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To NSW Department of Planning.

Submission by Robin Moyes on the North Nowra Link Road options.

Background

I have been a Shoalhaven resident since 1980, much of that time living in West Cambewarra. From 2004 until early 2008 I frequently drove my daughters to and from Nowra High School using Illaroo Rd at peak travel times. In 2008 I moved, with my family, into Nowra.

I have been actively interested in the North Nowra link road issue since 1995 and have acted as a spokesperson for the Friends of Bomaderry Creek which is an informal group opposed to the construction of a road or roads through Bomaderry Creek Bushland. I am also a member of the Bomaderry Creek Landcare Group.

Although I have a great affection for the environment of Bomaderry Creek and an interest in and knowledge of many of the plant and animal species contained therein, the main emphasis of this submission is on traffic management and the reports and documents the proponents have submitted in support of their position. I have focussed on this area during my involvement with this issue because it is clear that on environmental grounds the northern, or West Cambewarra Rd option, is markedly superior to (much less damaging than) either of the central routes. The area where real debate remains is on the effective management of existing and future traffic issues.

In comparing the different options I will focus mainly on council's stated preferred central option from Pitt St to Narang Rd (Pitt/Narang) and the West Cambewarra Rd link (the northern link). The southern route is probably ruled out by its extra cost and, without going into specifics, it faces many of the same difficulties in gaining approval that the central route faces. I don't believe council have ever been serious about constructing the southern option and may have suggested it as a way of making Pitt/Narang look less un-appealing to those community members opposing council's central route.

It would not be possible for me to address all the concerns I have with the proponent's application even if I confined my remarks to traffic considerations alone. Time constraints both in the form of a deadline by which time objections are to be lodged, but more pressingly the other obligations which my life carries, to my family, my work, my friends and

other responsibilities which I have taken on mean that I must limit the time I devote to this submission. Despite this awareness on my part the time spent directly in preparing this submission amounts to the best part of a working week and the time spent studying reports and absorbing background information and developing my understanding of the complicated concepts involved would be many times that.

Environmental Considerations

I regard the Pitt/Narang option as an environmentally catastrophic plan. It is clear that a significant number of State and Federally listed plant and animal species would be affected/killed by the construction of a Pitt/Narang link either directly during construction or by unavoidable changes to environmental factors following construction or directly as a result of road kill. Appropriately enough these factors have thus far prevented council from gaining approval and they will continue to make it difficult to gain approval. I do not intend to document the species involved or all the potential impacts of Shoalhaven council's proposed road on this valuable environment. Other submissions from more qualified respondents will comment on environmental factors far better than I can.

I will note in passing that the proponents appear to have inadequately documented many of the environmental factors at issue in the Bushland and some of the conclusions they draw are laughable. An example is to claim that the community's sense of ownership of the Regional Park will be enhanced by our ability to drive through it. The Mitchell McCotter Study in (approx) 1995 on the same issue argued that the same central route would increase our access to the Bushland area even though the plans made (and still make) no provision for access to the Regional Park from the link road!

Apart from questions about the adequacy or accuracy of the proponent's documenting of threatened species, the proponents themselves indicate that survey work is still not completed on some of the threatened species. It is clear that the actual impacts of council's proposal cannot be accurately assessed without the survey work being finalised.
Design work for the road and bridge elements is missing much necessary detail and so effects and effectiveness of mitigating actions cannot be assessed. Also costs cannot be accurately assessed although there are other concerns with the supplied cost estimates that will be dealt with later in my submission.

I emphatically reject the land swap deal or offsets that have been proposed by the proponents in support of their plan. The land they are

offering for inclusion in the Regional Park is adjacent to the Park, it cannot be developed and it is already being managed by council as environmentally sensitive land. While the sections on offer undoubtedly contain areas of high environmental value they also include some of the most weed-infested areas of the Bushland and areas of walking trails requiring considerable maintenance. What is really on offer is a change in management status that will reduce council's management responsibilities and costs, at the same time reducing access to special funding such as Landcare grants that are not available for areas managed by the National Parks and Wildlife Service (NPWS).

The proponents have represented this land offset to the community as "50 hectares in exchange for 2 hectares" and therefore a win for the environment. Clearly this approach is dishonest. It attempts to gloss over the effects of constructing a major road through a significant environmental area. Council has consistently argued that the power line easement is already degraded and therefore the additional impacts from their road construction are justifiable. In fact much of the power easement contains native grasses and other species of interest such as the Acacia subtillinervis. Much of the existing power easement in fact constitutes safe and valuable habitat that would be drastically altered in character if it were widened and the Pitt/Narang link constructed.

I believe the true cost of the proponent's land swap is the effective alienation of the northern third of the Bushland (approximately 80 hectares) from the Regional Park and the rest of the Bushland. The values of both sections of the Bushland as well as the areas being offered for addition to the Regional Park would be greatly reduced as a result of the separation that the road would impose. In the Nowra Bomaderry Structure Plan Council has zoned for residential development an area in the northern section of the Bushland adjacent to West Cambewarra Rd. I know that the residents of West Cambewarra Rd oppose that development going ahead. They would be supported by members of the Bomaderry Creek Landcare Group and others who oppose developments that will erode the environmental values of Bomaderry Creek Bushland. I believe the argument that council's proposed housing development in the northern area of the Bushland is not appropriate because of the values exhibited by that Bushland would be seriously eroded if council's proposed road from Pitt St to Narang Rd were to be approved. Another northern section of the Bushland is marked for expansion of the existing tennis courts. This will involve clearing an area of bush. Again, this inappropriate development becomes significantly harder to resist if the area concerned has already been de-valued by council's proposed road. These inappropriate developments would continue the devaluation of the

northern third of the Bushland adding to the management issues for NPWS initially created by council's road construction.
The council's proposals for either the central route or the southern route are completely at odds with some of the core values of the South Coast Regional Strategy (2007) and the Nowra Bomaderry Structure Plan (2008) regarding the maintenance and enhancement of the regions biodiversity and environmental values. The northern option will have environmental consequences but these can be managed in an acceptable manner unlike the options that pass through the body of the Regional Park and fragment significant habitat areas.

Economic Analysis

The proponents argue that the only route that can be justified on economic grounds is the central Pitt/Narang route. They are forced into this position because of the obvious and documented environmental risks and consequences to the Bushland and the Regional Park involved in pursuing their plan for the central route. On P. 178 of the EAR by JBA the proponents include the following from DECCW's policy regarding the revocation of land:

(1) The revocation of lands reserved or dedicated under the NPW Act will generally be undertaken as an avenue of last resort and only where appropriate, for example to correct a boundary error or encroachment where no other practical options are available.

