
Colston Budd Hunt & Kafes Pty Ltd

as Trustee for C & B Unit Trust

ABN 27 623 918 759

Transport Planning

Town Planning

Retail Studies

Our Ref: TR/5325/jj

27 November, 2006

Hazcorp
c/- Peter Lean
PO Box 252
CROYDON NSW 2132

Attention: Peter Lean

Fax: 9744 0444

Dear Sir,

RE: PROPOSED RESIDENTIAL DEVELOPMENT, NARRAWALLEE

1. As requested, we have reviewed the modified scheme for the above development. With respect to traffic, the modifications include the reduction in the number of residential lots from 192 to 168. The proposed road layout and access arrangements of the modified development are the same as the previous scheme.
2. Colston Budd Hunt & Kafes prepared the traffic report that accompanied the development application for the subdivision (Traffic Report for Proposed Residential Subdivision, Narrawallee, May 2005).
3. The summary of the previous traffic report is set out below:

In summary, the main points relating to the proposed residential subdivision in Narrawallee are:

- (i) *The proposed development is for a residential subdivision comprising some 192 standard residential lots;*
- (ii) *Vehicular access to the proposed subdivision is proposed via three connections to the existing road network;*

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Colston Budd Hunt & Kafes Pty Ltd

- (iii) *The proposed development will be designed in accordance with Shoalhaven Council's Subdivision Code and DCP 70;*
 - (iv) *The surrounding road network has capacity to cater for the traffic generated by the proposed development;*
 - (v) *The following mitigation measures are proposed as part of the proposed development:*
 - ❑ *Roundabout at the intersection of Gemini Way and Seawinds Parade;*
 - ❑ *\$15,000 contribution to a roundabout at the intersection of Tallwood Avenue and Bannister Head Road;*
 - ❑ *Two LATM devices (speed humps) on Leo Drive between Sagittarius Way and Aries Place;*
 - ❑ *Roundabout at the intersection of the elongation of Gemini Way and the elongation of the access road off Leo Drive; and*
 - ❑ *The design of the subdivision to comply with Council's Subdivision Code and AS2890.1-2004.*
 - (vi) *This supplementary report addresses the traffic issues raised by DIPNR.*
4. A copy of our previous report is attached to this letter.
5. With a reduction in the number of residential lots from 192 to 168, and the same road layout and access arrangements, the traffic effects will be less than the previous scheme. Overall the peak traffic generation of the proposed development would reduce from some 190 vehicles per hour (two-way) to some 170 vehicles per hour (two-way). Nonetheless we understand that the same mitigation measures (as set out above and agreed to by Council) will be provided as part of the modified scheme.
6. On this basis the traffic effects of the modified scheme will be satisfactory and the conclusions of our previous report are appropriate for the modified scheme.

Colston Budd Hunt & Kafes Pty Ltd

7. We trust the above provides the information you require. Finally, if you have any queries, please do not hesitate to contact us.

Yours faithfully

COLSTON BUDD HUNT & KAFES PTY LTD

A handwritten signature in black ink, appearing to read 'Tim Rogers'. The signature is stylized, with a large 'T' and 'R'.

Tim Rogers

Director

HAZCORP PTY LIMITED

SUPPLEMENTARY TRAFFIC
REPORT FOR PROPOSED
RESIDENTIAL SUBDIVISION,
NARRAWALLEE

MAY 2005

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I. INTRODUCTION

- I.1. Colston Budd Hunt & Kafes Pty Ltd has been retained by Hazcorp Pty Limited to prepare a supplementary traffic report for a proposed residential subdivision at Narrawallee. The site is located to the western side of Narrawallee, to the east of Milton Township, as shown in Figure I.
- I.2. This supplementary traffic report has been prepared in response to matters raised by DIPNR and amendments to the subdivision. The traffic matters raised by DIPNR relate to:
- ❑ Local Area Traffic Management;
 - ❑ sight distances; and
 - ❑ traffic report.
- I.3. With respect to traffic the proposed subdivision has been amended as follows:
- ❑ reduction in the number of lots to 192; and
 - ❑ modifications to the layout of the internal roads.
- I.4. Colston Budd Hunt & Kafes prepared the traffic report that accompanied the development application for the subdivision (Traffic Report for Proposed Residential Subdivision, Narrawallee, September 2003).
- I.5. During the preparation of this supplementary traffic report a meeting was held with Shoalhaven City Council's Traffic and Transport Manager to agree on further work to be undertaken and which mitigation measures would be required. A copy of the
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file note of this meeting is attached to this report. In summary the following was agreed at the meeting.

- “1. Assessment of the following intersections to be undertaken, Bannister Head Road/Tallwood Ave, Princes Highway/Illet Street and Princes Highway Golf Ave;
 2. Amended subdivision plan addresses a number of (but not all) issues previously raised with internal layout;
 3. It was agreed that issues of traffic management within the proposed subdivision and appropriate sight lines at intersections and driveways can be addressed during detailed design and appropriately conditioned;
 4. Applicant and Council agreed to the following traffic management measures external to the site:
 - ❑ Roundabout at Gemini Way/Seawinds Parade intersection;
 - ❑ \$15,000 contribution to a roundabout at Tallwood/Bannister Head Road intersection; and
 - ❑ LATM devices on Leo Drive between Sagittarius Way and Aries Place.
 5. Roundabouts and LATM devices of mountable bitumen construction would be considered where appropriate and
 6. Supplementary traffic report to be prepared to assess amended scheme, revised traffic distribution, additional intersection assessment and agree external works. With respect of all outstanding traffic issues (currently on Thursday 14th April, 2005) - the supplementary traffic report shall clearly
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identify the status of all outstanding issues.

1.6 The findings of our supplementary traffic assessment of the proposed residential subdivision are set down through the following chapters:

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

2. EXISTING CONDITIONS

- 2.1 The proposed residential subdivision is located on the western side of Narrawallee as shown in Figure 1. Narrawallee is located on the New South Wales South Coast to the north of Mollymook/Ulladulla. The Princes Highway passes through Milton to the west of Narrawallee. The site is currently bushland. To the east and south of the site is existing residential development in Narrawallee.

Road Network

- 2.2 The road network in the vicinity of the site comprises a number of collector and local streets in Narrawallee and the Princes Highway to the west. The Princes Highway is the major transport route along the NSW South Coast. It currently passes through Milton Township to the west and Ulladulla to the south. Through the towns it generally has one parking and one traffic lane in each direction with a 60 km/h speed limit. Outside of the towns, the road has one traffic lane in each direction with unsealed shoulders and a 80 to 100 km/h speed limit.
- 2.3 In the long term it is proposed to divert the Princes Highway to the west of Ulladulla. At its northern end this diversion would begin south of Milton and to the west of Mollymook. In addition to the proposed diversion of the highway to the west of Ulladulla a new road link is proposed between Matron Porter Drive (at Garside Avenue) and the Princes Highway (at Bishop Drive). This would provide the main connection between Narrawallee and Ulladulla and divert traffic away from the collector roads in Mollymook. This new road is known as the Northern Link Road.
- 2.4 The collector and local roads in the vicinity of the site comprise Matron Porter Drive,
-

Bannister Head Road, Manning Avenue, Leo Drive, Scorpio Grove, Seaspray Street and Gemini Way. Access to Ulladulla to the south is provided through a number of roads. These comprise Tallwood Avenue, Mitchell Parade, Golf Avenue and Ilett Street. These are described below:

- ❑ Matron Porter Drive is the main access road to Narrawallee from the Princes Highway and functions as a trunk collector road. It has one travel lane in each direction with parking lanes in the urban areas. The intersection of Matron Porter Drive and Princes Highway has recently been signalised;
- ❑ Bannister Head Road (along with Tallwood Avenue, Mitchell Parade, Golf Avenue and Ilett Street) forms part of a collector road link between Narrawallee and Mollymook/Ulladulla. These roads generally have one traffic lane in each direction plus kerb side parking. The intersection of Golf Avenue and the Princes Highway is controlled by a single lane roundabout;
- ❑ Leo Drive provides access to the existing residential area adjacent to the proposed development and functions as a local collector road within the road hierarchy. It has one travel and one parking lane in each direction; and
- ❑ Scorpio Grove, Seaspray Street and Gemini Way are all local streets providing access to residential development.

