ELDERSLIE PROPERTY INVESTMENTS PTY LIMITED

TRANSPORT REPORT FOR PROPOSED SUBDIVISION, DOLPHIN POINT

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1. INTRODUCTION

1.1. Colston Budd Hunt & Kafes Pty Ltd has been commissioned by Elderslie Property Investments Pty Limited to prepare a report examining the transport implications of a proposed subdivision at Dolphin Point on the New South Wales south coast. The site is located south east of the Princes Highway, south of Burrill Lake, as shown in Figure 1.

1.2. The overall development incorporates a project application as well as a concept plan under the provisions of Part 3A of the Environmental Planning and Assessment Act, 1979. Stage 1 has been approved for development of 72 residential lots. This report assesses the implications of the project application for Stages 2 and 3 as well as taking into account potential future development of Stage 4. A future project application will be made for Stage 4, which could include a range of uses such as residential and commercial. Stage 5 will comprise passive open space.

1.3. The findings of our transport assessment are set down through the following chapters:

- Chapter 2 - describing the existing conditions; and
- Chapter 3 - assessing the transport implications of the proposed subdivision.

2. EXISTING CONDITIONS

Site Location and Road Network

2.1 The site of the proposed subdivision is south east of the Princes Highway, south of Ulladulla and Burrill Lake as shown in Figure 1. It is currently vacant. East of the site there are residential properties in Dolphin Point. Between the site and these properties there is land zoned for future residential development. South and west of the site there is state owned land. To the north there is an approved residential subdivision comprising 72 lots (Stage 1 of the concept plan).

2.2 The road network in the vicinity of the site includes the Princes Highway, Dolphin Point Road and Link Road. The Princes Highway is the major transport route along the NSW South Coast. It passes through Ulladulla and Burrill Lake to the north and Lake Tabourie to the south. Through these towns it generally has one parking and one traffic lane in each direction with a 50 to 60 kilometre per hour speed limit. Outside the towns, the Princes Highway has one traffic lane in each direction with unsealed shoulders, and an 80 to 100 kilometre per hour speed limit.

2.3 Dolphin Point Road runs east from Princes Highway, south of the bridge over Burrill Lake. The intersection of Dolphin Point Road with Princes Highway is an unsignalised t-intersection controlled by give way signs. All turns are permitted at the intersection. Left turn deceleration and acceleration lanes are provided on the Princes Highway for traffic turning to and from Princes Highway. Dolphin Point Road provides access to tourist accommodation and open space and recreational areas adjacent to Burrill Lake. It connects to Highview Drive which provides access to residential properties in Dolphin Point.

2.4 Link Road runs west from Dolphin Point Road and provides access to the existing Stage 1 subdivision north of the site. The intersection of Link Road with Dolphin Point Road is an unsignalised t-intersection controlled by stop signs. Inside the existing residential subdivision, Link Road connects to a roundabout. From the roundabout, there is a connection to a recently constructed roundabout at the Princes Highway/Wallaroy Drive intersection.

2.5 Shoalhaven Council has prepared Development Control Plan No. 2 Dolphin Point. DCP 52 provides for the closure of Dolphin Point Road at Princes Highway now that the new access is constructed at the Princes Highway roundabout.

2.6 The roundabout on Princes Highway provides one lane on each approach. It is understood that provision has been made in the design of the roundabout for future provision of two circulating lanes.

Traffic Flows

2.7 Traffic counts undertaken during weekday morning and afternoon peak periods indicate the following two-way peak traffic flows:

- Princes Highway: some 480 to 550 vehicles per hour; and

- Dolphin Point Road and Link Road: some 50 to 100 vehicles per hour.

2.8 Observations made during peak periods indicate that the intersections of Princes Highway with Dolphin Point Road and Link Road are operating at good levels of service during morning and afternoon peak periods.

Public Transport

2.9 Ulladulla Bus Lines operates the 740/741 bus service between Ulladulla and Burrill Lake along the Princes Highway. This service operates five times per day in each direction on weekdays and three times in each direction on Saturdays.