(9) Where a non-permissible activity or development (e.g. a major highway rerouting or upgrade) is proposed by another party and requires the use of NPWS land, either the park boundary can be re-defined to exclude the proposed development or the development cannot proceed because it would encroach upon the park.

(10) In exceptional circumstances and where no suitable alternative sites are available outside of NPWS land, the Minister (only) may direct the NPWS to examine the potential revocation of the area. Circumstances where this may be required may include major Government infrastructure initiatives.

DECCW's policy clearly requires the proponents to establish that there is no viable alternative route available to be able to justify revocation of the Regional Park.

Despite the conclusions reached by the AECOM Report, and repeated in the EAR by JBL, I believe an objective reading of the proponents traffic studies provides considerable evidence that a West Cambewarra Rd link will function effectively, and in a very similar way to a Pitt/Narang route, as a part of the Shoalhaven road infrastructure. I also believe that a thorough and objective reading of the proponents traffic studies raises questions about the accuracy of some aspects of those studies, questions about the

objectivity of some of the conclusions reached and questions about the overall traffic management approach, skills and objectivity of Shoalhaven City Council.

Option Costs

In comparing the economic viability of the different options the relative costs of the different options is an important factor. Concept plan drawings of the road and bridge designs are presented in Appendixes C and D to the proponent's application.
The following table from P.82 of appendix gives the current estimated costs for the different options and shows that the northern route would cost $1.3m more than the council's preferred central route.

Table 7-1: Summary of Key Parameters of Route Options

Parameter	Central Route Option	Southern Route Option	Northern Route Option
Total Length	1810 m	1820 m	1730
Length of Bridge	75 m	105 m	75 m
Cost	$13 M	$18.5M	$14.3

This is surprising given the shorter length of option 3 compared to option 1 and, more significantly, the significantly greater complexity of the bridge required for option 1. Please note that the preliminary drawings for option 3 **do already** include provision for access to the residential West Cambewarra Rd but that the plans for Pitt/Narang **do not** make provision for access to the Regional Park, the existing tennis courts or the existing businesses adjacent to Narang Rd. Provision of such access points will add significant expense to option 1.

Of even greater concern are the cost estimates that the proponent has provided for the different bridge designs. Commonsense told me that because of the increased depth and width of the gorge at Pitt/Narang the bridge would be significantly more expensive than a northern link bridge. According to the proponent's application the 35m central span of the Pitt/Narang bridge will require beams of pre-stressed concrete 1.5m deep and .9m wide. I understand that at 35m long these could weigh 130-140 tonnes each. I am told that the crane work will need to be carried out from the top of the embankments because access to the bed of the gorge is not possible for heavy equipment. This will also constitute a problem for preparation of footings to support the bridge structure.

The West Cambewarra Rd bridge is a far less imposing structure with a central span of about 20m and concrete beams .5m deep and .4m wide. Access to the creek bed is feasible at this location making preparatory work far easier.

In support of my commonsense view I consulted a local civil engineer who is familiar with the area and has over 30 years experience in this type of work. For obvious privacy reasons it is not appropriate for me to name this source. He sent me the following response:

" As a construction engineer with 39 years experience in civil construction, it is my opinion from the information given in the report on display at Shoalhaven City Council, that the rates given for the construction of the bridges at the 2 West Cambewarra Road options and the Narang Road option are incorrect.
From an inspection of all the sites and from study of the plans it is clear that both West Cambewarra bridge options will be significantly cheaper than the Narang Road bridge though in the report the square meter rates are similar. This is due to the elevation, access constraints and increased size of girders required due to the 35 metre span across the gorge at Narang Road. I would suggest that a preliminary estimate on the different square metre rates would be in the order of 25-35% increase at the Narang Road option. This cost does not include the relocation of overhead power lines and water trunk main at Narang road although these elements may have already been covered in the road construction costings."

The proponents indicate that the price for the central route includes underground relocation of the power lines and incorporation into the bridge structure but the water main is not mentioned. The bridge design drawings provided by Jim Alexander Bridge Design (Appendix D) show the water main in section as part of the bridge but no indication is given whether he has included the cost of relocation as part of the estimated cost of the bridge. His work does not mention relocation of the power lines. The proponents have given no indication of the specific costs for the relocation of these 2 significant services.

According to the proponents it will cost only $100,000 more to build the Pitt/Narang bridge than to build a West Cambewarra Rd bridge (in 2007 prices). A more realistic assessment based on the professional information given to me is that the Pitt/Narang bridge would be $1 -1.4 million dollars more expensive **without** consideration of the pipeline and powerline issues. I have been told that for safety reasons the powerlines would need to be re-routed away from the bridge alignment before any work using cranes at the gorge could commence. It would be interesting to know whether a site visit was made by Jim Alexander Bridge Design before preparing his price estimates for the proponents.

The proponents should be asked to clarify their conclusions on the relative costs of the chosen options and indicate where in their estimates they have taken account of the complexities involved in moving the power lines and re-routing the water main for the central option. Their responses must adequately explain how they reached the conclusion that the northern, shorter and simpler option would be significantly more expensive than their preferred central option.

Since giving me the advice I have quoted regarding the bridge costings the engineer I consulted has received confirmation from another local engineer, also of at least 30 years experience, that his original advice to me is sound. He has also volunteered the advice that the cost of the West Cambewarra Rd bridge could be reduced a further 40% or so. This would be achieved by reducing the length of the bridge from 75m to 40m and by building the approaches up using compressed roadbase that would be stabilised against flood damage using geo fabric and natural rock battering. He has estimated the cost of built up approaches at $100,000 - $150,000 in 2011 prices. The cost of the bridge would be reduced in proportion to the reduction in length. For a $3.6m bridge the cost would drop to about $2m plus $150,000 for the raised approach roadworks.

Even without taking into account the re-location of power and water services and without allowing for the expense of providing access to facilities and businesses close to Narang Rd the northern option is looking $2.5m - $3m less expensive than the central route. This is a significant change to the parameters on which the AECOM Economic Analysis is conducted. That such apparently obvious weaknesses can be detected in the proponents supporting documents leads me to question both the rigour and possibly the impartiality with which the analysis has been conducted.

