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appendix 11

Traffic Report

AUSTRALIAN SUPER DEVELOPMENTS

REPORT ON TRAFFIC AND PARKING ASPECTS OF AMENDED STAGE 2 DEVELOPMENT OF PENNISULA GARDENS RETIREMENT VILLAGE, CABBAGE TREE ROAD, BAYVIEW

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1. INTRODUCTION

1.1. Colston Budd Hunt & Kafes Pty Ltd has been commissioned to prepare a report on the traffic and parking implications of a proposed Section 96 application to modify the consent for the construction of Stage 2 of Peninsula Gardens retirement village at Cabbage Tree Road, Bayview. This report has been prepared in accordance with the Expert Witness Practice Direction.

1.2. The original consent granted in 1982 was for the construction of 185 self care units and 40 hostel units. Stage 1 comprised 73 self care units and 40 hostel units and was constructed on the eastern part of the site. Access to the site is via Cabbage Tree Road with parking provided in separate garages and at grade off the internal service road.

1.3. Stage 2 was for 112 self care units on the western part of the site. With this Section 96 application ASD seeks to make some minor modifications to the approved 'Stage 2'development. These minor changes involve:

- Small extensions to balconies;
- Conversion of areas previously designated for storage into habitable floor area;
- Alteration of the arrangement of upper and lower floor areas on two of the unit clusters;
- These changes are accompanied by a reduction in the total number of self-care units to be provided in Stage 2 from the 112 permitted by the development consent, to 73 self care units

1.4. This reduction in the total number of units is achieved through rearrangement of internal walls of the approved buildings to replace one-bedroom units with two

bedroom units. Thus the proposed Section 96 application for Stage 2 is for a less intensive use of the site than the current approval.

1.5. This report examines the traffic and parking implications of the development through the following chapters:-

- Chapter 2 - Describing the existing situation; and
- Chapter 3 - Assessing the implications of the proposed development.

2. THE EXISTING SITUATION

2.1. Peninsula Gardens Retirement Village is located on the southern side of Cabbage Tree Road, Bayview as shown in Figure 1. Stage 1 of the development has been operational for a number of years. Access to the site is provided from Cabbage Tree Road with parking provided in separate garages and at grade off the internal service road. Adjacent land uses comprise residential development and bushland.

2.2. Cabbage Tree Road functions as a collector road link in the local road network. Along the frontage of the site, Cabbage Tree Road generally has one traffic and one parking lane in each direction. Cabbage Tree Road provides direct access to developments (generally residential) that front it.

2.3. Samuel Street provides a link between Cabbage Tree Road and Mona Vale Road and as such functions as a collector road. It generally has one traffic and one parking lane in each direction and provides direct access to developments that front it. The intersection of Samuel Street and Cabbage Tree Road is an unsignalised T-intersection with Cabbage Tree Road (west) the stem of the Tee.

2.4. Minkara Road forms part of a link between Bayview and Church Point. It generally has one traffic lane in each direction with unsealed shoulders. The intersection of Minkara Road and Cabbage Tree Road is an unsignalised T-intersection with Minkara Road the stem of the Tee

2.5. In order to establish traffic conditions in the vicinity of the site, traffic counts were undertaken during morning and afternoon peak periods at the following intersections:-

- Cabbage Tree Road/Samuel Street;

- Cabbage Tree Road/Old Samuel Street;
- Cabbage Tree Road/Minkara Road; and
- Cabbage Tree Road/Site Access.

2.6. The surveyed peak flows are set out on Figures 2 and 3 and summarised in Table 2.1.

Table 2.1 : Summary of Existing Two-Way (Sum of Both Directions) Traffic Flows (vph)

Road/Location	Morning	Afternoon
Cabbage Tree Road		
- west of Samuel Street	350	320
- north of Samuel Street	455	470
- east of Minkara Road	375	340
- west of Minkara Road	295	285
Samuel Street		
- south of Cabbage Tree Road	365	350
Minkara Road		
- north of Cabbage Tree Road	250	215
Site Access	22	12

2.7 The results in Table 2.1 reveal the following:-

- Traffic flows on Cabbage Tree Road vary from some 280 to 470 vehicles per hour (two-way) in the peak periods. Traffic flows were highest north of Samuel Street;
- Traffic flows on Samuel Street were some 350 to 400 vehicles per hour (two way) during the peak periods;
- Traffic flows on Minkara Road were some 200 to 250 vehicles per hour (two way) in the peak periods; and
- The site generated some 10 to 25 vehicles per hour (two way) in the peak periods.

