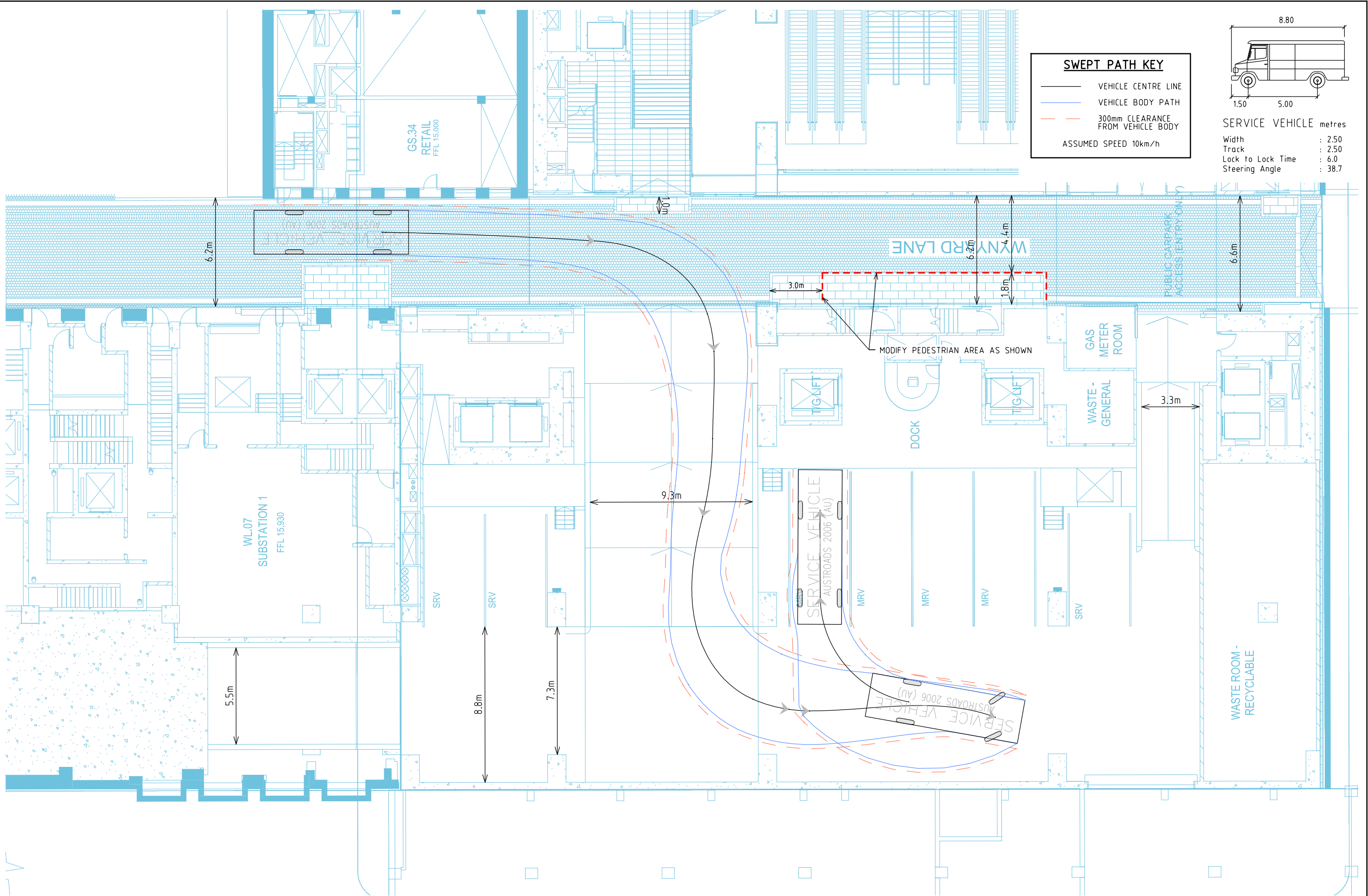
- VEHICLE CENTRE LINE
- VEHICLE BODY PATH
- - - 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h



