

**PROPOSED RESIDENTIAL
DEVELOPMENT
3 – 5 PYMBLE AVENUE, PYMBLE**

***Assessment of Traffic and
Parking Implications***

March 2009

Reference 0910 (B)

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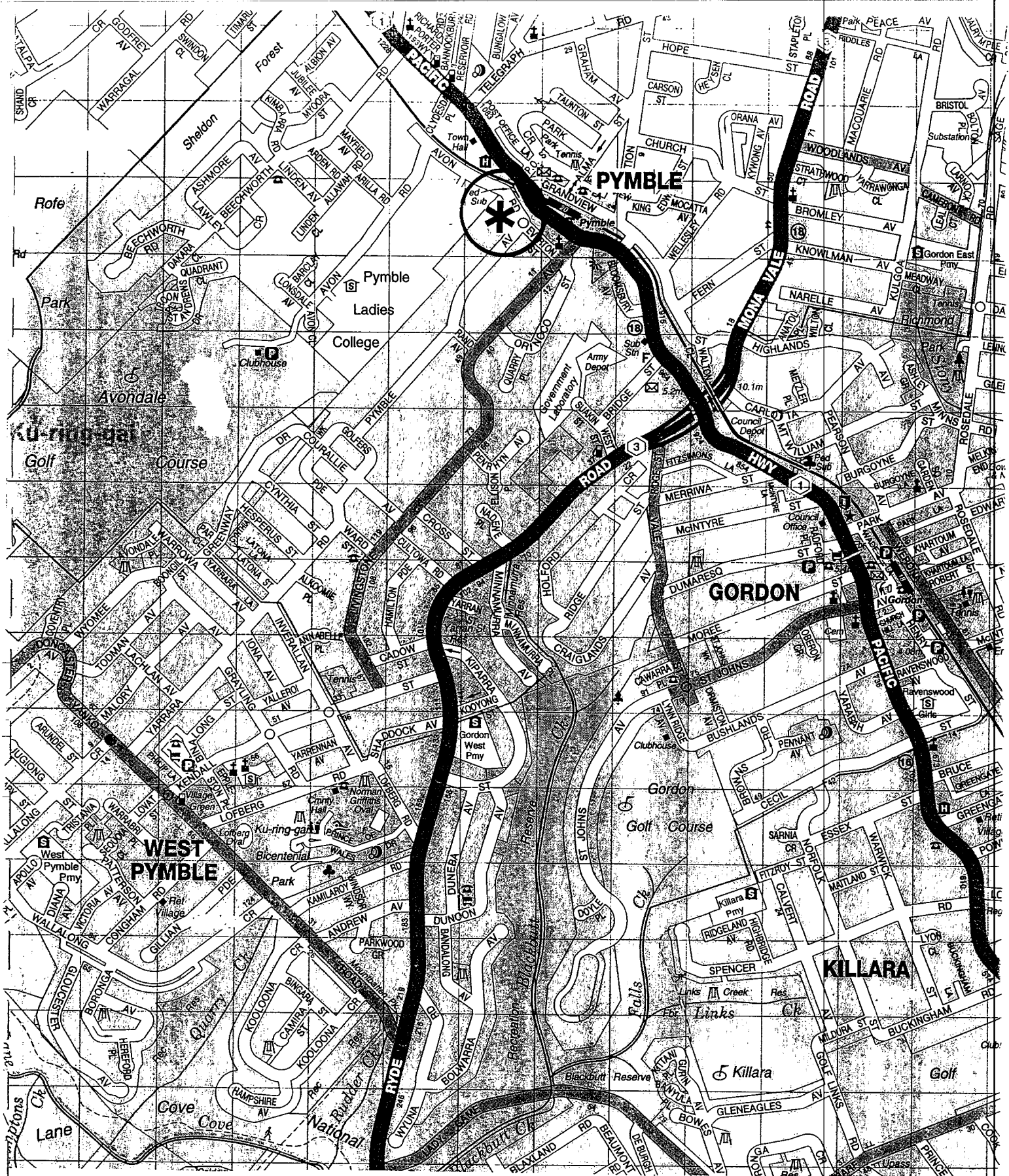
1. INTRODUCTION

This report has been prepared to accompany an Application to the Department of Planning for a residential apartment development on a small site located on the western side of the railway line with frontages to Pymble Avenue at Pymble (Figure 1).

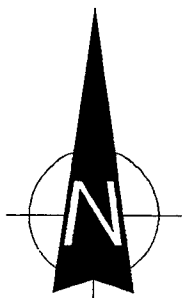
The proximity of the site to the Pymble Centre with its public transport services, shopping, entertainment and other facilities provides the ingredients which are ideal for residential apartment living. The development will be incorporated into a consolidated complex which is subject to a current application to modify a previously proposed development scheme.

The proposed development occupies an allotment with frontage to Pymble Avenue and comprises 25 residential apartments above basement carparking. The purpose of this report is to:

- ▷ describe the site, its context and the development proposal
- ▷ describe the existing road network and traffic conditions in the area
- ▷ 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 rectangular shaped lot with frontage to Pymble Avenue just to the south of Everton Street and to the west of the Pymble Centre and Railway Station.

The site is located just to the west of the Pymble Centre and the immediate surrounding area comprises a mixture of older style single dwellings and more recent medium density home unit/townhouse buildings while particular uses include:

- * the Pymble Centre with its retail and commercial buildings extending along the Pacific Highway and into the area east of the Highway
- * the Pymble Ladies College extending along Avon Road
- * the Avondale Golf Course extending off the end of Avon Road.