2.8 The capacity of the road network is generally determined by the ability of its intersections to cater for peak period traffic flows. The surveyed intersections have been analysed using the INTANAL program. INTANAL produces a number of measures of intersection operations. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.

2.9 Based on average delay per vehicle, INTANAL estimates the following levels of service (LOS):-

- For Traffic Signals, the average delay per vehicle in seconds is calculated as Delay/(All Vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:-

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other Control Mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

- For Give Way and Stop Signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:-

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other Control Mode.

>70	=	"F"	Unsatisfactory and requires other Control Mode

2.10 It should be noted that for Roundabouts, Give Way and Stop Signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

2.11 The INTANAL analysis found that the intersections along Cabbage Tree Road in the vicinity of the site (including the site access) are all operating with average delays per vehicle of less than 15 seconds in both peak periods. This represents LOS A/B, a good level of intersection operation.

2.12 As well as considering the operation of the road network in terms of road capacity, the impact on amenity should also be considered.

2.13 The definition of the impact on residential amenity by varying levels of traffic flow is extremely complex. Perceptions of impact vary greatly from person to person. Traffic flows that one person may find perfectly acceptable may be considered excessive by another. Impact is affected by the nature of the street and the area in which it is located, its width, building setbacks, grades, etc. as well as by the speed of traffic and the mix of cars and heavy vehicles.

2.14 The Roads and Traffic Authority has undertaken considerable research into appropriate environmental capacity performance standards on residential streets. Their "Guide to Traffic Generating Developments" defines the following environmental capacity performance standards for local residential streets and collector roads:-

- Local Roads
  - Environmental goal - 200 vehicles per hour in the peak hour;
  - Maximum flow - 300 vehicles per hour in the peak hour

- Collector Roads
  - Environmental goal - 300 vehicles per hour in the peak hour;
  - Maximum flow - 500 vehicles per hour in the peak hour

2.15 Table 2.1 shows that Cabbage Tree Road and Samuel Street are carrying traffic volumes lower than the maximum environmental flow for collector roads.

3 IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1. Stage 2 of Peninsula Gardens has consent for 112 self care units. A Section 96 application is being lodged to amend this to 73 units. Access to the amended Stage 2 scheme will be similar to that previously approved. Internal roads will follow similar routes to that in the approved scheme with Stage 2 connecting into the main access road to Cabbage Tree Road. One parking space will be provided for each unit (either in a garage or at grade near the unit) with additional parking provided at grade off the internal service roads. The self care units will generally be two bedroom units.

3.2. This chapter examines the traffic and parking implications of the development through the following sections:-

- Parking provision;
- Access and internal layout;
- External implications; and
- Summary.

Parking Provision

3.3. The units will be developed under State Environmental Planning Policy No. 5 (SEPP 5). SEPP 5 has the following requirements in relation to parking provision:-

"14. *The consent authority must not refuse consent to a development application under this part on the grounds of:-*

(d) ***Parking****: if at least the following is provided:*

(i) in the case of a hostel or residential care facility, at least:

- *1 parking space for each 10 beds in the hostel or residential care facility, and*
- *1 parking space for each 2 persons to be employed in connection with the development and on duty at any one time, and*
- *1 parking space suitable for an ambulance, and*

(ii) in the case of dwellings, at least

- *0.5 car spaces for each bedroom where the development application is made by a person other than the Department of Housing or a local government or community housing provider,*

  or
- *1 car space for each 5 dwellings where the development application is made by, or is made by a person jointly with, the Department of Housing or a local government or community housing provider; or*

(e) ***Visitor parking****: if, in the case of development that comprises less than 8 dwellings and is not situated on a clearway, no visitor parking is provided within the development*

3.4. Pittwater Council's parking code (DCP2) recommends that resident funded retirement units provide two spaces per three units plus one visitor space per five units.

3.5. The application of the SEPP 5 requirements would result in a provision of 73 parking spaces. Application of the rates recommended by Council would result in a provision of 49 resident spaces and 15 visitor spaces.