AECOM's economic analysis attributes no value, financial or otherwise, to any of the environmental consequences of any of the link road options. On P.76 AECOM says:

"6.6.1.3 Environmental Externalities
No attempt has been made to quantify, in monetary terms, the impact of any development option on the natural environment. An observation of the proposed route alignments appear to traverse through areas of bushland and recreation.

The development of any one of the options may result in a material degradation of the natural environment. However, this appraisal cannot make any accurate assertions as to the relative or absolute impacts on the natural environment resulting from each development option."

It is interesting to re-visit part of the 1993 judgement that **removed** Shoalhaven Council's license to take or kill threatened wildlife in the process of building the North Nowra link road. (Leatch v NPWS & Anor). In his judgement Justice Stein noted:

> "With respect to the northern route two comments are worth making on Mr Nairn's reports. First, he states that environmental factors were not included in the cost/benefit analysis. In this circumstance, the value to the Court of his cost/benefit analysis is limited. Mr Nairn says that the inclusion of environmental values is not required by the State Treasury and not usual in Australia. I find the latter comment hard to accept. There are a number of Environmental Economic models which factor environmental values into cost/benefit analysis. Surely an approach which attempts to integrate economic and environmental factors is preferable. In my opinion the purely economic analysis of the respective alternatives neglected to include natural values in the balance. As a result the northern route via West Cambewarra Road was screened out too early in the process to be properly considered as a real alternative to the preferred route"

One could be forgiven for asking whether anything has changed in council's analysis or presentation since that judgment was made in 1993. The proponents have still attached no value to the loss of environmental (or recreational) assets that will undoubtedly be diminished with the construction of their preferred option. The northern option has been rejected once again (by the proponents) following an economic analysis that, once again, contains no consideration for environmental factors.

With no value attached to the environmental attributes that are at stake, the elaborate compilation of vehicle running costs, and the painstaking adding up and valuing of our time in tiny increments, all carried out over a period of 20 years, means very little. The same approach with no value attributed to undeveloped areas of our environment would justify constructing roads through Centennial Park, Hyde Park and Parramatta Park in Sydney. In fact the argument would carry more weight in those cases because there are more motorists who would save time in tiny increments thus justifying any road construction. The logic employed by the proponents is effectively making the decision on our behalf that we would not value an area like Bomaderry Creek Bushland and Regional Park sufficiently to drive around it rather than through it. While paying lip service to principles of sustainability and maintenance of bio-diversity and habitat the Shoalhaven council gives the motor car and roads an over-riding importance in their decision making which is out of step with modern values and has been for some time.

If Bomaderry Creek Bushland is saved as an intact area its value to the community will appreciate with the passage of time. The benefits it will confer upon the community will grow as development proceeds and natural bushland and recreational areas become more valuable. These benefits, although difficult to quantify in monetary terms, are not limited to 20-year life spans but will continue to accrue in perpetuity.

Traffic Considerations

According to the proponents their traffic modelling demonstrates that the northern option does not provide a viable alternative to their preferred central route. Once again, they are forced to try and sustain this position because there is no debate that the central route is a far more environmentally damaging option than the northern route.
I have already indicated my belief that an objective reading of the proponent's traffic studies provides considerable evidence that a West Cambewarra Rd link will function effectively, and in a very similar way to a Pitt/Narang route, as a part of the Shoalhaven road infrastructure.

In this analysis I am principally examining 2 exhibited documents:
The North Nowra Link Road Options Study by AECOM, which are exhibited as Appendix E in 6 parts (AECOM Report) and
Environmental Assessment Report for North Nowra Link Road by JBA Planning, as exhibited (EAR by JBA).

It would appear that the modelling that underpins the proponent's base conclusions has been built up using a minimum of data and observation.

From AECOM P.7:

The base data has been derived from traffic surveys undertaken by Council on the following dates:

- Thurs 24th November 2005 and Thurs 25th May 2006 (traffic turning movements surveys);
- Thurs 22nd June 2006 and Thurs 29th June 2006 (pedestrian actuation surveys);
- Thurs 24th August 2006 (traffic queue surveys);
- Wed 8th & Thurs 9th March 2006, Wed 15th & Thurs 16th March 2006, Thurs 18th and Wed 24th May 2006, and Thurs 1st June 2006 (traffic travel time surveys); and
- Wed 19th January 2005 and Tuesday 31st March 1998 (traffic weave movement surveys).

Speed zone data was provided by Council and additional data has also been obtained from the RTA, including highway intersection layouts, signal phasing and SCATS data.

A site visit was also undertaken by AECOM to obtain sufficient road network data to ensure that the base case Paramics model network represents a true reflection of the existing road network features and constraints.

For example traffic queue surveys were taken on one day only and traffic

turning movements surveys occurred on only 2 days. AECOM indicate that they made 1 site visit to ensure that their modeling was a true representation of the road network and its constraints.
AECOM compared travel times generated by their modeling to travel times provided to them by council. AECOM P.14 indicates that the supplementary data provided by council was of a very limited nature:

"The lower average travel times modelled by Paramics (compared to council's collected data) *could be a result of the limited number of travel time surveys provided by Council. It is understood that Council carried out two to four runs along each route in each direction. This provides a general indication of travel time at select intervals within a peak period, however, it is considered to be insufficient to provide an accurate indication of the average travel time of all vehicles travelling along each route throughout the peak hour periods."*

AECOM P.12 says:

3.2.1.5 Bus Operations

Bus services were not modeled as there are a minimal number of buses operating within the study area during the peak periods.

This perhaps highlights a failure of Shoalhaven Council to adopt any progressive approach to its traffic management problems. It is also a questionable assumption to make in setting up the modelling because the one time of day when buses do make an impact on the road system is during the morning peak when buses carrying out school runs are present on the road system.

In the Executive Summary to the EAR by JBA the northern option is dismissed in the following manner:

- *The Northern Option fails to meet all project objectives with limited benefits in terms of traffic effectiveness and a net negative benefit / cost ratio. It is unlikely that Council would be able to justify the capital expenditure in the construction of the Northern Option given the net negative benefit / cost ratio.*

I have already raised questions about some of the information and assumptions that underpin the proponents economic analysis.

P.26 of the AECOM Report includes table 4.2 showing anticipated use of the different link road options.