2.2 PROPOSED DEVELOPMENT SCHEME

It is proposed to demolish the existing residential dwelling and excavate the site to construct a new building complex over basement carparking. The development will comprise:

4 x one-bedroom apartments

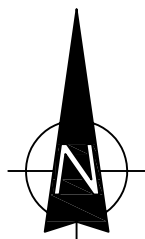
18 x two-bedroom apartments

3 x three-bedroom apartments

Total 25 apartments



LEGEND



SITE

FIG 2

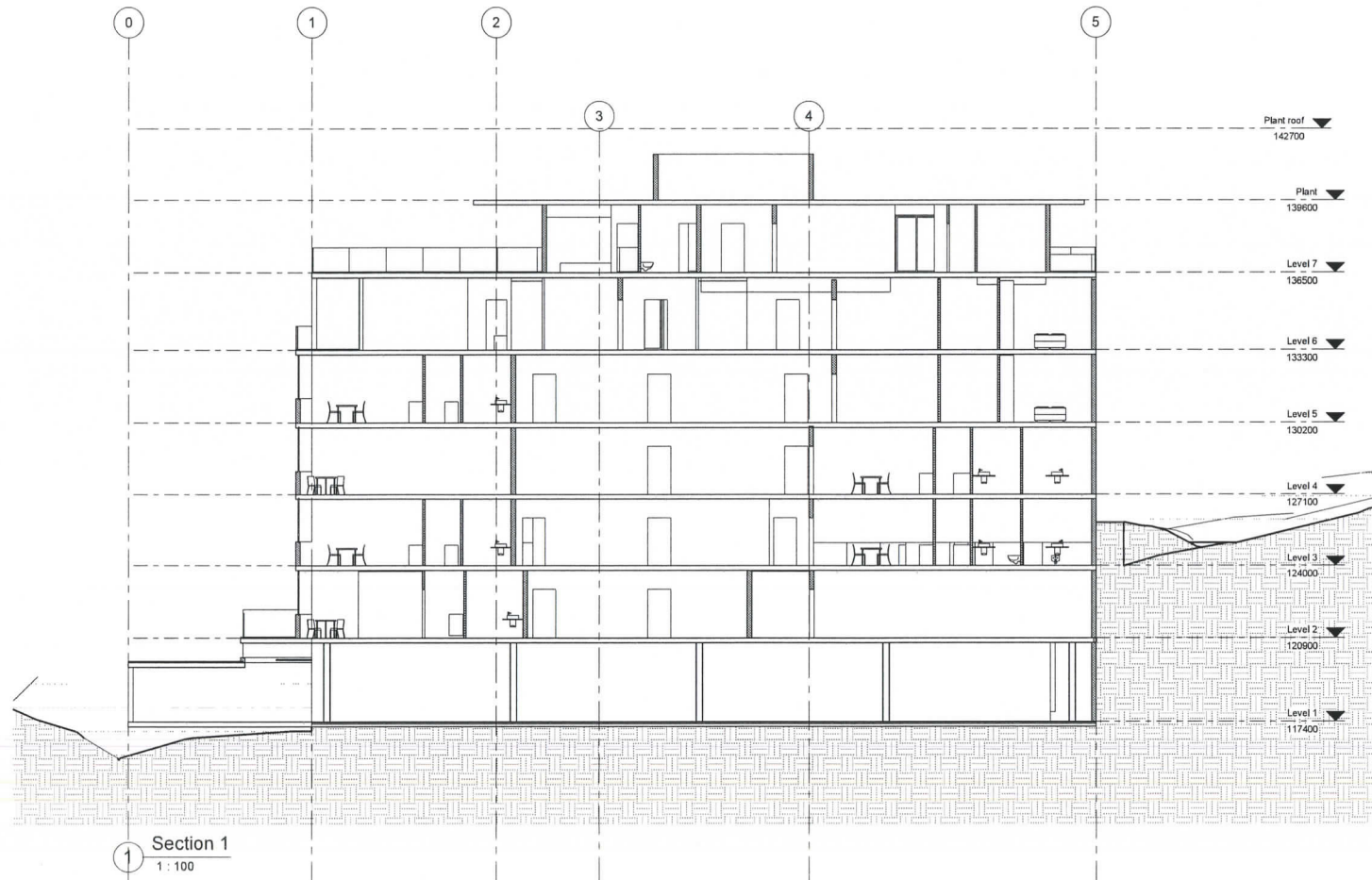
It is proposed to provide a total of 26 parking spaces in a basement level to serve the development with vehicle access provided by connection to the access ramp in the adjacent development linking to Pymble Avenue.

Details of the proposed development are provided on the architectural drawings prepared by Meriton Apartments which accompany the Development Application and are reproduced in part overleaf.

2.3 ADJACENT DEVELOPMENT SCHEME

There is an existing development consent for the large irregular shaped adjoining consolidation of sites and this involved vehicle access onto Avon road and Pymble Avenue. A revised development scheme has been submitted for this site (largely reflecting the approved scheme) which will comprise 143 residential apartments.

This scheme incorporates an access ramp connection to Pymble Avenue which will also provide access for the subject development. Details of the adjacent development are shown on the plans provided in Attachment A.



1 Section 1
1:100

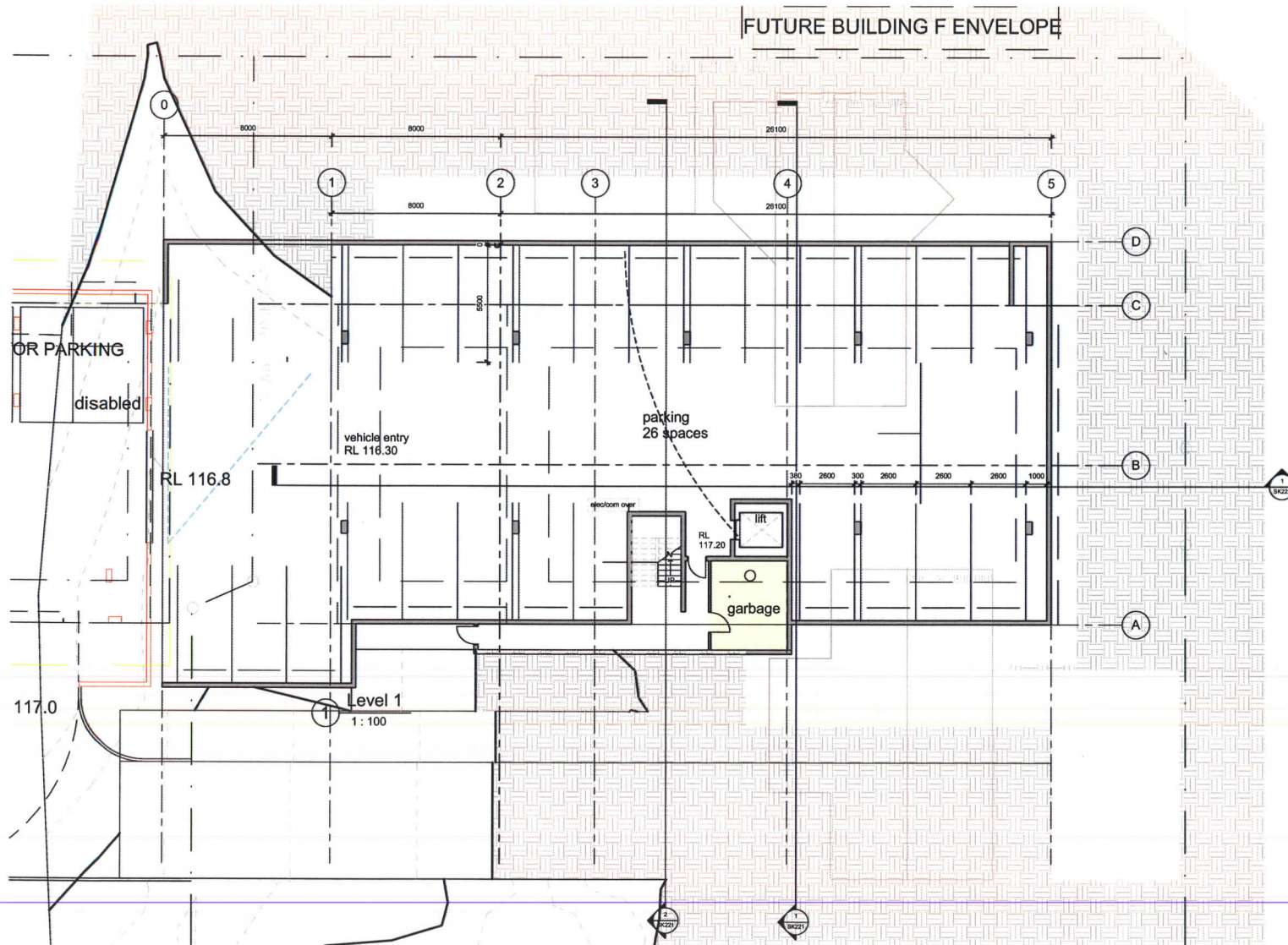
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Date	Description	Rev