Traffic Flows

- 2.5 In order to gauge traffic conditions in the vicinity of the site, traffic counts were undertaken during the weekday morning and afternoon periods at the following intersections:-
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- ❑ Princes Highway/Matron Porter Drive;
 - ❑ Matron Porter Drive/Leo Drive/Valley Drive;
 - ❑ Matron Porter Drive/Bannister Head Road;
 - ❑ Matron Porter Drive/Manning Avenue;
 - ❑ Bannister Road/Tallwood Avenue;
 - ❑ Princes Highway/Golf Avenue;
 - ❑ Princes Highway/Ilett Street;
 - ❑ Leo Drive/Manning Avenue; and
 - ❑ Leo Drive/Scorpio Grove.

- 2.6 The results of these counts are shown on Figures 2 and 3 and summarised in Table 2.1 below.
- 2.7 It can be seen from Figures 2 and 3 and Table 2.1 that the heaviest traffic flows in the vicinity of the site were observed along Princes Highway. Traffic flows were some 900 to 1,600 vehicles per hour (two-way) in the morning and afternoon.
- 2.8 Traffic flows along Matron Porter Drive decline steadily from west to east, being some 370 vehicles per hour (two-way), east of the Princes Highway, to some 110 vehicles per hour (two-way), north of Manning Avenue.
- 2.9 Golf Avenue carried some 700 to 800 vehicles per hour (two-way) in the morning and afternoon. Traffic flows on Ilett Street were lower at some 200 to 250 vehicles per hour (two-way) in the morning and afternoon.
- 2.10 Traffic flows on Leo Drive decline steadily from south to north, being some 170 vehicles per hour (two-way), north of Matron Porter Drive, to some 70 vehicles per hour (two-way), north of Scorpio Grove.
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Table 2.1 : Summary of Existing Peak Hour Two-Way Traffic Flows (vehs/hr)		
Location	Morning	Afternoon
Princes Highway - north of Matron Porter Drive - south of Matron Porter Drive - west of Ilett Street - west of Golf Avenue - east of Golf Avenue	990 1180 1085 895 1550	1090 1235 1050 935 1590
Matron Porter Drive - east of Princes Highway - west of Leo Drive - east of Valley Drive - south of Bannister Head Road - north of Manning Avenue	365 240 140 105 105	370 265 155 140 115
Leo Drive - north of Matron Porter Drive - north of Manning Avenue - north of Scorpio Grove	155 125 55	170 160 75
Manning Avenue - east of Leo Drive - east of Matron Porter Drive	20 35	20 50
Bannister Head Road - east of Matron Porter Drive - east of Tallwood Avenue	135 50	170 60
Tallwood Avenue - north of Bannister Head Road - south of Bannister Head Road	50 165	55 185
Golf Avenue - north of Princes Highway	735	795
Ilett Street - north of Princes Highway	190	235
Scorpio Grove - west of Leo Drive	40	70

2.11 Bannister Head Road and Tallwood Avenue carried some 50 to 190 vehicles per hour (two-way) in the morning and afternoon.

- 2.12 Scorpio Grove carried some 40 to 70 vehicles per hour (two-way) in the morning and afternoon.

Residential Amenity

- 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:

- traffic flows on Matron Porter Drive are within the RTA's maximum goal for
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collector roads and generally lower than the environmental goal. These flows are consistent with Matron Porter Drive's function within the road hierarchy as a trunk collector road; and

- ❑ traffic flows on other collector roads such as Leo Drive, Tallwood Avenue and Bannister Head Road are within the environmental goal for collector roads; and
- ❑ traffic flows on local streets such as Scorpio Grove are within the RTA's environmental goal for local streets.

Intersection Operations

2.16 The capacity of the road network is largely determined by the capacity of its intersections. The surveyed intersections shown on Figures 2 and 3 have been analysed using the INTANAL and SIDRA programs. SIDRA and INTANAL analyses intersections controlled by signals, roundabouts or signs. The programs produce a number of measures of intersection operations. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.

- ❑ 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 level of service (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

2.17 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.

2.18 The SIDRA/INTANAL analysis found that:-

- ❑ the intersection of Matron Porter Drive and Princes Highway is currently operating with average delays of less than 20 seconds per vehicle in the morning and afternoon peak periods. This represents levels of service B, an acceptable level of intersection operation with spare capacity;
 - ❑ the intersection of Golf Avenue and Princes Highway is currently operating with average delays of than 25 seconds per vehicle in the morning and afternoon peak periods. This represents levels of service B, an acceptable level of intersection operation with spare capacity. On occasions traffic can queue on the Golf Avenue approach in the morning peak period;
 - ❑ the intersection of Ilett Street and Princes Highway is currently operating with average delays of than 20 seconds per vehicle in the morning and afternoon peak periods. This represents levels of service B, an acceptable level of intersection operation with spare capacity;
 - ❑ the intersections of Matron Porter Drive with Leo Drive, Valley Drive, Bannister Head Road and Manning Avenue are currently operating with average delays of less than 15 seconds per vehicle in both peak periods. This represents level of service A/B, a good level of service;
 - ❑ the intersection of Tallwood Avenue and Bannister Head Road is currently operating with average delays of less than 15 seconds per vehicle in both peak periods. This represents level of service A/B, a good level of service; and
 - ❑ the intersections of Leo Drive with Manning Avenue and Scorpio Grove are currently operating with average delays of less than 15 seconds per vehicle in
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both peak periods. This represents level of service A/B, a good level of service.

2.19 To account for peak (holiday) traffic flows along the Princes Highway through traffic flows along the Princes Highway were increased by 15% and the INTANAL/SIDRA models rerun with these increased flows. The 15% increase in through traffic flows is based on a comparison between typical and holiday traffic flows at a permanent count station on the Princes Highway in the vicinity of Ulludulla. The analysis found that:

- ❑ the intersection of Princes Highway and Matron Porter Drive would continue to operate with average delays of less than 20 seconds per vehicle in the morning and afternoon peak periods. This represents levels of service B, a satisfactory level of intersection operation with spare capacity; and
- ❑ the intersection of Princes Highway and Golf Avenue would operate with average delays of less than 30 seconds per vehicle in the morning and afternoon peak periods. This represents levels of service C, a satisfactory level of intersection operation.

Public Transport

2.20 Ulladulla Bus Lines operates a bus service through Mollymook and Narrawallee to Ulladulla along Matron Porter Drive. This service operates five times per day on weekdays.

3. IMPLICATIONS OF PROPOSED DEVELOPMENT

- 3.1 The proposed development is for a residential subdivision comprising some 192 residential lots. Vehicular access to the proposed subdivision is proposed via three connections to the existing road network. These are the extensions of Seaspray Street and Gemini Way and on to Leo Drive.
- 3.2 The proposed development will be designed in accordance with the requirements of Shoalhaven Council's Subdivision Code (DCP 100) and DCP 70.
- 3.3 This chapter examines the traffic implications of the proposed development through the following sections:-
- ❑ access;
 - ❑ internal layout;
 - ❑ public transport;
 - ❑ traffic effects;
 - ❑ response to matters raised by DIPNR; and
 - ❑ summary.

