PROPOSED
MIXED USE DEVELOPMENT

41 – 43 FORBES STREET, LIVERPOOL

Assessment Traffic and Parking Implications

June 2018
(Rev B)

Reference 18096

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LIST OF ILLUSTRATIONS

1. INTRODUCTION

This report has been prepared to accompany a Development Application to Liverpool City Council for a proposed new mixed use building on a site in Forbes Street at Liverpool (Figure 1).

The site which is located just to the north of Liverpool CBD offers considerable advantages for residential apartment living due to:

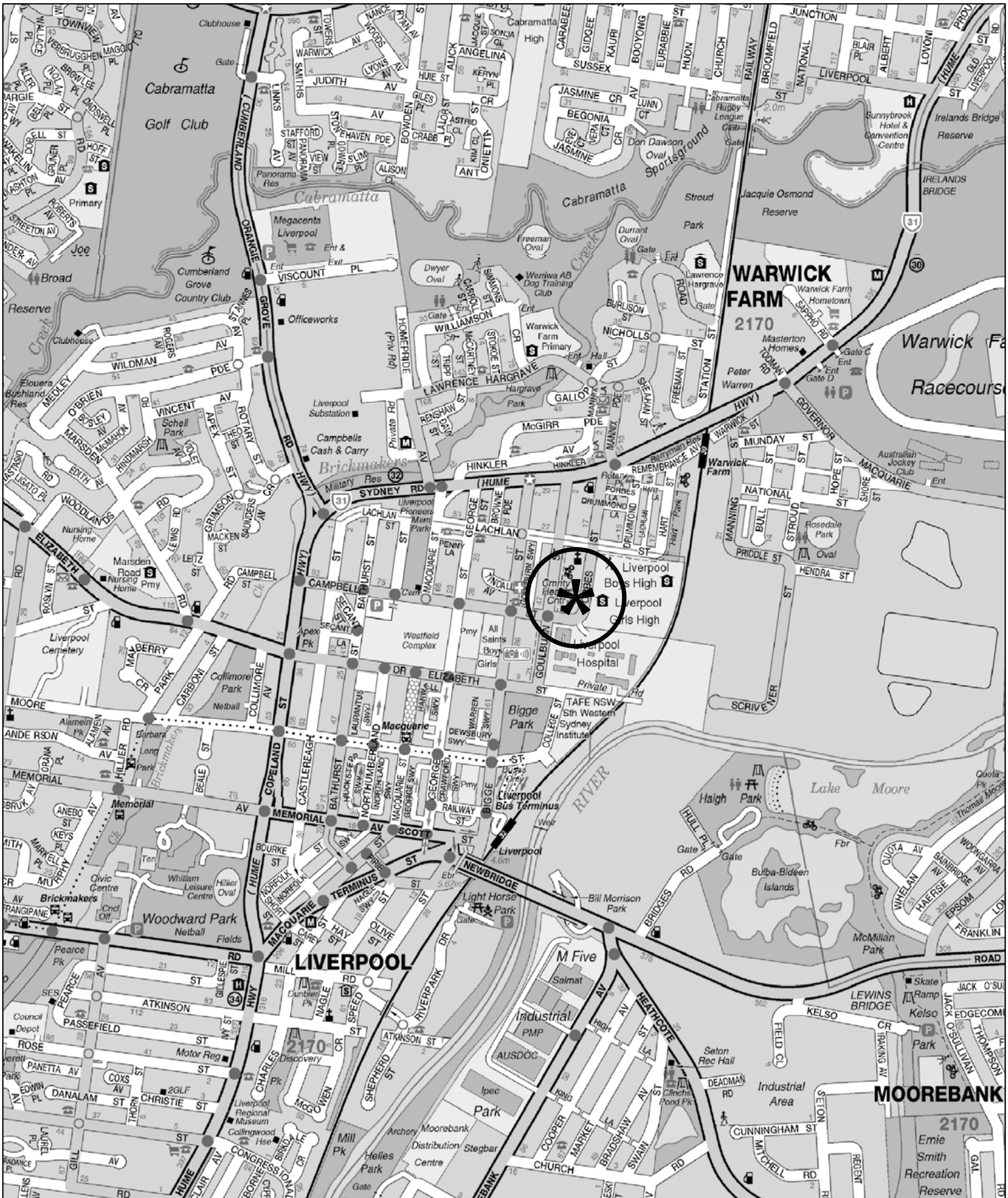
* the convenient access to primary public transport services (rail and buses)
* the proximity to employment, shopping and entertainment facilities available in the centre along with the nearby educational and hospital/medical services.

The proposed development scheme represents a contemporary residential apartment based mixed use complex comprising:

- 45 apartments (10 “affordable”)
- 4 commercial tenancies
- basement parking

The purpose of this report is to:

* describe the site, its context and the proposed development scheme
* describe the road network serving the site and the existing traffic conditions
* assess the adequacy of the proposed parking provision
* assess the potential traffic implications
* assess the proposed vehicle access, internal circulation and servicing arrangements



LEGEND

LOCATION

FIG 1

2. PROPOSED DEVELOPMENT SCHEME

2.1 SITE, CONTEXT AND EXISTING USE

The development site (Figure 2) is a consolidation of Lots 4 and 5 in DP37806 occupying a total area of 1,189m^2 with a frontage of some 25.6 metres to Forbes Street. The site, which is located on the northern edge of the City Centre in a largely hospital and education precinct, is currently comprises a residential cottage and a vacant lot as indicated on the survey plan overleaf.

The surrounding land uses comprise:

* the home unit buildings which adjoin to the north and west
* the Ambulance Station which adjoins to the south
* Liverpool High School to the east
* the large Westfield shopping centre located just to the west

2.2 PROPOSED DEVELOPMENT

It is proposed to demolish the existing building and excavate part of the site for construction of a new 9-level building with basement carparking.

The proposed development will comprise:

Residential Apartments	**Affordable Apartments**
20 x one-bedroom apartments	8 x one-bedroom apartments
15 x two-bedroom apartments	2 x two-bedroom apartments
Total 35 apartments	**10 apartments**

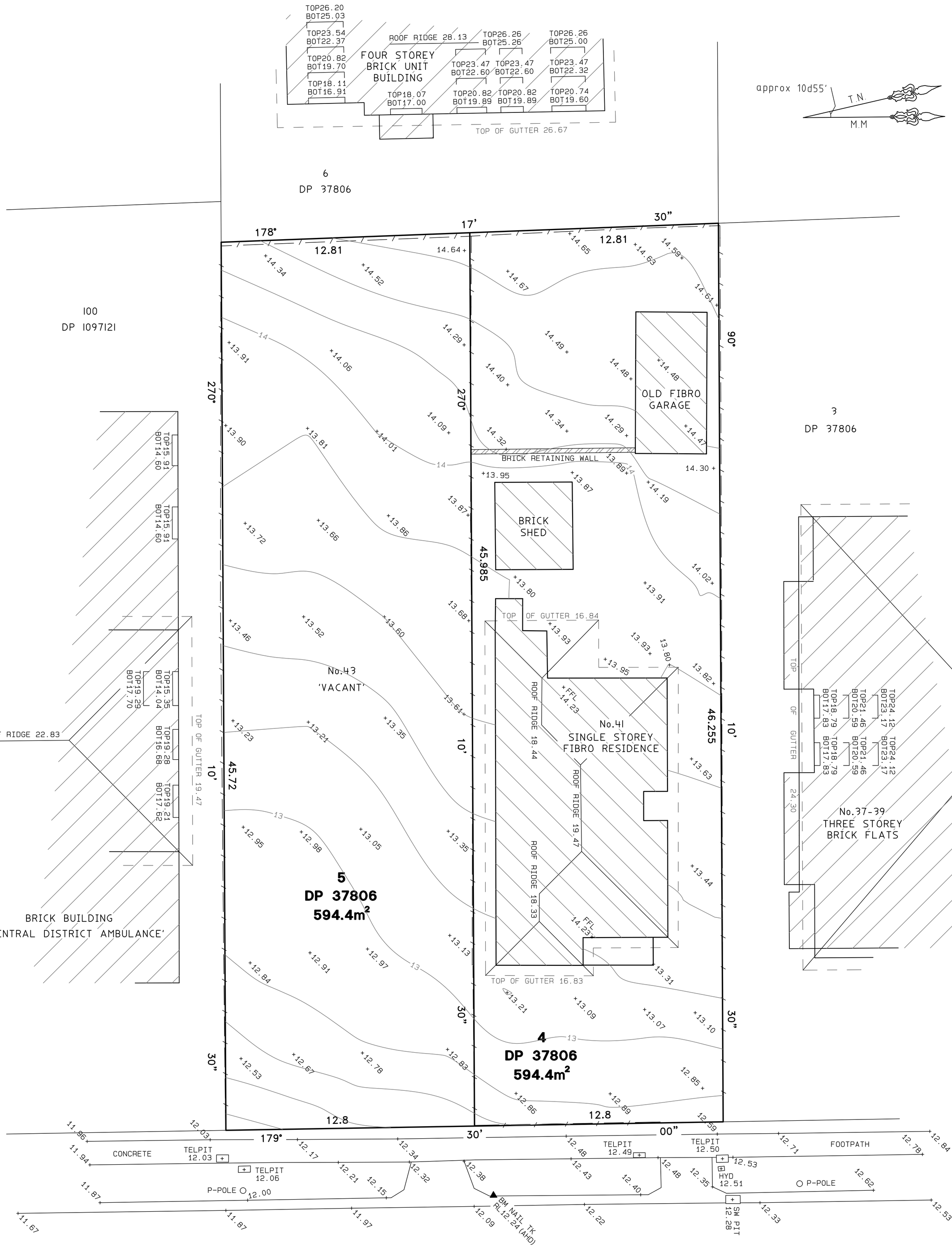
4 x commercial units (total 151.4m^2)