CM⁺ Conybeare Morrison International Pty Ltd
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Residential Apartments Building E
 Avon Road Pymble
 Client Meriton

N
 0 2 4 6 8m
 1:100@a1
 Title Sections E/W
 Date 5 Jan 09
 Dwg No 08128 SK222
 Revision



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Date	Description	Rev

3. ROAD NETWORK AND TRAFFIC CONDITIONS

3.1 ROAD NETWORK

The road network in the vicinity of the development site (Figure 3) comprises:

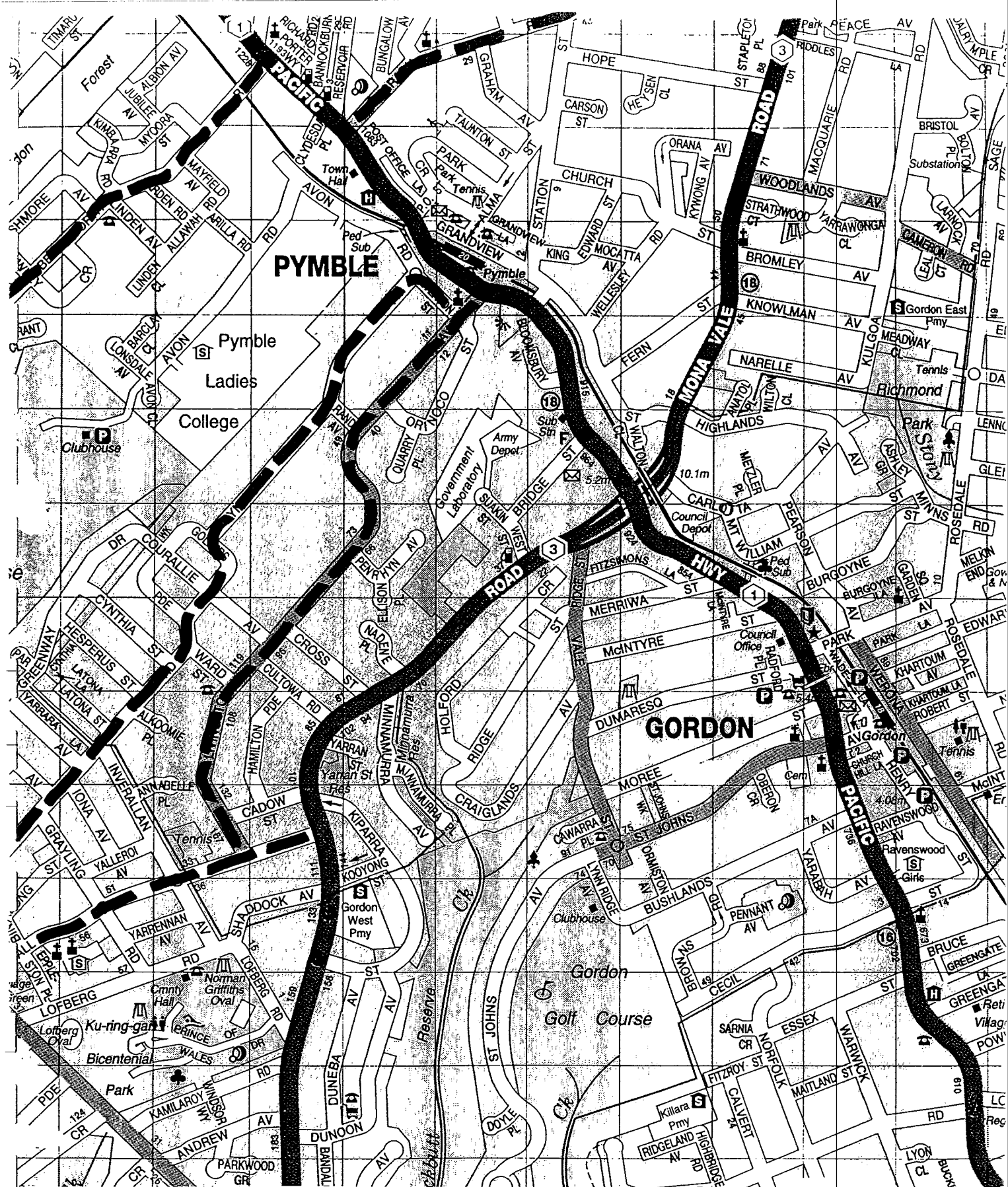
- ▷ *Pacific Highway* – a State Road and arterial route connecting between Sydney and Newcastle
- ▷ *Ryde Road/Mona Vale Road* – a State Road arterial route being part of Metroad 3 which runs across the Central Metropolitan Area
- ▷ *Telegraph Road* – a major collector road route linking between Pacific Highway and Mona Vale Road
- ▷ *Yanko Road* – a major collector road route linking northwards from Ryde Road to Pennant Hills Road
- ▷ *Pymble Avenue/Yarrara Road and Livingstone Road/Kendall Street* – minor collector road routes linking between the Pacific Highway and Yanko Road.