Access

- 3.4 Vehicular access to the proposed subdivision is proposed via three connections to the existing road network. These are the extensions of Seaspray Street and Gemini Way and directly on to Leo Drive.
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Internal Circulation

- 3.5 The internal circulation roads within the proposed residential subdivision will be based on guidelines set out in Shoalhaven Council's Subdivision Code and DCP 70. Internal circulation roads are proposed to have seven to eight metre wide carriageways, which are consistent with the requirements of Council's Subdivision Code.
- 3.6 These guidelines have been developed from AMCORD. Within residential precincts, the subdivision code/AMCORD distinguishes two levels of streets, local streets and collector streets.
- 3.7 On local streets the residential environment dominates. Traffic speeds and volumes are low and pedestrian/cycle movements encouraged. Vehicle speeds should, as far as possible, be controlled by street length, parked cars, landscaping design, built form and activity along the frontage with a 50 km/h speed limit. Bicycles are generally provided for on-street. Collector streets collect traffic from access streets and generally carry higher traffic flows. A good level of residential amenity and safety is maintained by restricting traffic volumes and vehicle speeds. Vehicle speeds on collector streets should be controlled by street alignment, parked cars, street length, intersection design and built form.
- 3.8 The adoption of the subdivision code/AMCORD guidelines provides a framework for the promotion of alternative travel modes to the private car (in particular improved pedestrian and cyclist facilities). The street widths and urban design principles provide for slower vehicle speeds and appropriate residential and pedestrian amenity, limiting the potential for through traffic in the subdivision.
- 3.9 It is therefore considered that the introduction of specific traffic control devices in
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the subdivision, such as traffic slowing devices, is not generally warranted. The proposed street layout, widths and urban design principles will have the effect of slowing traffic, providing good pedestrian amenity and limiting the potential for speeding traffic.

- 3.10 The amended subdivision plan has generally addressed the issues previously raised with the internal layout. It was agreed at the meeting with Council's Traffic and Transport Manager that any outstanding issues of traffic management within the proposed subdivision and appropriate sight lines at intersections and driveways could be addressed during detailed design and an appropriate condition of consent. The consent would require the subdivision design to comply with Council's subdivision code and the Australian Standard AS2890.1-2004.

Public Transport

- 3.11 The layout of the road network of the proposed subdivision will be designed to allow buses to use the major roads within the site. This will ensure that the site will be accessible by any expansion of public transport services in Narrawallee.
- 3.12 The proposed subdivision, with its increase in residential population, will strengthen demand for public transport services in the region.

Traffic Effects

- 3.13 The traffic generated by the proposed development will have its greatest effects during the morning and afternoon peak periods. The traffic assessment is based on a traffic generation of 10 vehicles per day (two way) for each standard lot being adopted for the proposed subdivision (as suggested in the subdivision code).
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- 3.14 When completed the proposed subdivision is estimated to generate some 190 peak hour vehicles per hour (two way) during the morning and afternoon peak periods. Some 70 per cent of the traffic would be expected to be outbound in the morning. The reverse would apply in the afternoon.
- 3.15 The additional traffic for the fully developed site during the morning and afternoon peak periods was assigned to the road network. Based on information provided by Council some 70% of traffic would travel south towards Ulladulla and 30% north towards Nowra. The resulting flows are shown in Figures 2 and 3 and summarised in Table 3.1.
- 3.16 The results in Table 3.1 reveal that:-
- ❑ traffic flows on Princes Highway would increase by some 10 to 135 vehicles per hour (two-way) in the peak hours;
 - ❑ traffic flows on Matron Porter Drive would increase by up to 55 vehicles per hour (two-way) in the peak hours between Princes Highway and Leo Drive. Further to the east, traffic flow increases would be some 80 vehicles per hour (two-way) in the peak hours between Bannister Head Road and Manning Avenue;
 - ❑ traffic flows on Leo Drive would increase by some 125 to 190 vehicles per hour (two-way) in the peak hours. The greatest increase would be between Manning Avenue and Scorpio Grove. North of the site access there would be little increase in traffic flows on Leo Drive; and
 - ❑ there would be an increase in traffic flows in Scorpio Grove and Manning Avenue of some 65 to 80 vehicles per hour (two-way) in the peak hours.
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Table 3.1 : Summary of Peak Hour Two-Way Traffic Flows with Development (vehs/hr)				
Location	Morning		Afternoon	
	Existing	With Dev	Existing	With Dev
Princes Highway				
- north of Matron Porter Drive	990	+40	1090	+40
- south of Matron Porter Drive	1180	+0	1235	+0
- west of Ilett Street	1085	+0	1050	+0
- west of Golf Avenue	895	+15	935	+10
- east of Golf Avenue	1550	+135	1590	+135
Matron Porter Drive				
- east of Princes Highway	365	+55	370	+55
- west of Leo Drive	240	+55	265	+55
- east of Valley Drive	140	+0	155	+0
- south of Bannister Head Road	105	+0	140	+0
- north of Manning Avenue	105	+0	115	+0
Leo Drive				
- north of Matron Porter Drive	155	+110	170	+110
- north of Manning Avenue	125	+190	160	+190
- north of Scorpio Grove	55	+125	75	+125
Manning Avenue				
- east of Leo Drive	20	+80	20	+80
- east of Matron Porter Drive	35	+0	50	+0
Bannister Head Road				
- east of Matron Porter Drive	135	+80	170	+80
- east of Tallwood Avenue	50	+0	60	+0
Tallwood Avenue				
- north of Bannister Head Road	50	+0	55	+0
- south of Bannister Head Road	165	+80	185	+80
Golf Avenue				
- north of Princes Highway	735	+120	795	+125
Ilett Street				
- north of Princes Highway	190	+15	235	+10
Scorpio Grove				
- west of Leo Drive	40	+65	70	+65

3.17 These increases would result in traffic flows:

- on Matron Porter Drive remaining within the RTA's maximum goal for collector roads between Princes Highway and Leo Drive. On other sections traffic flows

would remain below the environmental goal;

- ❑ on Leo Drive south of Scorpio Grove, well below the maximum goal. North of Scorpio Grove traffic flows would remain below the environmental goal;
- ❑ on other streets traffic flows would remain below the environmental goal for collector roads and local streets.

3.18 The intersections were re-analysed with the additional traffic from the proposed subdivision. The analysis found that:

- ❑ the intersection of Princes Highway and Matron Porter Drive would continue to operate with average delays of less than 20 seconds per vehicle in the morning and afternoon peak periods. This represents level of service B, a satisfactory level of intersection operation;
 - ❑ the intersection of Golf Avenue and Princes Highway would continue to operate with average delays of less than 25 seconds per vehicle in the morning and afternoon peak periods. This represents level of service B, an acceptable level of intersection operation with spare capacity;
 - ❑ the intersection of Ilett Street and Princes Highway would continue to operate with average delays of less than 20 seconds per vehicle in the morning and afternoon peak periods. This represents level of service B, an acceptable level of intersection operation with spare capacity;
 - ❑ the intersections of Matron Porter Drive with Leo Drive, Valley Drive, Bannister Head Road and Manning Avenue would continue to operate with average delays of less than 15 seconds per vehicle in both peak periods. This represents a level
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of service A/B, a good level of intersection operation;

- ❑ the intersection of Tallwood Avenue and Bannister Head Road would continue to operate with average delays of less than 15 seconds per vehicle in both peak periods. This represents level of service A/B, a good level of service; and
- ❑ the intersections of Leo Drive with Manning Avenue and Scorpio Grove would continue to operate with average delays of less than 15 seconds per vehicle in both peak periods. This represents a level of service A/B, a good level of service.

3.19 To account for peak (holiday) traffic flows along the Princes Highway through traffic flows along the Princes Highway were increased by 15% and the INTANAL/SIDRA models rerun with these increased flows. The analysis found that:

- ❑ the intersection of Princes Highway and Matron Porter Drive would continue to operate with average delays of less than 20 seconds per vehicle in the morning and afternoon peak periods. This represents levels of service B, a satisfactory level of intersection operation with spare capacity; and
- ❑ the intersection of Princes Highway and Golf Avenue would operate with average delays of less than 35 seconds per vehicle in the morning and afternoon peak periods. This represents levels of service C, a satisfactory level of intersection operation.

3.20 Following discussions with Council's Traffic and Transport Manager, the applicant has agreed to provide a number of traffic calming measures external to the site. These measures are to mitigate vehicle speeds and improve safety. They are not required to provide additional capacity. The measures include:

- ❑ Roundabout at the intersection of Seawinds Parade and Gemini Way;
- ❑ \$15,000 contribution to a roundabout at the intersection of Tallwood Avenue and Bannister Head Road; and
- ❑ Two LATM devices (speed humps) on Leo Drive between Sagittarius Way and Aries Place.