3.6. It is proposed to provide one resident car space per unit (either in a garage or at grade near the unit) and 11 visitor spaces. This results in a total parking provision of 84 parking spaces.

3.7. The proposed provision of some 84 spaces meets the requirements of both SEPP 5 and Pittwater Council.

Access and Internal Layout

3.8. It is noted that the approved road layout for Stage 2 was a concept design which would have been subject to more detailed design. The internal road layout for the approved Stage 2 and amended Stage 2 are similar in terms of alignment and width. For the amended Stage 2 roads are a minimum of three metres wide with passing opportunities provided at regular intervals. These dimensions are similar to those on the constructed Stage 1 part of the site. The grades of the internal roads are generally a maximum of 1in 5 (20%) with some short sections 1 in 4 (25%). These grades are comparable to those on the constructed Stage 1 part of the site.

3.9. Resident car parking will be provided in garages attached to the units or at grade off the internal access roads. Visitor parking will be provided at grade, off the internal access roads. All garages and car spaces will be a minimum of 3.2 metres wide by 6.0 metres long. These dimensions comply with the requirements of SEPP 5.

External Implications

3.10. The additional traffic generated by Stage 2 has been estimated based on surveys of existing traffic generation of the site. These surveys found that the existing 73 self care units have a peak generation of some 10 to 25 vehicles per hour (two way). This is the equivalent of a generation rate of 0.15 to 0.35 vehicles per hour (two way) per unit. This is conservatively high as this does not take into account traffic generated by the 40 hostel units.

3.11. Applying this rate to the current approval for Stage 2 (112 units) gives a generation in the range 15 to 40 vehicles per hour two-way (arrivals plus departures) during the morning and afternoon peak periods. Applying this rates for the amended Stage 2 development (73 units) gives a generation of 10 to 25 vehicles per hour (two-way). As would be expected the amended Stage 2 development with less units, generates 5 to 15 vehicles per hour (two-way) less than the approved Stage 2 development.

3.12. The additional traffic generated by the both the approved Stage 2 and the amended Stage 2 development have been assigned to the road network. The results are displayed on Figures 2 and 3, and summarised in Table 3.1. This assignment represents a conservative assessment as traffic at the high end of the likely generation has been assigned to the surrounding road network.

Table 3.1 : Summary of Existing Two-Way Traffic Flows with Development Traffic

Road/Location	Morning		Afternoon	
	Existing	With Dev*	Existing	With Dev*
Cabbage Tree Road				
- west of Samuel Street	350	+32/+18	320	+32/+18
- north of Samuel Street	455	+19/+11	470	+22/+12
- east of Minkara Road	375	+8/+3	340	+8/+3
- west of Minkara Road	295	+5/+1	285	+4/+2
Samuel Street				
- south of Cabbage Tree Road	365	+13/+7	350	+10/+6
Minkara Road				
- north of Cabbage Tree Road	250	+3/+2	215	+4/+1
Site Access	22	+40/+22	12	+40/+22

** Additional Traffic from Approved Stage 2/Additional Traffic from Amended Stage 2*

3.13. Examination of Table 3.1 reveals that for the approved Stage 2 development, the greatest increase in traffic flows occurs on Cabbage Tree Road between the site access and Samuel Street, where traffic flows increase by some 30 vehicles per hour (two-way). On other streets on the surrounding road network the increase is less at some 5 to 20 vehicles per hour (two-way). These are minor increases

with traffic flows on both Cabbage Tree Road and Samuel Street remaining below the maximum environmental flow for collector roads.

3.14. For the amended Stage 2 development, traffic flow increases would be less at some 20 vehicles per hour (two-way) on Cabbage Tree Road. On other roads traffic flow increases would be less at some 2 to 10 vehicles per hour (two-way). As for the approved Stage 2 development, these are minor increases with traffic flows on both Cabbage Tree Road and Samuel Street remaining below the maximum environmental flow for collector roads

3.15. The intersections analysed in Chapter 2 were re-analysed with Stage 2 development traffic using INTANAL. The analysis found that the intersections would continue to operate at the same levels of service as today with the additional traffic, with average delays per vehicle of less than 15 seconds in both peak periods. This represents LOS A/B, a good level of intersection operation

