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Dept of Planning
Director of Infrastructure Projects
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SYDNEY NSW 2001
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Ms Sharon Blazier
21 Bunberra Street
BOMADERRY NSW 2541.

Sblazier@bigpond.com

Dear Sir

RE. NORTH NOWRA LINK ROAD- MP07-0037

I am writing as a concerned resident in the Bomaderry area . The above proposal I believe does not serve as a satisfactory traffic mitigation option for the region. There are three options and I feel strongly that the most suitable route is around the perimeter of the Bomaderry Creek Regional park, that would be using the West Cambewarra Road option with the new road verging via a roundabout with MossVale Road. This is taking any North bound traffic away from the congested Bomaderry, Nowra section of the Pacific Hgwy.

Bomaderry Creek Regional Park is a significant environmental park supporting at least 5 endangered species , one existing nowhere else on the planet. It is not only a beautiful environmental refuge on the edge of a busy urban district but it is also a very valuable recreational resource in an area already massively under resourced . Recently despite major objections from our small community the area has been subjected to an increase of Dept of Housing medium density dwellings, which I believe will overbalance the social economic mix of the suburb. Special, beautiful and biodiverse recreational areas need to be maintained not destroyed for the betterment of the mental and physical health of the community.

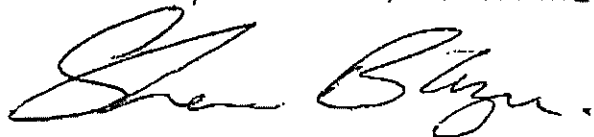
Bomaderry creek Regional Park would be significantly damaged and degraded environmentally if a link road is to be routed through the middle of bush land exiting on the Highway at Bomaderry. A bottle neck of traffic will simply be rerouted to the Pacific Highway at Bomaderry, moving a current problem up the road 1 or 2 Kms not solving it. With any future Nth Nowra development congestion will not be alleviated. The answer is a bridge over the Shoalhaven river for south bound traffic and a road around the bushland taking Nth bound traffic further up the highway linking a new road at a already constructed roundabout at Moss Vale road .

I hope you will consider my objections in your planning assessments and decision making process, I am one of many concerned residents in the local area that will be detrimentally affected by a decision to place a road via the route proposed by Shoalhaven Council.

I want the beauty, environmental, cultural and recreational benefits of Bomaderry Creek maintained in our area, for future generations.

Thankyou for your time and consideration of my comments.

Yours Sincerely Sharon Blazier , email: sblazier@bigpond.com



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Andrew Beattie - submission to the North Nowra Link Road

From: Howard Jones <hhjones@westnet.com.au>
To: <plan_comment@planning.nsw.gov.au>
Date: 2/04/2011 10:59 PM
Subject: submission to the North Nowra Link Road
Attachments: Bom Crk - link road - Env Assess Feb 2011 - GEPs' submission Apr '11.doc

Director Infrastructure Projects.

Please consider this as a submission to the North Nowra Link Road – Concept Plan Application No. 07_0037

Howard Jones
secretary
Gerroa Environmental Protection Society

Gerroa Environmental Protection Society Inc.

ABN: 84 332 604 459

PO Box 8, Gerringong NSW 2534

2 April, 2011

Dept of Planning
Director of Infrastructure *Planning*
PO Box 39
Sydney NSW 2001

RE: North Nowra Link Road – Concept Plan Application No. 07_0037

Having reviewed the above Concept Plan Application the Gerroa Environmental Protection Society (GEPS) wishes to express its concern at the relatively short exhibition period allowed for such a complex and detailed series of documents.

The challenge to come to terms with it and make an appropriate response may not have been so confronting if the obvious effort and expense involved in this exercise had not produced such a disappointing outcome.

From the outset GEPS expresses its strong opposition to any roads cutting through the main parts of Bomaderry Creek Bushland.

This is a popular and well loved urban bushland which is visited by many from further afield than the immediate locality.

It is distressing to learn about the plans for a road and bridge cutting through the sandstone tops with their beautiful wildflower displays and the gorge with its marvellous vistas and lush rainforest.

It is also concerning to think that there are four plant species and twelve animal species listed on the NSW endangered species lists, of which two of the plants and two of the animal species are listed nationally, and which are under varying levels of risk from the proposed Central Route (Option 1).

For members of our Society and many others that travel some distance to visit the Bushland, we are also absolutely surprised to consider just how close Option 1 would be to the delightful Narang Picnic Area. This particular route would result in a road destroying the entrance and parking area of the Bomaderry Creek Regional Park and passing within a few metres of the picnic area. The bridge would result in destruction of 10% of the endangered Albatross Mallee (*Eucalyptus langleyi*), block all access for the disabled to Bernies Lookout and other bushland features in the northern part of the Bushland and destroy the view from the Weir Lookout.

It is hard to believe that such a series of disastrous actions could be considered in any public place let alone in this outstanding community asset.

The West Cambewarra Road (parallel) Route (Option 3) is clearly the most appropriate location for a road aimed at meeting the access needs of the growing North Nowra/Bomaderry locality while avoiding most of the inevitable impacts that such an undertaking would bring about.

It would be on the edge of the Park and Bushland, avoid the immediate noise and other congestion for the residents on West Cambewarra Road, attract traffic from the main parts of North Nowra, now and in the future, travelling to Bomaderry, the southern highlands and northward along the Princes Highway, and present less costs than the other options.

It would avoid some Aboriginal archaeological sites (as opposed to Option 1) and would have implications for only one threatened species, the Glossy-black Cockatoo. On this latter point, the proposed setback of 50 metres into the bushland would avoid the cockatoo feed trees lining West Cambewarra Road thus minimising the risk to this species while providing the residents with a bushland noise buffer.

In the interests of reducing the time frame for the approval of this project and ensuring that the project will actually go ahead, it is an important matter that this route is the only one under consideration that will not require the matter to be referred to the Australian Government for approval under the Environmental Protection and Biodiversity Conservation Act.

Option 3 is the only one that offers the best chance of minimising more traffic congestion on the Princes Highway. By bringing traffic from North Nowra heading for Bomaderry or northwards onto the highway well away from the extensive congestion line that builds up on the highway from the lights at the river bridge anything up to 1.5 km northward, Option 3 will be the only route that would not contribute to this congestion. The congestion is already considerable for travellers heading south on the highway and Bolong Road towards the Shoalhaven River. It makes no sense whatsoever to allow traffic from North Nowra to contribute to this unsatisfactory situation.

It makes no sense, either, to create an even more difficult traffic situation with options that threaten the biodiversity, cultural, recreational and educational benefits offered by the Bomaderry Creek Bushland.

This Bushland is already managed very well with a joint arrangement between the various government agencies and the community (through the Bomaderry Creek Landcare/Bushcare Group). The proposal to transfer land from Council to DECCW therefore make no sense from a practical management sense and certainly does nothing to enhance the biodiversity values of the Bushland. How can a transfer of land from one agency to another in return for a destructive road through the middle of it all be of any benefit to the wildlife, cultural resources or the recreating public?

As mentioned above, this series of documents has produced a very disappointing result and provides no basis for a decision favouring either Options 1 or 2.

Yours sincerely

Howard Jones
Secretary

Andrew Beattie - North Nowra Link Road - Concept Plan Application No. 07_0037

From: "Terry Barratt" <terrybar@sctelco.net.au>
To: <plan_comment@planning.nsw.gov.au>
Date: 4/04/2011 2:32 PM
Subject: North Nowra Link Road - Concept Plan Application No. 07_0037
Attachments: Bom Crk - link road - Env Assess Feb 2011 - Review of Appendix G - Aboriginal Archeological Assessment Mar '11.doc; Bom Crk - link road - Env Assess Feb 2011 - Review of JBA Planning's EAR Mar '11.doc; Bom Crk - link road - Env Assess Feb 2011 - Terry's submission Apr '11.doc; Bom Crk - link road - Env Assess Feb 2011 - Review of Appendix F Biodiversity Assessment Part 1 Mar '11.doc; Bom Crk - link road - Env Assess Feb 2011 - Review of Appendix F Biodiversity Assessment Part 2 Mar '11.doc; Bom Crk - Table 1, Plant Communities.doc; Link Road - Natural & Cultural Values Under Threat - copy.jpg

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Director Infrastructure Planning

Please find attached my submission for the above concept plan application. I sent a draft in on Friday last (April 1). I hope you will accept this final submission in its place.

Thanking you in anticipation

Terry Barratt
16 Bunberra St, Bomaderry NSW 2541
4422 1211

TERRY BARRATT

*16 Bunberra Street
Bomaderry NSW 2541*

4 April 2011

Department of Planning
Director Infrastructure Projects
PO Box 39
Sydney NSW 2001

Dear Sir/Madam

Re: North Nowra Link Road – Concept Plan Application No. 07_0037

Please find attached a detailed submission in response to the public display of the above concept plan application.

I trust that in the interest of community consultation as enshrined in the EP&A Act you will accept and consider this submission even though it has extended beyond the official display period of 16/02/11 to 18/03/11.

With regard to the public display period, it was clearly too short a period of time for anybody to adequately deal with the very large number of documents and the complexity of them. The majority of community members would have taken one look at the documents whether on the web page or available locally as hard copy and turned away in despair. This would be due in part to their complexity, but I believe more due to the fact that the proponent failed to conduct a focussed and effective community consultation process during the almost 2-year period from May 2009 to February 2011 as required by the Director General Requirements (DGRs).

It is my view that this Environmental Assessment Report should not have been released until that part of the DGRs had been complied with.

During the formal display period, community participation may have been improved by the mounting of a display at the hard copy outlets interpreting some of the more relevant details and explaining the participation process.

These are matters that it would be appreciated could be considered in future in order to facilitate and encourage community participation in the planning process.

This is my first opportunity to comment on a concept plan application and I must say I am very disappointed at the concept of this feature of Part 3A of the EP&A Act.

By requiring very little information on details of the proposal such as detailed descriptions, construction plans, designs and environmental descriptions, an adequate and effective assessment process fails to eventuate.

There are significant errors evident in the various appendices and this has by their nature as background documents been repeated in the JBA Planning EAR.

Additionally, many surveys of threatened species had not been carried out or not completed at the time of the public release and to that extent the EAR has not been in compliance with the DGRs

There has been some other failures regarding compliance and they are detailed within the attached documents which are part of this submission.

I have been a resident of the Nowra/Bomaderry district for 31 years, have a professional career background as a national parks and wildlife manager and environmental scientist and I am now retired from full-time paid employment.

I have post graduate qualifications from Wollongong University where I studied the Threatened *Zieria baeuerlenii*. I am considered the leading specialist on that species.

I have had a long history of active involvement in environmental organisations and have worked as a volunteer in landcare/bushcare projects for 50 years.

Because of my background and specific expertise I have confined my submission mainly to the environmental, cultural, recreational and park management issues of this proposal. I have read the submission by Robin Moyes who has concentrated his attention on the road and traffic issues. I fully concur with all of his comments.

Finally, I wish to make the following brief points:

1. I am opposed to any link road option that passes through the main parts of the Bomaderry Creek Bushland.
2. For the purposes of this Concept Plan Application, I support the North Route (Option 3), the West Cambewarra Road parallel route.
3. I do not see any of the link road options as optimal solutions to the traffic issues affecting the travelling public on the northern side of the Shoalhaven River.
4. The first priority should be the undertaking of a number of small-scale measures to improve traffic flow as specific choke points, measures mostly the responsibility of the Shoalhaven City Council and ones that they should have dealt with many years ago.
5. The next priority is for all levels of government to come together (with community participation) to determine the best means of achieve a third bridge next to the existing ones or a replacement of the 1880 bridge which would provide three lanes south bound lanes with the capacity to incorporate light rail for extension of the south coast rail line south of the river. This bridge would have to include an overpass system to enable the two sets of lights on the northern side of the river to be removed.
6. A West Cambewarra Road parallel link and/or a Moss Vale Road/Illaroo Road link could be fitted in between any of those above project if the funding made it possible.

Thank you for your consideration.

Yours sincerely



Terry Barratt BSc (Hons)

Attachments – Reviews of:

Environment Assessment Report – JBA Planning
Appendix F: Biodiversity Assessment – Part 1
Appendix F: Part 2 – Revocation and Offset Assessment
Appendix G: Aboriginal Archaeological Assessment

plus Table 1: Plant Communities – Bomaderry Creek Bushland
Map 5: Link Road – Natural and Cultural Values Under Threat

JBA Planning

Environmental Assessment Report

North Nowra Link Road – Concept Plan

February 2011

Introductory Comments

A few general comments are provided:

The lack of detailed diagrams, plans, technical details and environmental descriptions is disappointing and results in a poor assessment outcome.

The Community Consultation process is totally inadequate and does not comply with the DGRs.

There are significant errors in the biodiversity assessment and the Aboriginal archaeological assessment.

Some threatened species surveys are missing or not complete and in that regard this EAR does not comply with the DGRs.

The study area is deficient as it has failed to include the very significant area encompassing the maternal Grey-headed Flying-fox colony.

The focus on specific, known site of threatened plant species has led to a failure to properly address the implications of the impact on each of the species' habitat. This same observation applies to the potential impact on threatened fauna species.

This EAR has failed to adequately address the park management issues as required by the DGRs.

Specific Comments

Introduction (page 3-11)

Limitations of the EA for the Concept Plan (page 11)

The following limitations of this proposal are noted in the EAR:

No detailed assessment has been made of temporary construction impacts. These will be dealt with at a subsequent stage of assessment.

There has been a limited amount of design development. Since Council are [sic] seeking concept approval a preliminary design of the proposed road has not yet been prepared.

Since temporary construction impacts can constitute major impacts on the environment, how can there be any meaningful understanding of the implications of the project and development of mitigating measures for consideration by the community if there is to be no detailed assessment?

Equally, if there has only been a limited amount of design development how can the proponent carry out a meaningful assessment of the direct and indirect impacts of the proposal?

These limitations render the EAR a farce.

Site Analysis (page 43)

The EAR provides the following site analysis of the Bomaderry Creek Regional Park:

At the centre of the study area is the Bomaderry Creek Regional Park, covering an area of approximately 82 hectares. The Regional Park is managed by the NSW National Parks & Wildlife Service which is part of the Department of Environment, Climate Change and Water (DECCW).