LEGEND

N

SITE

FIG 2



FORBES STREET

NOTE

TOTAL SITE AREA
BY TITLE DIAGRAM (DP37806) – 1188.8m^2

ORIGIN OF LEVELS: PM 51958 – RL10.81

CONTOUR INTERVAL – 0.2m

MAGNETIC DECLINATION DERIVED FROM EPOCH 1938 (DP37806)

IMPORTANT NOTE

NO BOUNDARY SURVEY HAS BEEN UNDERTAKEN.
DIMENSIONS AND AREA HAVE BEEN COMPILED FROM TITLE DIAGRAM DP37806
STRUCTURES SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY AND HAVE NOT BEEN LOCATED ACCURATELY RELATIVE TO BOUNDARIES.
NO SERVICES SEARCH HAS BEEN MADE.
ONLY SERVICE STRUCTURES EVIDENT AT THE TIME OF SURVEY HAVE BEEN LOCATED.
BEARINGS SHOWN ARE MAGNETIC NORTH.
TREES SHOWN ARE DIAGRAMMATIC ONLY.
BOUNDARIES SHOULD BE MARKED AND FULL TITLE SEARCH TO DETERMINE IF ANY EASEMENTS, RESTRICTIONS OR COVENANTS EXIST PRIOR TO ANY CONSTRUCTION

REV		DATE	BY	DESCRIPTION

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URBANEX Pty Limited
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ACN 003 425 438
ABN 48 003 425 438

PROJECT
41–43 FORBES STREET
LIVERPOOL

TITLE
DETAIL AND LEVELS OVER
LOT 4 & 5 IN DP 37806

CLIENT DOSAN

SCALE BAR 1:1
0 10 20 30 40 50 75

DRAWN BY NZ
CHECKED BY RT DATE 15/06/18
SHEET NO. 1 OF 1 SHEETS
DRAWING SCALE 1 : 100 @ A1
DRAWING REFERENCE FORBES–DT
REVISION

A total of 53 parking spaces will be provided on the ground and basement levels with vehicle access located on the Lachlan Street frontage at the northern site boundary.

Architectural plans of the development scheme prepared by Fox Johnston Architects accompany the Development Application and are reproduced in part in Appendix A.

3. ROAD NETWORK AND TRAFFIC CONDITIONS

3.1 ROAD NETWORK

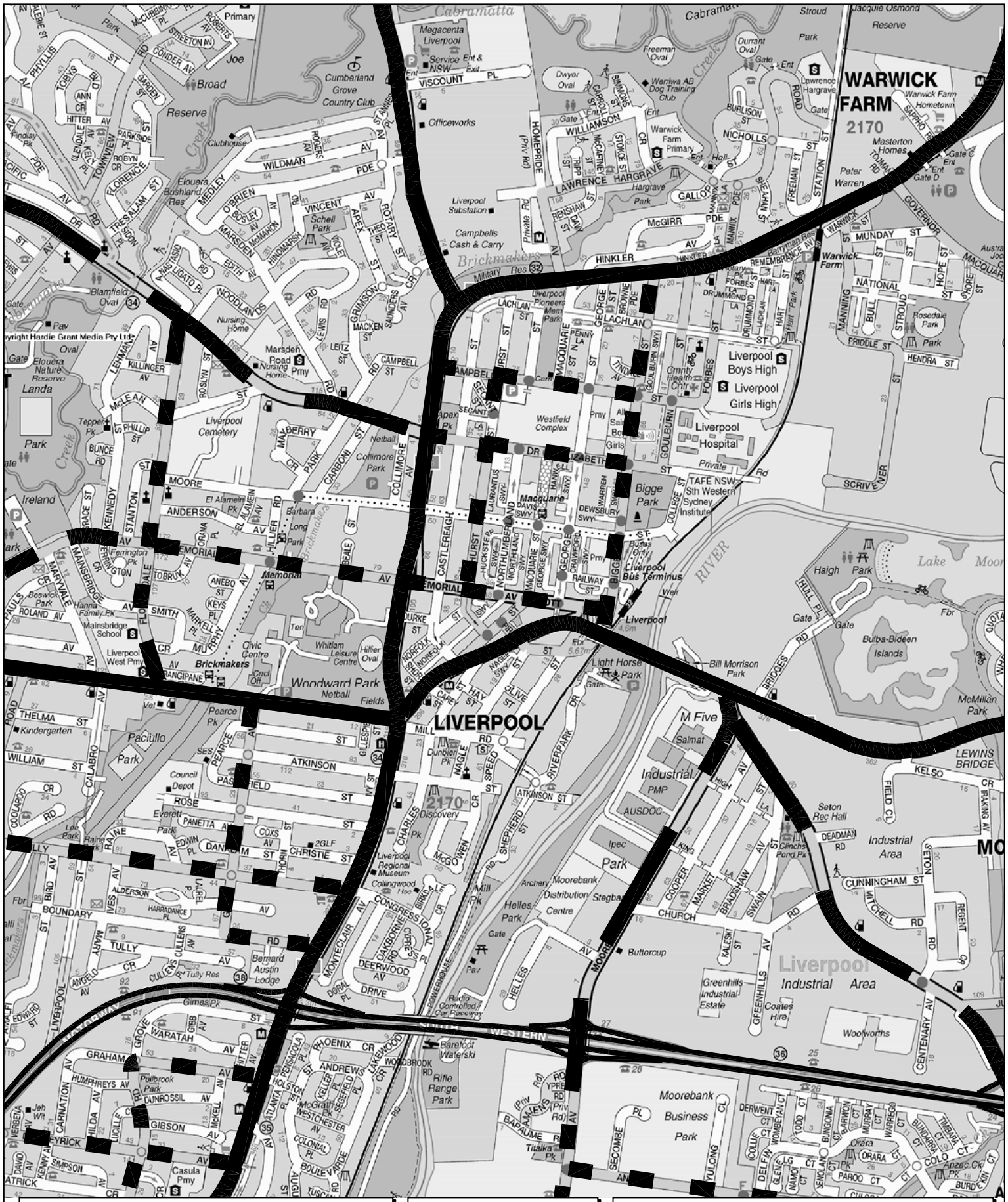
The road network which serves the Liverpool City Centre (Figure 3) comprises:

* the arterial State Road routes of the Hume Highway (Sydney Road) running along the northern and western edge of the centre and Terminus Street/Newbridge Road running along the southern edge
* the principal east-west access routes of Elizabeth Drive and Memorial Avenue/ Scott Street
* the principal north-south access route of Bigge Street
* the designated ring road system for the centre of Bathurst Street, Campbell Street, Bigge Street and Pirie Street
* Forbes Street – a local access road

3.2 TRAFFIC CONTROLS

The traffic controls on the road system in the vicinity of the site (Figure 4) comprise:

* the traffic control signals located at intersections along the Hume Highway including the Cumberland Highway, Bigge Street and Macquarie Street intersections
* the marked foot crossing on Forbes Street just to the north of the site
* the central median island along the highway across the Forbes Street intersection
* the GIVE WAY signs at Forbes Street and Lachlan Street intersection
* the traffic signals along Campbell Street at the Bigge Street and Goulburn Street intersections



LEGEND

- ARTERIAL
- SUB-ARTERIAL
- COLLECTOR

N

ROAD NETWORK

FIG 3

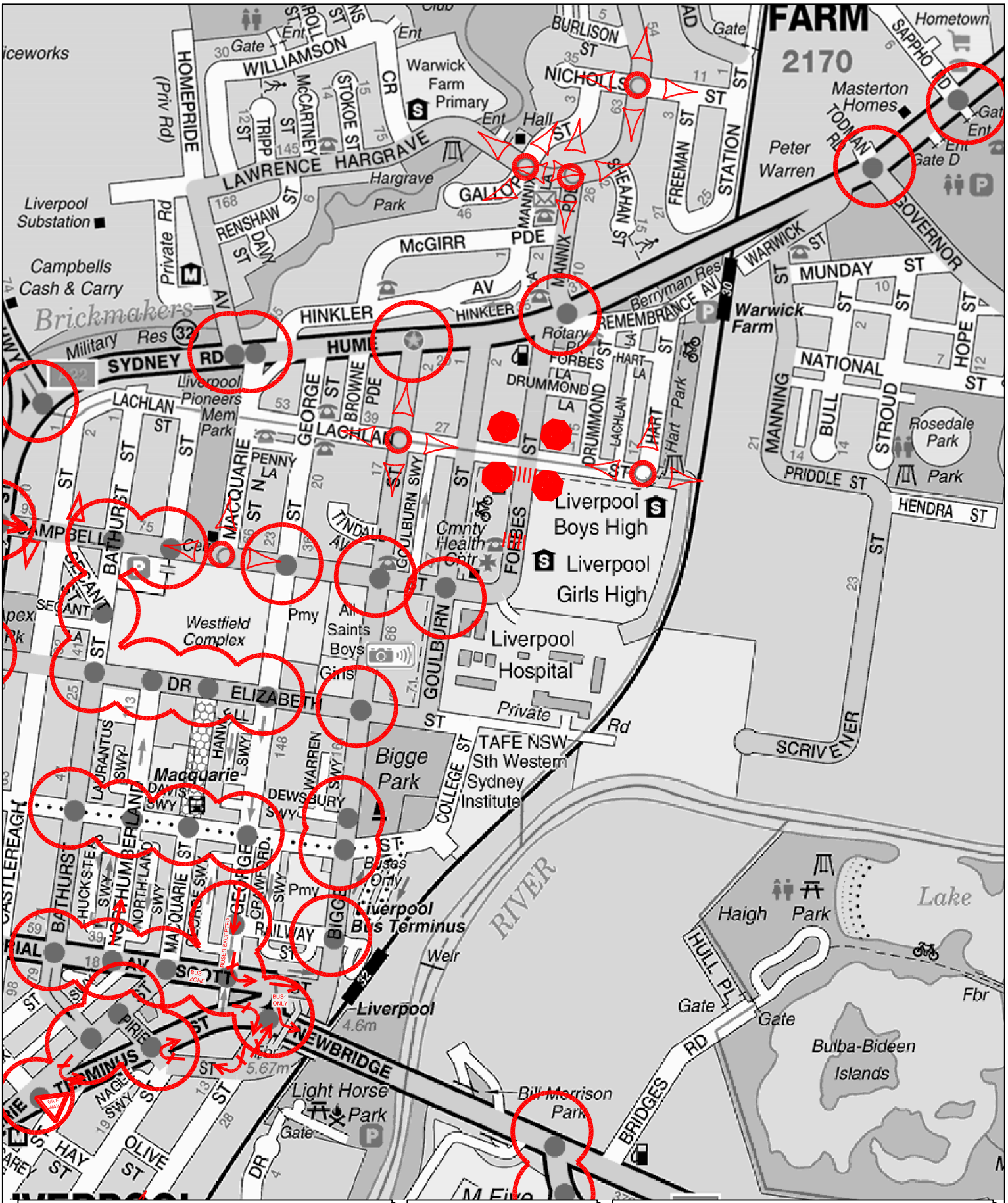
3.3 TRAFFIC CONDITIONS

The Hume Highway is a major arterial route which has peak hour flows of some 4,000 vehicles (two-way) and traffic conditions in the area are dominated by the operation of the major intersections along the highway (i.e. Cumberland Highway, Elizabeth Drive and Hoxton Park Road). Forbes Street is a local access road and the generalised vehicle flows at the site frontage are minor as follows:

	AM	**PM**
Eastbound	140	120
Westbound	130	150

3.4 TRANSPORT SERVICES

The development site is ideally located in relation to high capacity and frequent public transport services. Liverpool City Centre is the 'hub' for south-west Sydney and the development site is located within easy walking distance of the Railway Station and adjacent to its bus route terminal. Numerous bus services operate in the area and take advantage of the Liverpool – Parramatta Transitway which runs along Moore Street.



LEGEND

- TRAFFIC SIGNAL CONTROL
- ROUNDABOUT
- RESTRICTED TURNING MOVEMENT

N

TRAFFIC CONTROLS

FIG 4

4. PARKING

An indication of the appropriate parking provision for the development is provided by Council's DCP and the SEPP (Affordable Housing) which specify the following:

	DCP	**SEPP**
One-bedroom apartments	1 space	0.4 space
Two-bedroom apartments	1 space	0.5 space
Visitors	1 space per 10 apartments	Nil
Service Vehicles	1 space per 40 apartments	
Commercial	1 space per 100m^2 GFA	

Application of this criteria would indicate the following:

	DCP	**SEPP**
One-bedroom apartments	(20) 20 spaces	(8) 3.2 spaces
Two-bedroom apartments	(15) 15 spaces	(2) 1.0 space
Visitors	Nil *****	Nil
Commercial (151.4m^2)	2 spaces	
Services	1.1 spaces (1)	
Total:	**42.2 spaces**	

****** SEPP (Affordable Housing) applies*

It is proposed to provide a total of 53 spaces including 5 accessible spaces as follows:

Residents	45 spaces
Commercial *****	7 spaces
Service/Car wash	1 space

****** The commercial tenancies have a number of potential uses which would require a higher parking provision than "office space"*

The DCP specifies a requirement of 1 bicycle space per 200m^2 and accordingly, provision will be made for bicycle parking spaces as well as 3 motorcycle spaces in compliance with the DCP requirements.

5. TRAFFIC

A guide to the potential traffic generation of the proposed development is provided by the RMS Development Guidelines (TDT 2013-4) which indicate a generation during the peak periods of:

	AM	PM
Residential	0.19 vtph per apartment	0.15 vtph per apartment
Affordable	0.10 vtph per apartment	0.10 vtph per apartment

Application of this criteria to the development scheme with 45 apartments indicates generations of 8 vtph during the morning and 6 vtph in the afternoon. The 7 commercial parking spaces will generate some 4 vtph and the projected distribution of the total generated movements is as follows:

	AM		PM	
	IN	**OUT**	**IN**	**OUT**
Residential	1	7	6	1
Commercial	4	-	-	4
Total:	**5**	**7**	**6**	**5**

The generated traffic will have a number of alternative routes to approach and depart the site, particularly though the Hume Highway/Bigge Street and Hume Highway/Campbell Street and Elizabeth Drive intersections. It is apparent that the dissipation of such a small vehicle generation will represent an imperceptible outcome (so far as traffic operations and safety are concerned) which is consistent with the planning for urban development in the area.