P26 AECOM

Table 4.2: Number of vehicles using the Link Road for each Scenario

Scenario	Link Total (vph)	Link (vph) -> Out of North Nowra	Link (vph) -> In to North Nowra
2005			
AM			
PM			
2016 AM			
Do Nothing 2% Growth			
Do Nothing Structure Plan			
Option 1	536	412	124
Option 1 RCR	611	402	209
Option 2	480	371	109
Option 3	450	348	102
Option 1 MVRDLK	472	352	120
Option 3 MVRDLK	420	278	142
2016 PM			
Do Nothing 2% Growth			
Do Nothing Structure Plan			
Option 1	499	291	208
Option 1 RCR	519	315	204
Option 2	460	267	193
Option 3	478	278	200
Option 1 MVRDLK	389	227	162
Option 3 MVRDLK	385	181	204

Source: AECOM, outputs from Paramics

According to the proponent's modelling, during the morning peak travel time the West Cambewarra Rd link would carry 84% of the traffic that would be carried by a Pitt/Narang link. The modelling indicates that during the afternoon peak a West Cambewarra link would carry 96% of the traffic that would be carried by Pitt/Narang. I find the blanket dismissal from JBL difficult to reconcile with the figures from table 4.2. Later in my submission I will indicate why I believe that the level of use of a West Cambewarra link will be even closer to matching the use level for the central route.

Similarly I have trouble reconciling such a blanket rejection of option 3 with the following text interpreting Table 4.3.2 on travel times throughout the study area.

AECOM P.29

*"**Table 4.3.2** highlights that the construction of a Link Road will reduce the average travel time along Illaroo Road by approximately 2 to 3 minutes in 2016 (based on the NBSP). **Each Link Road option has a similar average travel time along Illaroo Road between 9 to 10 minutes.**"*

And with this text from AECOM P. 37 which is

"The improvement in Level of Service during the AM peak at Page Avenue and McMahons Road intersections with Illaroo Road indicates that Illaroo Road will become less congested with the construction of a Link Road and the flow of traffic will improve from residential roads onto Illaroo Road. This benefit is experienced under each of the Link Road scenarios that have been modelled to a varying degree."

The above text from AECOM is repeated in the following form on P.112 of the EAR by JBA:

"The improvement in Level of Service during the AM peak at the McMahons Road intersections with Illaroo Road indicates that Illaroo Road will become less congested with the construction of any of the Link Roads and the flow of traffic will improve from residential roads onto Illaroo Road."

There is clear acknowledgement in the proponent's own reports that the northern link will have an effective and beneficial effect on the North Nowra traffic flow and amenity.

Even though AECOM reports that *"There are significant traffic increase with Link Option 1 RCR* (River Crossing Relief measures)*, in comparison to base Option 1",* I have chosen not to include in my comparisons the percentages for option 1 using the River Crossing Relief measures (RCR) for 2 reasons. First, the proponents have chosen not to apply RCR to option 3 even though RCR measures would be at least as effective, and arguably more so, when used in conjunction with option 3 as they are with option 1. Second, there is confusion about the application of one of the most significant (and contentious) RCR measures. This point needs further explanation.

River Crossing Relief Measures

Page 8 of AECOM lists the RCR measures:

The RCR option tested in Paramics includes the following schemes:

- Right turn ban from Princes Highway to Illaroo Road;
- Inclusion of an additional left turn approach lane from Illaroo Road to Princes Highway;
- Separation of Pleasant Way from Princes Highway / Bridge Road intersection;
- Variable speed zone on link road to reflect design criteria (Refer **Section 3.3.2** for details); and
- Inclusion of 40 kph school zone on the Princes Highway, Bomaderry.

The signal phases and timings have been updated as a result of the exclusion of particular traffic movements from these intersections.

The first listed item is the proposal to ban the right turn for southbound highway traffic into Illaroo Rd. AECOM also make it clear that the light timing has been altered in their modelling to incorporate this, and other RCR measures. While this measure would increase significantly the green time available for other traffic movements through this busy intersection any application of local knowledge makes it very clear that banning this right turn is completely untenable. As AECOM reports it is heavily used, to the extent it is often not able to clear during the PM peak. If the right turn were not allowed motorists would be forced to join the northbound highway traffic to access the link road. This itself would involve interrupting the highway flow at some other point, either at Bolong Rd, Beinda St or Bunberra St. Upon exiting the link road in North Nowra many would need to travel back down Illaroo Rd to reach their destination. In many/most cases they would be forced to make a much longer journey to reach their

destination, certainly a negative result in vehicle kilometres travelled (VKT) and probably in terms of time travelled (VHT). These are two of the objective measures applied by the proponents to their comparisons to gauge efficiency and effectiveness. Bomaderry residents seeking to launch a boat at Greys beach or access the Nowra Golf Club would drive down Illaroo Rd almost to the Highway before making a right turn across Illaroo Rd traffic into fairway Drive in order to reach their objective. I do not believe banning the right turn from the highway would be acceptable to the community or justifiable on traffic flow or safety grounds **for even the southern option link road.**

Despite the apparently obvious problems in implementing this measure the RCR measures including the banning of the right turn from the highway have been present in the draft AECOM Report (Maunsell, Dec 2006) and were retained in exactly the same form in the finalised Report (AECOM, July 2010).
In a conversation with Mayor Paul Green at pre-polling on Tuesday 22nd March, Councillor Green indicated to me that he was unaware of the proposal to block the right turn from the highway in the AECOM Report. He also told me that council would oppose such a move. I informed him that the RTA could choose to impose the ban against council's wish, as the Highway is the RTA's responsibility.

The proponent's position is made even less clear because the proposal to block the right turn from the highway has not been included in the list of RCR measures included in EAR by JBA or in The Detailed Summary of Network Improvement Options section B.3.5 River Crossing Relief Options (Appendix B) as shown respectively below:
EAR P. 114

- The River Crossing Relief Improvements: include the following schemes to improve traffic flows across the Shoalhaven River bridges:
    - Inclusion of an additional left turn approach lane from Illaroo Road to Princes Highway.
    - Separation of Pleasant Way from Princes Highway / Bridge Road intersection.

and

B.3.5 River Crossing Relief Options

The AECOM study describes what is referred to as River Crossing Relief Options (or "RCR"). The RCR option included on the north side of the Shoalhaven River the additional lane on Illaroo Road on the approach to the Princes Highway, and on the south side of the Shoalhaven River the extension of Hawthorne Avenue and associated relocation of phase associated with Pleasant Way at the Highway/Bridge Road intersection (involves part closure of Pleasant Way to prevent vehicle access to/from the south, with those movements relocated to the new junction).