3. IMPLICATIONS OF PROPOSED SUBDIVISION

3.1 Stages 2 and 3 of the proposed development comprise a residential subdivision of 174 lots. Vehicular access is proposed through the existing Stage 1 subdivision to the north. An indicative concept layout of the proposed subdivision is shown in Figure 2.

3.2 Parking will be provided in accordance with Council's requirements and be finalised at the time of applications for individual dwellings. This chapter examines the implications of the proposed subdivision through the following sections:

- public transport;
- access and internal layout;
- traffic generation and effects; and
- summary.

Public Transport

3.3 The proposed subdivision is close to bus services which operate along Princes Highway between Burrill Lake and Ulladulla. The site will therefore be accessible by existing public transport services.

3.4 The proposed subdivision, with its increase in residential population, will strengthen demand for public transport services in the area.

Access and Internal Layout

3.5 DCP 52 identifies that access to the development should be provided through the adjacent residential subdivision to the north. It also identifies that provision should

be made for future access through the proposed subdivision to land to the east (to future residential development) and west and south (public access to state owned land). The proposed subdivision makes provision for these vehicular connections.

3.6 Vehicular access is proposed through the adjacent residential subdivision to the north. This connects, in turn, to the Princes Highway via the existing roundabouts on Link Road and the Princes Highway.

3.7 Internal circulation roads within the proposed residential subdivision will be designed in accordance with the principles in Council's Subdivision Code (DCP 100). Local streets (as defined in the subdivision code) will be provided with 18 metre reserves, 4.5 metre verges and nine metre carriageways. Access streets will have 16 metre reserves with four metre verges and eight metre carriageways. Access places will have 13 metre reserves with verges on both sides.

3.8 The principles in the subdivision code have been developed from AMCORD. Within residential precincts, the subdivision code/AMCORD distinguishes two levels of streets, local streets and collector streets.

3.9 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. Bicycles are generally provided for on-street.

3.10 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.

3.11 The adoption of the subdivision code/AMCORD guidelines provides an appropriate framework for the promotion of alternative travel modes to the private car, in particular, improved pedestrian and cyclist facilities.

Traffic Generation and Effects

3.12 Traffic generated by the proposed development will have its greatest effects during the morning and afternoon peak periods. Surveys undertaken by the RTA indicate that residential subdivisions generate 0.85 vehicles per hour per lot two-way during peak hours. Council's subdivision code indicates a traffic generation of 10 vehicles per day two-way which is equivalent to one vehicle per hour during peak hours and is higher than the RTA's rate. We have adopted Council's rate in assessing the traffic effects of the proposed development.

3.13 The proposed residential subdivision (Stages 2 and 3) will therefore generate some 175 vehicles per hour two-way during the morning and afternoon peak periods. The approved subdivision (Stage 1) would generate some 70 vehicles per hour two-way.

3.14 We have also considered the potential traffic effects of future stages of the concept plan. At this point in time, Stage 4 is being planned. However, we understand that likely uses could include commercial/retail space, medium density residential development and tourist accommodation.

3.15 Based on these uses, Stage 4 could generate some 200 to 250 vehicles per hour two-way during peak hours. We have assessed 250 vehicles per hour. Stage 5 will be passive open space and should therefore not generate significant additional traffic.

3.16 During the morning peak hour, some 70 per cent of traffic would be outbound. The reverse would apply in the afternoon.

3.17 The Department of Planning has requested that 10 year future traffic flows be considered. We have assessed a 10 year growth scenario for traffic flows on Princes Highway. The analysis we have undertaken is considered conservative because the proposed development would be a proportion of the growth over the next 10 years. Nevertheless, we have increased traffic on the Princes Highway by two per cent compound for 10 years and added the development traffic on top of this growth.

3.18 DoP has also requested that holiday traffic volumes be considered. Traffic data published by the Roads and Traffic Authority indicates that holiday flows are approximately double weekday flows. We have therefore doubled traffic flows on the Princes Highway.