SERVICE VEHICLE metres

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Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



PLOTTED BY: Tom.Napierkowski ON: 4/11/2015 AT 6:12:11 PM 13S1213000-18-P3.dgn

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Adelaide 08 8334 3600



PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT
NOTIFICATION

1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
8.8m MRV ACCESSING LOADING BAY

DATE: 04.11.2015
SCALE: 1:200@A3

APPROVED: TDY

DRAWING NO. 13S1213000-18-11-P3

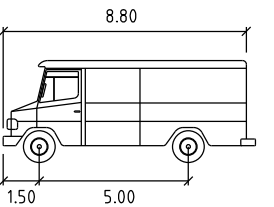
SHEET: 11 OF 17



SWEPT PATH KEY

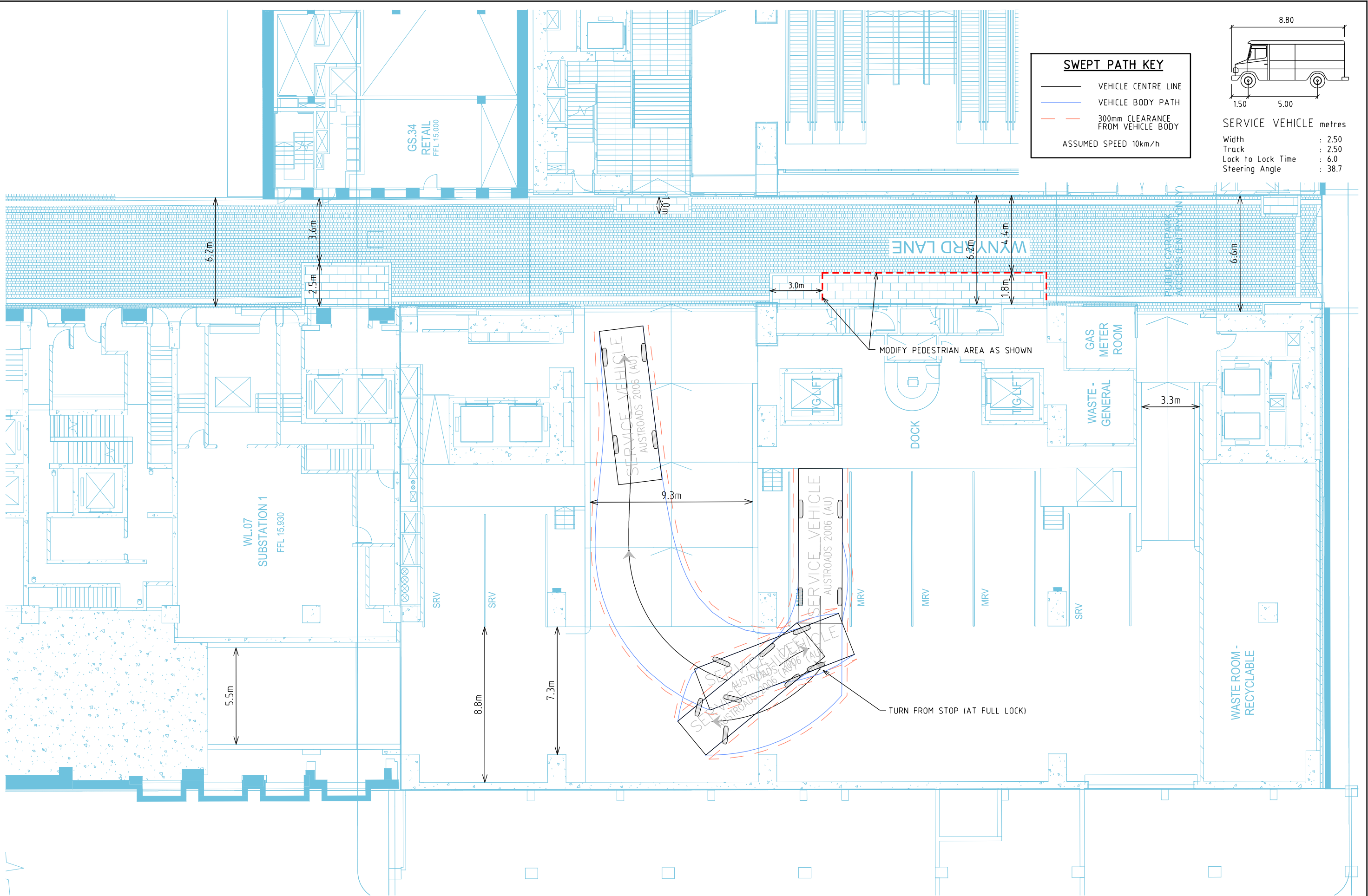
- VEHICLE CENTRE LINE
- VEHICLE BODY PATH
- - - 300mm CLEARANCE FROM VEHICLE BODY