Pymble Avenue is a local access road being generally some 11 metres wide.

3.2 TRAFFIC AND PARKING CONTROLS

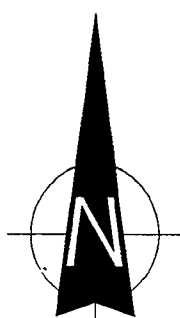
The existing traffic and parking controls in the vicinity of the site (Figure 4) include:

- ▷ the traffic signals at the Pacific Highway and Livingstone Avenue intersection (see Appendix A for details)



LEGEND

-  ARTERIAL
-  SUB-ARTERIAL
-  COLLECTOR



ROAD NETWORK

FIG 3

- ▷ the other traffic signals along the Pacific Highway including the Telegraph Road, Beechworth Road and Ryde Road intersections
- ▷ the roundabout at the Pymble Avenue, Avon Road and Everton Street (see Appendix A for details)
- ▷ the marked footcrossing across Avon Road just to the east of Pymble Avenue at the subway crossing under the Pacific Highway
- ▷ the GIVE WAY signs at the Livingstone Avenue/Everton Street/Orinoco Street intersection
- ▷ the sections of NO STOPPING restrictions along Avon Road
- ▷ the 50 kmph residential speed restriction on the local road system (with 40 kmph school time restriction in Avon Road) and 60 kmph speed restriction on Pacific Highway
- ▷ the speed hump constraints on Avon Road.

3.3 TRAFFIC CONDITIONS

An indication of traffic conditions on the road system serving the site is provided by data published by the Roads and Traffic Authority and traffic surveys undertaken as part of this study. The Roads and Traffic Authority data¹ is expressed in terms of average annual daily traffic (AADT) and the recorded volumes in the vicinity of the site are provided in the following:

	AADT
Pacific Highway at Telegraph Road	63,086
Livingstone Avenue at Pacific Highway	4,744

¹ *Traffic Volume Data for Sydney Region
Roads and Traffic Authority*

FIG 4

Traffic surveys were undertaken at intersections in the vicinity of the site to establish the prevailing traffic movement volumes during the peak traffic periods. Details of the intersection movement volumes are shown in Figure 5 and the operational performance of the access intersections under the prevailing peak traffic conditions has been established by SIDRA traffic modelling. The results of that assessment indicating satisfactory levels of service are provided in the following while the criteria for interpreting the results are provided overleaf.

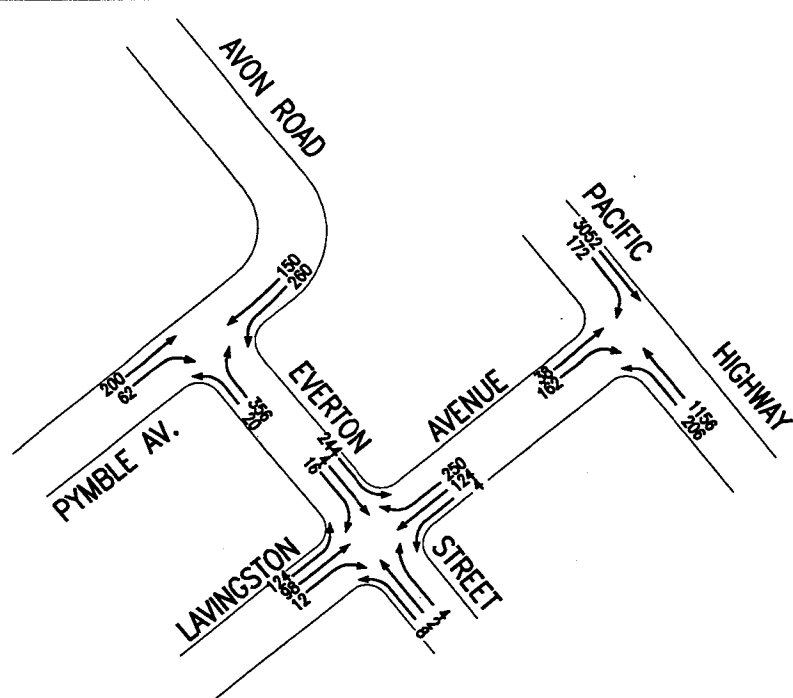
	AM			PM		
	LOS	DS	AVD	LOS	DS	AVD
Pymble Avenue/Avon Road	A	0.26	6.0	A	0.15	4.9
Everton Street/Livingstone Avenue	A	0.43	8.0	A	0.38	6.2
Pacific Highway/ Livingstone Avenue	C	0.91	31.2	D	0.94	45.3

3.4 PUBLIC TRANSPORT SERVICES

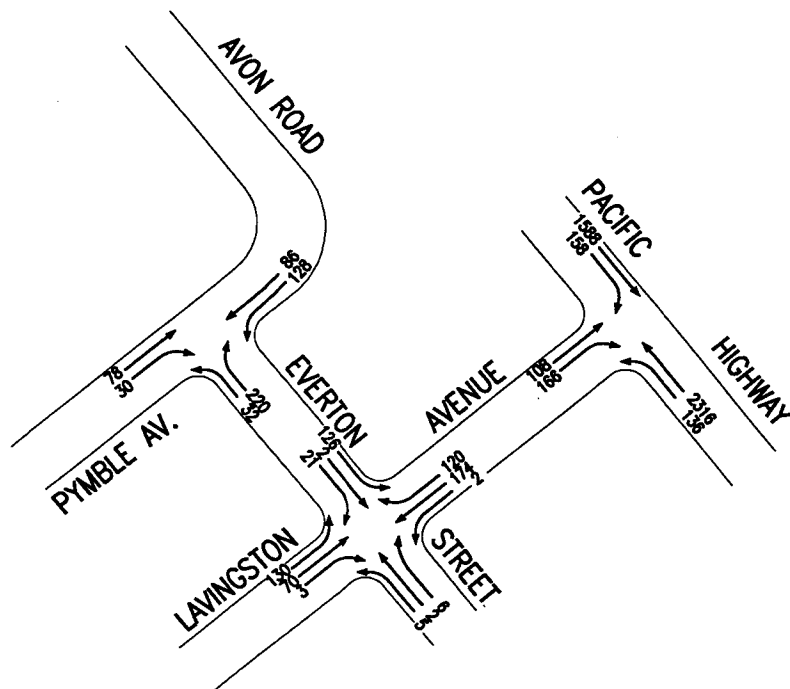
The site is situated some 200 metres from the entrance to Pymble Station with a direct path through a subway (just to the north of the site) and the station provides a high level of rail access to the Sydney rail network.