3.19 The additional traffic has been assigned to the road network. Base peak hour traffic flows are shown in Figures 3 and 4. Base flows comprise future 10 year holiday flows on Princes Highway plus redistributed traffic with Dolphin Point Road closed, plus traffic from the approved Stage 1 72 lot subdivision. Figures 3 and 4 also show additional development traffic from Stages 2, 3 and 4. A summary is provided in Table 3.1.

Table 3.1: Base two-way peak hour traffic flows plus development traffic

Road	**Location**	**AM peak hour**		**PM peak hour**	
		Base flow	Plus development (stages 2, 3, 4)	Base flow	Plus development (stages 2, 3, 4)
Princes Highway	North of Link Road	1,165	+300	1,195	+300
	South of Link Road	1,045	+125	1,070	+125
Link Road	East of Princes Highway	185	+425	180	+425

3.20 Table 3.1 shows that traffic increases on Link Road would be some 425 vehicles per hour two-way during peak hours. Increases on Princes Highway would be lower at some 125 to 300 vehicles per hour two-way during peak hours.

3.21 Roads within Stages 2 and 3 would generally carry traffic flows less than 100 vehicles per hour two-way as a result of the proposed development. This level of traffic would not be unexpected for these roads.

3.22 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The intersection of Princes Highway with Link Road has been analysed using the SIDRA program for the traffic flows shown in Figures 3 and 4.

3.23 SIDRA analyses isolated intersections controlled by signals, roundabouts or signs. The program produces a number of measures of intersection operations. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA 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 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"	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

3.24 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.

3.25 The analysis found that with future 10 year holiday flows, Dolphin Point Road closed and the additional development traffic from Stages 1 to 4, the one lane roundabout at the intersection of Princes Highway with Link Road and Wallaroy Drive would operate with average delays of less than 20 seconds per vehicle during morning and afternoon peak periods. This represents levels of service B, a good level of service.

3.26 Therefore the roundabout at the intersection of Princes Highway with Link Road and Wallaroy Drive has capacity to cater for the approved Stage 1 development, the proposed development of Stages 2 and 3, future development of Stage 4, the closure of Dolphin Point Road and future traffic growth on Princes Highway during holidays.

3.27 At this stage the overall construction methodology, process and staging has not been defined for Stages 2 and 3. However, indicative peak construction traffic flows have been estimated based on information provided by the study team.

3.28 Peak daily traffic flows during construction would be up to some 200 vehicles two-way. These flows would include peak deliveries of construction materials of some 40 to 50 deliveries per day.

3.29 Based on an eight hour working day, the peak traffic generation of 200 vehicles per day is equivalent to an average of some 25 vehicles per hour two-way. The surrounding road network will be able to cater for these relatively small traffic movements.

Summary

3.30 In summary, the main points relating to the proposed subdivision in Dolphin Point are:

(i) Stages 2 and 3 of the concept plan are for a residential subdivision comprising 174 lots;

(ii) vehicular access to the proposed subdivision will be via Link Road and the existing residential subdivision to the north;

(iii) the proposed access arrangements satisfy the intent of DCP 52 and are considered appropriate;

(iv) internal roads will be provided in accordance with the principles in Council's Subdivision Code and AMCORD;

(v) the proposed development would have a peak period traffic generation of some 175 vehicles per hour two-way during peak hours; and

(vi) the road network will be able to cater for the approved Stage 1 development, the proposed development of Stages 2 and 3, future development of Stage 4, the closure of Dolphin Point Road and future growth on Princes Highway during holidays.