3.21 These works could be included as conditions of development consent.

Response to Matters Raised by DIPNR

3.22 The traffic matters raised by DIPNR relate to:

- ❑ Local Area Traffic Management;
- ❑ Sight distances; and
- ❑ Traffic report.

3.23 Each of these matters is addressed below.

Local Area Traffic Management

3.24 DIPNR has requested that the following Local Area Traffic Management devices:

- ❑ Roundabouts at the intersections of Leo Drive and Scorpio Grove, Seaspray Street and Seawinds Parade, and Gemini Way and Seawinds Parade;
 - ❑ Traffic slowing devices within the straight alignments of the extensions of Seaspray Street and Gemini Way; and
 - ❑ Roundabouts at the intersections of the access road of Leo Drive and Leo Drive and the elongation of Gemini Way and the elongation of the access road off Leo Drive.
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3.25 It was agreed with Council's Traffic and Transport Manager that these LATM devices are not required due to capacity constraints. Rather they have been suggested to reduce vehicle speeds. In place of the above devices, a set of LATM measures have been agreed between Council's Traffic and Transport Manager and the applicant (as set out in the attached file note). These include:

- ❑ Roundabout at the intersection of Gemini Way and Seawinds Parade;
- ❑ \$15,000 contribution to a roundabout at the intersection of Tallwood Avenue and Bannister Head Road;
- ❑ Two LATM devices (speed humps) on Leo Drive between Sagittarius Way and Aries Place;
- ❑ Roundabout at the intersection of the elongation of Gemini Way and the elongation of the access road off Leo Drive; and
- ❑ The design of the subdivision to comply with Council's Subdivision Code and AS2890.1-2004.

Sight Distances

3.26 DIPNR has requested that a road safety assessment be provided on the junctions and house driveway locations on the curves of the loop road. The statement should address safe intersection sight distance for traffic travelling at 50km/h.

3.27 Council has agreed that this could be addressed through detailed design and an appropriate condition of consent requiring the intersections and locations of driveways to comply with relevant standards with respect to sight line requirements (see attached file note). The revised subdivision layout has addressed a number of concerns previously raised with respect to this issue and a review of the new concept plan has found that it should be possible to provide the necessary sight lines.

Traffic Report

3.28 DIPNR has requested a detailed traffic report be submitted with any development application re-evaluating the anticipated traffic routes (after discussions with Council's traffic engineer) looking at the suitability of the design of the following intersections to cater for additional traffic (having regard to level of service, safety of design and queuing lengths):

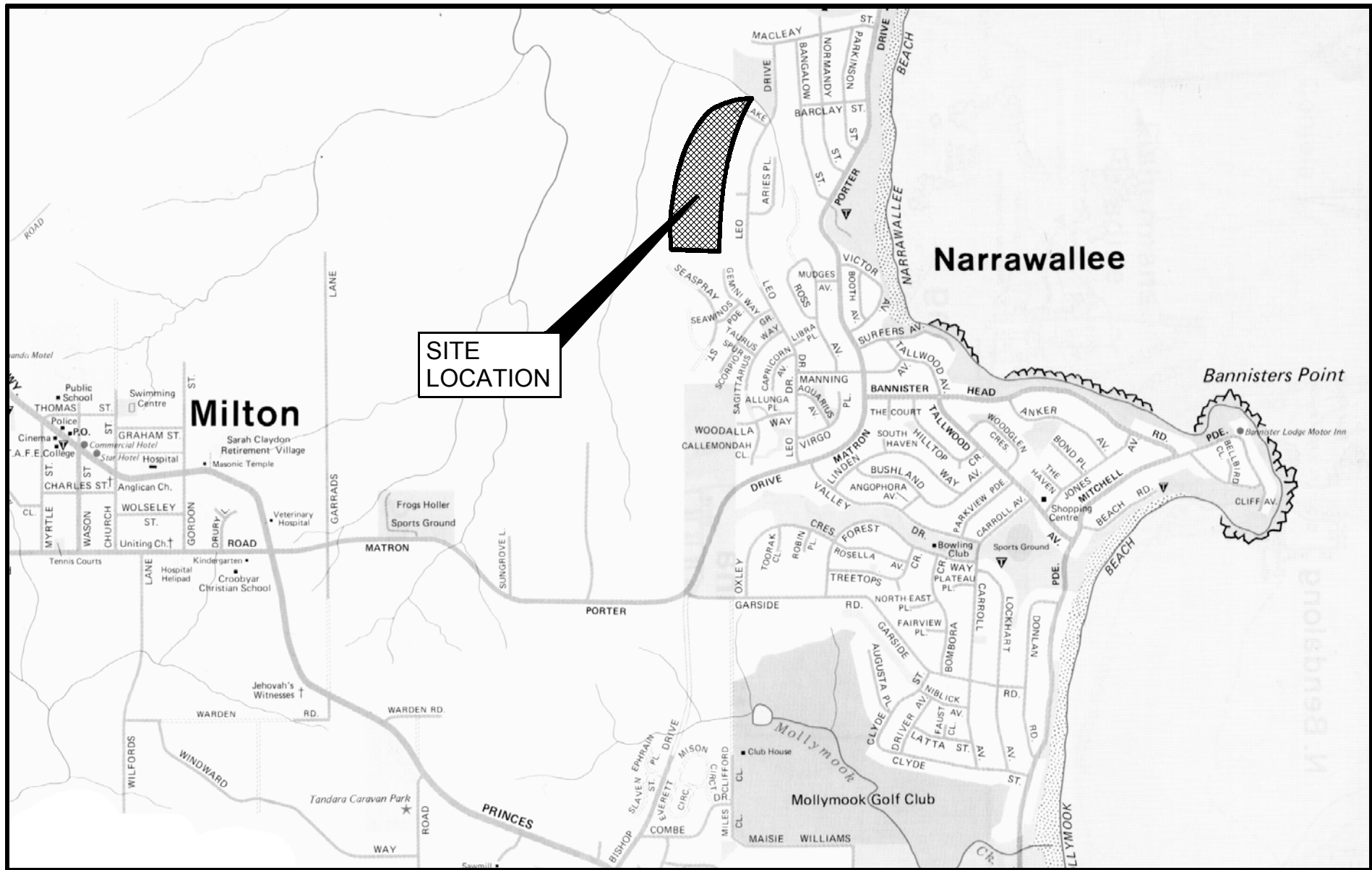
- ❑ Leo Drive/Matron Porter Drive;
- ❑ Matron Porter Drive/Princes Highway;
- ❑ Matron Porter Drive/Bannister Head Road;
- ❑ Bannister Head Road/Tallwood Avenue;
- ❑ Gold Avenue/Princes Highway; and
- ❑ Ilett Street/Princes Highway.