ASSUMED SPEED 10km/h



SERVICE VEHICLE metres

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7



PLOTTED BY: Tom.Napierkowski ON 4/11/2015 AT 6:12:17 PM 13S1213000-18-P3.dgn

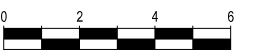
Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
Adelaide 08 8334 3600



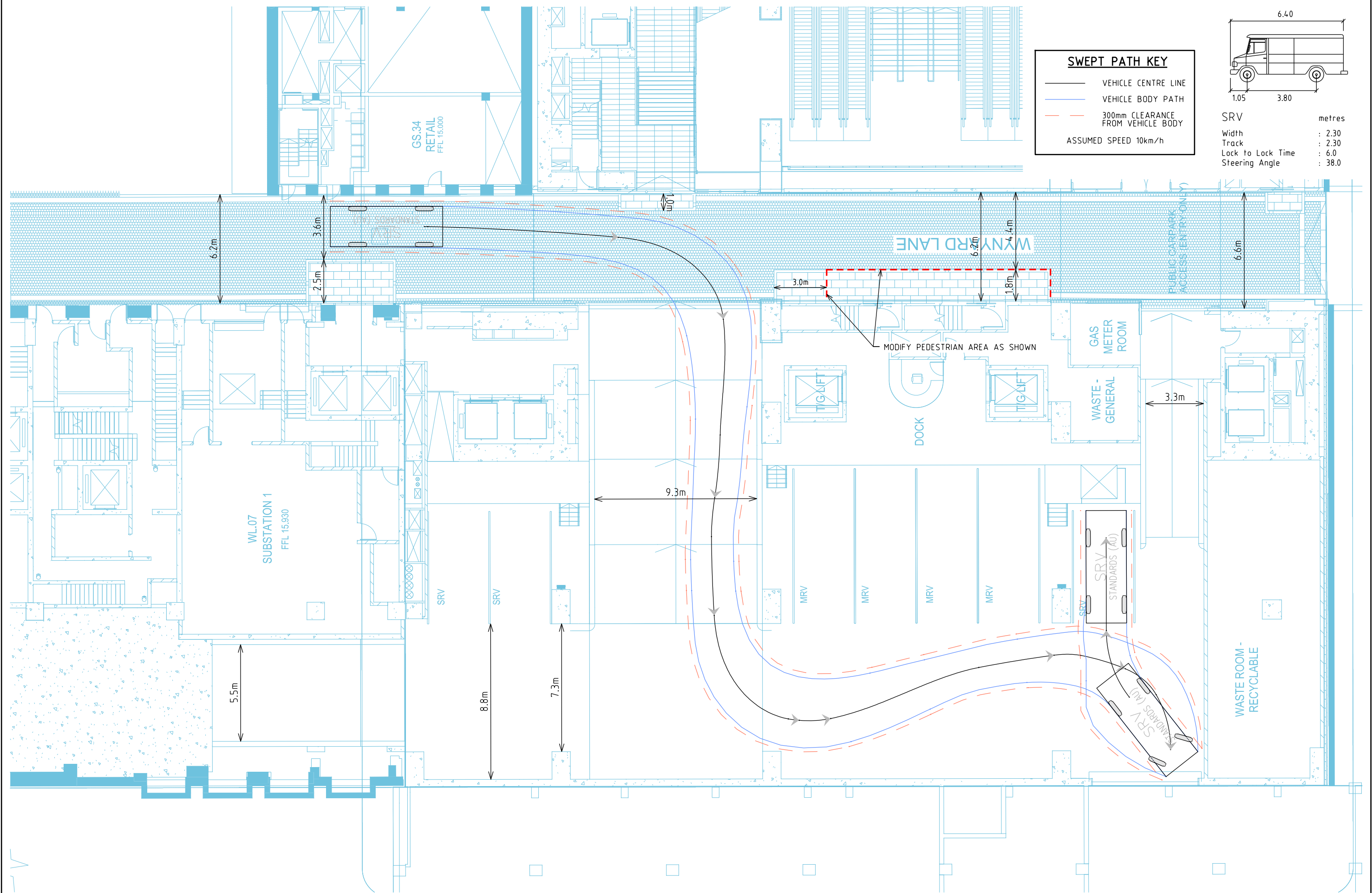
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT
NOTIFICATION