The site also has good access to some local bus services (Figure 6) with a number of bus routes operated by Shoreline passing along the Pacific Highway and adjacent to the railway station. Forest Coaches operate Routes 195 and 196 along the Highway and Mona Vale Road to Mona Vale.

It is apparent that the site is located within easy walking distance of good public transport services and this will result in a reduced reliance on private car transport for journey to work.

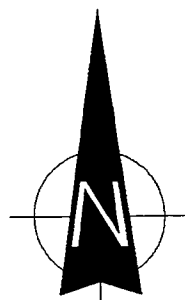


AM PEAK



PM PEAK

LEGEND



PEAK TRAFFIC
FLOWS

FIG 5

Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good	Good
'B'	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
'C'	Satisfactory	Satisfactory but accident study required
'D'	Operating near capacity	Near capacity and Accident Study required
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
'F'	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabouts	Give Way and Stop Signs
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals**² both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

¹ the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs

4. PARKING

The SEPP № 53 document relevant to the proposed development specifies the following:

	Minimum	Maximum
One-bedroom	0.5 space	1.0 space
Two-bedroom	0.8 space	1.6 spaces
Three-bedroom	1.0 space	2.0 spaces
Visitors	1 space per 10	1 space per 5

Application of this criteria to the development indicates the following provision range:

	Minimum	Maximum
4 x one-bedroom	2 spaces	4 spaces
18 x two-bedroom	15 spaces	29 spaces
3 x three-bedroom	3 spaces	6 spaces
Visitors	3 spaces	5 spaces
Total	23 spaces	44 spaces

It is proposed to provide a total of 26 spaces in the basement in satisfaction of the SEPP requirements and 1 space will be suitable for disabled drivers. Provision will be made to store bicycles in the basement level comprising 9 spaces for resident bicycles and 3 spaces for visitor bicycles.

5. ACCESS

The vehicle access to/from Pymble Avenue will be by way of connecting to the new ramp/roadway constructed as part of the adjacent development.

This access connection will be positioned in a location where suitable sight distances will be available and the design of the access will comply with AS 2890.1.

6. TRAFFIC

Traffic generation criteria in relation to 'high density' residential development is specified in the RTA Development Guidelines³. This criteria was established by survey and assessment of some 20 existing buildings located as cross section of the inner metropolitan area. The sites were generally near railway stations (eg Chatswood, Artarmon) while a number were not in close proximity to rail services or 'line haul' bus services (eg Brighton-Le-Sands).

The great majority of sites involved in the RTA study comprised two and three-bedroom apartments (ie only 7% were one-bedroom) and the parking supply was generally 'unconstrained'. The derived traffic generation criteria for the RTA publication (for non-CBD sites) was 0.29 vtph in the morning and afternoon peak periods.

The development site currently comprises 1 large single residence and the RTA Guidelines specify a relative traffic generation rate of 0.85 vtph in the peak periods.

Application of the RTA criteria to the proposed 25 apartments indicates a consequential peak traffic generation of some 7 vtph. Thus, the additional traffic generation resultant to the proposed development would be some 6 vtph. The projected traffic movements at the proposed vehicle access, including the assessed generation of the adjoining development, would be:

	AM		PM	
	IN	OUT	IN	OUT
Proposed development	1	6	6	1
Adjoining development	2	6	6	2
Total	3	12	12	3

³

*Guide to Traffic Generating Developments
Roads and Traffic Authority of NSW*

The operational performance of the access intersections with the total completion of development has been modelled using SIDRA. The results of that assessment shown in the following indicate that the impact on intersections in the area is imperceptible and the existing level of service will be maintained.

	AM			PM		
	LOS	DS	AVD	LOS	DS	AVD
Pymble Avenue/Avon Road	A	0.33	7.4	A	0.28	5.8
Everton Street/Livingstone Avenue	A	0.44	8.1	A	0.38	6.4
Pacific Highway/ Livingstone Avenue	C	0.91	32	D	0.94	45.1

Due to the relatively low level of the 'additional traffic' consequential to the development there will be no perceptible change to the operational performance of the Pacific Highway/Livingstone Avenue or Everton Street/Livingstone Avenue intersections. The operational performance of these intersections does not reflect the short intermittent occurrences of queuing which result from external factors (eg school children using the pedestrian crossing on Avon Road to the west). These occurrences are not indicative of the operational performance of the intersections while the queuing (northbound in the morning and southbound in the afternoon) does not reflect the principal generation movements of the development (ie southbound in the morning and northbound in the afternoon).

7. INTERNAL CIRCULATION AND SERVICING

Internal Circulation

The internal circulation design provisions including ramp grade, aisle width, bay dimensions etc accord with the requirements of AS 2890.1 and these generous provisions will ensure easy access without any undue conflict.

Servicing

Refuse will be transferred internally from Building E to the central collection area in Building A on collection days.

Refuse will be removed by a Council's garbage service from the basement while small vehicles (service personnel, couriers etc) will be able to utilise the visitor spaces in the basement. Occasional larger service vehicles (eg furniture vans) will be reliant on use of the available on-street kerbspace as is normal for small residential apartment developments of this nature.

Details of a turning path assessment for access by Council's refuse vehicle are provided in Appendix B indicating a satisfactory provision.