Neither of these reports accurately reports the contents of the accompanying AECOM Report with regard to the RCR measures even though the latter refers directly to it in the quoted section and Section 12 of the EAR by JBA from which the RCR information is reproduced commences with the following:
"The information in this Section is sourced from the AECOM North Nowra to Bomaderry Link Road Options Study provided in Appendix E."

If the proposal to ban the right turn has indeed been dropped then I am relieved that some measure of commonsense has been brought to bear, however belatedly, but it is not clear that this is indeed the case because the Level of Service performance measures and average intersection delay times for the relevant intersections contained in EAR by JBA (by which time the banned right turn **may** have been omitted) match exactly the same performance measures from AECOM when the banned right turn was expressly included.

P.27 AECOM:
"Option 1 RCR generally improved flow conditions along the Princes Highway, but this was more notable in the PM Peak period, with increased capacity for northbound traffic attributed to the banned right turn into Illaroo Road."

The following tables are reproduced from AECOM Ps.34&35:

Table 4.6.2

Without Moss Vale Link Road		2016 Option 1			2016 Option 1 RCR			2016 Option 2			2016 Option 3		
Intersection		LoS	AvD	Num Veh	LoS	AvD	Num Veh	LoS	AvD	Num Veh	LoS	AvD	Num Veh
Illaroo Rd	McMahons Rd	A	4	1,424	A	3	1,436	A	4	1,421	A	3	1,434
Illaroo Rd	Page Ave	A	1	1,024	A	1	1,133	A	1	1,014	A	1	1,014
Illaroo Rd	Pitt St	A	2	933	A	2	1,026	A	0	641	A	1	878
Illaroo Rd	West Cambewarra	A	1	401	A	1	407	A	1	389	A	1	854
Princes Hwy	Illaroo Rd	F	96	4,881	F	88	4,767	F	97	4,853	F	103	5,009
Princes Hwy	Bolong Rd	F	88	3,749	F	77	3,567	F	81	3,633	F	82	3,806
Princes Hwy	Beinda St	C	33	2,484	B	16	2,395	B	15	2,361	C	31	2,444
Princes Hwy	West Bunberra St	A	2	2,437	A	2	2,389	C	39	2,567	A	1	2,390
Princes Hwy	Narang Rd	A	4	2,589	A	4	2,584	A	4	2,263	A	3	2,292
Princes Hwy	Cambewarra Rd	A	8	2,676	A	8	2,646	A	8	2,659	B	28	2,812
Bolong Rd	Beinda St	B	18	1,824	B	22	1,824	A	10	1,760	A	12	1,881
Bolong Rd	Meroo Rd	A	14	1,904	A	10	1,880	A	10	1,869	A	12	1,994
Meroo Rd	West Bunberra St	A	1	986	A	1	1,027	A	3	1,122	A	1	1,029
Illaroo Rd	Link Rd Option 2							A	2	785			
Moss Vale	Link Rd Option 3										B	22	1,360

Table 4.6.2

Without Moss Vale Link Road		2016 Option 1			2016 Option 1 RCR			2016 Option 2			2016 Option 3		
Intersection		LoS	AvD	Num Veh	LoS	AvD	Num Veh	LoS	AvD	Num Veh	LoS	AvD	Num Veh
Illaroo Rd	McMahons Rd	A	4	1,597	A	4	1,693	A	5	1,612	A	4	1,576
Illaroo Rd	Page Ave	A	1	1,191	A	1	1,310	A	1	1,219	A	1	1,172
Illaroo Rd	Pitt St	A	2	962	A	2	1,082	A	1	883	A	1	789
Illaroo Rd	West Cambewarra	A	1	423	A	1	445	A	1	394	A	1	726
Princes Hwy	Illaroo Rd	F	94	5,635	D	50	5,686	F	79	5,688	F	113	5,547
Princes Hwy	Bolong Rd	F	82	4,321	C	40	4,264	E	70	4,308	F	94	4,280
Princes Hwy	Beinda St	B	25	2,588	A	4	2,707	A	9	2,614	C	38	2,578
Princes Hwy	West Bunberra St	A	1	2,457	A	2	2,456	D	44	2,724	A	1	2,480
Princes Hwy	Narang Rd	A	4	2,645	A	4	2,653	A	5	2,385	A	3	2,385
Princes Hwy	Cambewarra Rd	A	13	2,973	A	8	2,852	A	13	2,878	B	25	3,100
Bolong Rd	Beinda St	A	9	2,200	A	8	2,216	A	14	2,118	B	27	2,130
Bolong Rd	Meroo Rd	B	17	2,263	A	12	2,179	B	21	2,210	C	33	2,132
Meroo Rd	West Bunberra St	A	3	1,156	A	1	1,053	A	1	1,230	A	2	1,145
Illaroo Rd	Link Rd Option 2							A	2	787			
Moss Vale	Link Rd Option 3										A	3	1,403

The first table shows the AM peak figures and the second shows the PM peak figures. I believe the second table should correctly be labelled table 4.7.2.

The significant intersections to look at, because they have the most to gain from banning the right turn into Illaroo Rd, are the Highway/Illaroo Rd intersection and the Highway/Bolong Rd intersection. They are easy to pick up for the first table because they are marked in red as LOS F. Note that the proponents have neglected to mark the LOS F intersections for option 1 in red in the second table.

The tables below are reproduced from P. 115 of the EAR by JBA and show, in part, LOS ratings and average intersection delay for some of the modelled intersections for the morning peak and the afternoon peak. The last 2 intersections in each table are for the highway/Illaroo Rd intersection and the highway/Bolong Rd intersection The first column shows the modelled performance for option 1, the 2nd column for option 1 plus RCR and the 3rd for option 1 plus MVRL. (More about the Moss Vale Rd link later). In each case the LOS rating and the average delay is identical with the modelling results from Ps.34&35 of AECOM shown above when the right turn ban was expressly included as part of the proponent's model. In particular the reduced delay time shown during the PM peak for each intersection, 94 seconds reduced to 50 seconds at Illaroo Rd/highway and 82 seconds reduced to 40 seconds at the highway/Bolong Rd, is as a result of the increased green time allocated to the highway because of the banning of the right turn from the Highway into Illaroo Rd.

P.27 AECOM says:

"Option 1 RCR generally improved flow conditions along the Princes Highway, but this was more notable in the PM Peak period, with increased capacity for northbound traffic attributed to the banned right turn into Illaroo Road."

P.29 AECOM says:

"It should also be noted that the RCR option does not provide any significant travel time savings in the AM peak, but more significant travel time savings occur in the PM peak."