1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
6.4m SRV ACCESSING LOADING BAY

DATE: 04.11.2015
SCALE: 1:200@A3
APPROVED: TDY
DRAWING NO. 13S1213000-18-12-P3



SHEET: 12 OF 17



PLOTTED BY: Tom.Napierkowski ON: 4/11/2015 AT 6:12:23 PM 13S1213000-18-P3.dgn

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
Adelaide 08 8334 3600



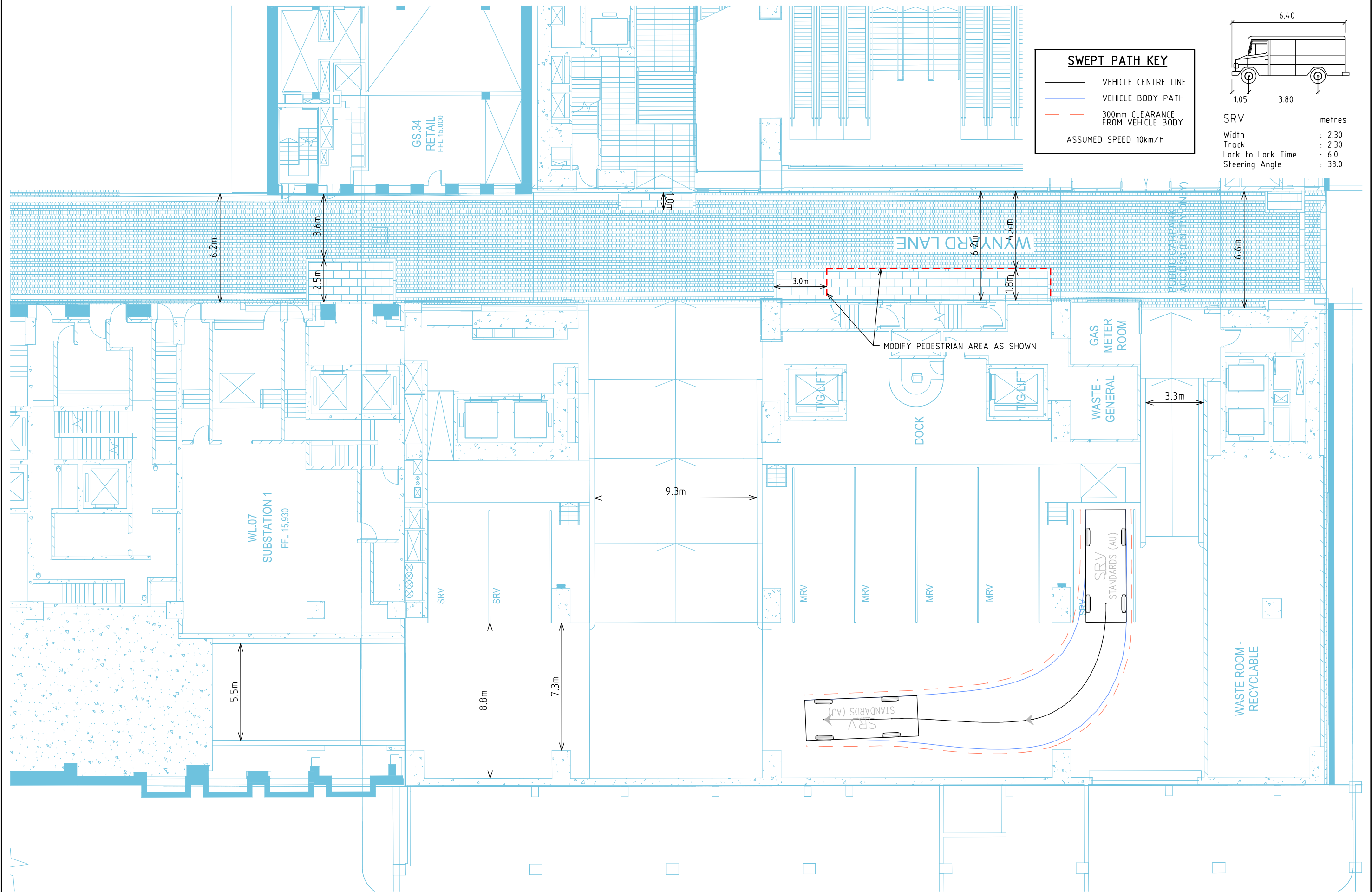
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT
NOTIFICATION