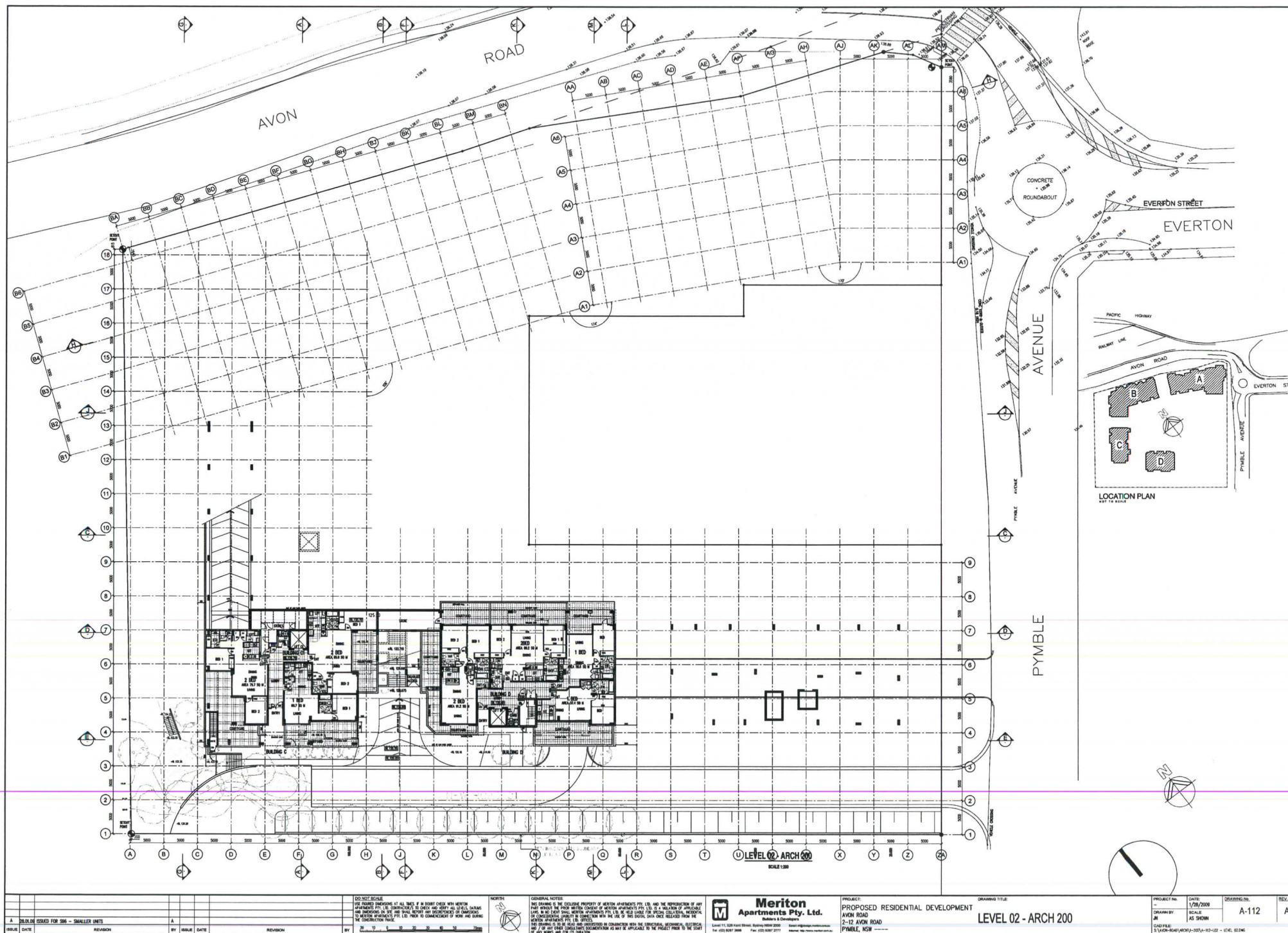
8. CONCLUSION

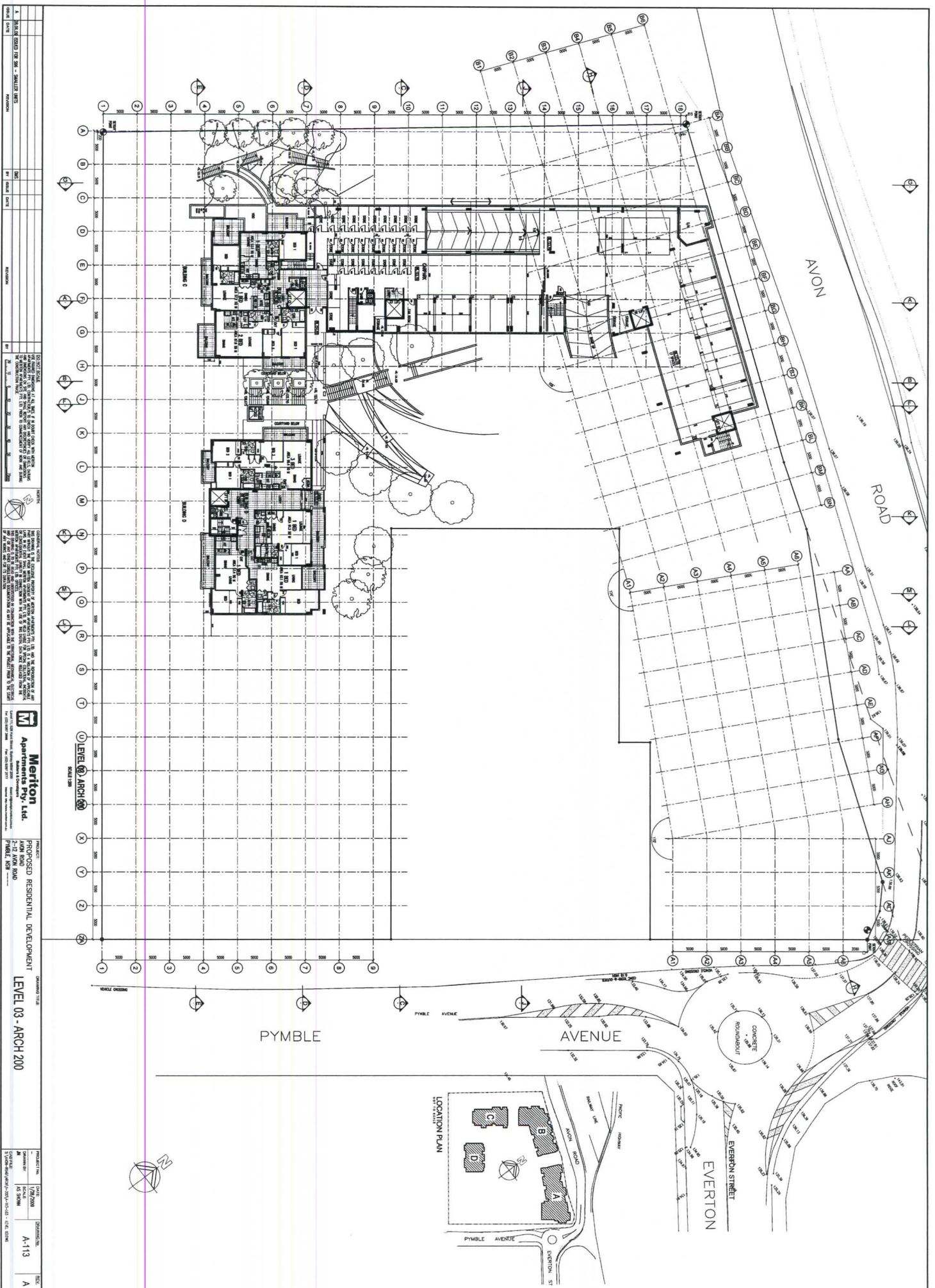
The proposed development scheme represents a contemporary apartment complex which is compatible with the attributes of the area. This assessment has concluded that:

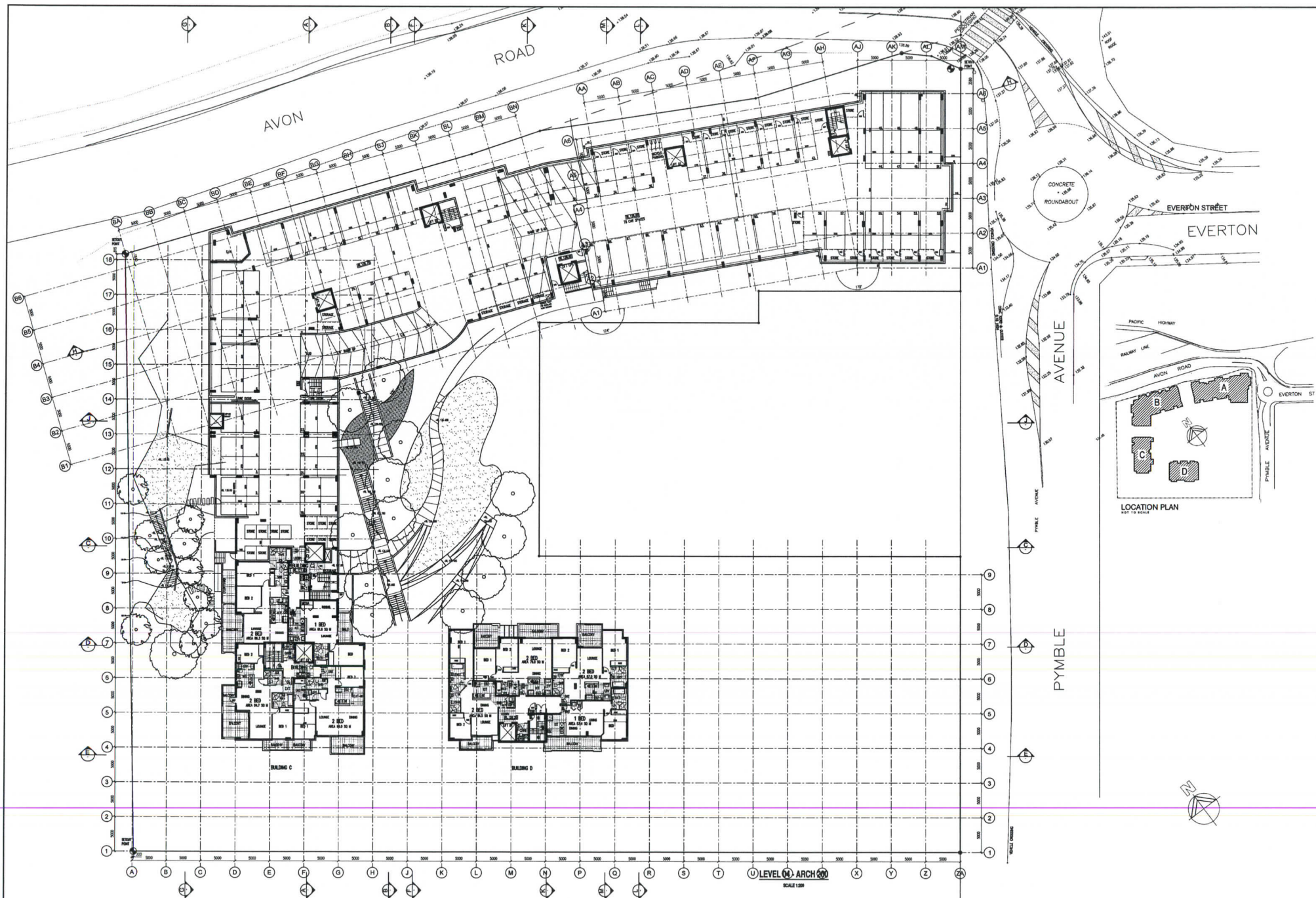
- ▷ the development will not present any unacceptable traffic implications
- ▷ the proposed parking provision will be suitable and appropriate for the needs of the development given the particular considerations
- ▷ the proposed internal circulation, parking and servicing arrangements will be satisfactory
- ▷ the proposed vehicle access arrangements will be acceptable.