This Regional Park was declared in the Government Gazette of December 2002 under Section 30H of the National Parks and Wildlife Act 1974. The Regional Park is considered to be an area of very high conservation value due to its high species diversity, rare and threatened flora and fauna and its high degree of use for public recreation within an expanded urban landscape. The Bomaderry Creek Regional Park contains suitable habitat for a number of threatened flora and fauna species.

The Regional Park is also of significant importance for its natural heritage, Aboriginal spiritual connection and contemporary European heritage in reference to the former dam that serviced Bomaderry for many years (the dam was partially demolished to form the existing Bomaderry Creek Weir).

The Bomaderry Creek Regional Park encompasses only a small section of the Bomaderry Creek. The majority of the creek within the study area falls within the adjacent Council land to the north and east of the Regional Park.

*The Park has been developed for public recreation with a substantial public picnic ground which currently has public access only by walking. There are walking trails, interpretive signs, fences, seats, steps and handrails provided for public benefit, but the grounds are not well used due to being concealed and the access being located on a dead-end street. Examples of walkways, picnic facilities and interpretative signs installed by the NPWS are provided in **Figure 6.1**. Walking trails are focussed around the entrance area to the Regional Park which contains facilities, and is close to the Bomaderry Creek Weir. **Figure 6.2** shows the location of facilities and walking trails within the Regional Park. There is 1 principle walking track within the Regional Park, being a 1.4 km loop that crosses Bomaderry Creek near the weir and connects again downstream (to the south) of the weir. A second walking track extends this loop to the southeast crossing onto Council owned land on either side of the Bomaderry Creek, creating a 5.5 km loop.*

There are 3 other less significant walking tracks connecting to the principal loop trails.

- 1. One of these connects the short loop westwards to Falcon Crescent through the Regional Park.*
- 2. A second connects the short loop – Falcon Crescent track northwards, leading the track out of the Regional Park onto Council owned land up to West Cambewarra Road.*
- 3. A third travels north from the entrance area onto Council owned land to Bernies lookout.*

This statement cannot be honestly considered an analysis. It is purely a brief description (and not a very accurate one at that) of some of the biodiversity and recreational features of the

Bomaderry Creek Bushland. An analysis would have dealt with the values of the described features as natural, cultural, recreational and educational assets for the community.

It seems to seek to downgrade these values by reducing the very important features of the Bushland to a brief summary, omitting some very significant features, concentrating on the Regional Park rather than the Bushland as a whole and by making unsubstantiated comments such as: *"...but the grounds are not well used due to being concealed and the access being located on a dead-end street."*

Regular visits over many years (almost on a weekly basis by many people) and regular Landcare/Bushcare on-site meetings and field work provides observational evidence of the significant and growing popularity of the Bushland. It is the *concealed* character of the Bushland that attracts many people to enjoy its beauty and quiet retreats. And why would its location on a *dead-end street* be seen as a factor to discourage visitors? On the contrary, it can be argued quite legitimately that visitors would be attracted because of this feature rather than by a destructive through road which would pass within metres of the picnic area and destroy the vista from a popular lookout.

This so-called analysis follows the same line as much of the whole series of documents associated with this Concept Plan Application, and that is, it fails to look at (and as a consequence fails to analyze) the study area as a whole, ie, as the Bomaderry Creek Bushland. It even includes information derived from a high quality walking track publication by the Bomaderry Creek Landcare Group (2001) without any acknowledgement, which deals with the Bushland as a whole in terms of its very significant recreational values. That publication was funded by an Australian Government grant and is a popular item on sale throughout the Shoalhaven LGA.

The so-called analysis also underrates the area of the Regional Park within the Bushland and overrates the importance of the area of Council land therein. The Park constitutes about one third of the Bushland, the Council owned land also constitutes about one third and the remaining one third is taken up mostly with Crown land and a small percentage of freehold.

This focus on elements of the Bushland and attempts to downgrade the significance of some of them avoids the inconvenient truth of the impact of the road proposals on the Bushland as a whole. If a broader approach had been taken the nonsense inherent in the proponents land deal strategy would have been more obvious.

A zoning diagram of the Bushland (Figure 6-3, page 45) presents an interesting picture of the past attitudes to the values of the Bushland. It shows much of the biodiverse and scenic gorge country of the creek as open space making it no more important than the Bernie Regan Sporting Complex at the NW corner of the diagram or the Bomaderry Basketball Stadium on the eastern side. It also shows the majority of the Bushland as residential (including most of the Regional Park). The majority of Councillors still hold to the outdated attitudes reflected in these zonings. On the other hand, the positive approach to the Bushland of Council's staff about its important environmental and recreational values is greatly appreciated by the general public.

Figure 6.3 is incorrect in one aspect. It shows certain lands adjacent to the creek as environmental protection. These areas are zoned as scenic. It would be stretching the credibility of planners to regard this type of zoning as environmental protection. Council has a different suite of zoning categories at its disposal to signify environmental protection values. At the very least the proponent should have labeled those lands with the correct terminology to avoid any implication that the planners who shaped the Shoalhaven LEP 1985 perceived any environmental values

associated with the Bushland. All the scenic and open space zoning represents is land that has no perceivable development potential.

This nonsense that the current zonings reflect anything other than land that can or cannot be developed is also found in subsection 6.3.2 (page 48) where it is stated “*The Council owned land associated with the Bomaderry Creek gorge is zoned for conservation...*”. The open space and scenic zonings are negative ones, all about limitations on development rather than positive affirmations of conservation value.

It is quite concerning to come across elsewhere in this EAR statements that imply that this scenic designation imparts an environmental protection character. It is also interesting to note that some of this ‘scenic’ land is not in the proponents study area.

It is noted that the major statement in subsection 6.4.1 (page 51) is a direct take without acknowledgement from Barratt (1993). This also occurs with some slight changes in subsection 6.4.3 (page 52). They are both examples of plagiarism of the worst kind.

Threatened Fauna Species (page 55)

The proponent states that the Giant-burrowing Frog (GBF) and the Eastern Pygmy Possum have the potential to occur in the study area. This is incorrect. The GBF was recorded by York and Daly on 16/05/92 in the Bomaderry Creek Bushland (Daly 1996) and the Eastern Pygmy Possum was recently recorded by Alison Hunt and Associates (pers com) in the Bushland.

With regard to the GBF, the proponent perpetuates the error about its recording within the Bushland by stating on page 59: “*A single possible call was heard from within the study area in 1992. The species has never been found in the study area. However, there is potential suitable moist sandstone habitat. The total area of sub-optimal GBF habitat within the study area is approximately 13.67 hectares.*” Gary Daly has confirmed his 1992 ‘siting’ of this species in the literature (Mitchell McCotter 1992 and Daly 1996) and has made it very clear that the detection of calls of this frog is commonly the only way of being aware of the species given its often cryptic nature and that this is accepted by all professionals as a standard ‘siting’ of the species (pers com). Webb (1993) also confirmed this view.

The limited acknowledgement of the Grey-headed Flying Fox by the proponent in this EAR reflects the same lack of knowledge of this species demonstrated in Appendix F Biodiversity Assessment. Detailed notes are provided in the review of Appendix F Part 1 further into this submission.

It must be noted here that this EAR states that further studies are to be conducted in 2011 into the presence and status of this species. This comment about further studies is made about other species under consideration in this assessment. Clearly, this is a work still in preparation and has been prematurely placed on public display. Without the full details any attempt at assessing the impact of the proposal will be inadequate and fail to present a valid picture of the likely impacts on any of these particular species. This Concept Plan Application must be seen to fail as a consequence.

With regard to the Eastern Pygmy Possum, the proponent on page 61 states: “*Suitable habitat for the Eastern Pygmy Possum is known to occur throughout the Shoalhaven region and the area of suitable habitat that exists within the study area only represents a small portion of the overall habitat availability within the broader region.*” The issue of the habitat in the Bushland in

relation to its regional distribution is beside the point. The proponent is required to assess the likely impact of the proposal on the local occurrence of the species only.

Ethnohistoric Background (page 64)

The proponent states that no direct ethnographic recordings relate to the Bomaderry Creek area. This is incorrect. DECCW has recorded such information in a cultural mapping places project in 2005 and T. Barratt submitted some notes on Aboriginal use of Bomaderry Creek Bushland Post European contact to the NPWS in 2000.

Proposed Refinement to Option 3 – the Northern Option (page 73)

The proponent had identified that: “*Option 3 (the Northern Option) has been shifted to the south for safety and amenity reasons, as shown in Figure 7.1.*”

This is in effect a road parallel to West Cambewarra Road, set back into the bushland by at least 50 metres - a sub-arterial road which would not permit private access directly from individual properties.

From a traffic and residential perspective, it offers a number of advantages. It would be able to carry traffic at 80 kph and avoid any disruption from/to the 19 properties of West Cambewarra Road. It would reduce significantly the noise impacts for the locals living there and would relocate the access to and from the road system for the residents to a location about halfway along the new parallel proposal. This would have two benefits for these people - their road would be even more private than it is now and they would have about the best means of getting to both North Nowra and Bomaderry compared to anyone else in North Nowra. Not that other North Nowra (or travelers coming from the Bomaderry side) would be worse off. With the increased speed capacity of this new sub-arterial road their travel times would be reduced.

With regard to the threatened species along that route, the Biodiversity Assessment by the consultants Eco Logical make it very clear that there are significant advantages in following a route on or near the edge of the Bushland. They list a few threatened species (but fewer than those for the other two options) that could be affected by a road built along the new proposed alignment and demonstrate that the affects would be significantly less than with the two other options that are designed to go through the middle parts of the Bushland.

The major environmental issue with this route is its implications for the Glossy-black Cockatoo which feeds exclusively on the seeds of the common Black She-oak. These trees form a fairly linear pattern on the edge of the West Cambewarra Road opposite the residences. Crushed cones on the ground below are clear evidence of the cockatoos' feeding activities. The trees would be destroyed if the link road was to be constructed along this road, but by setting the road back into the bushland the She-oaks would be avoided. This would of course require abandoning proposed noise mitigation structures in this strip of forest. After all, the vegetation and the set back distance should provide a good noise buffer for the residents.

This option involves retention of a vegetation buffer opposite the residences of West Cambewarra Road, which would otherwise be lost as a result of a planned residential subdivision on Council land on the other side of the road.

Yet a further benefit for this new route is that none of the threatened species are protected under federal law and that referral of the matter for final decision by the Australian Minister for the

Environment would be entirely unnecessary. The benefit of no further delays and an early commencement of this sorely needed road are obvious. After all, the other two options would require the final decision to go to the Australian Minister if the State Government selected any one of them. This would entail further delays and may possibly result in their rejection. If that happened, Council would have to have another look at the parallel route. A short-cutting of the process has to be the way to go.

Another positive feature of this parallel option is the avoidance of two Aboriginal archaeological sites on the edge of Bomaderry Creek. Details of this matter are provided in the review of Appendix G further into this submission.

For the residents, road commuters, Aboriginal community, Bushland visitors and the environment, the approval of the West Cambewarra (parallel) Road option would be a win/win outcome.

Statutory Requirements – EPBC Act (page 88)

To the list of species in this section must be added the Grey-headed Flying Fox.

Consultation (Section 9.0-9.5, pages 89-95)

The proponent has provided a consultation report within this EAR.

The consultation report is predominantly an historic account of events that occurred prior to the issuing of the 2009 DGRs and it is contended that these events fall outside the requirements of the currently operating DGRs. The reported consultation events consist of:

- Summaries of correspondence from four State agencies to the Dept of Planning to assist in the issuing of the 2009 DGRs. By definition, these are not part of the proponent's consultation process;
- A three line mention of three meetings held with DECCW during 2010. While this is clear evidence of consultation with one State agency during the period from issuing of the DGRs, no information on outcomes or effectiveness is provided.
- A brief report by consultants Brown and Root who were engaged in 2001 by the proponent to review and update a link road options study. The consultants reported on a public workshop, advising that the results were inconclusive. On the basis of this one workshop the project was aborted by the proponent. The Bomaderry Creek Landcare Group subsequently received advice from the consultants that they sought additional funds to proceed further with the project, but the funds were not forthcoming. It is argued that this consultation cannot be regarded as having any worth in relation to the current process given the time since this project was undertaken and the absence of any outcomes.
- A brief summary of community consultation undertaken by the member for Kiama, Matt Brown in 2006. By definition this is not a part of the proponent's consultation process;
- A very brief comment on a 2007 information flyer which was only distributed to the media and to anyone making specific enquiries. No details are provided on the response rate or even if the media made it public. It is not surprising that the Bomaderry Landcare Group can find no one to date who has any memory of this very limited information effort delivered 4 years ago. As it is not linked to any report on traffic modelling and economic analysis and lacks any evaluation, it is contended that this was a very ineffective community consultation process and hardly worth reporting.

- A more detailed and focussed community letter box survey conducted in 2007 with some information on response rates, preferences and a selection of specific comments. It is difficult to understand why the survey was limited to residences within 200m of the three route options. Surely all residents in North Nowra, Bomaderry, Bengalee, Cambewarra Village and many commuters beyond should have been given the opportunity to be involved. Perhaps the limited distribution and the time since the survey may explain the lack of knowledge of this survey amongst local residents consulted by Landcare members to date. At best it is argued that this technique provided a basis for a more comprehensive follow-up survey and cannot be considered as evidence of compliance with the DGRs.
- Some details of attempted consultation with the Aboriginal community during 2009 and 2010 with little response. A one day on-site meeting with one person from one Aboriginal group was briefly documented. A consultation process purportedly carried out by an archaeological consultant was provided in summary form but, reference to the consultants report (Appendix G) revealed this to be the process by which the consultant attempted to elicit response from the Aboriginal community. Both the consultant and the proponent appear to have failed to appreciate the inherent difficulty of formal bureaucratic processes in gaining meaningful input from Aboriginal groups. Long experience by the National Parks and Wildlife Service has shown that the best method of gaining such response is by initial meetings held on the interest groups' turf and developing a trusting relationship with them. It is a slow, but worthwhile process which usually produces effective results. There is no evidence of this approach reported in any of the documents provided in the EAR and thus it is contended that consultation with the Aboriginal community has been ineffective;
- A report of an on-site inspection and a follow up meeting during 2010 with DEWHA officers. At the current stage of the assessment process this level of consultation with Federal agencies would appear to be adequate.

It is contended, that this report on consultation carried out in response to the 2009 DGRs was not detailed enough, not adequately focussed, was totally lacking with regard to the general community and community groups and thus ineffective. No attempt has been made to justify this overall inappropriate level of community consultation.