1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
6.4m SRV LEAVING LOADING BAY

DATE: 04.11.2015
SCALE: 1:200@A3
APPROVED: TDY
DRAWING NO. 13S1213000-18-13-P3



SHEET: 13 OF 17



PLOTTED BY: Tom.Napierkowski ON: 4/11/2015 AT 6:12:31 PM 13S1213000-18-P3.dgn

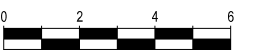
Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
Adelaide 08 8334 3600



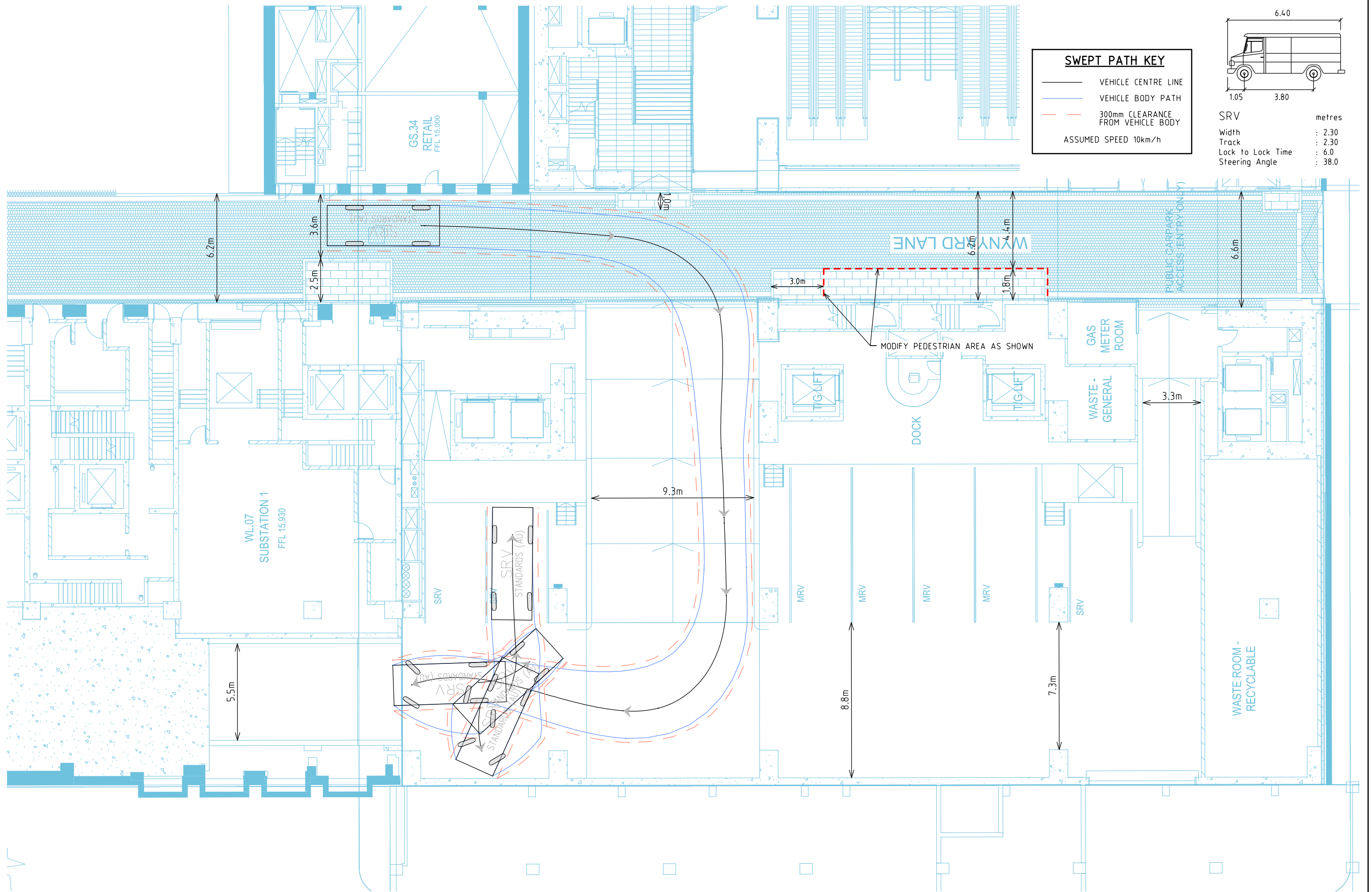
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT
NOTIFICATION