6. ACCESS, INTERNAL CIRCULATION AND SERVICING

ACCESS

Vehicle access for the site will be provided by a 6.0 metre wide driveway on Forbes Street at the northern site boundary. The proposed access will satisfy the AS 2890.1 (Section 3.2.2) design criteria where there are quite adequate sight distances available.

INTERNAL CIRCULATION

The single lane ramps connecting the basement levels will be subject to a traffic signal system with supplementary traffic mirrors. The traffic signals will automatically revert to and dwell on “green” for ingressing cars. Sensors will detect cars waiting to egress and the lights will change to “red” for ingress and “green” for egress for a pre-set time period.

The design of the carpark will accord with the requirements of AS 2890.1 & 6 and a very flexible access two-way circulation system will be provided through the carpark levels. The aisles, ramps, parking bays and manoeuvring areas have been designed to accord with the AS2890.1.

SERVICING

Garbage will be removed by Council’s collection vehicle standing in the frontage driveway. Delivery/service vehicles visiting the site will be able to stand in the service bay provided.

7. CONCLUSION

The assessment provided in this report confirms that:

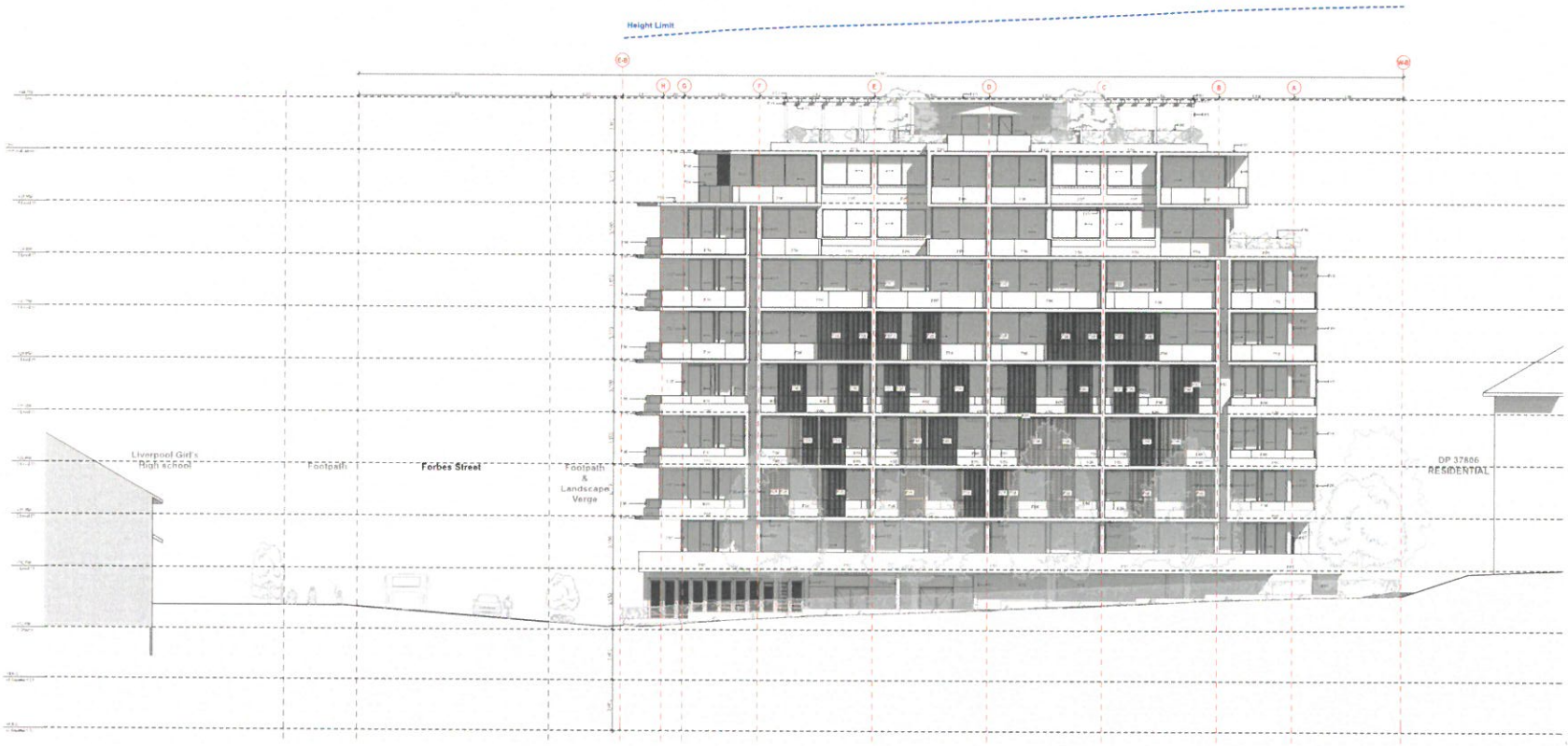
* a suitable and appropriate parking provision will be made in relation to the needs of the development

* the traffic generation of the development will be satisfactorily accommodated on the road system

* the vehicle access, internal circulation and turning arrangements will be quite satisfactory

APPENDIX A

DEVELOPMENT PLANS



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Client
Barua Developers Investors PTY Ltd

Rev	Description	Drawn	Date
P02	Preliminary To Client Review	VA / CJ	16/05/22
P03	Preliminary To Consultant For Coordination	VA / CJ	18/05/23
P04	To Basix Consultant for review	VA / CJ	18/06/06
P05	Full Set To QS Review	VA / CJ	18/06/07
P06	For Coordination	VA / CJ	18/06/07
P07	For Client Review	VA / CJ	18/06/20

ALL LEVELS TO AUSTRALIAN HEIGHT DATUM.

IT IS THE CONTRACTORS RESPONSIBILITY TO CONFIRM ALL MEASUREMENTS ON SITE PRIOR TO COMMENCEMENT OF WORK. DRAWINGS SHOULD NOT BE SCALED. WRITTEN DIMENSIONS ONLY SHOULD BE TAKEN FROM DRAWINGS. ALL DIMENSIONING IS TO SUBSTRATE BRICKWORK, BLOCKWORK UNLESS OTHERWISE NOTED.

Project
41-43 Forbes Street

Title
North Elevation

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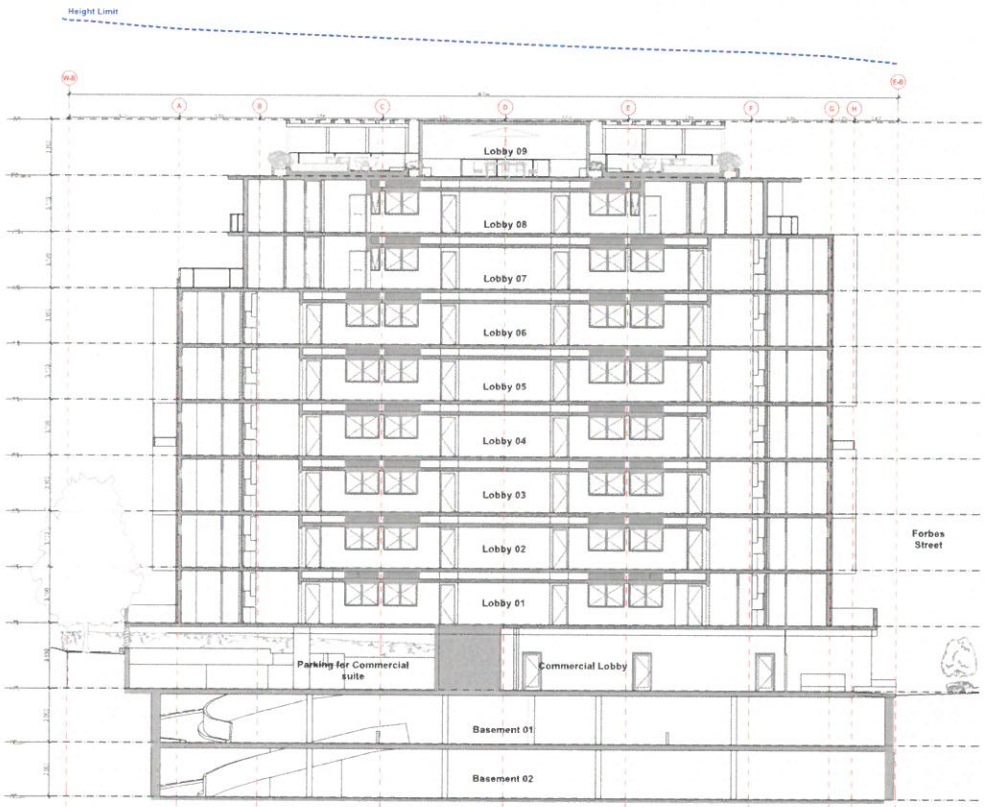
Date	
Drawn/Checked	VA / C.