This inadequate treatment of this basic requirement of the principles laid down in the EP&A Act with regard to community consultation, is further demonstrated by the lack of attention to the many requirements and expectations detailed in the Dept of Planning's 2007 Guidelines for Major Project Community Consultation.

It is clear that the proponent has failed to comply with the DGRs with regards to its Consultation requirements.

Strategic Justification (pages 98-106):

NSW Strategic Plan:

This plan establishes as a priority the protection of native vegetation and biodiversity with a target of improving native vegetation and biodiversity. This target is defined as providing for an “...increase in the recovery of threatened species, populations and ecological communities”.

The proponent claims, however, that the North Nowra Link Road is not inconsistent with the above priority as it is claimed that there will be no significant impacts to threatened species, populations and ecological communities. This claim is a nonsense as the target is to *increase* recovery of threatened species, populations and ecological communities not to *avoid significant*

impacts on them. A review of Section 13 of this EAR shows that the claim of avoiding significant impacts can be challenged.

The South Coast Regional Strategy 2007

This Strategy is the pre-eminent planning document for the South Coast. It sets out clear land use plans whilst aiming to protect and enhance the values of the South Coast environment.

The DGRs require a strategic assessment of the need and location for the proposed Link Road with consideration to the South Coast Strategy and the proponent in this EAR makes the following statement:

The Biodiversity Outcomes of the South Coast Regional Strategy include:

- *To maintain or enhance the quality and distribution of the Region's biodiversity over time.*
- *To direct urban development away from areas important for conservation.*
- *To protect, enhance and reinstate the values and functions of riparian corridors.*

The only reference in the EAR to these outcomes is “...the proposed NNLN will provide infrastructure to cater for increased housing density within the existing living area of North Nowra, consistent with the Biodiversity Outcome to direct urban development away from conservation areas”.

It is clear, however, that the Central Route (Option 1) and the Southern Route (Option 2) are not consistent with any of above the Biodiversity Outcomes, because they would not maintain or enhance the regionally significant biodiversity of the Bomaderry Creek Bushland and Regional Park, would play no role in directing development away from the Bushland which is known to be important for conservation, and would not protect, enhance and reinstate the values and functions of riparian corridors – quite the reverse in fact.

The Northern Route (Option 3) would have adverse biodiversity outcomes, but the proponent's biodiversity assessment establishes that they would be less significant compared with the other two options (Appendix F Part 1). Of specific note, only Option 3 has the potential to help direct urban development away from conservation areas. The Potential New Living Area (PNLA) fronting the southern side of West Cambewarra Road would be rendered almost unviable should Option 3 be adopted. It would intrude significantly into the relatively small proposed urban area and would require a noise buffer of similar distance to that proposed for the residents of West Cambewarra Road. A parallel feeder road of the new area similar to that proposed for West Cambewarra Road would also be required. Once a bushfire asset protection zone is accounted for, it is apparent that the remaining land available for development would hardly be economically viable.

This PNLA is a significant conservation area as it contains part of the Giant Burrowing Frog habitat and habitat of *Genoplesium baueri* (see review of Section 13, page). Thus Option 3 sits much more comfortably with the Biodiversity Outcomes of the South Coast Regional Strategy.

Nowra Bomaderry Structure Plan

The DGRs also require a strategic assessment of the need and location for the proposed Link Road with consideration to the Nowra Bomaderry Structure Plan. However, this EAR is silent on the matter of the natural and cultural environment with regard to the structure plan. Where it does pass comment on the Plan, it merely repeats the matters that deal with development needs.

The Plan deals with conservation of the natural and cultural environment referring to a set of principles for identifying core conservation areas, which includes the statement that

“...biodiversity hotspots should be considered core conservation areas.” The Bomaderry Creek Bushland /Regional Park with its exceptional biodiversity would meet this criterion. The Plan does not, however, resolve the conflict between its development objectives and its conservation objectives, particularly regarding the future of the Bomaderry Creek Bushland and Regional Park.

There is no doubt, however, that the environment protection objectives of this structure plan would be best met by choosing Option 3 for the North Nowra Link Rd as it would have the least environmental impacts.

With regard to the South Coast Regional Strategy 2007 and the Nowra Bomaderry Structure Plan the proponent’s strategic assessment is not in compliance with the DGRs.

Analysis of Potential Landuse Conflicts:

Option 1 (the Central Option) - Amenity Within Bomaderry Creek Regional Park (pages 102-103)

The proponent states: *“The Central Option would result in improved access for visitors on the walking track on the east side of Bomaderry Creek, which provides access from the Park entrance and facilities area down to the Bomaderry Creek Weir.”*

Given that the proposed road would pass through the Regional Park entrance sign and destroy the existing vehicle parking area at the main entrance to the Park, it is a bit difficult to imagine that this would improve visitor access, particularly in the absence of any description and designs of alternative access arrangements. A new entrance would have to be provided and a new parking area within the Park. Besides the impact of this road on the extensive Landcare regeneration work carried over many years adjacent to the Park entrance, there would be additional impacts caused by the development of the new entrance/parking area. With the absence of any comment on these matters one must be left with the question of who would provide the new entrance and who would pay for it. It is strongly suspected that no thought has been given to these matters and that the costs involved have not been factored into the estimates for Option 1. How can the proponent assure us that access will be improved if these basic details have not been considered?

Furthermore, how can a busy road within a few metres of the popular Nerang Picnic Area and a bridge overarching a popular walking track improve access? It certainly won’t improve the visitors’ appreciation of the currently quiet enjoyment experienced in this beautiful bushland setting at the end of a relatively quiet terminating road (Nerang Road).

The proponent states: *“The walking trail for Bernies Lookout also starts within the Regional Park grounds, and would cross underneath the proposed bridge for the Central Option.”*

This sealed walking track was built on a level gradient by the Bomaderry Rotary Club in the 1980s for access by the disabled to Bernies Lookout and the Camellia Garden situated north of the picnic area. Option 1 would cut off any future access for the disabled to these features at the northern end of the Bushland. An alternative access via the track to the weir would not be able to be traversed by the disabled, as it has steep gradients in part with sometimes slippery steps. Although the weir track and the remaining section of track for the disabled on the northern side of the proposed road could be linked for people with normal walking capabilities the gradient involved in achieving this would prove a further impossibility for the disabled. Thus approval for an Option 1 route would in effect close off this excellent outdoor opportunity from use by the

disabled – the only such facility provided in the Bushland. It is impossible to believe that the proponent was unaware of these implications. This leads to the conclusion that the above quoted comments by the proponent are a rather dishonest attempt to gloss over the serious implications of this particular option.

Further: *“The principle loss of amenity would relate to increased traffic noise and visual impact from the road and bridge structure in the vicinity of the Bomaderry Creek Weir, although the existing water pipeline crossing already makes a significant visual amenity intrusion.”*

No mention is made of the horrific visual impact the initial construction of the bridge and the ongoing visual intrusion it would have on visitors standing at the Weir lookout. This is a very popular lookout and the vegetation established in the gorge over many years by the Landcare/Bushcare Group has significantly screened the view of the pipeline. The bridge on the other hand would be much closer, the pipeline screening vegetation would be destroyed and all one would get is a view right in ones face of an ugly bridge structure with noisy traffic crossing it. It would, however, be a perfect position to view the progressive destruction of the gorge, the possibility of which has stimulated some to suggest that we rename this lookout as the ‘Bridge’ Lookout!

The observation that this option would improve surveillance of anti-social behaviour beggars belief. What evidence is there that busy people passing to and fro are likely to detect such behaviour. Surely the presence of numerous visitors enjoying the Park would be a more likely deterrent than those concentrating on their driving and intent on cutting time of their trips. A more likely scenario would be of anti-social types throwing rocks from the lookout at passing cars. The likely outcome of such behaviour would no doubt lead to closure of the lookout. We would then have to rename it the ‘No’ Lookout! The absurdity of all of these possibilities is the outcome of this insultingly simplistic attempt to justify a very bad option for the North Nowra Link Road.

The final comment by the proponent says it all: *“The construction of Option 1 would increase the potential to give the North Nowra and Bomaderry communities a greater sense of pride and ownership of the Regional Park.”*

Anyone with an ounce of commonsense would realise that a road passing over the gorge along the route of Option 1 would actually significantly diminish the community’s sense of pride and ownership of the Bomaderry Creek Regional Park and Bushland. How can anyone take the proponent seriously in these circumstances?

The major thing missing from pages 102 and 103 of this strategic justification subsection is a detailed description of the amenities provided here. Although the site analysis on pages 43 and 44 provides some incomplete details of the Regional Park amenities, a proper evaluation of the proponent’s strategic justification on pages 102 and 103 would have been greatly assisted by a complete coverage of the amenities provided on the eastern side of the creek. But nothing is provided in this subsection to give the reader a proper perspective on what greets the visitor to the Park and what is at stake given the proponents adherence to an option that seems to have no merits with respect to these particular issues. There is an attractive entrance and parking area, a pleasant walk past regenerated bushland to a very attractive picnic area with toilet facilities (suitable for the disabled), sheltered picnic tables, a gas barbeque and interpretive signage including an outstanding reconciliation wall. This picnic area is the take off point for an excellent walking track system that provides access to the wildflower attractions of the sandstone tops and the rainforest along the deeply entrenched creek line.

Interpretive signage is provided along the way. Close to the picnic area is the Weir Lookout that overlooks the 73 year old weir that provided Bomaderry with its first reliable water supply and the 34 year old pipeline that is the current water supply for Bomaderry, Berry, Shoalhaven Heads and Cambewarra Village. There is a long history of human use in this locality and some of the structures add to the visitors' enjoyment of the area. There is an interpretive sign at the lookout that explains the history of the weir and the pipeline and which is also described in the Bomaderry Creek Bushland Walks book produced by the Bomaderry Creek Landcare Group in 2001. No mention is made of this publication which is an important account of the many values of the Bushland written in layman's language. It is on sale throughout the Shoalhaven district and is held in the libraries of every Primary and High School from Berry to St Georges Basin.

No mention is made in this strategic justification of the significant financial investment of the State Government in the upgrading of all of the features mentioned above.

The quality of the facilities provided by DECCW are an outcome of the past significant input of voluntary effort by community groups such as the Bomaderry Rotary Club and the Bomaderry Creek Landcare/Bushcare Group and the ongoing involvement of the latter group. In fact the Regional Park would not exist if it hadn't been for the efforts of the Landcare/Bushcare Group and other community groups in lobbying the State Government to take on a contribution to the management of this outstanding natural and recreational resource.

All of the benefits summarized above are at risk from Option 1 and this strategic justification reflects a poor understanding of the issues at risk. As poor as the biodiversity assessment is, it is immeasurably better than the treatment that the recreational attributes of the Regional Park have received.

Comparison of Route Options (page106)

A comparative ranking of each of the route options against the key land use parameters has been attempted and the outcome is demonstrated in Table 11-2. There is no explanation, however, about how the scoring methodology was arrived at. The methodology is quite limited and subjective and cannot be considered as having any statistical validity. For example, the range of scores is far too limited to allow for any sensitivity in the outcomes. Thus we have the very serious impact on park amenities of Option 1 scoring only two points more than Options 2 and 3 that have no amenities whatsoever.

It can be argued that the amenity impact on the gorge is underrated. Although the impact on the natural values of the gorge for Option 2 is seen as high, the impact of Option 1 on the natural, recreational and cultural values of this, the most heavily used part of the gorge, should be rated equally, ie, using this suspect rating system the figure should be 3.

The indirect impact on existing residential areas is rated too high for Option 3. This parallel route, with its minimum 50 m setback, provides a visual screen of vegetation for the West Cambewarra Road residents, which could be enhanced with further planting of native vegetation. Special arrangements have been provided for access to and from the parallel road for West Cambewarra Road residents, which would effectively enhance the privacy of their dead-end road. Probably the greatest benefit of all is the guarantee that there will be no threat of urban development immediately encroaching on the opposite side of the road. Even the survival of the Glossy-black Cockatoo feed trees as a result of the parallel road set-back should be rated as an amenity benefit deriving from Option 3. This could give the rating for this parameter as 1.

Just these two minor changes to the ratings would increase Option 1 to 11 and reduce Option 3 to 6. This produces a clearer distinction between the options than provided by the proponent.

Biodiversity (pages 120-134)

For a detailed response to this section of the EAR please refer to the review of Appendix F – Biodiversity Assessment – Part 1.

The following comments clarify and address directly some of the summarized statements of this section.

Option 1 Central Option pages 120)

The proponent states that in order to avoid the *Zieria baeuerlenii* a section of road will be reduced to 20 metres *where practicable*. The statement goes on: “*The narrower 20 metre wide road reserve and clearance zone would be subject to detailed design development, which would take into account the AUSTROADS standards and likely operational speed environment.*”

This does not leave one with confidence that narrowing the road to the extent proposed will be successful.

***Zieria baeuerlenii* (Bomaderry Zieria)**

Despite the uncertainty expressed above by the proponent about the width of the proposed road reserve, great confidence is expressed that there will be no direct mortality on this species. This contention is questioned in the Biodiversity Assessment (BA) review which concluded that the proponent is far too optimistic about avoiding serious threats to this species.

It is claimed that indirect impacts will be avoided by a range of mitigating measures. The mitigating measures in the BA are vague and not convincing. Potential impacts associated with runoff and stormwater are to be addressed via future plans. Thus we have no details of what measures will be implemented. How can we be confident about mitigation when there is nothing to consider.

Where the proponent has actually dealt with specific indirect impacts, the BA review goes into a great deal of detail to explain why most of them are likely to be ineffective. In some cases this is because they will not work, in others it is because of factual errors about the issues raised and in others it's due to vague assurances that cannot be accepted without more detail. It is very important that the assurances expressed in this EAR are not accepted without referral to the BA review.

For example, the error in the BA about the 10 m distance of the road edge from the nearest *Z. baeuerlenii* is repeated in this EAR. The maximum distance is closer to 5 m and the accuracy of this would depend on the proponent getting away with constructing to a maximum road width of 20 m.