Table 12-7: Key traffic Indicators For Assessment of Impact to Future Road Improvements

Traffic Parameter AM Peak Modelling	2016 – Central Option	2016 – Central Option + RCR	2016 – Central Option + MVLR
VHT	672	614	599
Mean Speed	27	29	30
No. of Vehicles on Modelled Network	8,013	7,852	7,987
No. of Vehicles on Link Road	536	611	472
Travel Times – Route 1 (north bound)	4:28	4:17	4:19
Travel Times – Route 2 (south bound)	9:24	8:43	8:27
LoS – Illaroo Road/ McMahons Road Intersection (LOS and Average Delay)	LOS A 4 s	LOS A 3 s	LOS A 3 s
LoS – Illaroo Road/ Princes Highway Intersection (LOS and Average Delay)	LOS F 96 s	LOS F 88 seconds	LOS F 78 s
LoS – Bolong Road/ Princes Highway Intersection (LOS and Average Delay)	LOS F 88 s	LOS F 77 s	LOS E 66 s

Traffic Parameter PM Peak Modelling	2016 – Central Option	2016 – Central Option + RCR	2016 – Central Option + MVLR
VHT	854	696	818
Mean Speed	23	29	24
No. of Vehicles on Modelled Network	8,727	8,523	8,703
No. of Vehicles on Link Road	499	519	389
Travel Times – Route 1 (north bound)	5:47	5:02	7:16
Travel Times – Route 2 (south bound)	11:18	9:03	9:34
LoS – Illaroo Road/ McMahons Road Intersection	LOS A 4 s	LOS A 4 s	LOS A 4 s
LoS – Illaroo Road/ Princes Highway Intersection	LOS F 94 s	LOS D 50 s	LOS F 75 s
LoS – Bolong Road/ Princes Highway Intersection	LOS F 82 s	LOS C 40 s	LOS D 56 s

The significant point here is that the modelling that has been used to support council's preferred option, has been significantly compromised, and the proponents should be called upon to clarify the confusion their reports have created. **Is the right turn ban from the highway into Illaroo Rd included in the proponents modelling, or is it not?**

I emphasise that the proponents have chosen to apply RCR measures in their modelling **only to their preferred Pitt/Narang option**. Of the different RCR measures, the blocking of the right turn from the highway is/was probably the most significant of the RCR measures in reducing congestion at the Illaroo Rd and Bolong Rd intersections with the highway. As I have indicated I do not believe it is a measure that the community

would, or should, accept. Mayor Paul Green has indicated to me directly that he and the council would not support it being implemented.

It is my opinion that the inclusion, and apparent lack of awareness, of such a poorly considered measure up to such a late stage in the investigation and reporting can only be as a result of a widespread failure within council to carefully read and consider preliminary reports, subsequent poor communication between council, council staff and their consultants, carelessness in the preparation and checking of material, an intention to deceive decision makers about the effectiveness of proposed network changes, or a combination of some or all of the above.

With regard to the remaining RCR measures it should be noted that some have merit and should/could have been acted upon some time ago. A dedicated left turn lane added on Illaroo Rd is of even more significance prior to the construction of a link road as much of the traffic that would use a dedicated left turn lane will have the option of using the link road to avoid Illaroo Rd altogether.

Another RCR measure involves improving the performance of the Highway /Bridge Rd intersection by separating Pleasant Way from Bridge Rd. The proponents suggest this could involve a new intersection further south away from Bridge Rd. This may have some merit although it results in another set of lights further south , between Bridge Rd and North St, bringing the highway to a stop. As an alternative, not apparently considered by the proponents, I am suggesting a relatively minor construction to provide a dedicated left turn and merger lane for traffic exiting Pleasant Way onto the Highway. There is plenty of room to make this change and it would completely remove the need to stop southbound Highway traffic at Bridge Rd to allow cars to exit Pleasant Way. Highway traffic could still be stopped to allow a right turn from the Highway into Pleasant Way and for the pedestrian crossing, on demand.

An additional and more substantial improvement at the Bridge Rd/highway intersection would be achieved by using existing RTA technology to remotely monitor the intersection. This approach has not been considered in the proponent's work but the availability of the technology was brought to my attention during a field trip to the area by traffic consultant Garry Kennedy of GTK Consulting. (Unfortunately our funds did not allow us to pay Garry to carry out the modelling necessary for him to produce a report). During the AM peak when the turning lanes for Bridge Rd regularly overflow onto the old bridge cutting the lane capacity from 2 to 1, this blockage could be almost eliminated at current traffic levels by stopping northbound highway traffic and clearing the right turn lanes from the southbound highway to prevent the overflow onto the bridge. This single

measure would probably do more to help the flow of traffic in the studied area than any of the link road options.

The Link Road Strategy

From a reading of the proponent's reports there is some apparent confusion over the role of the link road in the immediate area's infrastructure. How much of a role do the proponents expect the link road to play in getting traffic from North Nowra to Nowra? The explanation below for table 4.1 from AECOM p.24 provides an example:

Table 4.1 *shows that VHT and VKT are lower for the link road Options 1 and 2 (southern link road options) and higher for link road Option 3 (northern link road option) during both the AM and PM peak periods. This trend is identified in Council's TRACKS modelling analysis, and is expected considering the centre of gravity of trip generation in North Nowra, and the high percentage (approximately 70%) of existing movements on Illaroo Road which have destinations south of the river.*

The significance that is placed on the 70% of trips starting in North Nowra **with a destination south of the river** when comparing VHT (time) and VKT (distance) between the southern link road options (actually I thought option 1 was the central option, but perhaps it suits the proponent's logic to include it as a southern option) and the northern or West Cambewarra Rd option would seem to indicate that the proponents expect at least a proportion of the traffic exiting the link road to turn south and, eventually, cross the bridge.

AECOM P.37
The Princes Highway / Bolong Road intersection has decreased to a F (LOS? author's note) *during both the AM and PM peak periods. This is due to the additional traffic accessing Princes Highway southbound from the Link Road.*

If congestion is increased at the highway/Bolong Rd intersection due to additional southbound highway traffic from the link road then that traffic **must** be going on across the bridge.

AECOM P.37:
The Link Road has increased traffic on Princes Highway and as a result of congestion encouraged vehicles to rat- run along Beinda Street and then Bolong Road. This route allows vehicles to avoid the long queues / delays experienced on Princes Highway at the Bolong Road intersection (northern approach) but has resulted in a decrease in Level of Service at the Bolong Road / Beinda Street intersection during the AM peak.