Summary

3.16. In summary the key findings of the amended Stage 2 development at Peninsula Gardens are:

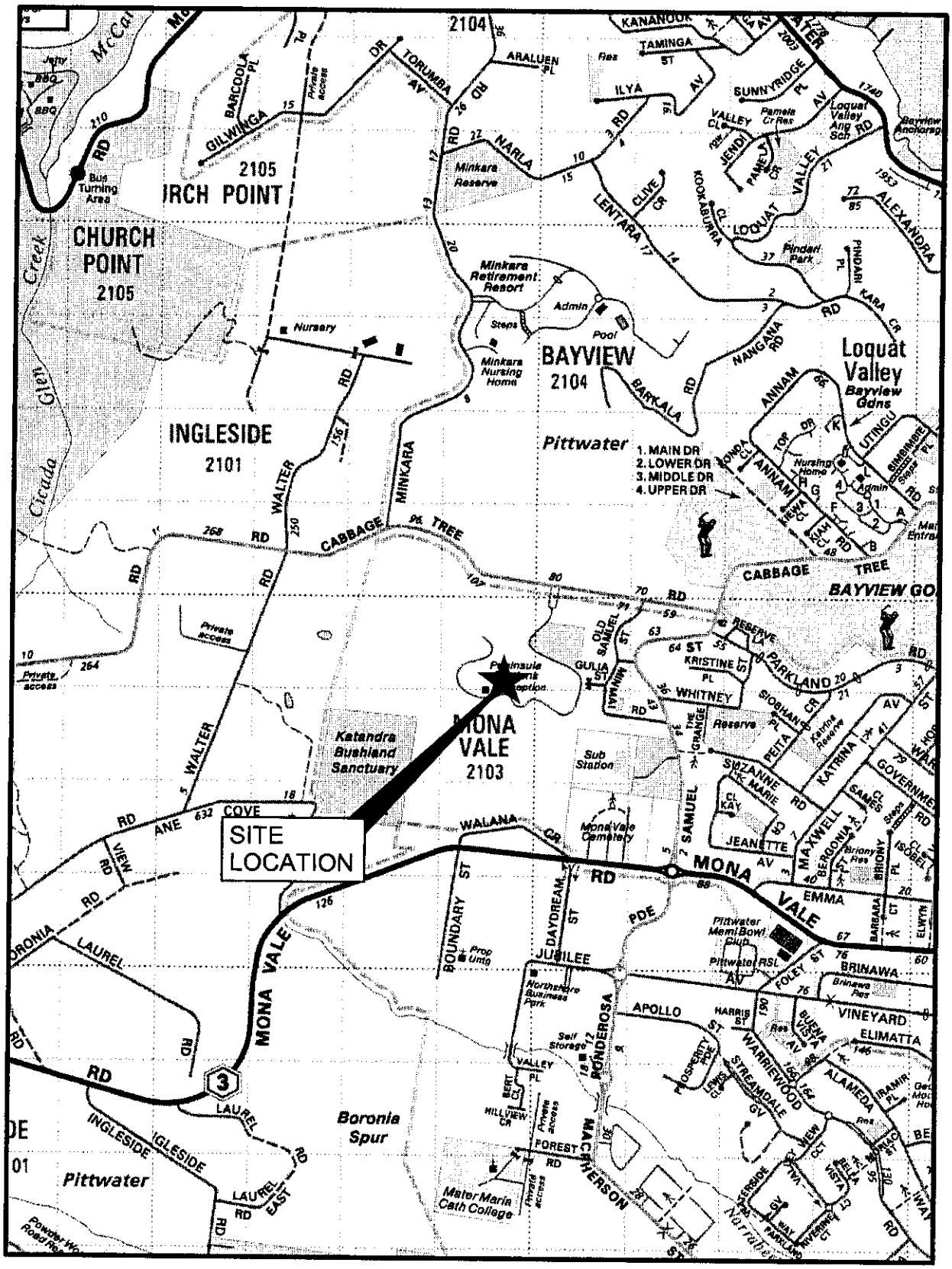
- Parking will be provided in accordance with the requirements of SEPP 5 and Council (DCP 2);

- Access arrangements and the layout of the internal roads and driveways for the amended Stage 2 development will be similar to the approved Stage 2 development and that constructed for Stage 1;