Arguments about loss of habitat are also repeated and this is equated in terms of the actual hectares that will be lost. There are many other factors that must be considered when a break is created in a species' habitat. The impacts that a major road construction undertaking resulting in a permanent barrier to species movement need a careful, detailed and informed discussion lacking from the EAR. Too much generalization is introduced about the special nature of *Z. baeuerlenii*'s reproduction. One example of this is the assumption that the existing powerline is a barrier to the vegetative spread of the species. There is, however, no evidence to support this assumption and some contrary evidence that this may not be correct provided in Barratt (2007). It would seem obvious to most people the difference between a powerline break in continuous habitat and an 80 kph sealed sub-arterial road, but the proponent does not appear to appreciate this. One major difference is that powerlines can be undergrounded and habitat restored, but that

opportunity is lost if a permanent barrier such as a road is placed across the species potential direction of spread.

The argument that the road would not isolate individuals of one genotype is a spurious one. Just by blocking its direction of spread is a serious matter for a vegetative reproducing species such as this highly vulnerable species. It should also not be assumed that this species would not have the capacity of reproducing at some time in the future.

These comments about reproduction by the proponent are based on selective use of Barratt (1999), but no reference is provided. In many cases statements based on this thesis are incorrect or taken out of context.

The proponent raised the possibility of helping DECCW to carry out weed management, but with no clear commitment to do so. Council is already carrying out this work and there is no reason it can't continue to fund these activities directly without handing the land over to DECCW. In fact, much of the work is funded through community grants which is a source of funds not available to DECCW.

There is absolutely no case presented in this EAR or in the BA that can lead to the confident statement by the proponent that it is not considered likely that the proposal will adversely affect long-term viability of the population.

***Eucalyptus langleyi* (Albatross Mallee)**

The proponent quite incorrectly promotes the idea that the impacts on this species will be indirect. KMA (2008) clearly states that there are two plants growing on the centre line of Option 1 (Site S5, Barratt 2009) and that would result in the loss of these two plants. The idea of raising the height of the bridge to avoid direct impact was mentioned in the BA but not in the EAR.

If raising the height of the bridge is what the proponent is referring to when making reference to an avoidance strategy, why not say exactly what it proposed. Is this just another vague statement deliberately made to avoid critical comment while assuring less critical readers that 'everything is fine'? It is hard to imagine that the ground surface and any vegetation nearby and immediately below the bridge construction site would not be highly impacted. No mention of the height of the bridge has been made, but given the gradient of the ground near the *E. langleyi* there is some doubt that it would clear the plants which are already about 4.5m high. They can be expected to attain heights of 8m or more (Barratt 2009).

Should the plants survive the initial construction phase there is no doubt that the shading cast by the bridge would lead to the death of the plants.

The hydrological characteristics, both surface and subsurface, will unquestionably be modified, which could also lead to the death of these plants given that this species appears to be very dependent on specific seepage characteristics within the rock shelf-terrain of the *E. langleyi* habitat (KMA 2002).

The loss of these two plants will constitute a 10% reduction of the local population if Option 1 gets approval.

There is another plant (Site S4) under threat from relocation of the water pipeline. This plant is close to the pipeline which is to be removed from its current alignment across the creek and attached to the bridge. The huge plant and equipment that will be needed to access the site for this major operation will run a real risk of damaging or destroying this plant. Its loss would mean that 15% of the population will be lost. No mention has been made about this risk in any of the

documents produced for this Concept Plan Application. Thus the proponent has failed to address yet another diminution of this population.

The proponent raises the land transfer deal as a mitigation measure for the impact on this species by the construction of Option 1 arguing that this transfer of land from one agency to another will somehow minimise impacts. The nonsense of this argument has been explained elsewhere.

The claim has not been made elsewhere that all of the remaining individuals of this population will be part of the land transfer. This is untrue. Due to poor boundary definition on the land transfer maps, it is not clear if Site S4 will be included in the land deal. The uncertainty about this question is probably academic as it is one of the sites that may be destroyed by Option 1. The other site included in the land swap is Site S5 which will be destroyed by the Option 1 road. Sites 1, 2 and 3 (the plants in this site have died) are within the land Council intends to retain for future development purposes.

E. langleyi is listed as Vulnerable under State and Australian legislation, but a recent listing of the population in the Bomaderry Creek Bushland as a Threatened Population under the Threatened Species Conservation Act has effectively raised the threat level to that of a Threatened species as opposed to Vulnerable as far as the individual species in this local population are concerned. Thus extra consideration of the species' needs is required. The proponent's rather limited treatment of the subject does not reflect this requirement.

The threat of 15% loss of this Endangered Population is a matter for very great concern particularly given the dramatic decline of the Population over the past 12 years or more. More specific details about the species is provided in the review of the BA.

The proponent considers this loss of a few plants as insignificant given the thousands of other plants elsewhere in the district and thus fails to consider the local population as required by DECC (2007).

This EAR fails the NSW Strategic Plan which includes a target of increasing the recovery of threatened species, populations and ecological communities. This nonchalant disregard for the loss of 15% or even 10% of the Endangered Population of *E. langleyi* is regrettable as this population is in serious decline without the threat of this road hanging over its head. A plan to recover this particular population is urgently needed not a plan to drive it closer to extinction.

The Biodiversity Outcomes of the South Coast Regional Strategy include: *To maintain or enhance the quality and distribution of the Region's biodiversity over time*. Clearly, as far as *E. langleyi* is concerned, this EAR fails this particular Biodiversity Outcome.

***Genoplesium baueri* (Bauer's Midge Orchid)**

The proponent believes that only one plant may potentially be impacted by Option 1. This is incorrect. There are three known plants of *G. baueri* on the northern side of the powerline and these would be destroyed by Option 1. There will be nine plants at risk of destruction by construction of Option 2. That means almost 11% of the local population would be destroyed by Option 1 and 33.3% of the local population would be destroyed by Option 2.

The proponent considers the fact there are other plants beyond the local population means that adverse impacts on the species is not considered likely. This regional approach to assessment does not meet the requirements of DECC (2007).

***Hibbertia* sp. Nov. 'Menai'**

The proponent has also taken the course of action of assessing this species based on the regional approach which is not in accord with DECC (2007).

Glossy Black Cockatoo

The assessment of impacts is based on the regional approach and is not in accord with DECC (2007).

Giant Burrowing Frog

The proponent claims that there are no confirmed records for this species in the Bomaderry Creek Bushland. This is incorrect. A male frog was heard calling from a burrow in 1992 (Mitchell McCotter 1992).

The proponent appears to be ignorant of the facts about the GBF. Although it is often sited moving through shrubby open forest during the evening, it requires wet habitat for breeding (Webb 1993).

The proponent states that potential breeding habitat only occurs on the northern side of the powerline. This is incorrect. Potential breeding habitat also occurs on the southern side.

About one third of the mapped habitat on the northern side of the powerline will be retained by the proponent for urban development. In addition to direct habitat destruction, urban runoff and other urban/bushland edge effects will seriously degrade the remaining habitat. Council should rethink its urban development plans for the its land fronting West Cambewarra Road and manage the land for environmental protection purposes.

More details comments are provided on this species in the review of BA.

Spotted-tailed Quoll

This species is susceptible to road mortality in forested areas fragmented by roads. Thus the proponent needs to conduct surveys in the Bushland and needs to do a better assessment job than provided in this EAR. More details about the species are provided in the BA review.

Grey-headed Flying-fox

The proponent has underestimated the importance of this species in the Bushland and needs to carry out a great deal of extra work in the Bushland. More details about the species are provided in the BA review.

Yellow-bellied Glider

The proponent has got quite a few facts wrong and clarification of these and other comments on the species can be found in the BA review.

Eastern Pygmy-Possum

The proponent has failed to acknowledge the presence of this species in the Bushland although it was found there in recent months by Alison Hunt and Associates (pers com). No further details about this survey work are available.

The proponent compares the amount of suitable habitat in the Bushland with the regional distribution of suitable habitat and on that basis assesses the low likelihood of concern for this species. This is once again an example of not following the requirements of DECC (2007).

Broad-headed Snake

This species is not mentioned in the EAR on the assumption that it does not occur in the Bushland. There is certainly suitable habitat for it, and there is evidence that it once occurred here. More details on this species are provided in the BA review.

Comparison of Options (pages 132-134)

Detailed comments are provided on this Section under the heading Comparative Assessment in the BA review.

Aboriginal Heritage (pages 147-149)

The comments relevant to this section are found in the attached review of Appendix G: Aboriginal Archaeological Assessment. This review found errors in the assessment due to changes in the route of Option 3 subsequent to the archaeological field work. Some differences were discussed regarding the adequacy of field work on Option 1. Concern was expressed regarding inadequate consultation procedures.

Biodiversity Offsets (page 188)

Detailed comments on the 50 ha land offer relating to Option 1 is provided in the attached review of Revocation and Offsets Assessment June 2010 (found after much searching in Appendix E to Appendix F Biodiversity Assessment Part 2).

References

See the review of Appendix F: Biodiversity Assessment – Part 1 for the full list of references

North Nowra Link Road – Concept Plan Application No. 07_0037

Review of Appendix F: Biodiversity Assessment – Part 1

1. Failure to comply with Director General's Requirements (DGRs)

The Biodiversity Assessment fails to comply with the DGRs as it is not complete.

It is not in accordance with DEC's Guidelines for Threatened Species Assessment as the survey work for the following species had not been completed at the date of the release of the Environmental Assessment Report (EAR): Giant Burrowing Frog, Spotted-tailed Quoll, Grey-headed Flying Fox and Eastern Pygmy Possum.

Further, there has been no targeted surveys for the Broad-headed Snake and the Brittle (Bauer's) Midge Orchid (*Genoplesium baueri*). In the case of the Broad-headed Snake, the failure to undertake targeted surveys is based on the incorrect assertion that there is an absence of suitable habitat for this species. In the case of *G. baueri* the proponent has incorrectly mapped the location of data derived from other sources and, having failed to carry out its own surveys, has made the error of assuming that the species does not occur on the Central Route. They have also ignored the very high risk of the Southern Route impacting on *G. baueri*. The proponent has therefore failed to carry out an appropriate environmental assessment on this species.

This EAR should be withdrawn from public exhibition until the proponent has complied with the DGRs.

2. Existing Environment (pp 32-50)

On page 32 it is claimed that the cleared power line which runs parallel to the Central Route provides no habitat values for threatened species. This claim is incorrect as *G. baueri* occurs in the slashed verges of the powerline within the Bomaderry Creek Regional Park. This clearly demonstrates that the slashed verges (which will be destroyed by construction along the Central Route) are an integral part of the habitat of this threatened orchid.

This cleared/slashed power line easement also passes through the habitat of the Giant Burrowing Frog, Yellow-bellied Glider and Glossy-black Cockatoo. All three species utilise this easement when moving across it while occupying and utilising their habitat. Although disturbed and therefore not of the same value to the species as the undisturbed sections, it cannot be said that it has no value for these species. Further, the statement on the same page that the easement "...presents a physical barrier to flora and fauna" is incorrect as the movement of animals and plant propagules has been observed and indicated by indirect evidence to occur. It would be correct, however, if the proponent were to acknowledge that a sealed 60-80 km/hr road would indeed be a physical and significant barrier to flora and fauna.

On page 39 it is claimed that some of the Council land adjacent to Bomaderry Creek is zoned for conservation. The zoning of the Council land is in fact 6(a) Open Space (Existing Recreation) and 6(c) Open Space (Proposed Recreation) – hardly conservation zoning!

It is also noted that, in the last paragraph on page 39, the proponent refers to Spotted Gum Blackbutt Forest running the length of Bomaderry Creek in the study area. Reference to Table 2, shows that the correct title for this forest type is Spotted Gum – Turpentine Tall Forest. In fact, Blackbutt (*Eucalyptus pilularis*) has not been located in the Bomaderry Creek Bushland. Unfortunately, this same error is repeated in Figure 16: Vegetation communities within

Bomaderry Creek Regional Park (page 50). It is noted also that Figure 16 does not show all of the regional park, but does extend beyond the park into parts of the broader bushland area (all of which is not shown either). Given these shortcomings, Figure 16 is a highly inaccurate and unreliable illustration of the plant communities of the Bomaderry Creek Bushland and of those communities likely to be affected by all three road options.

At the top of page 40, *Zieria baeuerlenii* is reported as being recorded in Coachwood/Ironwood Warm Temperate Rainforest. This is incorrect. There is clear evidence (Barratt 2007) that this endangered species is intolerant of heavy shading and has not been recorded in this vegetation community. In fact, Table 3 does not specifically list this particular community.

3. Threatened Species and Communities (pp 42-68)

Eucalyptus langleyi (p 42)

This subsection contains a number of inaccuracies and omits details of very great importance to the assessment process. This arises from a failure to rely on the most detailed review of the status of the population of this species in the Bomaderry Creek Bushland, ie, Barratt (2009a). This document is not listed in the References section of this Biodiversity Assessment.

The Assessment also fails to address the potential impact issues relating to this species' status in the Bomaderry Creek Bushland as an Endangered Population. Barratt (2009) documented the history of the threats to the population as follows:

Threats to the Population

A particular distinction between the Bomaderry Population and other stands of this species is the high level of threats to its survival. It occurs within a highly disturbed landscape featuring roads, powerlines, pipelines, tennis courts, dumped materials including a disused spoil depot, a picnic area, walking tracks, a range of weed species typical of such disturbed sites, drought, regular fire in one instance (and possibly infrequent fire in others) and recreational activities and anti-social behaviour (car dumping and car torching). The history of impacts goes back to at least 1938 when a weir was constructed on Bomaderry Creek (Barratt et al 2001) which involved construction of an access road and installation of a pipeline through the Population. Evidence of this early disturbance phase can still be clearly discerned in remains of structures, disturbed soil surfaces and weeds. This is a much more intensive regime of impacts than experienced by any other stand within the total population of this species.

Although there is quite a deal of undisturbed weed-free bushland in the general locality, all sites appear to have been affected to a greater or lesser degree by human activities and 3 of the 7 sites have weeds present.

Ken Hill (Mitchell pers. com. 2008), botanist until recently at the National Herbarium, submitted in 1996 a record of the Bomaderry Population to the National Parks and Wildlife Atlas noting "...half gone for car park – 20 to 36 plants left."

The major current threat is a Shoalhaven City Council road proposal planned to be constructed through the middle of the population. Council's environmental consultant has acknowledged that this will lead to the destruction of two plants (Mills 2008).

The Assessment fails to address the potential impact on the species of the relocation of the pipeline and the powerline across the gorge along the Central Route. There is a major pipeline facility supplying water to Bomaderry, Berry, Cambewarra Village and Shoalhaven Heads

crossing Bomaderry Creek adjacent to the Central Route. If a road is constructed along this route it will force Council to relocate a section of the pipe and valve structures on the western side of the creek. This has led to the decision to remove the whole section spanning the creek and realign it with and attach it to the proposed road bridge.