Dwg No. **A-200-002** Rev. **P07**



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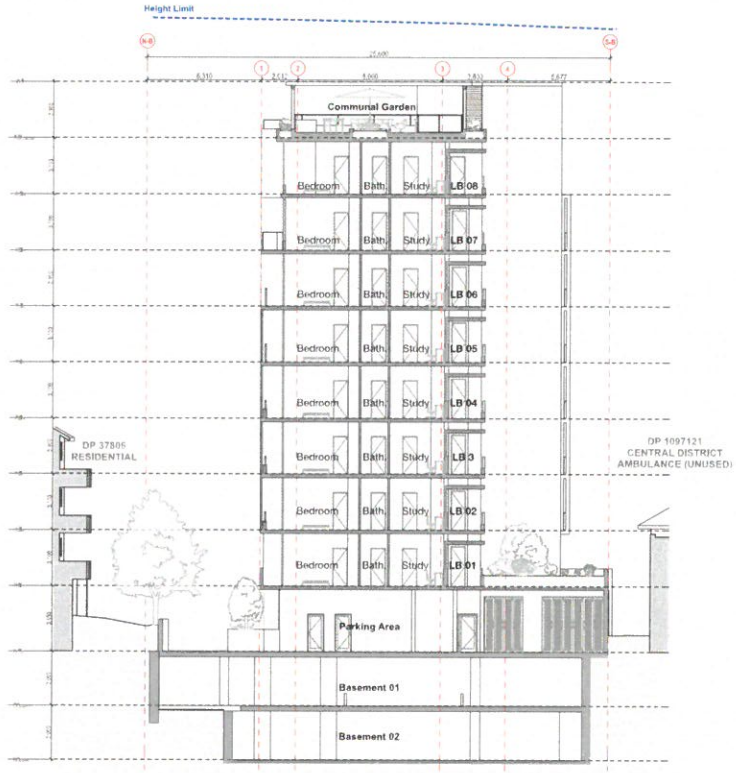

Section BB

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Rev	Description	Drawn	Date
P04	To Hydraulic consultant	VA / CJ	18/06/07
P05	Full Set To QS Review	VA / CJ	18/06/07
P06	For Coordination	VA / CJ	18/06/07
P07	For BCA Approval	VA / CJ	18/06/12
P08	For Planner Review	VA / CJ	
P09	For Client Review	VA / CJ	18/06/20

Project
41-43 Forbes Street

Title
Sections

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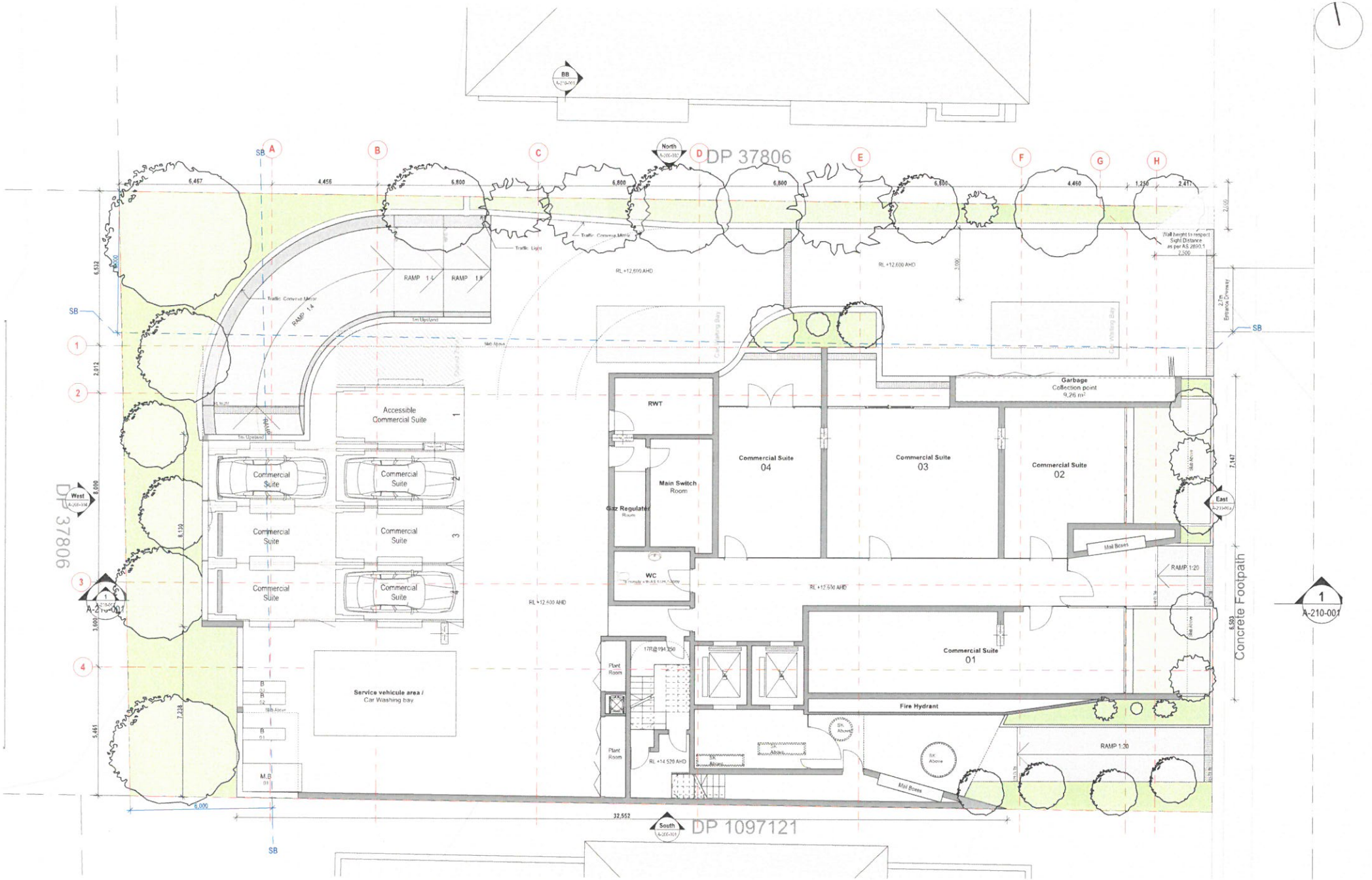
Drawn/Checked	VA / C.

Dwg No. **A-210- P09 001**
Rev.