1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
6.4m SRV ACCESSING LOADING BAY

DATE: 04.11.2015
SCALE: 1:200@A3
APPROVED: TDY
DRAWING NO. 13S1213000-18-14-P3



SHEET: 14 OF 17



PLOTTED BY: Tom.Napierkowski ON: 4/11/2015 AT 6:12:44 PM 13S1213000-18-P3.dgn

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
Adelaide 08 8334 3600

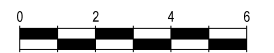


PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT
NOTIFICATION

1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
6.4m SRV ACCESSING LOADING BAY

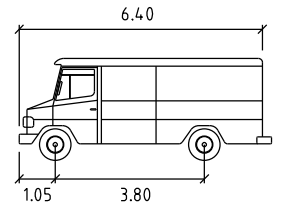
DATE: 04.11.2015
SCALE: 1:200@A3

APPROVED: TDY
DRAWING NO. 13S1213000-18-16-P3
SHEET: 16 OF 17

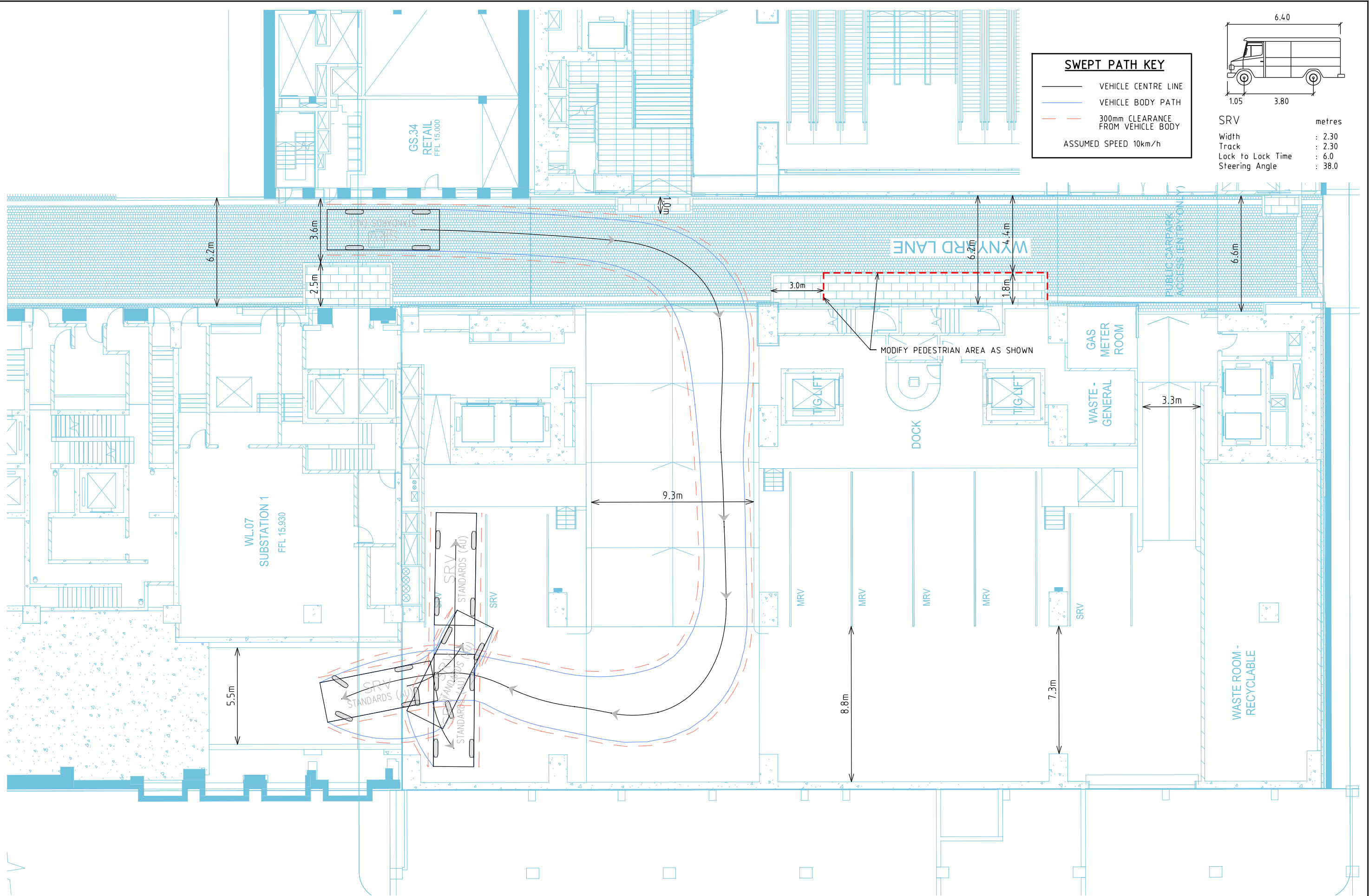


SWEPT PATH KEY