APPENDIX A

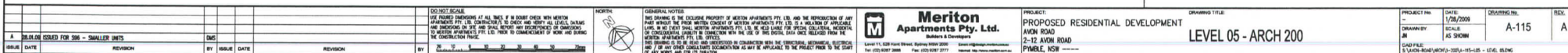
PLANS FOR ADJOINING DEVELOPMENT





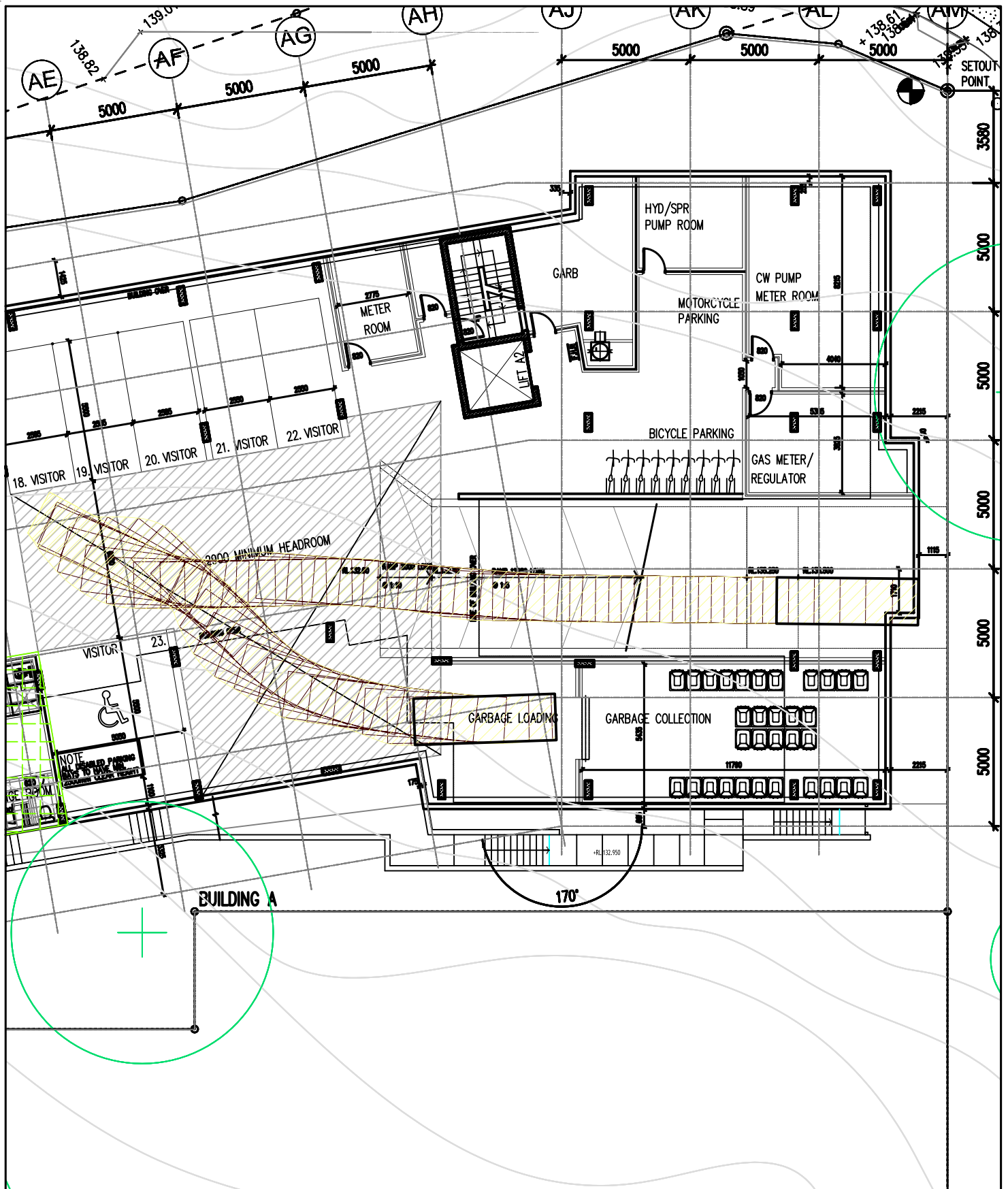


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APPENDIX B

TURNING PATH ASSESSMENT



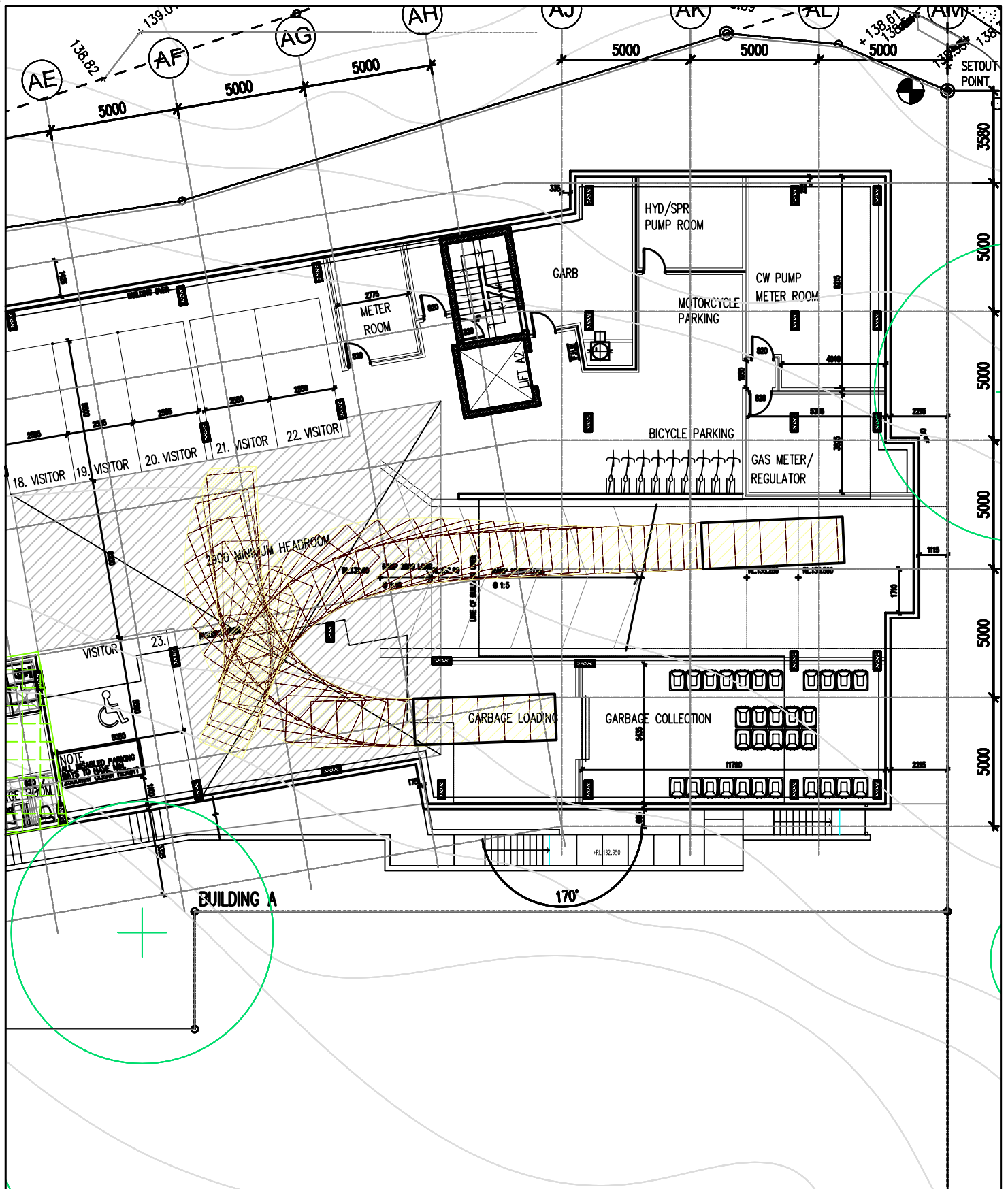
LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2000. 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 KU-RING-GAI REFUSE VEHICLE ENTERING THE SITE

SP 1



LEGEND

This drawing has been prepared using vehicle modelling computer software AutoTrack V5.00a in conjunction with AutoCAD 2000. 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 KU-RING-GAI REFUSE
VEHICLE EXITING THE SITE**

SP 2