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Rev	Description	Drawn	Date
P09	For Coordination	VA / CJ	19/06/07
P10	For BCA Approval	VA / CJ	18/06/08
P11	For Traffic Review	VA / CJ	
P12	For Traffic Review	VA / CJ	19/06/15
P13	For Traffic Review	VA / CJ	19/06/19
P14	For Client Review	VA / CJ	19/06/20

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Project
41-43 Forbes Street

Title
Ground Level

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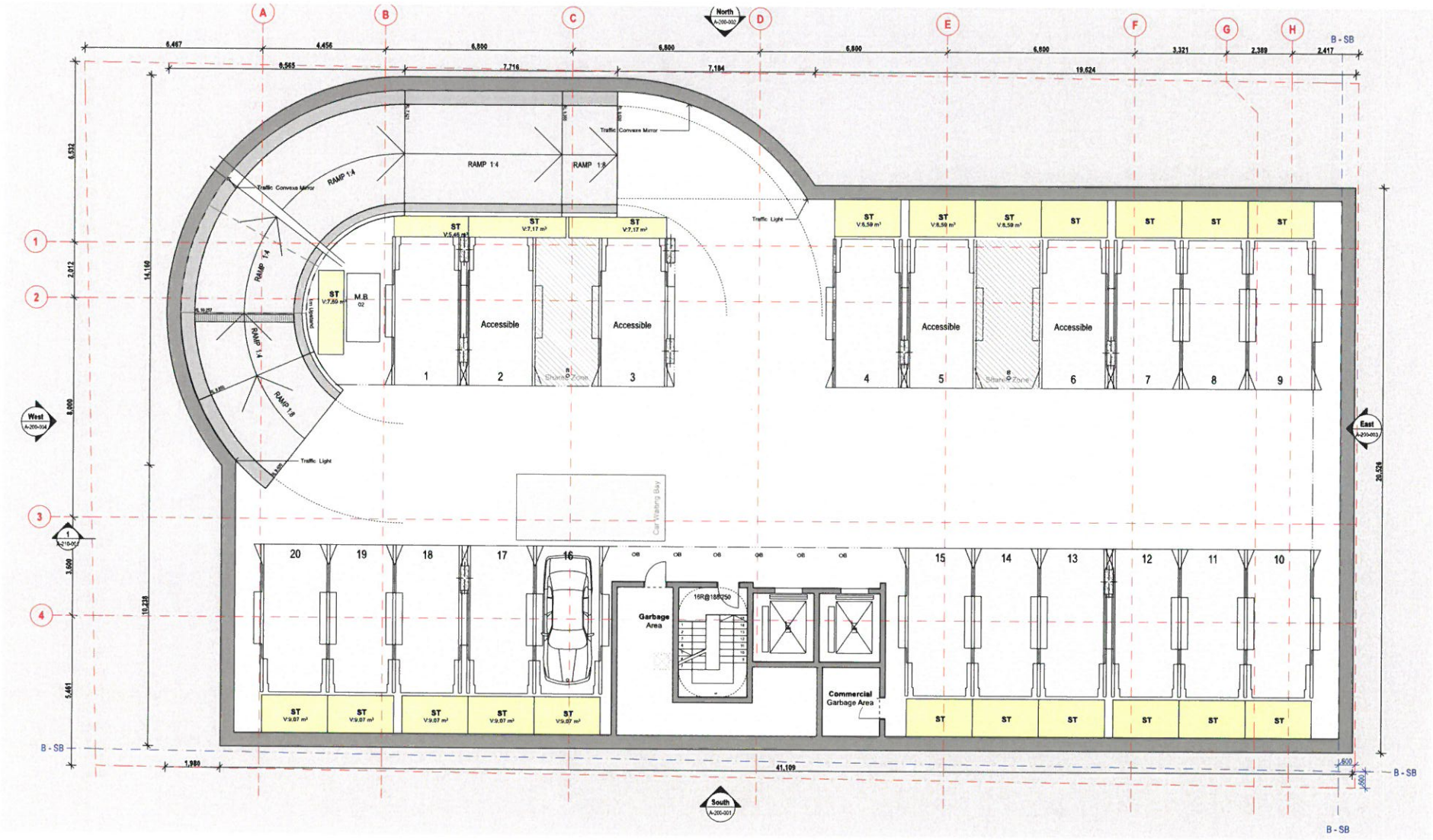
Drawn/Chkd	VA / C.

Dwg No. **A-110- 002** Rev. **P14**



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Client
Clempton Holdings Pty Ltd

Rev	Description	Drawn	Date
A	DA Submission	VA / CJ	18/06/22

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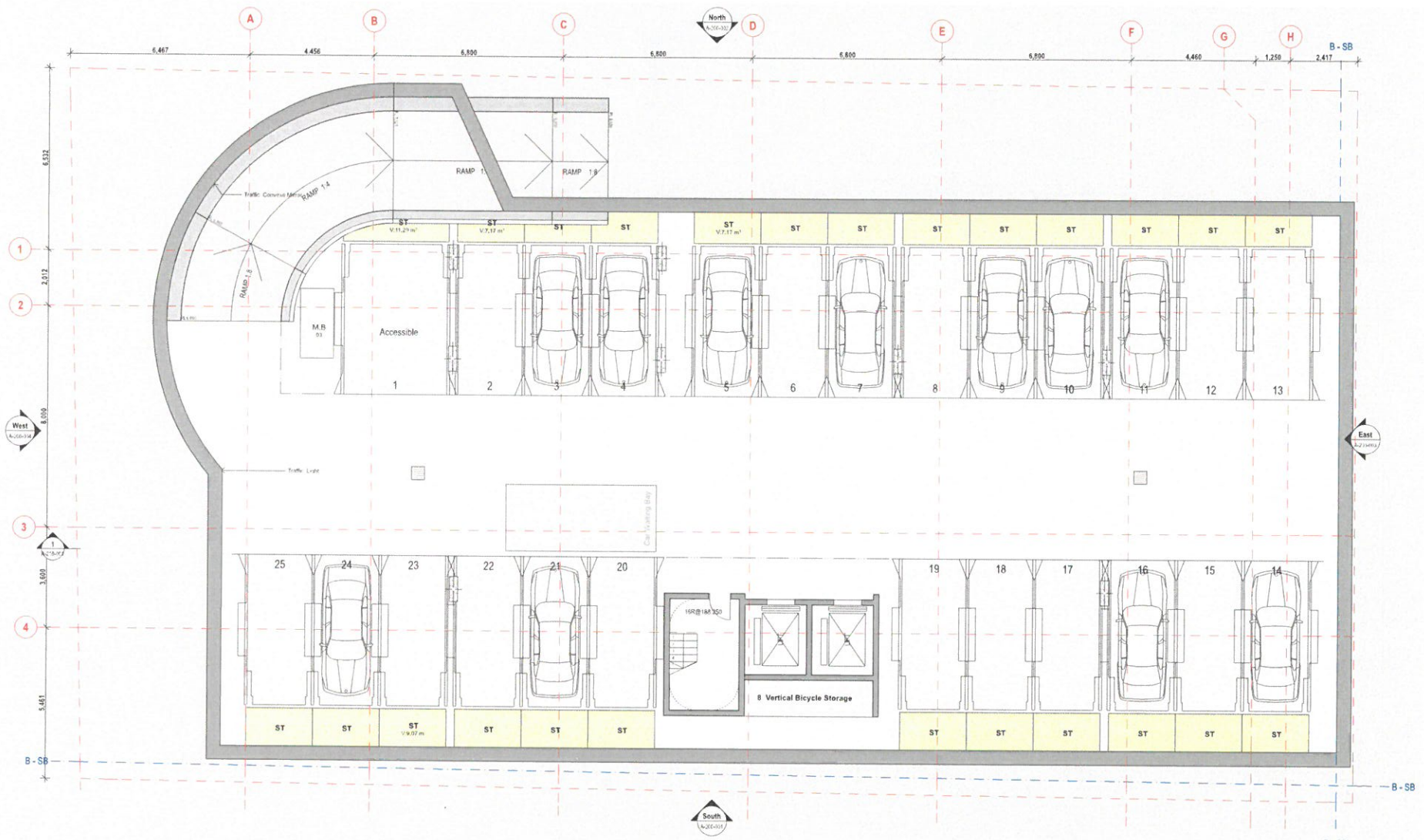
Project
41-43 Forbes Street

Title
Basement 1

Job No.	1803
Scale	1:100 @ A2
Date	18/06/22
Drawn/Checked	VA / CJ

Dwg No. **A-110-001** Rev. **A**



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Client
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Rev	Description	Drawn	Date
P04	Preliminary To BASIX Consultant For Coordination	VA / CJ	19/05/31
P05	Preliminary To Traffic Consultant for review	VA / CJ	19/06/04
P06	To Hydraulic consultant	VA / CJ	19/06/07
P07	Full Set To QS Review	VA / CJ	19/06/07
P08	For Coordination	VA / CJ	19/06/07
P09	For Client Review	VA / CJ	19/06/25