Again the link road is seen to cause an increase in traffic southbound on the highway heading, presumably, to Nowra.

And the following from P. 113 of EAR by JBA:

The models show a general worsening in overall intersection performance at Princes Highway and Bolong Road as a result of construction of the North Nowra Link Road when modelled in isolation of any other improvements. When modelled in isolation, there are no instances where the performance level was improved. This is due to extensive queuing along Bolong Road, and also on the northern approach of the Princes Highway / Bolong Road intersection, which would be exacerbated by additional southbound traffic from North Nowra passing through this intersection, where it would normally only pass through the Illaroo Road/Princes Highway intersection.

The **following** statement from the proponents makes no mention of motorists using the link road to get across the river and appears to offer a more realistic assessment of the role of the link road in the area's road infrastructure.

AECOM P.32

In general terms, it is expected that the development of a Link Road will improve the overall level of accessibility to the North Nowra area, particularly for local trips between Bomaderry and North Nowra as well more strategic trips travelling between North Nowra and regions to the north and east (author's note: and west?). *By using the Link Road, these trips will be provided with the opportunity to avoid the congestion on Illaroo Road, and at the Illaroo Road/Princes Highway intersection. This will reduce travel times for these trips on the network, as well as remove these trips from Illaroo Road, and Illaroo Road/Princes Highway intersection.*

The Nowra /Bomaderry Structure Plan says this about the role of the link road:

- *To create a road that was determined as an important element of future infrastructure required to cater for future growth as set out in the Nowra Bomaderry Structure Plan to satisfy the over arching strategic plans. In particular, to create and maintain improved accessibility for North Nowra and for movements between North Nowra and Bomaderry.*

In my conversation with Mayor Paul Green at pre-polling he told me that the link road was not about getting across the river but was about traffic movement north of the river. This commonsense position is based on the obvious fact that any of the link road options is a long way round if one is going to Nowra.

This is confirmed by comparing the distances for a couple of standard journeys between North Nowra and Nowra comparing a Pitt/Narang link and Illaroo Road.

From the Pitt St/McMahons Rd intersection to the Bridge Rd/Highway intersection it is 5.56km via the link road and 3.72km via Illaroo Rd. This is a ratio of 1.5 to 1 meaning the link road route is 50% further than the Illaroo Rd route.

From the Judith Dr/Page Ave intersection to the Bridge Rd/Highway intersection the link road journey is 5.48km and via Illaroo Rd it is 2.88km following Page Ave to Illaroo Rd or 3.46km via Judith Dr and McMahons Rd. The ratios here are 1.9 to 1 and 1.58 to 1. The link road is either almost 60% further or almost twice as far depending on the route chosen to access Illaroo Rd.

Even from the Pitt St/Illaroo Rd intersection travelling to the Bridge Rd/Highway intersection it is 25% further via Pitt/Narang than via Illaroo Rd.

When the extra distance in the link road journey is coupled with the existing traffic congestion on the Highway during peak journey times, it is clear that motorists travelling from almost all existing North Nowra locations to Nowra will choose to use Illaroo Rd.

This is entirely consistent with the objective measures of vehicle kilometres travelled (VKT) and vehicle hours travelled (VHT) used by the proponents to compare the different link road options. **A significant omission in the AECOM Traffic Study is that the VKT analysis and VHT analysis is never applied to compare Illaroo Rd itself to council's link road strategy.**

It seems the proponents are saying that motorists will save time travelling to Nowra along a route (a link road) that is significantly longer than the present one. What makes it harder to swallow this perverse logic is the fact that we already have high levels of congestion on the highway. The certainty that motorists will be spending more on fuel by travelling further and wasting more time in highway traffic sounds a more likely outcome if they choose to go the long way round.

This tends to negate the proponent's conclusion that significantly more motorists will use a more southern link road option rather than a northern link option. This conclusion is based on the (discredited) assumption that motorists will choose the link road to travel between North Nowra and Nowra. For this route they will choose to use Illaroo Rd because it is a shorter distance and will take less time.

The best environmental outcome will be achieved by sticking with Illaroo Rd as the main route to Nowra and by taking steps to ensure that avoidable delays on this route are not allowed to persist. Examples of the latter are providing a dedicated left turn lane for traffic approaching the highway on Illaroo Rd. and rationalising the current school term congestion at Illaroo Rd School.

The proponents have failed to include in their model the congestion and queuing that occurs at Illaroo Rd Public School particularly during the AM Peak. Often the right lane is blocked with parents turning right into Crest Ave to drop their children off on the opposite side of Illaroo Rd from the school while buses parked in the kerb side lane frequently block the left lane. Children dropped off across the road then cross at the lights to get to school causing more traffic delays. Sometimes only one or two cars eastbound will get through in a green period. I have frequently experienced a significant traffic hold-up at Illaroo Rd School followed by a relatively quick run down to the highway once past the immediate school area. Illaroo Rd Public School seems an ideal location to recognize the importance of pedestrian and child safety as well as the desirability of avoiding traffic congestion by building a pedestrian overpass.

For some trips between North Nowra and Bomaderry, Illaroo Rd still results in a lower VKT decision (i.e. a shorter journey). This is the case for trips to southern Bomaderry destinations but the link road (whichever one) results in shorter trips for central and north Bomaderry destinations. This suggests that motorists may still be selective about using a link road rather than Illaroo Road for trips between North Nowra and Bomaderry depending on the location in Bomaderry and the time of the trip and the congestion likely to be encountered.

This suggests that overall numbers choosing to use the link road (whichever link road) may be considerably lower than the 25-30% of Illaroo Rd traffic estimated by the proponents.

When comparing the different link road options at the North Nowra end, a West Cambewarra link clearly works more efficiently for proposed new developments west of North Nowra but is marginally longer for most established North Nowra areas when compared to a Pitt/Narang link road. The proposed West Cambewarra link clearly provides better access to Bomaderry than does Pitt/Narang by accessing the highway via Moss Vale Rd. Many of the Bomaderry services such as the public swimming pool, Bomaderry High School, Bomaderry Bowling Club, the industrial area off Meroo Rd, the railway station and even Bolong Rd and Shoalhaven Heads are better reached by crossing directly over the highway into Cambewarra Rd. If the link road exits at Narang Rd then no direct access to Bomaderry is available. Motorists to Bomaderry would turn either left or right and join the highway traffic before exiting again to access Bomaderry.
A West Cambewarra Road link will clearly work best in facilitating trips to and from Kangaroo Valley and the Southern Highlands, which is an option that many motorists going to Sydney use to access the Hume Highway, by

being the shortest route, and by avoiding any intersection with the Princes Highway at all.