The major biodiversity impact of this activity will occur on the eastern side of the creek. Here the width of disturbance will be more than the width of the proposed road and with removal of such a large structure and its supporting infrastructure there will be extensive soil disturbance and vegetation destruction. If Site S5 (Barratt 2009) survives the bridge construction, it surely won't survive the pipeline relocation. Another site is potentially under threat. This is Site S4 which is quite close to the cleared margins of the pipeline and is at risk of damage or destruction from the relocation of the pipeline and subsequent restoration of the site. The risks involved cannot be assessed as there are no details of how the project would be carried out. In fact there is almost no reference to this important and costly undertaking in any of the documents which make up this assessment.

There may or may not be any implications from the relocation of the powerline, but this cannot be determined unless the proponent explains what is involved.

As in most cases in this assessment, the proponent has concentrated specifically on the impact on individual plants rather than a consideration of populations within their habitats. Barratt (2009) stated:

“Over the many years of Council's pursuit of this road, its consultants have consistently failed to recognise the issue in terms of habitat effects and have therefore failed to produce a valid argument that its plans will not have a deleterious impact on the Bomaderry Creek Bushland and its diverse wildlife including its many rare and threatened species. This mind-set has limited awareness of the growing threats to the E. langleyi population and helped avoid recognition of the need for urgent attention to arrest this growing threat.”

Zieria baeuerlenii (pp 43-49)

This subsection pays particular attention to the potential direct and indirect impacts on Group A of *Z. baeuerlenii* arising from construction of a road along the Central Route.

Much attention regarding the potential direct impacts is devoted to the proposed reduction of the width of the road adjacent to Group A from 30 metres to 20 metres which is the minimum width allowed for roads of this type. This is important to the proponent's arguments as the closest *Zieria* site to the middle line of the proposed road is 30 metres which has led to the deduction that the road edge will be 10 metres from the nearest cluster of the species (Site A2). The proponent has unfortunately deducted the reduced width on the opposite side of the road from the distance away from the *Zieria* and has thus failed to realise that the distance is in fact 5 metres not 10.

Assuming that it is even possible and reasonable to restrict the width of the road to this extent, 5 metres is not a great deal of security against the unintended sweep of a bulldozer blade, backhoe bucket or other plant and equipment. How can the proponent be confident that spoil will not be deposited on plants that are so close to the construction site? Even erection of a security fence poses serious threats of direct impact.

Given the error by 50% of the distance between the road edge and Site A2 it seems a little optimistic of the proponent to be claiming that there will be no direct impact on the species.

The discussion of the indirect impacts is vague and full of holes. The proponent first relies on the assurance that potential impacts associated with runoff and stormwater will be addressed through the development of an Erosion and Sediment Control Plan and a Soil and Water Management Plan to be prepared presumably some time in the future. We are given assurances that all will be well on the basis of absolutely no details of what measures will be implemented to ameliorate potential impacts. How can the proponent be sure that increased runoff with its attendant traffic induce pollutants will not present a threat to the species? How will the risk of a lowered water table be dealt with? Build up of soil and leaf litter between the road and the species may cause water to pool on the adjacent road surface creating safety issues. How will this be dealt with? The usual practice is to grade the road verges to keep them clear and facilitate runoff. What direct impact would this have on the species? In any case, the fence erected to protect the plants could be expected to prevent any effective clearing from taking place. How long will Council managers and road maintenance workers memories last to be sure that protective practices are maintained?

The proponent then goes on to discuss the risk of increased exposure to heat and sunlight. We are assured that since the clearing will take place on the southern side of this *Zieria* group that there would only be minor effects from the loss of shading from trees. No field data such as measurement of solar intensity is provided or documentary evidence of examples of this claim having any validity.

The drying effect of changed wind patterns is not addressed. Nor is the risk of weed invasions and rabbit herbivory which are exacerbated by opening up of edges in natural systems.

The proponent has dealt with the potential impact of a road through the habitat of the species by quantifying the actual area of habitat to be lost. This is only one aspect of habitat impacts. The fragmentation of the habitat has not been dealt with and this has particularly serious implications for a species that is only known to spread vegetatively. Whereas a powerline can be placed underground and the original habitat conditions restored to facilitate the chances of the *Zieria* increasing its distribution (Barratt 2007 reported such a scenario occurring at Site A2), a sealed 60-80 km/hr road will make this possibility impossible.

The proponent claims that "Barratt (1997) suggested that a major threat to the species was fire." This is not correct. Barratt has not at any time made such a claim. Kevin Mills and Associates have made this claim in many documents over many years without any evidence to support this. The evidence is (Barratt 2007) that the species appears to require occasional fire to reduce competition from other species and that it resprouts readily following fire provided the conditions are not so extreme to "cook" the soil. Follow up conditions and events have been documented by Barratt (1997, 1999, 2007) such as drought, disturbance and herbivory that may have a deleterious affect on the species.

Drought on the other hand (Barratt 1999, 2007) can have a much more serious impact on the species as it seems to be particularly sensitive to extended dry periods, does not have a resource of seeds in the soil and can be subject to rabbit herbivory on the tender new shoots that emerge in the same fashion as in the event of fires. The proponent quotes Barratt (2007) in discussing the effects of fire, but fails to draw attention to drought effects also detailed in the same report. This issue of drought sensitivity, particularly given the edge effect discussed above following construction of a road, needs close and detailed consideration. It is of very great concern that the proponent has failed to address this issue.

With regard to the effect of a road through the middle of the Bushland on the incidence of fire, the proponent tries to have it both ways by citing the possibility of fires being reduced or

increased. They deal with this difficulty by stating that a fire management plan for the regional park will be developed. They thus commit the NP&WS to this task (after all the park is their responsibility isn't it), but make no mention of a plan for the rest of the Bushland. Does this mean that the proponent and the Crown lands agency will have no role to play in this task?

Unfortunately the proponent has failed to consider the concern expressed by Barratt (2007) that the most immediate problem for *Z. baeuerlenii* may be the long absence of fire from some sites. This of course has no direct relevance to the potential impacts of a road bulldozed through the habitat and almost on top of known sites, but it does indicate a lack of understanding of the ecology of the species by the proponent and a tendency to be rather selective with regard to the available evidence based on long term observation and research.

The proponent suggests the installation of anti-littering signage along the proposed road to reduce the chance of bushfire ignition resulting from dumped cigarette butts and glass. They fail to advise if there is any evidence that this is an effective means of dealing with littering. There is no comment on the aesthetic affect of signposting, but then that would be nothing compared with the visual impact of a sub-arterial road and its attendant traffic through an environmentally sensitive natural system!

Quite surprisingly, the proponent appears to think that the intrusion of roads in bushland reduces the incidence of rubbish dumping. This is a very interesting reversal of the commonly held belief that they actually increase this anti-social activity. It would be interesting to be made aware of the evidence for this dramatic shift in our understanding of the practice. The proponent, against all evidence elsewhere, considers that it will be able to clean up any roadside dumping and that the road will facilitate this. Interestingly, there has been absolutely no history of rubbish dumping near the Zieria A Group sites.

The dismissing of the risk of trampling and vandalism from construction of a road is rather glib. The proponent ignores the effective actions taken to minimise past vandalism (Barratt 2007) by relocation of a track in order to reduce access to the Zieria site. The assurance that fences and signs will be effective measures does not leave one with any confidence.

The proponent has failed to address one outcome of restricting the width of the road adjacent to Group A on the Central Route which raises public safety concerns. The plants in Site A2 are clustered at the base of a Red Bloodwood (*Corymbia gummifera*). This means that there is a tree within 5 metres of a very narrow road with virtually no verges carrying traffic at speeds of 60 km/hr. If not immediately, some time in the future this tree could pose a risk to passing traffic through falling branches or of total collapse. Should this situation be seen as a threat in the future, there will be understandable pressure to have the tree removed. This could not be achieved without removal and thus destruction of Site A2. Although this extreme scenario could be avoided by retaining the stump of the tree and removing the rest there is no guarantee that the Site would not be adversely affected during the cutting down of the tree and/or subsequently as a result of a drying out of the habitat or increased risk of weed invasion or access by rabbits.

The proponent states that the proposed road may present a physical barrier to a species which reproduces vegetatively. On the contrary, a road will present a total barrier to the spread of this species. The presence of the gravel power line service trail near the species is not to be equated with the construction of a sealed road immediately adjacent to the species. The trail has already been moved away from the Zieria site to increase its capacity to spread and has the potential for total removal by undergrounding of the power line. The permanent presence

of a road is a totally different proposition and it is rather inappropriate for the proponent to try to imply that the two forms of access are in any way similar.

The proponent presents a rather limited view of the concept of habitat fragmentation. They equate it solely to do with genetic viability due to isolation of sexually propagating species. As *Z. baeuerlenii* appears to have lost the ability to reproduce sexually, the proponent claims the only issue relevant to fragmentation is the risk of isolating individuals within a clonal group and, since the Central Route would not pass through any *Zieria* group, fragmentation is not an issue. Fragmentation applies to splitting up habitat as well as dividing specific sites of species. The isolation of one part of the habitat from another resulting in blocking of the physical spread of the species is equally a feature of fragmentation. This is a particular concern where the species is immediately confined on one side by the presence of a road. This is a much more serious threat to the species than the mere clearing of vegetation for a powerline access.

This subsection is concluded with the assertion that there will be no loss of individual species as a result of construction activities. It has been shown above that this is by no means certain and that the proponent cannot confidently take this position. It has also been shown that the mitigating actions have not been well considered or documented and that there are some threatening processes that have not been considered.

A final point is made by the proponent that it cannot be foreshadowed that the proposal will adversely affect the long-term viability of the population. Given the considerable shortcomings of this biodiversity assessment, it is contended that it cannot be predicted that the proposal will not adversely affect the long-term viability of the population. In fact, it is particularly important to invoke the Precautionary Principle here as laid down in the Protection of the Environment Administration Act 1991 as follows:

“...if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.”

Much has been stated in regard to protecting *Z. baeuerlenii* without any scientific evidence to support it. The Precautionary Principle in this case would dictate that the best means of preventing environmental degradation would be that the proposed measure (that is construction along the Central Route) should not proceed. It was in fact the application of this principle by Justice Stein in his precedent setting decision (*Lynch v. NPWS and Anor* 1993) that stopped the construction along the Central Route 17 years ago. Justice Stein also observed that the assessment process had not adequately considered the alternative route (the Northern Route) and that it was reasonable to assume that the community would be prepared to travel for a short additional time in order to protect this important bushland area.

***Genoplesium baueri* (p 50)**

The proponent has not carried out any surveys for this species. They report sites and numbers of this species in the Bomaderry Creek Bushland derived from other sources which they have cited incorrectly. They have attributed the recording to NPWS when in fact the work was carried out in 2010 by Alan Stephenson the National Conservation Officer for the Australasian Native Orchid Society.

The proponent reports that one plant may be impacted along the Central route. This is incorrect as three plants were recorded in 2010 within the Bomaderry Creek Regional Park on

the northern side of the powerline easement. This placed three plants on the Central Route, where they would be destroyed if this route were to be approved.

The proponent has made a serious error by mapping (Figure 22) all sites south of the powerline easement, thus making the assumption that the impact of the Central Route would not be significant.

Although Figure 22 is not a reliable guide to the occurrence of recorded sites, it does indicate that some *G. baueri* sites may occur on the Southern Route. Despite this, the proponent does not recognise the possibility of direct impacts, gives no comment on indirect impacts and considers that adverse impacts are not likely. They come to this amazing conclusion because the "...species is known to occur more broadly throughout the Shoalhaven region". This is despite the fact that the three other known sites in the Shoalhaven region are potentially subject to varying degrees of impact. The proponent should have been honest enough to acknowledge this fact.

Similar to the situation of *E. langleyi* and *Z. baeuerlenii*, the proponent has not paid serious attention to the issue of habitat impacts, preferring to concentrate on specific sightings of *G. baueri*. In the absence of an intensive survey of the species habitat (during February and March following a wet January) within the Bushland, the proponent cannot know where the species may occur and confidently state that the species will not be significantly impacted.

The only mitigation measures alluded to in Section 6 of this assessment is fencing and limited stopping areas. Clearly the proponent has not taken a serious and responsible position on this species.

With regard to *G. baueri*, the proponent has demonstrated a failure to comply with the DGRs and therefore must be directed to carry out the necessary surveys, a proper assessment of the impacts on all routes and the placement of the outcome of this work on display for further community comment.

Giant Burrowing Frog (pp 54-56)

The proponent refers to a "...possible call..." as the only record of this species within the study area. This record was listed by Mitchell McCotter (1992a) as a genuine record and the two zoologists conducting the fauna survey in 1992 for the proponent, Dr Alan York and Garry Daly, have asserted their conviction that they heard the species (pers com). Frog calls are often relied on for recording their presence and particularly in the case of cryptic species such as the Giant Burrowing Frog (GBF). Justice Paul Stein, Land and Environment Court, when delivering his decision that prevented the proponent from proceeding with the road in 1993 (*Leatch v NPWS and Anor* 1993) stated "*We know with reasonable certainty that the call of a male frog was heard by Dr York and Mr Daly in 1992. We know that it is likely that there is a population of the frogs in the area.*"

Prior to the proponent undertaking surveys in 2009 and 2010, the only known surveys to locate the species in the study area post-1992 were: Webb (1993) and Daly (1996).

Webb visited the site (during the day time) in late September 1993. He failed to locate the species and attributed this to time of day, prevailing dry conditions and time of year (outside breeding season and calling behaviour not likely to occur then). Webb observed that "...*H. australiacus* is one of the most difficult frogs of eastern Australia to detect because it burrows deep into earth banks of creeks and in damp swampy ground, and tends to call primarily during wet periods coinciding with its breeding season (summer-autumn). The optimum time

to conduct a survey for H. australiacus is therefore during prolonged wet periods coinciding with their peak breeding season (late summer – early autumn)."

Daly (1996) carried out surveys in late June, July and August 1994 (a dry year) which is too late for the breeding season.

Both Webb (1993) and Daly (1996) stated that the species has a sparse distribution and is not easy to detect.