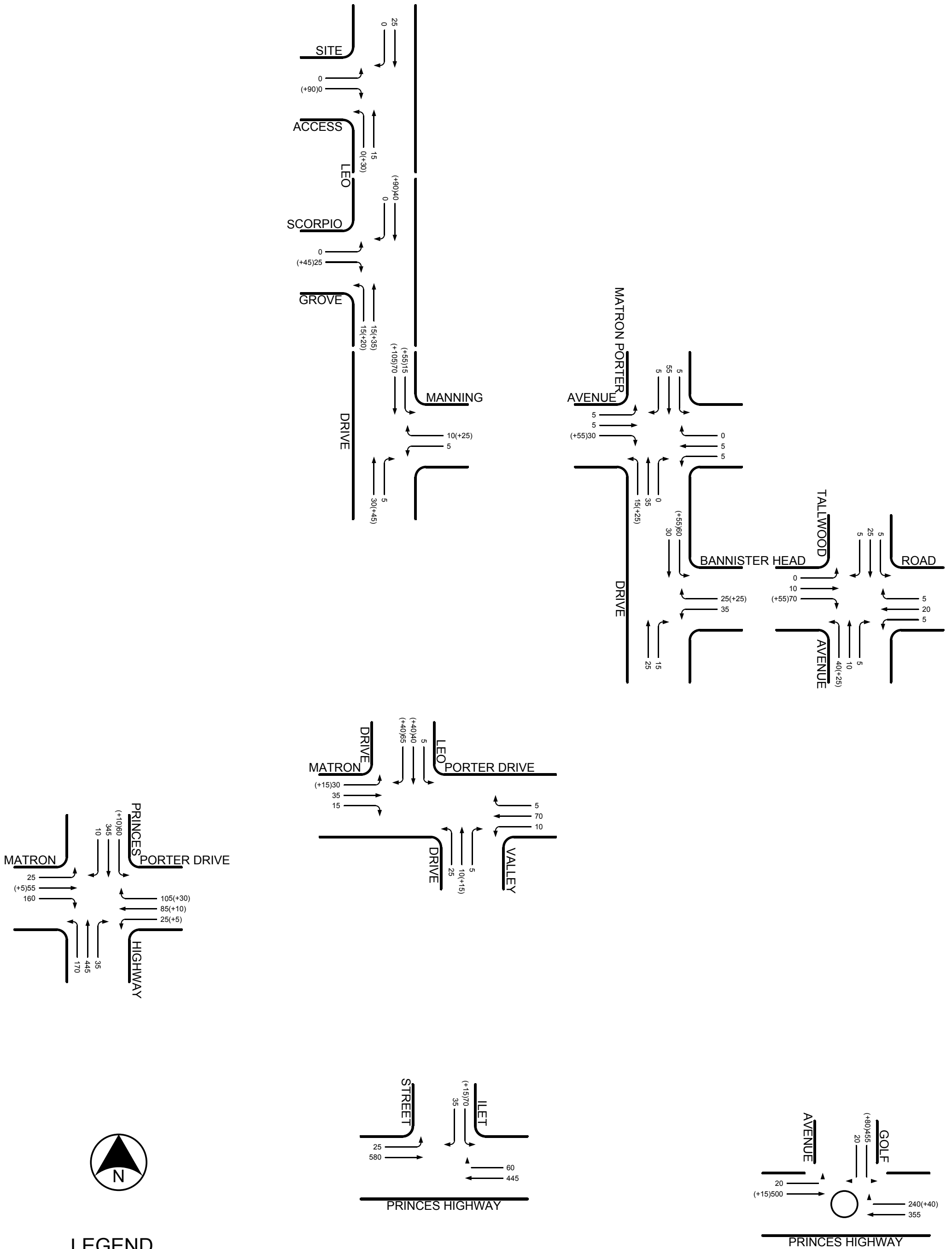
3.29 This supplementary traffic report has analysed the above intersections with and without development traffic in place. The assignment of future traffic to the road network was based on information provided by Council's Traffic and Transport Manager. The above intersections do not require upgrading as result of traffic generated by the proposed residential subdivision. To address an existing safety concern at the Bannister Head Road/Tallwood Avenue intersection the applicant has agreed to contribute \$15,000 to a new roundabout at the intersection.

Summary

3.30 In summary, the main points relating to the proposed residential subdivision in Narrawallee are:-

- (i) The proposed development is for a residential subdivision comprising some 192 standard residential lots;
 - (ii) Vehicular access to the proposed subdivision is proposed via three connections to the existing road network;
 - (iii) The proposed development will be designed in accordance with Shoalhaven Council's Subdivision Code and DCP 70;
 - (iv) The surrounding road network has capacity to cater for the traffic generated by the proposed development;
 - (v) The following mitigation measures are proposed as part of the proposed development:
 - ❑ Roundabout at the intersection of Gemini Way and Seawinds Parade;
 - ❑ \$15,000 contribution to a roundabout at the intersection of Tallwood Avenue and Bannister Head Road;
 - ❑ Two LATM devices (speed humps) on Leo Drive between Sagittarius Way and Aries Place;
 - ❑ Roundabout at the intersection of the elongation of Gemini Way and the elongation of the access road off Leo Drive; and
 - ❑ The design of the subdivision to comply with Council's Subdivision Code and AS2890.1-2004.
 - (vi) This supplementary report addresses the traffic issues raised by DIPNR.
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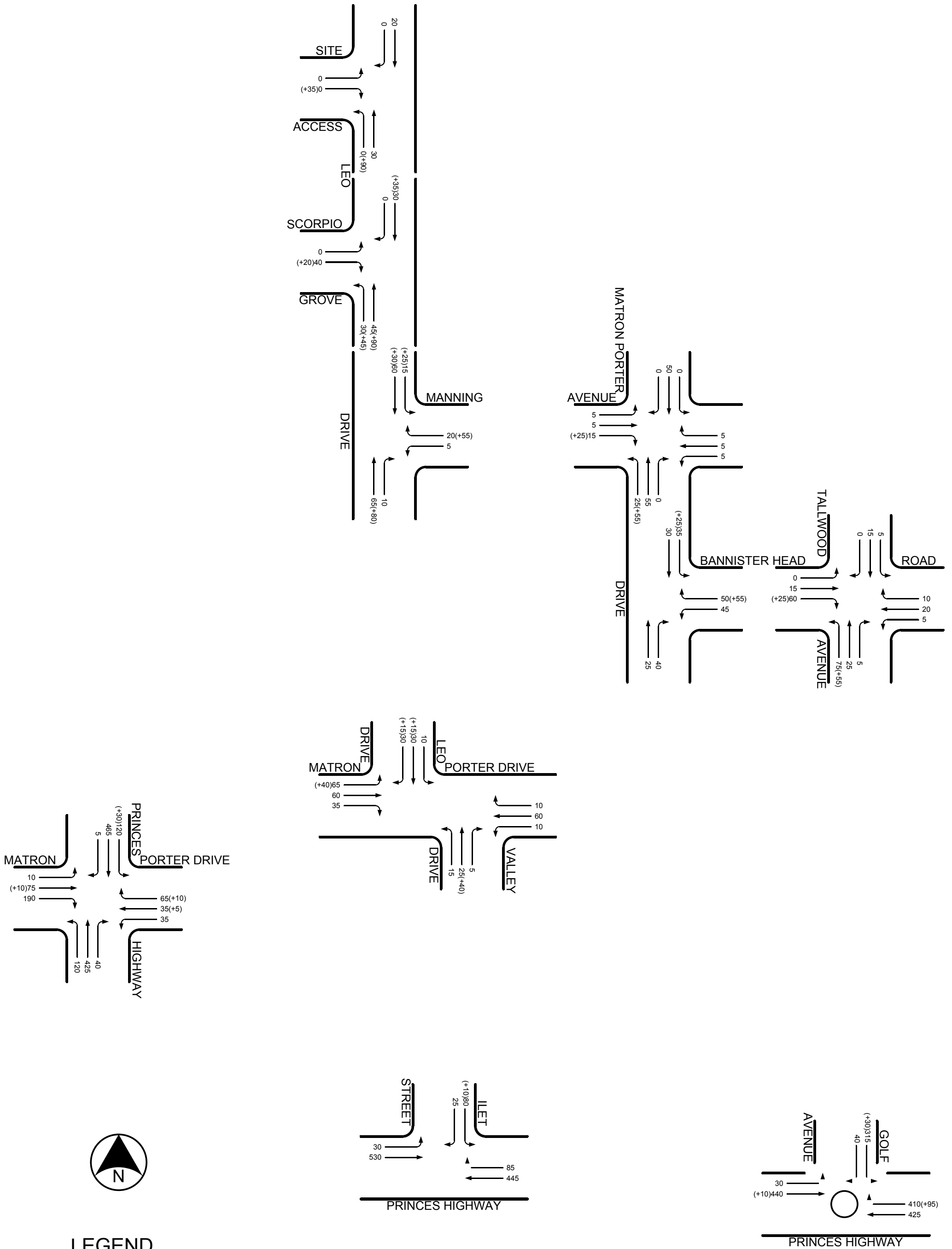




LEGEND

- 100 - Existing Peak Hour Traffic Flows
- (+10) - Additional Development Traffic
- - Roundabout

EXISTING PLUS DEVELOPMENT WEEKDAY MORNING PEAK HOUR TRAFFIC FLOWS



LEGEND

- 100 - Existing Peak Hour Traffic Flows
- (+10) - Additional Development Traffic
- - Roundabout

EXISTING PLUS DEVELOPMENT WEEKDAY AFTERNOON PEAK HOUR TRAFFIC FLOWS

ATTACHMENT A

RESPONSE FROM DIPNR



Department of
Infrastructure, Planning and Natural Resources
Sustainability Division, Urban Assessments Branch

Planning Assessment Report - MP 11-5-2003

SEPP 71 Master Plan – Narrawallee Subdivision

ATTACHMENT A

LIST OF REQUIRED VARIATIONS TO DRAFT MASTER PLAN

Design Objectives and Principles

1. The design objectives should be expanded to include a design objective of minimising impact upon flora and fauna and Aboriginal archaeology.