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Project
41-43 Forbes Street

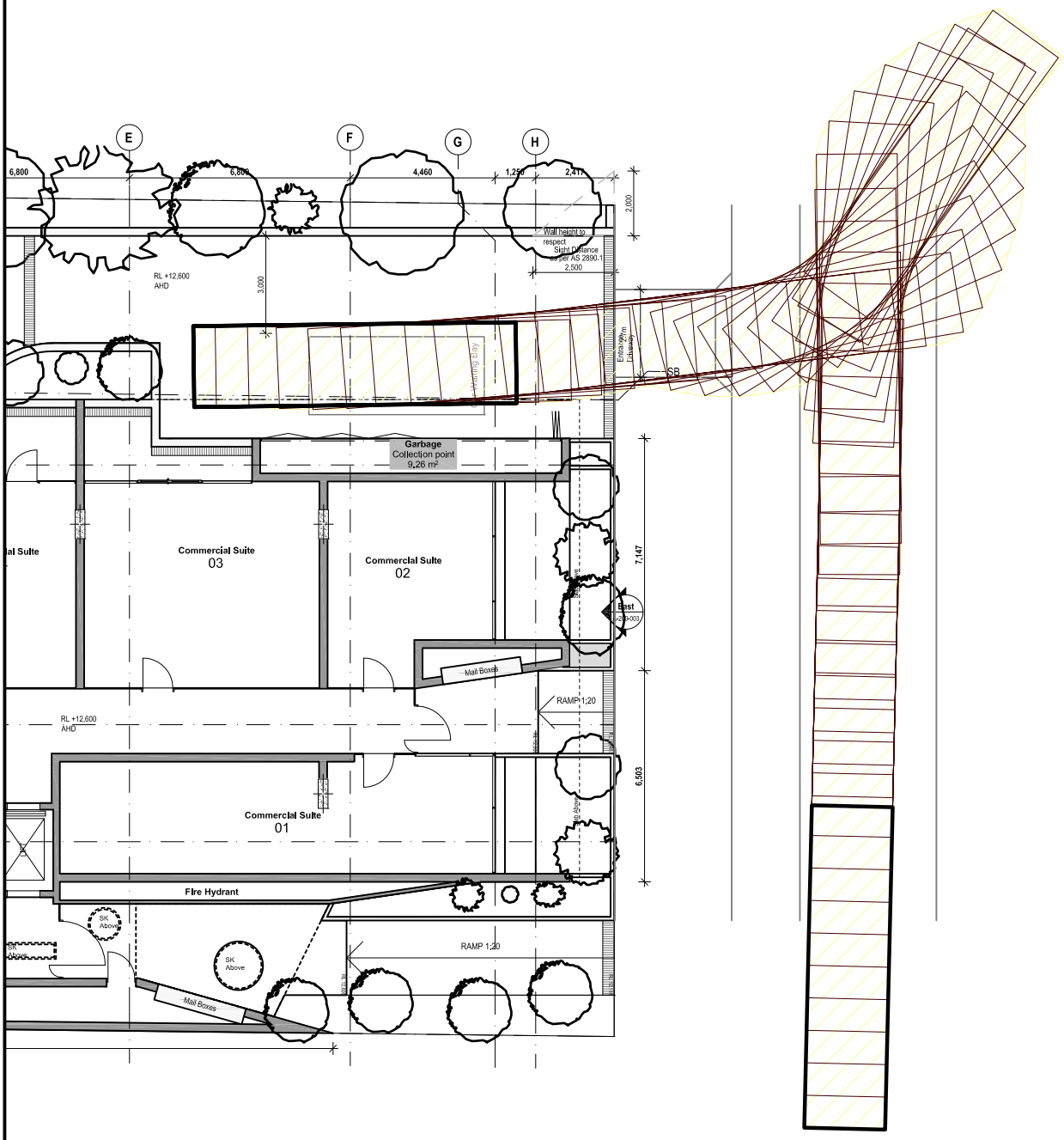
Title
Basement 2

Job No.	1803
Scale	1:100 @ A2
Date	
Drawn/Checked	VA / CJ

Dwg No. A-110- 000
Rev. P09

APPENDIX B

TURNING PATH ASSESSMENT

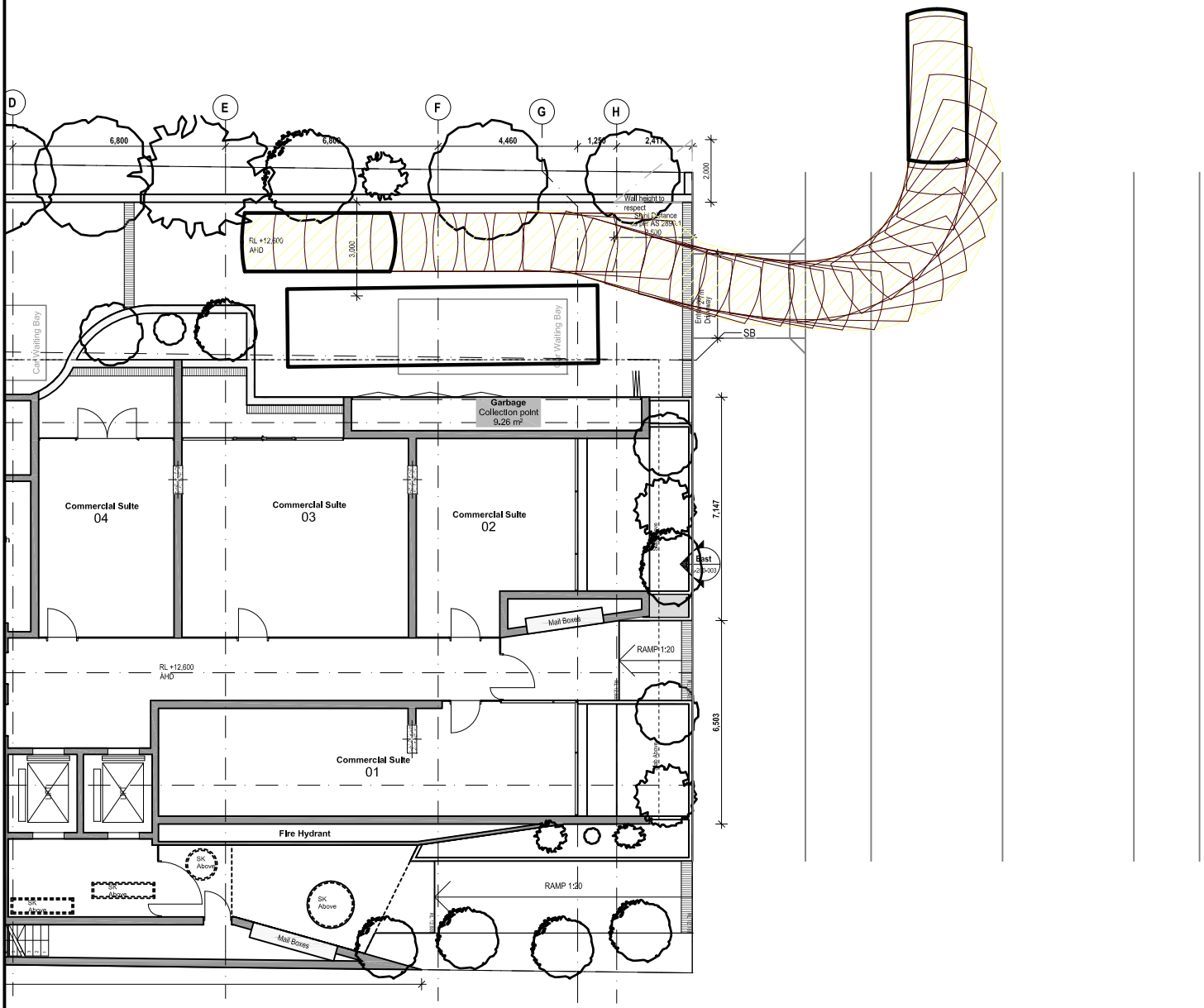


LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2013. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