With regard to the above observation pointing to the advantage of a more direct access to Bomaderry from the proposed West Cambewarra Rd link the proponents make a laughable attempt to turn this into a negative for the northern option and a positive for Pitt/Narang with the following conclusion from P.114 of EAR by JBA:

The option with the least potential to increase traffic on Bomaderry collector roads is the Option 1 (Central Option). Unlike the Northern and Southern options the Central Option is the only route that does not connect directly to a major collector road in Bomaderry, and this allows a considerable community benefit from the link road without unreasonable direct impacts on residents along the existing collector roads in Bomaderry.

I think this comment is a tacit acknowledgement of the negative effects that the AECOM traffic report says the link road strategy will have on Bomaderry traffic flow. I don't think their conclusion deserves a serious response other than to point out that the consultants are leaving no stone unturned in their attempts to support council's preferred option.

The role of the Moss Vale link road (MVLR) is seen as significant by the proponents and it would appear to have some important potential benefits although its effect on one of the primary link road objectives would appear to be mixed.

P.19 EAR by JBA:

Council is also planning to construct a new link between Illaroo Road and Moss Vale Road to provide North Nowra with access to the new living areas in the vicinity of Moss Vale Road – including a new neighbourhood centre and high school, and to link the new living areas with the schools, shops and services in North Nowra.

A principal benefit resulting from the MVLR would be to provide more efficient access for residents in the Cambewarra area to the services available in North Nowra. As indicated above it will also work in reverse: giving North Nowra residents access to the planned new services close to Cambewarra. The present situation is that North Nowra has a fair range of services and necessity shopping opportunities concentrated in the McMahons Rd shopping centre. Cambewarra has a much more limited range of services available to the village. To the extent that Cambewarra residents could be encouraged to do some of their shopping at North Nowra this would actually reduce pressure on the most congested areas of the network by reducing trips to Nowra. While the effect is likely to be relatively small it seems like good planning in principle.

One of the general concerns I have with some of the detail that has been part of the link road strategy is that it seems to be actively diverting traffic

away from the services available in North Nowra with the result that more pressure is put on the central service area of Nowra.

I am aware that the cost of linking Cambewarra with North Nowra, and perhaps bringing more business to the North Nowra shopping centre, is more cars driving through North Nowra. The proponents regard this as an acceptable outcome of the MVLR. Indeed the proponent's model shows a reduction in average delay time at the Illaroo Rd and Bolong Rd intersections with the Highway with the construction of the MVLR. The proponents acknowledge that one effect of the MVLR will be to encourage a measurable increase in traffic, and a measurable added delay on Illaroo Rd, in the following paragraphs from P.s 114&115 of EAR by JBA:

"... the North Nowra Link Road in combination with the proposed 2 additional improvements to the network results in further beneficial affect on the network. In all cases the traffic parameter improves, except for the northbound travel time for traffic travelling from the Princes Highway (south of the bridges) to Illaroo Road.
This shows an increase in travel time once the Moss Vale Link Road is included in the network analysis, since a new connection to Moss Vale Road will be provided via Illaroo Road diverting some traffic from the Princes Highway.
Whilst this may appear as an adverse effect, this diversion demonstrates the added effectiveness of the MVRDLK to optimise conditions on Moss Vale Road and Princes Highway, as overall best network performance (lowest VHT) is apparent with this option, and due to other traffic diversions from Illaroo Road to the MVRDLK and the NNLR, Illaroo Road has the ability to absorb minor diversions of traffic such as this with no adverse consequence."

I find it quite remarkable that when assessing the northern option the proponents are bent on getting as many cars as possible diverted **from** Illaroo Rd but they dismiss the MVLR diverting cars back onto Illaroo Rd as a "minor diversion with no adverse consequence".

Table 12.7 **key traffic indicators** can be seen on P.115 of EAR by JBA and on P. 16 of this submission. If the diversion through North Nowra is substantial enough to produce reductions of 18 seconds to 26 seconds in the average vehicle delay at the Illaroo Rd and Bolong Rd intersections with the Princes Highway in both the morning and afternoon peaks then I would expect it to have quite an effect on Illaroo Rd movements. It is surprising that there is no resulting alteration at all to average vehicle delay at the IllarooRd/McMahons Rd intersection. The consultants should be asked specifically to explain this apparent anomaly.

When assessing the performance of the northern option it is important to realise that the West Cambewarra Rd option is no longer being considered on the existing West Cambewarra Rd alignment but is to be set back 50 metres from the front boundaries of properties along the

existing road. The current West Cambewarra Rd residential road alignment will be retained as the access road for those existing properties. This will allow a noise buffer for homes situated along the north side of West Cambewarra Rd, will facilitate the northern link operating safely at a higher speed, thus improving its efficiency, and will simplify design and construction issues because there will be no direct residential access to or from the link road.

When excluding traffic to Nowra from considerations of the link road it seems clear that performance of the central route and the northern route would be so close that similar numbers of motorists would be likely to use whichever of those 2 options was built. Even the small differences between user numbers for the different options shown in the table reproduced on P.9 of my submission (table 4.2, P.26, AECOM) is likely to be reduced if one accepts that the link road will be used by virtually no motorists heading from North Nowra across the river. Both options 1 and 3 would result in a similar reduction in traffic levels on Illaroo Rd and similarly improved amenity for North Nowra motorists. The council's argument that the only viable option is Pitt St to Narang Rd is not supported by any careful reading of their own supporting documentation. Council's credibility is undermined by their glib acceptance of consultant reports that don't bear close scrutiny.

There is overwhelming evidence that the proponent's preferred route from Pitt St to Narang Rd would have much more significant environmental consequences than option 3. The proponent's attempt to dismiss the northern option as a viable route has failed through the combination of a poorly formulated traffic management strategy and the sloppy application of their own modelling. There is also evidence that the northern option would be significantly cheaper to construct. The proponents have failed to adequately value environmental factors in their consideration of this matter.

The only route that can be justified with the information supplied is the northern option parallel to West Cambewarra Road.

Robin Moyes
Spokesperson and 'Traffic Consultant'
for the Friends of Bomaderry Creek
90 Douglas St, Nowra. 2541.
Ph: 44225775 robinmoyes@bigpond.com