LOCATION PLAN

1

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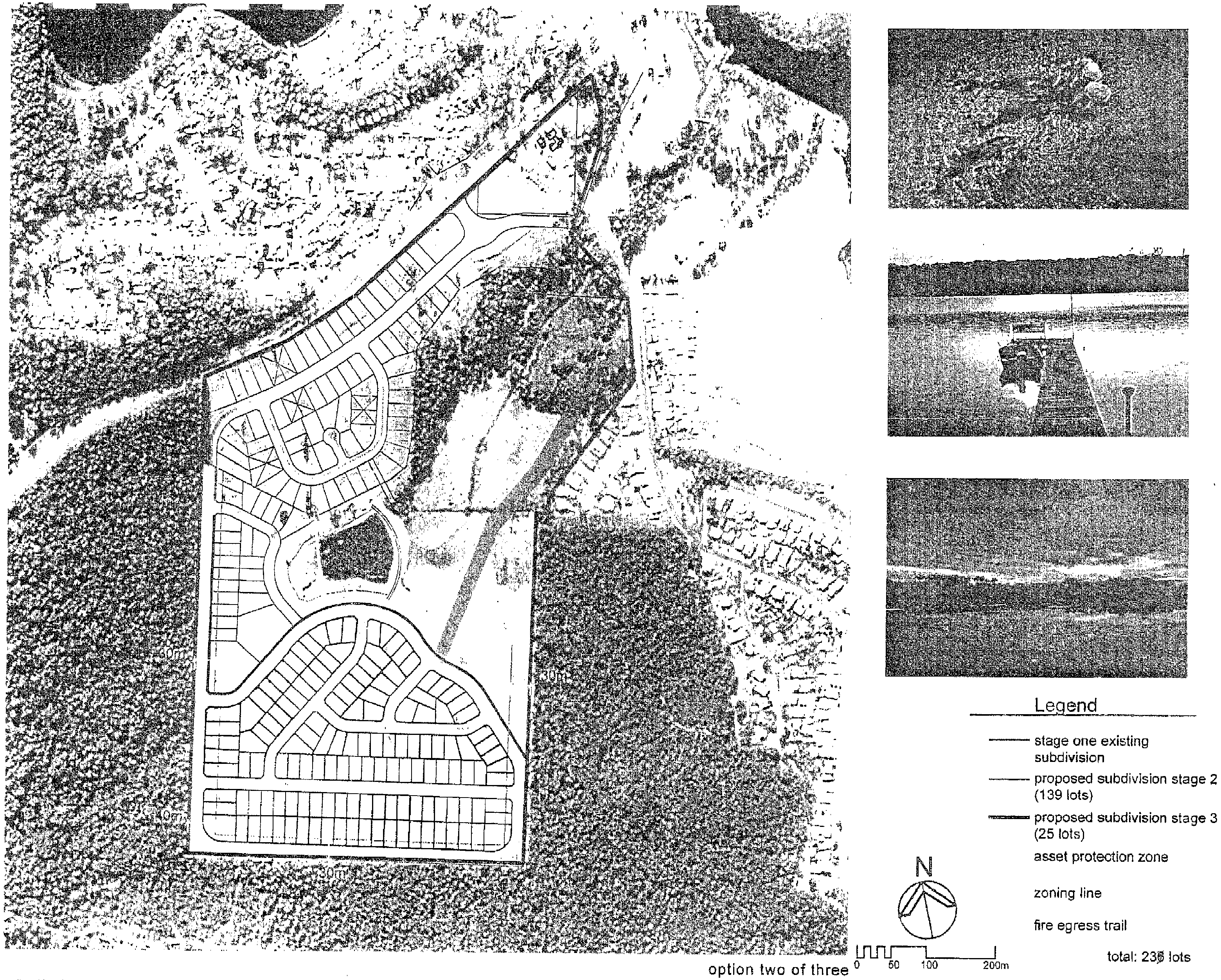