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



SRV
Width : 2.30 metres
Track : 2.30
Lock to Lock Time : 6.0
Steering Angle : 38.0



PLOTTED BY: Tom.Napierkowski ON: 4/11/2015 AT 6:12:51 PM 13S1213000-18-P3.dgn

Melbourne 03 9851 9600
Sydney 02 8448 1800
Brisbane 07 3113 5000
Canberra 02 6263 9400
Adelaide 08 8334 3600

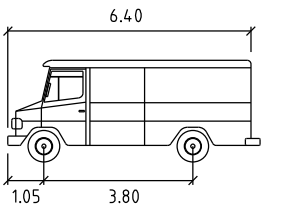


PRELIMINARY PLAN
FOR DISCUSSION PURPOSES ONLY
SUBJECT TO CHANGE WITHOUT
NOTIFICATION

1 CARRINGTON STREET, WYNYARD
SWEEP PATH ASSESSMENT
6.4m SRV LEAVING LOADING BAY

DATE: 04.11.2015
SCALE: 1:200@A3

APPROVED: TDY
DRAWING NO. 13S1213000-18-17-P3
SHEET: 17 OF 17



SRV metres
Width : 2.30
Track : 2.30
Lock to Lock Time : 6.0
Steering Angle : 38.0

SWEPT PATH KEY

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