Given the documented evidence by frog specialists (Webb and Daly), it is not at all surprising that *H. australiacus* has not been found in the subject area since 1992. This failure to detect does not, however, mean that the species is not present.

Attached is a diagram (Figure 1 from Webb 1993) which indicates the potential core habitat (hatched) for the GBF in the Bomaderry Creek Bushland. This is a professional survey plan prepared for Mr Webb's report. The Webb (1993) report was submitted as evidence to the Land and Environment Court in the case *Leatch v NPWS and Anor*, 1993. The surveyed habitat for the species in Figure 1 of Mr Webb's report was accepted by the defendants during the court proceedings.

It is important to note that Figure 1 of Webb's report shows the habitat as a continuity across the route of the proposed road in contrast to the disjunct habitat sites in the proponent's Figure 8.

Given that the population of this species may be small in the Bushland, makes it certain that any threats to its survival will be very significant. This would undoubtedly be the case should the Central Route be approved, which bisects the habitat of the GBF.

In Section 6 Mitigation, the proponent makes the unsubstantiated claim that the potential breeding habitat exists only on the northern side of the Central Route. This is by no means certain and the assertion that this assumed fact would eliminate the need to traverse the road cannot be relied on. Webb (1993) noted that "...*H. australiacus* moves great distances from breeding areas in search of food and may even be found moving about on nights too hot and dry for most other frogs".

The GBF habitat is referred to by the proponent as sub-optimal, but no evidence or other information is advanced to explain this designation. Webb (1993) stated that "*At the northern end of its range (the Hawkesbury Sandstone formation), H. australiacus occurs in hanging swamps on sandstone shelves and beside perennial non-flooding creeks*". This is a fairly accurate description of the habitats illustrated in Webb's Figure 1.

The proponent is advised not to rush into assumptions regarding the effectiveness of mitigation measures given the quote from Recsei (1997) that "*This frog has a habit of sitting still on warm, wet roads and is not startled by cars or headlights and a small population could be adversely affected by one road kill.*"

The proponent claims that the area of habitat in Council owned land will be made available for addition to Bomaderry Creek Regional Park if approval is given to the Central Route. However, a comparison of Figure 8 and Figure 28 shows that approximately one third of the habitat shown in Figure 8 will be retained by the proponent. The Nowra Bomaderry Structure Plan (2005) identifies the land to be retained by Council fronting West Cambewarra Road for future urban development. Such development on the edges of this habitat will visit significant

impacts on the GBF habitat within the Regional Park. It is hard to believe that the proponent is serious about protecting and minimizing the impacts on this species.

The proponent has undertaken to carry out further surveys during 2010/11 and therefore any decision on a preferred route must await the submission of the survey data and its display for community comment.

Grey-headed Flying-fox (p 57)

The proponent states that there is suitable habitat for this species in the study area shown on Figure 25. However, Figure 25 is devoted exclusively to the issue of the Glossy-black Cockatoo and a figure specific to the Grey-headed Flying-fox could not be located.

A record of the species occurring at the south-eastern corner of the study area is noted and it is also stated that the species has not been recorded at any other locations within the study area. This has led to the conclusion that construction of the Northern and Central routes would have no implications for the species. It is also suggested that the recorded location is approximately 1km from the Southern Route corridor and as such there would be no direct impacts on the species. It is interesting indeed to note that during a survey of the Giant Burrowing Frog the proponent sighted the Grey-headed Flying-fox on three separate occasions (see Figure 8)

It is clear that the proponent knows very little, if anything, about the recorded site. This is the site of a well established colony which has been established for quite some years and is growing in size and significance. This is confirmed by recent data collected by the NPWS, local residents and a PhD student from Griffith University who is a flying-fox ecologist who has been studying flying-foxes in eastern Australia for the past 7 years. The following details were submitted to the Australian Dept of the Environment, Water, Heritage and the Arts on 23/12/09 by PhD student Ms Billie J. Roberts:

- *Bomaderry Creek (34°51'24.34"S, 150°35'29.77"E) has been used as a camp site by grey-headed flying-foxes for the past six years (Appendix 2). Animals were first recorded using this location as a roost in January 2004, but the surrounding area has been known to be utilised by flying-foxes for the past 20 years, possibly longer. Since 2004 the site has been used yearly during the spring, summer and autumn months by grey-headed flying-foxes. The length of time the animals stay at the site has varied but ranges from a few weeks to several months.*
- *On average the number of grey-headed flying-foxes using the site is > 2,500 and for the past two years has included reproductive females during the final stages of pregnancy and during lactation.*
- *At times this camp has reached numbers of > 20,000 grey-headed flying-foxes.*
- *Currently the camp has between 2,000-5,000 grey-headed flying-foxes including females with dependent young.*

This clearly establishes that it is a maternal colony.

In commenting specifically on the Council road options which had been submitted to the Australian Dept for the Environment during 2009, Ms Roberts stated:

The type of major road construction proposed is known to impact upon the welfare and movements of resident flying-foxes, altering their normal behaviour (e.g., noise from machinery and vibration is known to disturb flying-foxes, causing the animals to fly during the day) and can sometimes cause the animals to shift roost location (e.g., possibly causing the animals to shift their camp site closer to residents and causing conflict) or abandoning the camp site altogether (as per the Kurnell flying-foxes camp, Sydney due to construction of a desalination plant).

This comment is specifically relevant to construction of the Southern Route. Of relevance to the Southern Route is Barratt (2009) who produced a diagram showing observed flight paths from this colony and adjacent feeding areas during 2007 and 2009. Of particular relevance was the feeding activities of the species in 2009 which, rather than the normal flights well beyond the roosting area, were concentrated on the immediate area of the Bushland and even the suburban margins. They were attracted by a very good flowering season of the Red Bloodwood (*Corymbia gummifera*) which is a significant component of the Grey Gum-Stringybark Forest/Woodland (Figure 16). This forest community is an extensive one throughout the Bushland is the most extensive one through which the Southern Route option would pass.

Ms Roberts goes on to say:

The Bomaderry Creek Regional Park is also a foraging area for grey-headed flying-foxes and the habitat within this area meets two of the criteria as foraging habitat critical to the survival of the species. That is habitat that is: (i) productive during spring when food bottlenecks have been identified for grey-headed flying-foxes, and; (ii) productive during the final weeks of gestation, and during birth, lactation and conception (DECCW 2009).

Finally, the flying-foxes at times disperse north along Bomaderry Creek to search for food in the surrounding area and could be an issue (for the flying-foxes and human safety) if any bridges are built in the animal's flight path.

The above statement is as relevant to the Central Route as it is to the Southern Route.

Ms Roberts concludes in her 2009 letter to the Australian environmental agency:

I am of the opinion that both route Option 1 (Central) or 2 (Southern) proposed by Shoalhaven City Council has the potential to impact habitat critical to the survival of grey-headed flying-foxes and that the council has inadequately considered this impact in their proposal.

Although Ms Roberts' comments were made in 2009, prior to the current display of the EAR, they are as relevant today as they were then.

The proponent has committed to actually carrying out some surveys in 2011. These must be undertaken and made available for community comment.

Spotted-tailed Quoll (p 58)

The proponent has not conducted field surveys for this species and yet, while acknowledging that all stands of forest and woodland within the study area provide potential habitat for the species, they conclude that it is unlikely to occur there. This is a classical example of denial based on ignorance.

Although the Quoll has not been recorded in the Bushland, Andrew (1994) considered that the northern Shoalhaven district to be one of the best remaining areas for Spotted-tailed Quolls on the south coast. Both Andrew (1994) and Mitchell McCotter (1992a) made reference to the siting of a Quoll in a North Nowra backyard on a tributary of Bomaderry Creek 1.6 km west of the creek (and 2 km from the crossing of the creek on the Central Route alignment) in February 1992. During the early 1990s a resident of Bangalee reported Quolls

occupying the bushland in her backyard 2 km from the crossing of the creek on the Central Route alignment (pers com). Thus there is suitable habitat in the Bushland and Quolls have been reliably sited within 2 km of this habitat. The proponent, Andrew and Mitchell McCotter have all confirmed suitable habitat along Bomaderry Creek and its margins which would provide an ideal habitat corridor from the Shoalhaven River to adjacent creek systems all the way to the Cambewarra Range.

It is instructive to learn from the proponent that the species is susceptible to road mortality in forested areas fragmented by roads.

Thank goodness the proponent has committed to carrying out surveys during 2011. We look forward to the opportunity of commenting on the outcome during the next community exhibition of the EAR.

Yellow-bellied Glider (pp 61-62)

The proponent states that the Grey Gum-Stringybark Forest/Woodland around the gorge is the core area of habitat for the Yellow-bellied Glider (YBG).

However, Mitchell McCotter (1992a) indicated that Spotted Gum forest and Scribbly Gum woodland was also important for the species. The Scribbly Gum can provide an important alternative food resource as it flowers when other important species are not. Spotted Gums are important due to their significant size in facilitating gliding particularly where gaps in the forest habitat exist (whether natural or human created). They also provide ideal den trees for this species (Gary Daly, one of the authors of the Mitchell McCotter reference, provided this advice to Terry Barratt in 1992 when pointing out that the den tree shown in Figure 3 of Mitchell McCotter (1992a) was a Spotted Gum and that this was a common species utilised by YBG for denning).

Given this evidence it is apparent that more than the Grey Gum feed trees and hollow-bearing trees need to be considered when assessing the impact of road clearing on the YGB.

Some concern is entertained with regard to the accuracy of the feed tree and tree hollow surveys. Leonard and Fyfe (1995) in a survey of the Central Route recorded one feed tree and nineteen hollow-bearing trees (3 *Corymbia gummifera*, 4 *Corymbia maculata* and 12 *Eucalyptus sclerophylla*) on the proposed road route on the western side of the creek and one hollow-bearing tree (*C. gummifera*) on the eastern side of the creek. It is not clear from the details provided by the proponent how many hollow-bearing trees they recorded on the Central Route, but from an inspection of Figure 7 it would appear to be quite a few less than recorded by Leonard and Fyfe. It is clear that the potential impact of the Central Route may be much greater than indicated by the proponent. The claim that the Central Route would not impact on feed trees or den sites for the species and adverse impacts are unlikely due to construction along this route may have to be reconsidered.

It seems as if the proponent considers the loss of trees and habitat as a result of road construction along the Central route can be compensated for by the transfer of some of the land owned by the proponent to another government agency (DECCW). The logic of this is not clear. Almost all of the land proposed for addition to the regional park cannot be developed due to topographical constraints or lack of legal access. It is also land of such high conservation value that it is unlikely that the proponent would ever be able to develop it. Thus it is quite secure from impact from development impacts and can be very effectively managed for its conservation values by the proponent. Transferring the land in these circumstances imparts no particular benefits for the YBG. On the contrary, destruction of part of its habitat

and some of its required feed and denning trees in return for a transfer of already secure habitat is clearly a loss for the species.

To this argument must be added the fact that the YBG has been estimated to be at low population levels within the Bomaderry Creek Bushland (Mitchell McCotter 1992a). This would indicate that any reduction in its habitat, even as small as claimed, must be regarded as a serious threat to the survival of this local population.

It is a pity that the proponent has not made full use of some of its referenced documents and is not apparently aware of other work carried out or informed comments made regarding this species within the Bomaderry Creek Bushland.

The suggestion that the Northern Route potentially provides the greater impact than the Central Route due to fragmentation is not valid. The Bushland, to all intents and purposes comes to an end just beyond the former option, except for a disturbed area extending upstream adjacent to the creek which is not suitable YGB habitat. Thus fragmentation is not an issue for the species along the Northern Route which would have to be judged to be the least threatening of all three options with regard to this disturbance factor.

In Section 6 Mitigation (p 75) it is claimed that "...direct impacts will not occur and indirect impacts are considered unlikely..." with regard to the Central Route. From the above it is clear that this view can be seriously questioned.

With regard to the proposed mitigation measures there are some that are inappropriate, others not tested and some quite ridiculous. One would wonder at the desperate attempts (not to mention the cost) that the proponent is prepared to go to in its attempt to promote an option that has serious implications for impact on the biodiversity of the Bushland.

Glossy-black Cockatoo (p 64)

The criterion used for assessing the impact of the proposal on the Glossy-black Cockatoo (GBC) is the size of habitat to be cleared. On that basis, the Northern and Central Routes are considered of most concern. However, due to the small extent of clearing envisaged on each of these proposed routes it is considered by the proponent that they will not bring about a significant impact. This is not seen as the best approach as far as the Central Route is concerned as Leonard and Fyfe (1995) recorded more *Allocasuarina littoralis* species at risk than the proponent and 12 hollow bearing trees (*Eucalyptus sclerophylla*) also at risk. In this regard it is considered necessary for the proponent to carry out a survey to determine if the hollow bearing trees on the Central Route are potential nesting sites for the GBC.

Although the proponent has identified a long narrow occurrence of GBC feed trees along West Cambewarra Road, it would appear that the Northern Route would pass on the southern side of them. The only risk to them would be the suggested provision of noise dissipating mounds within the habitat of these trees. It is suggested that the proponent have second thoughts about that costly and damaging idea. The retained strip of bushland, existing road and the set back of the properties would seem to be sufficient noise ameliorating factors for the West Cambewarra Road residents.

As an additional point, the proponent states that "...the amount of foraging and nesting habitat likely to be removed for the northern or central options only represents a small part of the habitat within the Shoalhaven region". While this is correct, the issue is not with the significance of impacts on the whole population or just a larger segment of the population, it

is with the population in the study area. If the wider population were to be taken into consideration, the potential impacts on those GBC habitats would also have to be assessed.

Broad-headed Snake (p 22)

The proponent in Table 1 (p22) indicated that there is a low probability of the Broad-headed Snake occurring within the study area due to its known distribution, the absence of suitable habitat and lack of records of the species from within the study area. Targeted surveys were not considered necessary given the lack of suitable habitat.

There is some reliable contrary advice about suitable habitat for this species in Bomaderry Creek Bushland. Attached is a short report supplied to Terry Barratt in 1996 by Garry Daly setting out his views about the likely presence of the species in the Bushland. Mr Daly who is a specialist in herpetology confirmed that there is suitable habitat in the Bushland and expressed the belief that there is a high probability of Broad-headed Snakes occurring in the Bushland.

This information clearly indicates a need for targeted surveys to be undertaken to ascertain the presence of the species in the Bushland, to undertake an assessment of significance of impact and to propose mitigating measures for those routes where the species is likely to occur. We look forward to release of the outcomes of this work and the opportunity to comment.