suite 1/1 ridge street north sydney nsw 2060

Dolphin point

stage two subdivision layout alternatives

INDICATIVE SUBDIVISION LAYOUT FOR STAGES 2 & 3

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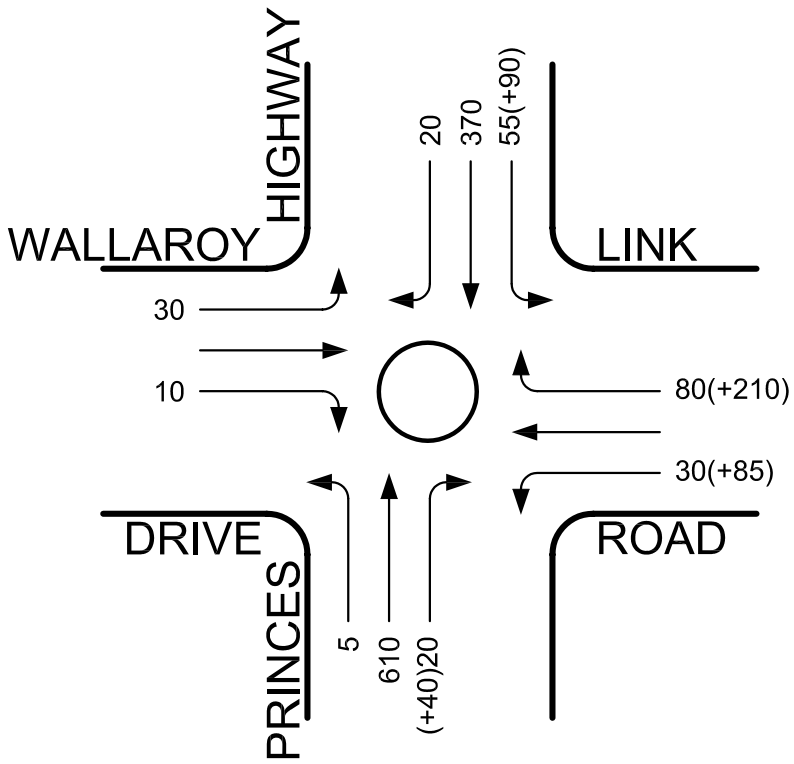
2



LEGEND:

100 - Base Peak Hour Flows (existing flows plus 10 years growth plus approved development plus Dolphin Point Road closed, holiday periods)

(+10) - Additional Development Traffic from Stages 2,3 & 4

○ - Roundabout

BASE 10 YEAR MORNING PEAK HOUR TRAFFIC FLOWS PLUS DEVELOPMENT TRAFFIC

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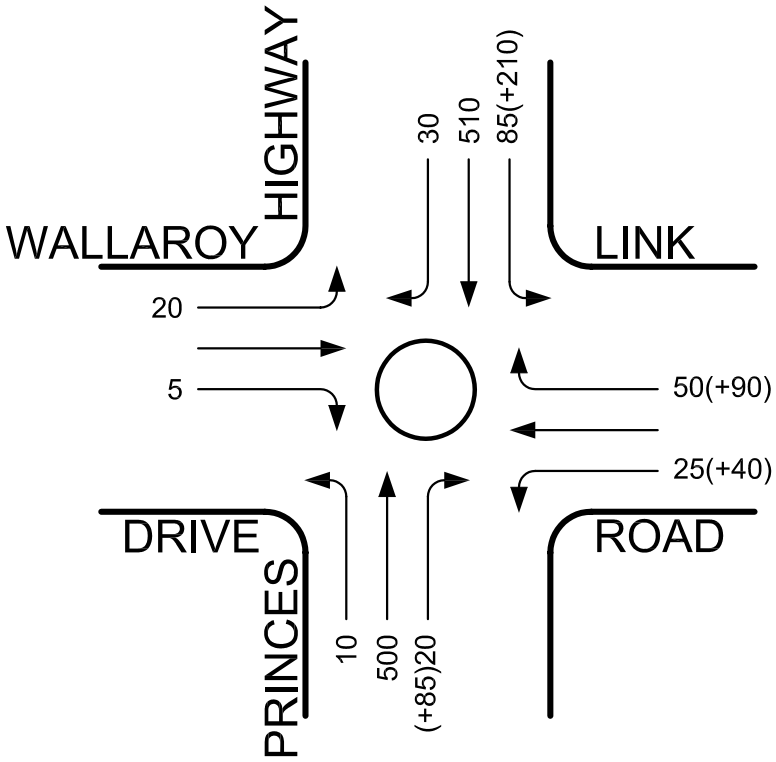
3



LEGEND:

100 - Base Peak Hour Flows (existing flows plus 10 years growth plus approved development plus Dolphin Point Road closed, holiday periods)

(+10) - Additional Development Traffic from Stages 2,3 & 4

○ - Roundabout

BASE 10 YEAR AFTERNOON PEAK HOUR TRAFFIC FLOWS PLUS DEVELOPMENT TRAFFIC

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