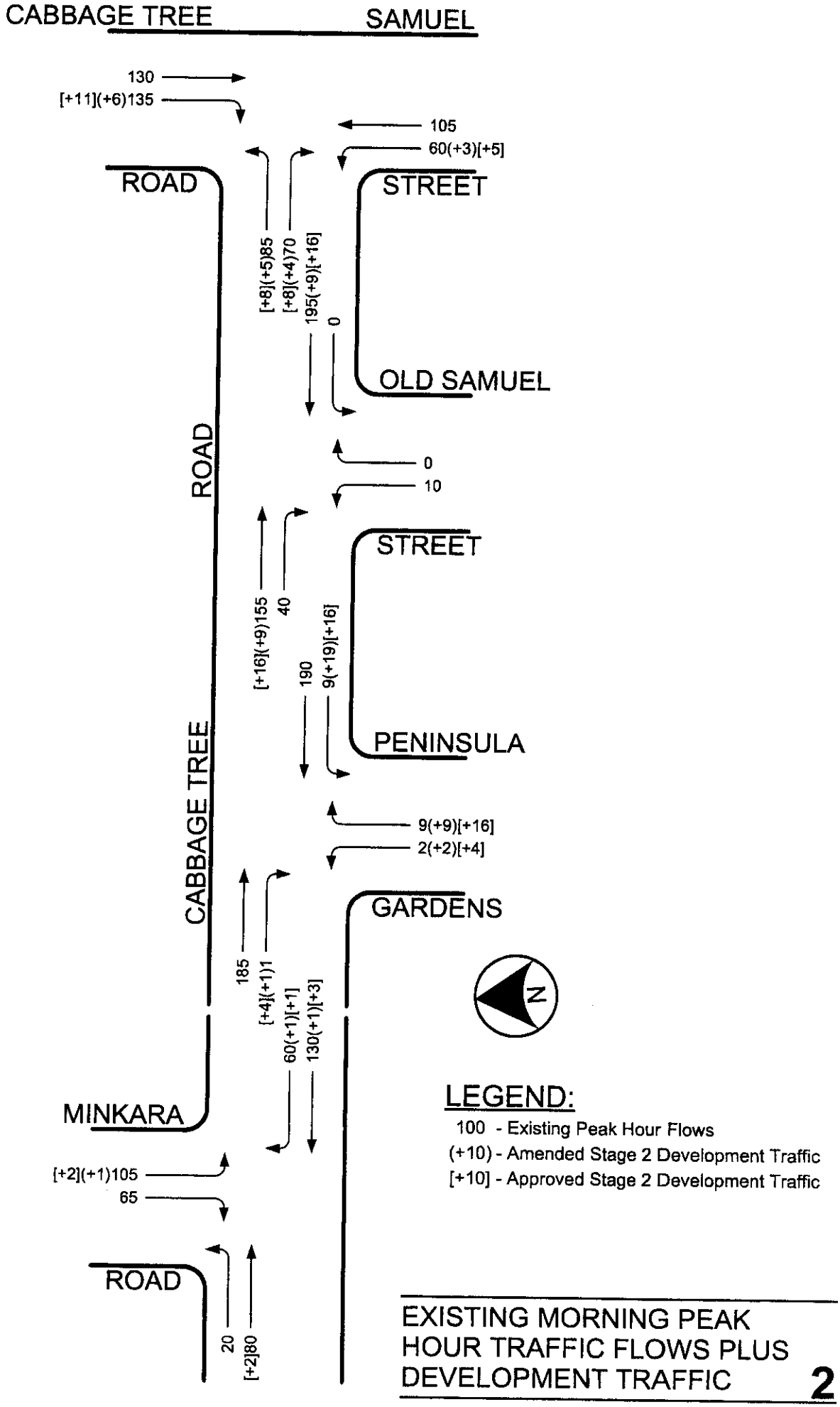
- Parking areas will be designed to comply with the requirements of SEPP 5;

- The amended Stage 2 development will generate less traffic (some 5 to 15 vehicles per hour, two way) than the approved Stage 2 development;

- Stage 2 is a minor traffic generator and will have little impact on the operation of the road network. The adjacent intersections would continue to operate at the same delays and level of service as today and the traffic flows will be within acceptable amenity levels.