Eastern Pygmy Possum

The proponent has failed to acknowledge the presence of this species in the Bushland although it was found there in recent months by Alison Hunt and Associates (pers com). No further details about this survey work are available.

4. Construction and Operational Impacts (pp 69-70)

Construction Impacts (p 69)

The proponent argues that "... no direct impacts are expected or likely to occur on listed threatened species as a result of the construction of the North Nowra Link Road". Most of the above points of contention would indicate otherwise.

The proponent contradicts itself by admitting that shading of two individual Albatross Mallee, as a consequence of the construction of the bridge for the Central Route, is likely to lead to their demise. The proponent should have been prepared to acknowledge the very high probability of the plants being destroyed during the construction phase.

The proponent raises the idea of transferring land from one administration to another in return for destroying habitat for a road through Crown land, a regional park and the proponent's own land is a benefit, particularly when the land on offer is to a large extent not capable of development. This is indeed a strange twist of logic. This land transfer offer is really only relevant to the Central Route.

Operational Impacts (pp 69-70)

The proponent relies on the presumed effectiveness of proposed mitigating measure to argue its case that the proposal will not have a significant impact on the Bushland. Refer to the comments on mitigating measure below.

The proponent quite inappropriately tries to get away with claiming that a road along the Central Route "...is not expected to create a more significant barrier to flora and fauna than

what currently exists". It stretches the credibility of the proponent to claim that a narrow gravel trail with slashed margins under a powerline and a 30 metre wide clearing with a two-lane bituminised road carrying expected high traffic numbers at 60-80 km/hr are equivalent to one another as flora and fauna barriers! For a start, there are no records of road kills resulting from the presence of this powerline break.

5. Mitigation (pp 72-79)

The proponent has set out a range of mitigation measures aimed at addressing the impacts resulting from construction of a road through the Bomaderry Creek Bushland. Unfortunately this concept plan application does not provide any significant details of the actual proposed works. How can mitigation measures be planned and confidently predicted to be effective if these crucial details are missing? How can the community comment on the adequacy of these proposed measures in these circumstances?

It is noted that an environmental management plan (EMP) and a landscape plan will be prepared. It would appear that there is no intention of placing those plans on public display.

Threatened Flora Species (pp72-74)

Zieria baeuerlenii

It is acknowledged correctly by the proponent that the Central Route is the only option placing *Z. baeuerlenii* at risk. It is asserted that fragmentation is not an issue with respect to this species due to its method of reproduction. This contention is challenged in item 4 above. As a consequence of this incorrect assumption, the proponent has failed to consider mitigating measures for fragmentation impacts.

Eight mitigation measures have been committed to by the proponent for *Z. baeuerlenii*. They are: fencing, retention of large shade trees (where possible), compensatory planting, restrictions on stopping and retention of low fuel levels to minimise risk of fire, ensure best practice field operations, weed management, erosion and sediment control measures.

There is no recognition that some of these mitigation measures can themselves result in impacts, eg, fencing, fuel management, weed removal and erosion and sediment control (it is assumed that water management would be a component of these latter two measures). Placing of a fence between the proposed road and the *Zieria* plants could result in direct damage to the plants and disturbance of roots. It may also interfere with soil water conditions. Would the fence be sufficiently strong enough to resist the occasional unintended swipe of a dozer blade, a back-hoe bucket or dumping of spoil? Has there been any thought given to how fuel levels will be managed. Physical removal of leaf litter could be very risky for the *Zierias*. Hazard reduction may or may not be deleterious depending on the way and when this is carried out and the weather conditions at the time. Weed removal poses its own particular problems requiring careful consideration of appropriate methods ranging from physical removal to spraying of chemicals. The physical disturbance involved in erosion, sediment and water management measures can pose very serious risks for adjacent plants. The community should be given the opportunity to consider the measures proposed for overcoming the impact of the mitigation measures before a decision is made to approve the Central Route.

How can planting to compensate for loss of shade trees be achieved given that it is assumed that the removal in the first place was to allow for the construction of the road?

What does best practice field operations mean? These should be defined so the community can properly consider their effectiveness.

The land offer deal is raised by the proponent as a mitigating measure. How can the very real risk of direct impacts on individuals of this endangered species and the possibility of indirect impacts on other nearby *Zieria* plants be mitigated merely by changing the ownership of adjacent land? Unless, of course, the proponent considers they are not competent enough to properly manage these species!

The land deal is seen to have three benefits, ie,

Increasing known colonies in the park from 60% to 97% - why can't this figure be increased to 100%?

Increasing genotypes in the park from 60% to 100% - this ignores the fact that the 3% of plants that won't be added to the park have not yet been genotyped.

Increasing critical habitat from 51% 88% - what nonsense is this? Critical habitat for the *Zieria* has not been declared and the proponent is aware of this.

The funding offer for weed management is not necessary. Council is already funding work on the *Bryophyllum* jointly with the Landcare/Bushcare Group. Lantana is not posing a problem for the *Zieria*. What are the advantages of implementing a complicated funding arrangement when Council can just retain ownership of the land and allocate its resources directly to the task at hand? After all it is not the DECCW that Council officers go to when they need help or advice about management matters in the Bushland, it's the Landcare/Bushcare Group. Similarly, DECCW often approaches the Group for help or expert advice. What we need is the continuation and growth of the current cooperative management arrangements between all land owners and the community. This is democracy at its best.

With regard to the *ex situ* populations at the Booderee Botanic Gardens, there are legal impediments to planting them on areas outside the gardens. If these impediments can be overcome, then some limited planting for education and interpretive purposes will proceed at the Nerang Picnic Area, but this is already planned as a joint undertaking between the botanic gardens, DECCW and the landcare group. The question of planting the species in natural habitats throughout the Bushland must be more carefully considered and, if that was to eventuate, there would be no need for a land swap deal to achieve it.

Eucalyptus langleyi

It is not surprising that the proponent has not offered anything specific about mitigating impacts. After all they can't do anything about preventing the destruction of 10-15% of this species' Endangered Population if they receive the go ahead for the Central Route.

The lack of any details about the relocation of the pipeline and the powerline on the Central Route and thus the environmental impacts this would cause are matters for very great concern. Further, it is a matter of alarm to learn that there is no intention to propose any mitigation strategies.

It stretches ones ability to respect the credibility of the proponent given its statement that the loss of *E. langleyi* plants from this Endangered Population "...is unlikely to significantly impact the local occurrence of the species given that these individuals only represent a small part of the overall population within the region". A number of past direct and indirect actions have contributed to the serious decline of this population (Barratt 2009) which in turn has led to the recent declaration of its endangered status. The future threat of a road through its habitat with the probability of a further 10-15% decline should be a matter of concern, even

for the proponent, and should have elicited a more serious attempt to mitigate this decline. Perhaps it is the fact that there can be no mitigation of serious impacts on this population should a road be approved for the Central Route that the proponent appears to have given up any pretence of protecting it.

The proponent raises the land swap deal as a mitigating measure, but, as with the Zieria, the land swap deal is of no benefit. It would just serve to accelerate the decline of this population.

Genoplesium baueri

Through an error in mapping, the proponent is unaware that the Central Route will have a direct impact on three individuals of this species. They need to consider how they can address this problem and how they can deal with the fact that modifying the route of the Central Route option will still take it through an extensive area of the species habitat.

The proponent is, however, aware that the Southern Route would pass straight through known sites of the species as well as through a significant part of the species' habitat. They have nonetheless ignored the need to identify means of avoiding a direct impact on the species and its habitat.

Threatened Fauna Species (pp 74-77)

Throughout this subsection the proponent continues to advance the idea that the issue is the area of habitat cleared compared with the total area of the each species habitat in the region. The proponent is not required to address the matter on the basis of the risks to the total population or its regional population, they have to address the risks to the local population. This is of particular importance given the low population levels of most of the threatened species in the Bushland and therefore the impacts are likely to be greater and the need for more effective mitigating measure to be considered and applied.

Grey-headed Flying-fox

The major concern for this species is the Southern Route. The assertion that there will be no direct impacts with this route is not accepted. It is, however, difficult to address the proposed mitigating measures for this species until more information is available on the local population of breeding flying-foxes. The outcome of the proponent's proposed surveys is eagerly awaited.

Yellow-bellied Glider

It is not accepted that there will be no direct impacts on this species for the Central and Southern routes.

Elevation of the bridge and other modifications related to this structure offer no benefits for this species.

Measures outlined to deal with disturbed or injured threatened fauna and to ensure that workers cause no harm seems to suggest that the proponent is not too certain about the assurances given about there being no direct impacts.

It would be helpful to know just what evidence there is about the effectiveness of wildlife warning signs. In the first place the animals can't read and just how many drivers take notice of such signs and modify their entrenched driving habits.

Spotted-tailed Quoll

The comments in the two last paragraphs under YBG above are also applicable to the mitigation measures advocated for this species.

Giant Burrowing Frog

The major concern for this species is the Central Route.

Too much reliance is placed on the frog moving under the elevated sections of the bridge. It is difficult to know just how close these elevated sections will be to the GBF habitat due to the limited design information provided in this assessment. But it is known that there is no research data available on the effectiveness of this technique for this particular species. Suggesting that the species can use the gorge and the riparian zone indicates a lack of knowledge of this species particularly during the breeding season. It is unlikely to stray to far from its immediate habitat on the sandstone tops because that is where the male digs its burrow and calls from to attract the female.

It is more likely that the species will cross directly over the surface of the road in which case it is particularly vulnerable because of its behaviour of sitting on roads unaware of the dangers involved (Recsei 1997). The idea that road kills are not a concern due to the low population of this species in the Bushland is ridiculous. The low numbers should be cause for concern about risks of road kills.

Surely all of this is grounds for a more focussed attempt to develop a better set of mitigating measure or, if this is not possible, abandon the Central Route altogether.

Runoff, sedimentation and erosion (p 78)

The proponent discusses the use of sedimentation ponds as part of the water quality safeguard measures. No details of where these ponds are to go, nor any discussion about mitigating possible impacts as a result of their construction, are provided.

Concerns about this matter arose during the Leatch v. NPWS and anor. 1993 court case where the proponent had submitted detailed designs showing these structures and their proposed locations. This enabled the appellant to draw attention to a range of impacts on important habitat trees including feed and hollow-bearing trees and on a number of rare plants. This was an issue that Justice Stein expressed concern about and which led to suggested modifications by the defendants.

The problem with the current assessment is that no such details are provided. As a consequence mitigation and management measures will not be detailed until completion of the construction design phase. Thus no meaningful mitigation measures can be provided by the proponent in this assessment. This also means that the community cannot properly consider the effectiveness of any measures that may be suggested. It places the community, agencies and the Minister in the position of “trust me!” when it comes to the assurances given by the proponent about the appropriateness and effectiveness of any mitigating measures they may wish to suggest. This is surely no basis on which the Minister can be expected to make a considered and safe decision particularly regarding the Central Route where the greatest number of endangered species and their habitats are at risk.

Edge effects/fragmentation and increased weed invasion (pp 78-79)

It is with some concern to read that the service road (presumably the powerline service trail adjacent to the Central Route) will be widened. Neither details nor reasons are provided for this, but it is assumed that this will widen the area of disturbance associated with the Central Route.

It is made clear that overhanging trees will not be retained if road safety is an issue. Since overhanging trees are always an issue, this must mean that any such trees will be removed. Given that the tree immediately adjacent to the Zieria Site A2 is only 5 metres from this narrowed section of road (in other words 5 metres from passing traffic) can we be assured that it does not overhang the road? If it does, will it have to be removed? If it is to be removed, what mitigating measures are proposed to ensure that the trees removal will have no direct and/or indirect impacts on the Zierias growing at its base? Indeed, can the proponents give any assurances that there is absolutely no risk of destruction of the plants should the tree have to be removed? The issue of retaining trees is to be assessed in the EMP. Surely now is the time to carry out that assessment, not when community access to decision making has been closed off.

Effectiveness of proposed mitigation measures (p 77)

Given the matters raised in response to the Mitigation section of the assessment, it is considered that very little confidence can be entertained regarding the effectiveness of most of the measure proposed. In both general and specific cases they have been shown to be inadequate, inappropriate and in some cases ridiculous. This is render even more unsatisfactory given that much of the construction design details are yet to come and thus much of the mitigation measures relevant to those planned works cannot be properly considered. This assessment is therefore deficient and must be withdrawn until all of the necessary planning and design work has been completed and resubmitted for community comment.

6. Comparative Assessment (pp 80-83)

The proponent follows a very predictable course of action in this comparison of the three options. While acknowledging that the Northern Route will have the least impact on biodiversity values due to its location on the edge of the Bushland, they downplay the implications of constructing a road along the Central and Southern routes, through the middle of the Bushland. They argue that the mitigating measures will overcome any concerns and then mention, in passing, cost and socio-economic factors (without any details or analysis of these factors) as a basis on which to express preference for the Central Route.

The proponent also makes the briefest of reference to feedback from the community as a further reason for preferring the Central Route. This is despite the fact that the proponent has not complied with the DGRs as far as community consultation is concerned. Besides receiving verbal comments from one representative of the Nowra Local Aboriginal Land Council there has been no community consultation in the 2 years since the issuing of the DGRs.

Other factors mentioned of relevance are Aboriginal heritage, noise and visual effects. It is noted that it is only on the Central Route that Aboriginal relics have been found which will be destroyed. No mention is made of the visual and sound impacts that traffic would have on the recreational experience of visitors. But then, none of these factors are strictly biodiversity ones.

Beside the fact that it is not the role of a biodiversity assessment to introduce non-existent community consultation results or unsubstantiated cost and socio-economic factors, the biodiversity arguments themselves do not hold water. For example:

- This assessment has not dealt with the Broad-headed Snake on the argument that there is no suitable habitat in the Bushland. In Section 3 (p13) of this review it is

pointed out that there is certainly a significant area of suitable habitat for this species. The proponent's failure to properly address this issue is evidence that they have failed to comply with the DGRs.