Further the design principles should be expanded to include:

- Provision of a stormwater system which protects water quality to the adjoining sensitive areas;
- Implementation of a total water cycle management system into the subdivision and subsequent housing development;
- Ensuring the protection of flora and fauna in adjoining sensitive lands;
- Provision of appropriate measures to ensure a suitable level of protection in the event of a bushfire;
- Provide for connections of areas of open space within the site and with existing areas of open space;
- Provide for improved accessibility to the coastal foreshore.

Pedestrian/cycle Path Through Reserve

2. A pedestrian/cycle path is to be provided through the reserve land to the north of Blake Place, connecting the northern end of the main loop road in the subdivision with Leo Drive.

The path should, as a minimum, be a 2.5m wide concrete path with appropriate signage at each end of the path in accordance with the requirements of *AUSTROADS Guide to Traffic Engineering Practice Part 14 – Bicycles*. The path should be located in the disturbed area running generally parallel to the rear of the Blake Place properties and should be setback and native landscaping provided along the path.

The path shall be designed to be suitable for access by persons with a disability, being of appropriate grade for persons in wheel chairs, if the topography allows, and with signage and tactile surface warnings provided for vision impaired persons. The accessibility of the path is to be addressed in the Accessibility Report required by Variation 10.

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A design for the path and landscaping plan is to be submitted with the development application for the subdivision and the works are to be funded by the developers of the subdivision. The development consent should address the stage of the development at which the works should be required.

Remediation

3. A preliminary contamination assessment is to be prepared having regard to the quarry use. If research into the previous use indicates the likelihood of onsite contamination, a remediation report is to be prepared indicating the method of remediation proposed. This report is to be lodged with the development application for the subdivision. Any required remediation should be completed and certified prior to the commencement of any development consent for any subdivision works within the master plan site.

Removal of Weeds

4. Invasive plant species should be removed from the proposed open space and the buffer area to the protected land to the west of the site. A Weed Removal Plan to be submitted with the development application.

Design of Parks

5. A landscape plan is required to be provided for approval with the development application for the two parks.

The small park provided at the second (northern) high point (off the elongation of Gemini Way) is to retain healthy existing trees to minimise the visual impact of the subdivision and is to be provided with child play equipment and seating.

The southern open space area should be designed in connection with an upgrade of the existing portion of this park and should also provide for child play equipment and seating and should provide for a sealed path from the park to Gemini Way.

The landscape plans are to identify the use of endemic species of vegetation, pathways, seating, lighting and types of child play equipment. The safety of the children using the parks is to be ensured by design features such as shade planting near the equipment, provision of seating for adult supervision and provision of barriers (fences/planting) preventing direct access to the adjoining roadway.

Street Trees

6. Details the proposed street tree planting is to be provided with the development application. The detail to be provided includes the species (to be endemic), planting size and appropriate bonding for planting to occur after the final road seal and footpaths have been provided, together with details of a maintenance and replacement period for the establishment of the trees.

Local Area Traffic Management

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7. The following Local Area Traffic Management devices are to be provided for, with details provided for assessment with the Development Application:
- Roundabouts are to be provided at the intersections of Leo Drive and Scorpio Way, Seaspray Street and Sea wind Parade and Gemini Way and Seawind Parade;
 - Traffic slowing devices are to be provided within the straight alignments of the extensions to Seaspray Street and Gemini Way; and
 - Roundabouts are to be provided at the intersections of the access road off Leo Drive and Leo Drive and the elongation of Gemini Way and the elongation of the access road off Leo Drive.

Footpaths/Cycle Ways

8. Combined footpath/cycle ways are to be provided for:
- the entire loop road (on the eastern side);
 - one side of the elongation of the access way off Leo Drive;
 - one side of the elongation of Gemini Way (north of its intersection with the elongation of the access way off Leo Drive); and
 - one side of the south/north road leading off the elongation of the access way off Leo Drive to the proposed extension of the public reserve.

The paths should be of minimum 2.5m width and be a shared pedestrian/cycle path with appropriate sign posting in accordance with the requirements of *AUSTROADS Guide to Traffic Engineering Practice Part 14 – Bicycles*. The paths should be designed to be accessible for both persons in wheel chairs and for vision impaired persons to the extent possible given the topography of the site. The design of the path, together with an access report should be provided for approval with the development application.

Sight Distances

9. A road safety statement is to be provided on the junctions and house driveway locations on the curves of the loop road. The statement is to be provided with the development application and is to address a Safe Intersection Sight Distance for traffic travelling at 50km/h.

Traffic Report

10. A detailed traffic report is to be submitted with any development application re-evaluating the anticipated traffic routes (after discussions with Council's traffic engineer) looking at the suitability of the design of the following intersections to cater for the additional traffic (having regard to level of service, safety of design and queuing lengths):

- Leo Drive/Matron Porter Drive ✓
- Matron Porter Drive/Princes Highway ✓
- Matron Porter Drive/Bannister Head Road ✓

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- Bannister Head Road/Tallwood Avenue x
- Golf Avenue/ Princes Highway x
- Illatt Street/ Princes Highway y

Any works required to make the intersections safe as a result of the increased traffic are to be funded by the applicant.

Accessibility Report

- 11 An Accessibility Plan is to be prepared by a suitably qualified access expert addressing the suitability of the design of the subdivision in relation to the requirements of the Building Code of Australia, AS1428 and the Disability Discrimination Act.

The plan is to be provided for approval with the Development Application and is to include, but not be limited to, an assessment of the following:

- Paths of travel (ie paving material, gutter crossings, gradients and the like)
- Levels of lighting along the pedestrian/cycleway and in the parks; and
- Design and accessibility of the child play areas.

Design of Roads

- 12 14. Details of the design of roads, to be in accordance with Shoalhaven City Council's standards, are to be provided with the Development Application. Information to be provided is to include details of:

- Standard of construction;
- Footpaths;
- Gutter crossings;
- Guttering;
- Lighting; and signage.

Provision of Bus Stops

- 13 12. The applicant is to provide bus stops (signage) along an approved bus route (looping through the site along the elongation of the access way off Leo Drive, along the loop road travelling northward and back to Leo Drive via the elongation of Gemini Wa). The location of the bus stops is to be determined in consultation with the operators of Ulladulla Bus Lines Pty Ltd (or other service provided if appropriate). Bus stops are to be provided at the completion of the final stage of the subdivision, subject to confirmation of the provision of the bus service.

Staging

- 14 13. The development shall be carried out generally in accordance with the approved Staging Plan, which is to be amended to reflect the amended lot layout and is to be submitted for approval with the development application. The provision of infrastructure is to be carried out as follows:

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- Construction of southern park: At completion of Stage 3 and prior to release of Subdivision Certificate for that Stage;
- Construction of northern park: At completion of Stage 5 and prior to release of Subdivision Certificate for that Stage;
- Completion of Bio-Swale and associated landscaping/weed removal: Proportion adjacent to each stage at completion of that stage and prior to release of Subdivision Certificate for that Stage;
- Construction of Pedestrian/cycle path to reserve: At completion of Stage 6 and prior to release of Subdivision Certificate for that Stage;
- Construction of roundabouts/traffic calming devices and paths: At completion of Stage to contain the works and prior to release of Subdivision Certificate for that Stage;
- Construction of roundabout to intersection of access way off Leo Drive and Leo Drive: At completion of Stage 1 and prior to release of Subdivision Certificate for that Stage;
- Construction of roundabout to Leo Drive and Scorpio Way Gemini Way and Seawind Parade: At completion of Stage 2 and prior to release of Subdivision Certificate for that Stage; and
- Construction of roundabout to Seaspray Street and Seawind Parade: At completion of Stage 10 and prior release of Subdivision Certificate for that Stage.