LOCATION PLAN 1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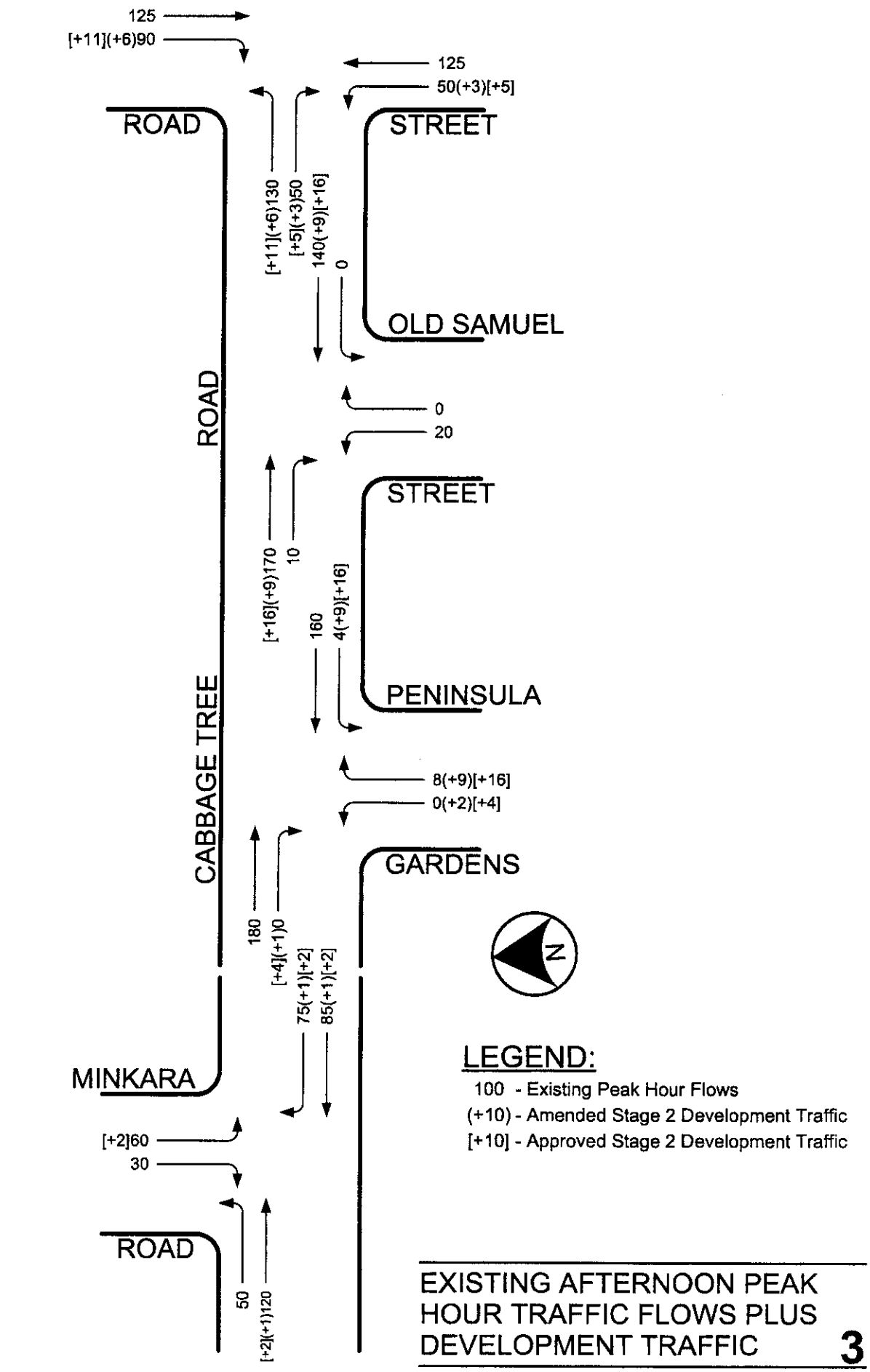
EXISTING MORNING PEAK HOUR TRAFFIC FLOWS PLUS DEVELOPMENT TRAFFIC
2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EXISTING AFTERNOON PEAK HOUR TRAFFIC FLOWS PLUS DEVELOPMENT TRAFFIC
3