SWEPT PATH ANALYSIS OF A 9.9m REFUSE VEHICLE ENTERING THE SITE

SP 1



LEGEND

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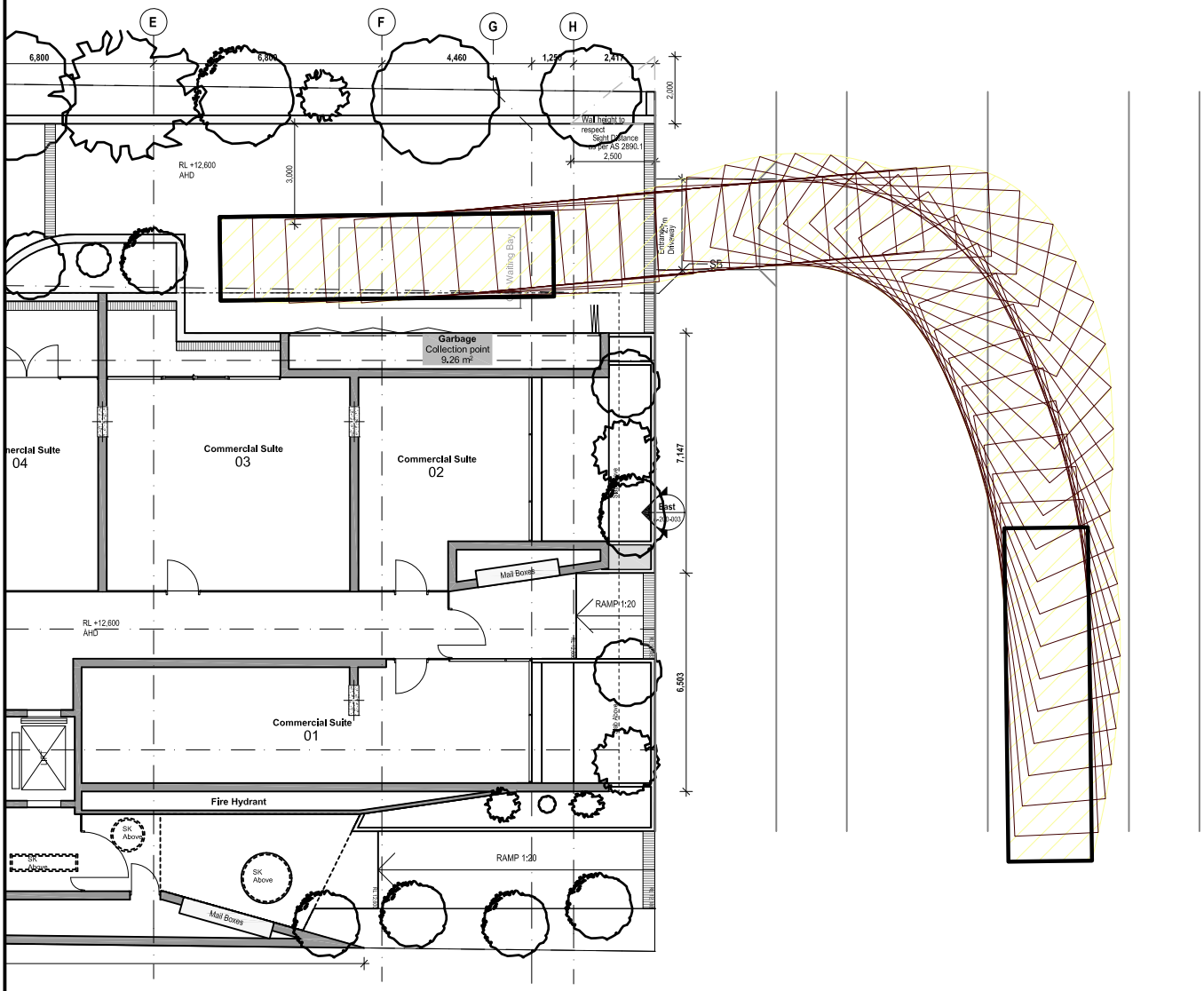
SWEPT PATH ANALYSIS OF AN 85th PERCENTILE VEHICLE EXITING PAST A WAITING 9.9m REFUSE VEHICLE

SP 2



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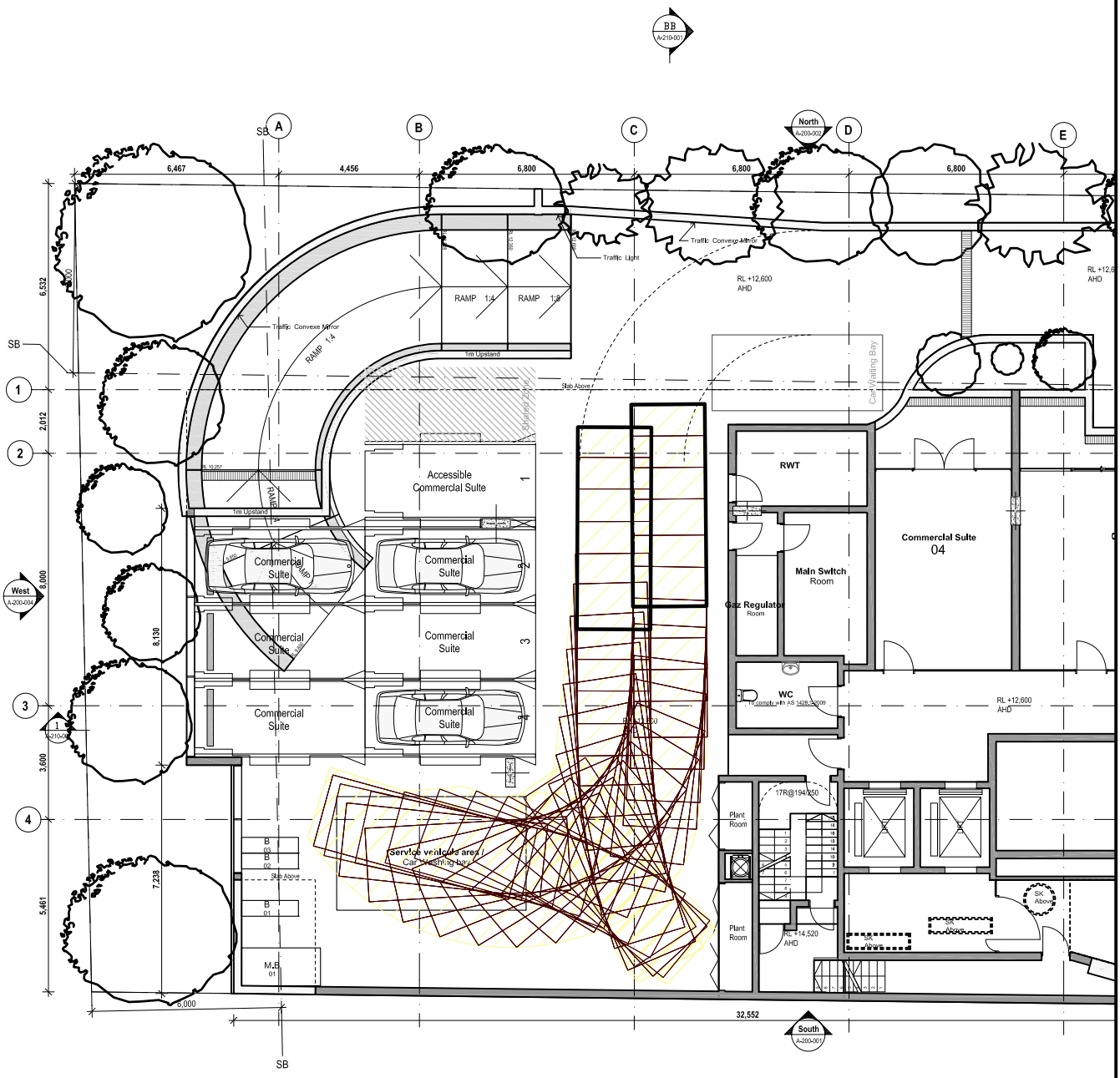
SWEPT PATH ANALYSIS OF A 9.9m REFUSE VEHICLE EXITING THE SITE

SP 3



LEGEND

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SWEPT PATH ANALYSIS OF A 7.0m DELIVERY VEHICLE ENTERING AND EXITING THE SITE

SP 4