More than one stage can be constructed concurrently subject to the stages occurring in the same order and subject to the above works being completed with the relevant stages, without need to modify the master plan. Given the need for local infrastructure, such as the local schools, to keep pace with the release of land, no more than 25 lots shall be released in any 12 month period. This requirement may be waived with the written approval of Council and upon receipt by Council of a written confirmation from the Department of Education indicating that the residents of the additional lots can be catered for at local schools.

Dedication of Environmental Protection Land

- 15 14. The development consent for the subdivision of the site is not to be released until the land zoned Environmental Protection 7(a) and 7(d2) to the west and north/west of the site in the same ownership has been dedicated to Shoalhaven Council.

The land to the west and north of the proposed loop road is to be dedicated to Council, for the purpose of drainage reserve and environmental protection, at the completion of Stage 10 and prior to the sale of any lots within that Stage.

Stormwater Maintenance and Monitoring

- 16 15. An Operation and Maintenance Manual to be prepared for the stormwater system and a copy provided to Council prior to the commencement of works on Stage 1. The maintenance requirements of the manual are to be carried out by the developer for a period of 2 years after the sale of the last property within each relevant Stage or until a minimum of 80% of the dwellings within that stage

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are complete, which ever occurs first.

A water quality monitoring program is to be prepared and submitted for approval prior to the commencement of works on Stage 1. The monitoring program is to be carried out by the developer for the length of the project and until at least 80% of dwellings are completed on all Stages.

Owner's Consent

- 17 18. The written owner's consent of the owner of the land between the proposed elongation of Seaspray Street on the subject site and Seaspray Street is to be submitted with the development application for the subdivision.

ATTACHMENT B

FILE NOTE OF MEETING WITH
SHOALHAVEN COUNCIL TRAFFIC AND TRANSPORT MANAGER

Infrastructure & Asset Management



File: SF9366
Date: 18th April, 2005
Subject: SUBDIVISION NARAWALLEE SF9366 OUTSTANDING TRAFFIC ISSUES

FILE NOTE

FINAL DRAFT FILE NOTE RE : NARAWALLEE SUB-DIVISION
SF-9366 (Lodged 08/07/2003)
DISCUSSIONS HELD THURS 14TH APRIL, 2005 RE OUTSTANDING TRAFFIC ISSUES

The purpose of this file note is record a summary of conversation that took place in a meeting at Council (12:30pm and 1:00pm on Thursday 14th April, 2005) between Scott Wells (representing Council's Traffic Unit), Mr Peter Lean (Sub-Division Applicant), and Mr Tim Rogers (traffic consultant representing the Sub-Division applicant)

The meeting was requested by Mr Tim Rogers and it is my understanding that this followed advice by DIPNR that there were outstanding traffic issues that required resolution (through consultation with Council) before the application could proceed further.

The meeting format involved discussion on each item (traffic) considered outstanding by DIPNR.

This file Note does not attempt to summarise every outstanding item however attempts to document the more important discussion points.

Leo Drive

- Current Recommendation : Roundabout at the intersection of Leo Drive and Scorpio Gr
- Current Recommendation : Roundabout at the intersection of Leo Drive with Sub-Division main east-west access north of Aries Place

Mr Rogers : commented that it was their opinion that the roundabouts were not necessary. This is on the basis that there is adequate capacity at the intersections.

Mr Wells : responded agreeing that it was unlikely that capacity was the main concern but outlining that he believed facilities were necessary along Leo Drive to improve safety by controlling speeds and that the increased traffic from this sub-division would in no doubt exacerbate the safety concerns. Mr Wells suggested that LATM devices at appropriate locations could be considered in leui of the roundabout proposals.

Mr Lean (Applicant) : added that they (the applicant) would be happy to consider installing LATM devices at appropriate locations.

Mr Wells : agreed that it was not possible to agree on appropriate locations at the meeting however he (Mr Wells) agreed to investigate and advise of appropriate locations for LATM devices that would result in reduced speeds at the two subject intersections. He advised that this would be undertaken at the soonest possible time.

Intersection Gemini Way / Seawinds Pde

- Current Recommendation : Roundabout to be provided at the intersection (with the suggestion of possible cost sharing between two sub-division developers)

Mr Rogers : commented again that it was his opinion that the subject roundabout was not necessary. This is on the basis that there is adequate capacity at the intersection.

Mr Wells : responded similarly to above agreeing that it was unlikely that capacity was the main concern but outlining that he believed the roundabout was necessary to improve safety at the junction by controlling speeds and regulating flow.

Mr Lean (Applicant) : added that they (the applicant) would accept this condition and given the unlikely timeframe over other potential sub-division (Sea-Spray St) that they (the applicant) would accept the full cost of this facility.

Internal Intersection (main internal intersection immediately to the west of Leo Drive)

- Current Recommendation : Roundabout to be provided at the intersection

Mr Rodgers : commented that the applicant has agreed to provide this roundabout

General Condition in relation to sight distance at driveways and intersections

- Current Recommendation : General recommendation about need to ensure adequate sight distance at all driveways and intersections

Mr Rogers : commented that he did not fully understand the need for this specific condition and added further that in his opinion - he could not foresee any sight distance related problems with the revised sub-division layout that could not be addressed through detailed design.

Mr Wells : responded by pointing out a number of areas that were raised as sight distance concerns. It was noted that the south-western road alignment was still of concern despite the east-west road being deleted (discussed in next point). The northern end of the sub-division layout was discussed in particular. Mr Wells added that the revised layout had appeared to have addressed the main problem areas but noted the proposed grade and curvature of the northern perimeter road may still be a problem for access to the northern lots. It was demonstrated (measuring from plan) that it was possible that there would still be adequate sight distance in this vicinity and it was also pointed out that traffic volumes at this end of the sub-division would be very low.

Mr Rogers : Added that he is confident this issue would be satisfied through process of final detailed design of the roadway and determination of final driveway locations to maximize sight distance.

Mr Wells : responded by emphasizing the importance of the proposed (recommended) LATM devices along the western perimeter road and added that a design would need to be undertaken to determine appropriate locations of the LATM devices and that it should be possible to design a treatment at the northern end of the western perimeter road to control speeds of vehicles approaching the northern curve. It was agreed that this would resolve the safety concerns relating to the subject curve. Mr Wells agreed that this could be addressed through detailed design and an appropriate condition of consent requiring the intersections and locations of driveways to comply with relevant standards with respect to sight line requirements.

LATM devices – Sub-Division roads

- Current Recommendation : unsure of exact wording of recommendation however I believe LATM devices are required to control speeds at appropriate locations along the western perimeter road and at appropriate locations along the eastern north-south road.

Mr Rogers : commented that the applicant has agreed to provide these facilities. It was advised that a design has yet to be undertaken and that this would be addressed through detailed design and an appropriate condition of consent.

Mr Wells : the importance of the LATM devices was re-emphasized. It was added that a design would need to be prepared of all works for Council's approval. Design of all traffic devices and all traffic devices and intersections where regulatory signs / markings are required are to be forwarded to the Local Traffic Committee for comment prior to approval by Council. This could be done after development consent was issued.

Road alignment – south west corner of Sub-Division

- Current Recommendation : unsure of exact wording of recommendation however concerns have been raised with respect to the likelihood of high speeds around the subject curve and the recommendation would have eluded to the need to control speeds around the curve.

Mr Rogers : commented that the east-west link that was of most concern had been removed as suggested .

Mr Wells : raised the issue of safety in the vicinity of access to proposed properties at the south western corner of sub-division and added that it was hoped this could be addressed through appropriate intersection design (connection to Sea-Spray Street) to control speeds.

There was then discussion in relation to the future potential sub-division of lands to the west of Sea-Spray Street.

Mr Wells : advised that it was desirable that Sea-Spray Street be continued west to the potential future sub-division and that the western perimeter road of the subject sub-division meet Sea-Spray Street at 90 degrees.

It was agreed that this would result in a marked improvement to safety when compared with the current proposal, however the difficulties associated with timing and uncertainty of the potential future sub-division were also discussed.

Mr Lean (Applicant) : advised that the subject area was the last stage of sub-division and suggested that there was time to resolve this issue in conjunction with the adjacent future sub-division. Mr Lean further added that they (the applicant) were happy to provide a roundabout at the subject location at their cost if that meant resolving the safety concerns in this vicinity.

It was agreed that an appropriate flexible condition could be applied whereby if the adjacent sub-division proceeds prior to the final stage of the subject sub-division and Sea-Spray Street is realigned to connect directly into the adjacent Sub-Division – then no works would be required other than extending the western perimeter road (of the subject sub-division) to connect with Sea-Spray Street as a standard T-Junction. This would provide adequate speed control in this vicinity of the western perimeter road. Alternatively – if the final stage of the subject sub-division were completed first – then a roundabout would need to be provided first (as a road safety device providing adequate speed control) and at an agreed location that would allow the adjacent sub-division to connect into that roundabout at a later stage. It was agreed that this roundabout would be at Mr Leans cost.

Traffic Impact Assessment to consider broader impacts on the wider road network

- Current Recommendation: unsure of exact wording of recommendation however I believe the recommendation seeks an understanding of the broader impacts of this sub-division on the road network.

Mr Rogers: commented that this assessment has been undertaken but has not specifically addressed all of the intersections and roads requested.

Mr Wells: responded by advising that the subject sub-division was of significant size in the local area and that it was perfectly appropriate that Council request an assessment of the true impacts of the sub-division on the surrounding road network.

Mr Rogers: commented that he did not dispute the traffic distributions suggested by Mr Wells.

Mr Wells: added that the distributions were determined based on local surveys as well as estimates from Council's TRACKS models of the Milton-Ulladulla area. Mr Wells further added that the distributions are used to determine appropriate section 94 apportions and can be used to determine the impact of the sub-division prior to a northern link road being built.

In that respect it was discussed that it was not fair to ask the applicant to address road safety issues along Tallwood Avenue and Mitchell Parade AS WELL as contribute to the northern link Road.

Mr Wells : responded advising that it was not known whether any Interim works are required as an assessment has not been undertaken, and advised that it was perfectly appropriate for such an assessment to be undertaken given the uncertainty of when the Northern Link Rd would be completed. Mr Wells pointed out a potential rat-run from the sub-division with the potential use of Manning Avenue (eastern end) and Tallwood Avenue in lieu of Bannister Head Road due to current priority controls. Mr Wells further added that it was more than likely that potential Interim problems may arise with associated again with increased traffic and higher speeds rather than capacity concerns.

Mr Rogers: agreed that the additional assessment will be undertaken and a supplementary report prepared.

Mr Lean (Applicant): advised that the intersection of Bannister Head Road and Tallwood Avenue may benefit from the installation of a roundabout.

Mr Wells : responded by advising that a roundabout installation at the intersection of Bannister Head Road and Tallwood Avenue may encourage traffic to remain on the main road network rather than rat-run via Manning Street (east). It was suggested that the local area would almost certainly benefit from the speed control characteristics that a roundabout could provide at the intersection.

Mr Lean (Applicant) : advised that the least he (the applicant) could provide would be a roundabout at that intersection (Bannister Head Road and Tallwood Avenue) if it were considered that would improve road safety and off-set any Interim problems that may arise following his sub-division (prior to the Northern Link Rd being built).

Mr Wells: responded by advising that Council would be happy to consider such a proposal and that any such proposals should be inclusive to the outstanding traffic assessment to be undertaken by Mr Rogers.

Section 94 plans – road works on Northern Link Road and Matron Porter Drive

Mr Wells: advised that the above projects were in the current section 94 review and that the extent of proposed works and cost estimates had been reviewed recently. Mr Wells advised that among other section 94 projects - the subject sub-division would also be required to make contributions under the section 94 plan to those identified roadworks projects. The projects and extent of works were discussed briefly.

Summary

1. Assessment of the following intersections to be undertaken, Bannister head Rd/Tallwood Ave, Princes Highway/Illet Street and Princes Highway Golf Ave.
2. Amended subdivision plan addresses a number of (but not all) issues previously raised with internal layout;
3. It was agreed that issues of traffic management within the proposed subdivision and appropriate sight lines at intersections and driveways can be addressed during detailed design and appropriately conditioned;
4. Applicant and Council agreed to the following traffic management measures external to the site:
 - ❑ Roundabout at Gemini/Seawinds;
 - ❑ Roundabout at Tallwood/Bannister Head Road; and
 - ❑ LATM devices on Leo Drive between Sagittarius Way and Aries Place.
5. Roundabouts and LATM devices of mountable bitumen construction would be considered where appropriate;
6. Supplementary traffic report to be prepared to assess amended scheme, revised traffic distribution, additional intersection assessment and agreed external works. With respect of all outstanding traffic issues (current on Thursday 14th April, 2005) – the supplementary traffic report shall clearly identify the status of all outstanding issues.

Scott Wells
Traffic & Transport Manager

Significant events that have occurred following the noted discussion on Thursday 14th April, 2005.

Comment from Mr Peter Lean Monday 18th April, 2005 via email (in response to File Note) :

"I agreed to a roundabout at Tallwood /Bannister on the basis of your rough estimate of approx \$15,000. Should the roundabout require major reconstruction of the existing kerbs, or resumption of property, I would have to back off from the offer. This roundabout is needed now, as there has been quite a few accidents at the corner, and I was offering on the basis that it would help any additional traffic from our subdivision, but also as a gesture to the Mollymook community. Please advise your estimates of cost".

Response from Mr Scott Wells Monday 18th April, 2005 via email :

"My 'rough estimate' was provided on the assumption that the roundabout could be retrofitted to existing kerbs and be of bitumen construction in leui of concrete.

Without atleast undertaking preliminary investigation (site inspection / measurements) - I cannot provide indicative cost estimate with confidence and certainly could not provide a more accurate cost estimate until a design has been undertaken. Given your comments (that I do recall) and under that basis - perhaps you should consider a straight \$15,000 contribution towards the intersection upgrade or we could consider wording along the lines of 'an agreed fair and reasonable contribution'.

None the less - it is evident that if we are going down this path, that we need to understand in more detail the works involved and associated costs.

Suggest that Tim Rogers undertakes the assessment in the first instance and that we undertake more formal discussions re works required and funding arrangements of any upgrade of Tallwood / Bannister Head Road intersection prior to final consent being determined."

Response from Mr Peter Lean Monday 18th April, 2005 via email :

"Thanks Scott, and I would be happy with the contribution, but on the basis that the work is done sooner rather than later"

Investigations conducted by Mr Scott Wells (Shoalhaven City Council) immediately following the above discussions.

Email advice to Tim Rogers and Peter Lean (from Mr Scott Wells Monday 18th April, 2005) :

"With respect of my subsequent investigations - I note that there is an existing raised LATM device (flat top hump with kerb extensions / narrowing) located on Leo Dr approximately 75m north of Scorpio. To satisfy the the requirement for adequate speed control - I would recommend additional facilities on Leo Drive (approximately at Bdy 95/97 Leo Drive, ie approximately 120m south of eastern Sub-Division access Rd, and in the vicinity of 48 Leo Drive, ie approximately 50m south of Scorpio). In my opinion - this would ensure adequate speed control and adequate spacing of facilities. I have discussed this option with Robert Sutherland (Council's Infrastructure and Asset Manager) and we agree that this could provide an acceptable road safety improvement in leui of the roundabout proposals. I intend to note this detail as supplementary comment to the File Note".

Scott Wells
Traffic & Transport Manager

Distribution :

Mr David Mutton (DIPNR)
David Pym (Manager – Sub-Divisions, Shoalhaven City Council)
Robert Sutherland (Manager – Infrastructure and Assets, Shoalhaven City Council)
Mr Peter Lean (Applicant)
Mr Tim Rogers (Traffic Consultant - Colston Budd Hunt & Kafes)