- The failure to comply also applies with the fact that the proponent is still carrying out surveys on a number of threatened species as part of its assessment process and thus for all intents and purposes, the application has been put on public display prematurely.
- The proponent has failed to address the impact of the Central and Southern routes on the Brittle (Bauer's) Midge Orchid. Once again this is a non-compliance issue.
- The proponent has also failed to properly address the impact of the Southern Route on the Grey-headed Flying-fox. This is clearly due to the fact that they hadn't, as at the date of the release of the EAR, carried out any surveys of the species even though they have undertaken to do so. How can they, in these circumstances, claim that the impacts of a road along this route will not be significant? Perhaps this is yet another example of non-compliance.
- The argument that the small number of feed trees to be lost with the Southern Route is not likely to result in adverse impacts on the Yellow-bellied Glider is not a safe conclusion. It is well documented in reports on the population of this species in the Bushland that the levels are very low and isolated from other nearby habitats. In these circumstances, even a small loss of feed trees may prove significant.
- The proponent argues that construction of a road along the Central Route will not create any additional fragmentation impacts than already exist as a result of the powerline service trail. This is clearly a ridiculous argument and does the proponent no credit in following this line. A wide, permanent, sealed road carrying heavy traffic cannot be equated to a narrower, natural gravel trail with slashed margins, carrying, for all intents and purposes, no traffic. The proponent's argument also does not make any allowance for the possibility of undergrounding the powerline and thus reducing the already small biodiversity impacts of the service trail.
- For all three routes, the proponent raises the land offer deal as a compensation for any loss or impacts on the Regional Park. This is an invalid argument as there is no net gain from a transfer of land from one agency to another. This deal only ensures that there will be a loss of biodiversity values. The argument is really about what is the best route to build a road on in order to minimise its impacts.

7. Proposed Offsets (pp 84-87)

The proponent advocates the benefits of its land offer by claiming that it will increase the size and biodiversity values of the Bomaderry Creek Regional Park. This is an invalid claim as the consideration of this matter must be concerned with the overall benefits to the Bomaderry Creek Bushland as a whole. It must not be a matter of trading off some parts in return for gaining other parts. The outcome in this latter case would result in an overall loss of biodiversity.

The land transfer proposal is simply just that – it is a transfer from one government agency to another. This would be at the cost of permanent destruction of the habitat (and in some cases

loss of individual plants) of some particularly significant threatened species. It would also bisect the Bushland into isolated parts, increasing the boundary to area ratio with the long-established adverse implications for biodiversity through operation of the “island effect”. This would accelerate the rate of population decline of all native species within this already significantly isolated, fragmented and reduced bushland.

Taking the Bomaderry Creek Bushland into consideration as a whole (approximately 250 ha) a road along the Central Route would isolate about one third on the northern side of the proposed road. Combine this with the plans the proponent has for urban development in land it intends to retain plus planned urban development of a large area of Crown land adjoining Illaroo Road, this drastically reduced area of Bushland (including that part within the regional park) would be a sad remnant of its current state.

Not that the two thirds of the Bushland south of the proposed road would be any better off as one significant part (Lot 118 DP 751258, Jamieson Road, North Nowra) of relatively undisturbed and relatively weed free bushland has been approved for urban subdivision and a very large area of Crown land is already zoned urban. This southern two thirds also includes the site of the now disused North Nowra tip, and a disused gravel disposal site. Although it includes the most biologically diverse and scenic part of the Bushland, it is already more impacted than the northern one third.

The Bushland has a sad history of human impacts and this is set to continue. The fact that it has survived to the extent that it has and still supports habitat for a significantly diverse range of species including four species of threatened plants and eight species of threatened animals is in part due to luck and to a large part due to the persistent work of unpaid dedicated members of the general community.

The regional park exists as a result of that same community commitment as well as the growing involvement of Council in the management of its part of the Bushland. There is absolutely no reason why the current situation of joint management by DECCW and Council cannot continue. The involvement of the Crown lands agency would then round out an ideal situation, with all agencies working together sharing the costs and commitments, but also the benefits of an appreciative community.

There are some clear budgetary benefits in Council retaining its current ownership. Due to State Government financial restraints on DECCW they currently have little funds to devote to the management and improvement of the regional park, whereas Council has access to project funding through state and Australian government grant schemes. This operates very effectively in cooperation with the Bomaderry Creek Landcare/Bushcare Group which can also seek similar funding opportunities. Thus, with the current Treasury strictures on DECCW, they have had about \$2,000 to spend on the park during the current financial year, while the Group has been able to access \$6,000 through the Southern Rivers CMA for rabbit control in the Bushland and \$15,000 through a Community Access Grant for weed control and erection of a barrier to a powerline easement for prevention of care dumping and protection of part of the habitat of the Vulnerable Albatross Mallee. Council has also been able to gain a small grant for erection of a quality interpretive sign, some additional funds for weed control and is committing some of its own funds to walking track maintenance.

Given that the land Council is offering is the most weed-infested part of the Bushland (Barratt 2008) it is not in the interest of DECCW to take on a job that is beyond its financial capacity to manage. It is much more advantageous for the current working relationship between the

Landcare Group and Council to continue and for both to commit to a long term weed eradication program.

It is certainly a highly likely outcome, if the Landcare Group's long standing and long term commitment to protection of the whole Bushland area is negated by this most inappropriate fragmentation of the Bushland, that it will disband and the hard work and good will of the community over an eighteen year period will be permanently lost.

The benefits of the land offer for *Zieria baeuerlenii* would be no different if the proponent continued to manage its share of this endangered species' habitat. The Council and the Landcare Group are working cooperatively on weed control around this species, protective fencing and signposting, letter boxing adjacent residents seeking cooperation in the interests of its protection. The Landcare Group is also working with Council on Koori employment projects to eradicate weeds threatening the species.

Council is proposing to retain some of the Bushland adjacent to the tennis courts which contains some of the *Z. baeuerlenii* and some of the *E. langleyi* sites. Presumably it considers itself capable of managing these very important and very threatened plant species. If so, why would it not consider that it can continue to manage these rare species (and others) in its current land holdings.

This is a harmonious working relationship bringing great benefits to this marvellous bushland resource. The only threat to its perpetuation is the proponents persistence with a poorly considered road undertaking that should have been resolved years ago by constructing a link road on the edge of the Bushland.

The suggestion that the proposed offset will greatly enhance the long term conservation of the population of *Eucalyptus langleyi* would be laughable if there was no risk of the proponent's wishes coming true. A road on the Central Route would cut a swathe through the habitat of an Endangered Population, destroy 10-15% of the population and negate any chance of establishing a cooperative management arrangement between DECCW, the Council and the Landcare Group aimed at protecting and restoring this very important yet badly treated population.

The proponent's offer to *consider* contributing to the cost of management of Zb is no different to it *considering* committing its funds to do the job itself while working in cooperation with DECCW and the

The proponents offer to seek a more appropriate rezoning of the offered land should also be extended to include all of the land within the Bushland including the Crown land. This should be done asap as a correct course of action in the absence of any land swap deal between the proponent and the Government.

The proponents suggestion that the land deal "...will help to simplify fire management within the regional park, regulate access through appropriately marked and patrolled areas, effectively manage human activity and educate the public about the biodiversity values of the regional park" is another way of saying that DECCW can take over the full management responsibilities of a larger area of the Bushland while the proponent cuts a swathe through the middle of it and cuts the rest up for money making urban development. It should be noted that Council has only offered to *consider* contribution of funding assistance for limited purposes (eg, some protection measures for Zb). It is obvious that Council wants its road and to get rid of its land management responsibilities and it cannot be relied on to uphold any limited

promises it may make about financial assistance. This is a win/win offer by the proponent and does not mean in favour of the Government. Don't forget that the outcome of an inappropriately located road through the middle of an important conservation resource and a highly valued local recreational resource with all of its attendant management problems and costs will be the only legacy the Government will inherit. It is a proposition that the Government should run a mile from.

There is no reason why the Minister can't approve the Northern Route on the condition of the abandonment of any urban development of the land it owns, transfer of the old spoil depot from DECCW to Council for development of its tennis court complex and a commitment to work cooperatively with DECCW and the Crown lands agency to establish a plan of management for the Bushland and devote sufficient resources to implementation of the plan.

8. Conclusions (p 88)

With regard to the quality of this document much of the expression is poor, repetitive and contains annoying typographical errors.

The proponent's conclusion that "...the northern route option provides the best biodiversity outcomes when compared to the central and southern routes..." is strongly supported.

However, the proponent's contention that the environmental impacts associated with the Central and Southern routes are "...negligible given the range of mitigation measures that can be implemented" is strongly disagreed with. The impacts have been poorly assessed and many of the proposed mitigating measures are inadequate and/or inappropriate. The limited supporting data provided is surprising given the length of time this assessment process has been in progress. A number of important documents have not been utilised, many of those that have been referred to have been done so in a very selective way, in some cases statements have been attributed to the wrong author and in one case the wrong organisation has been credited with carrying out the survey work on a particular species.

Of particular concern is the strong evidence that the public display of the assessment has been premature. For many of the species assessed, there is survey work still going on or proposed for early attention. It has been stated that the results of this further work will be appended to the assessment report. How can this be – the document is already on display? Perhaps there will be another period of display for follow up reports!

One can only conclude that there are a number of areas in which the proponent has not complied with the DGRs principally with regard to the DEC's *Guidelines for Threatened Species Assessment*.

Given these circumstances it is contended that a decision to approve the Central Route or the Southern Route would be an unsafe one. Both of these options will require referral to the Australian Government. If they knock the selected option back, then Council and the community are left with nothing.

A decision in favour of the Northern Route would mean no Australian Government involvement and an early development, at long last, of a North Nowra to Bomaderry Link Road.

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Review of Appendix F: Biodiversity Assessment Part 2 – Appendix E: Revocation and Offsets Assessment June 2010

Introduction (pages 6-8)

In this report, the proponent claims that a comprehensive assessment of the biodiversity values of the proposed 50 hectare compensatory land has been undertaken and that the report will help inform an application for revocation of land from the Regional Park for the construction of the North Nowra Link Road. The proponent also claims that it will help inform the environmental assessment of the road proposal under Part 3A of the NSW Environment Planning and Assessment Act 1979 (EP&A Act) and Part 9 of the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

A careful reading of this report reveals that it is not a comprehensive assessment and thus fails to inform any process leading to revocation of part Bomaderry Creek Regional Park for construction of the link road.

For example, there is no comprehensive, up-to-date list of the plants and animals of the Bomaderry Creek Bushland provided (which can best be obtained from Barratt 2006); there are four other references not listed nor referred to in the report (Barratt 1997, 2007, 2008, 2009a, 2009b) which are critical resource documents that provide a guide to the natural, cultural, recreational and educational resources of the Bushland; there are significant errors with the vegetation communities (both mapped and described); the recreational amenities within the Regional Park are described as occurring in the offset land; the extent of the weed infestations in the offset land is significantly underestimated; and natural phenomena identified as having value for purposes of this assessment are downplayed as to their significance in the link road assessment (at best an inconsistent approach and at worse a dishonest one).

The summarized shortcomings in this report in the above paragraph are dealt with in detail as follows:

Background (page 6)

There are a number of errors in the last paragraph on page 6, ie, there are four threatened species that will be impacted by Option 1 (*Zieria baeuerlenii*, *Eucalyptus langleyi*, *Genoplesium baueri* and *Hibbertia* sp. nov 'Menai'), the habitat of the *Zieria* and *Eucalyptus* species is not critical habitat, and since the whole area containing the threatened species is not to be handed over to DECCW the whole area will not be managed by the state nature conservation agency.

Revocation of Land Policy (page 7)

The proponent has made an offer of 50 ha of land adjacent to the Bomaderry Creek Regional Park for inclusion in the Park in return for approval of a road through the Park, vacant Crown land and the area of Council land on offer.

This proposal is not a genuine offer for biodiversity benefits. It is an inducement that will downgrade the biodiversity value of the Bomaderry Creek Bushland in return for an exchange of ownership of part of the Bushland.

It cannot be considered as a compensation package as there will be a loss of biodiversity values rather than a gain. Not only will a road through the middle of the Bushland fragment it into two smaller areas and present a suite of management problems for the DECCW, it will cut a swathe through the identified Critical Habitat of the Endangered *Zieria baeuerlenii* and the habitat of the Endangered *Eucalyptus langleyi* and the Vulnerable *Genoplesium baueri* as well as the habitat of many animal species.

It will not overcome the significant impact on the recreational enjoyment of visitors to the Nerang Picnic Area and Weir Lookout. This will lead to a major loss of the tourism potential for the Bushland.

The offer does not include all of Council's land, which is being retained for future development for housing in an area fronting West Cambewarra Road and for a huge expansion of tennis courts on the eastern side of the creek. The urban development site includes Glossy-black Cockatoo and *Genoplesium baueri* habitat and the tennis court expansion site consists of part of the nominated Critical Habitat for the Endangered *Zieria baeuerlenii* and the habitat of the Endangered *Eucalyptus langleyi*.

Clearly, the acceptance of the land offer would lead to a serious impact on biodiversity values for the Bushland.

It would also have a serious impact on the recreational enjoyment of thousands of visitors per annum and would deny use of a track provided by the Bomaderry Rotary Club for the disabled.

There would need to be substantial State Government funding for restoration of the degraded land in these offset lands.

More details of the disadvantages of this proposal are provided below.

Methods (pages 9-10)

The proponent claims to have reviewed the relevant flora and fauna studies in order to generate lists of species and communities within and nearby the offset land and to enable analysis and interpretation as a basis for the offset land assessment. However, the list of documents in the References section of this assessment is missing Barratt (1997, 2006, 2007, 2008, 2009a, 2009b), deLacey et al (2010) and Roberts (2009). These are significant references which deal with the many issues raised in this offsets assessment, the absence of which, renders the adequacy of the assessment somewhat limited and suspect as a work to be relied on. It should be noted that the Barratt (1997) reference is in fact Barratt (1999).

Results (page 11-20)

Table 2 leaves a lot to be desired. It has been derived from KMA (1998) which classifies vegetation across a broad area of the Shoalhaven LGA and thus is too generalized to apply specifically to the Bomaderry Creek Bushland. Barratt (2006) provides a much more accurate and detailed description of the vegetation of the Bushland which is summarized in Table 1 (Barratt 2006). A copy of Table 1 is attached which shows the equivalent plant communities in KMA (1998). Map 5 (Barratt 2006) showing plant communities from Table 1 is also attached. It is of importance to point out that DECCW utilise Barratt (2006) with reference to vegetation in the Bomaderry Creek Bushland.

As there are no Blackbutt (*Eucalyptus pilularis*) recorded in the Bomaderry Creek Bushland, the community listed in Table 2 as Spotted Gum-Blackbutt Forest is incorrect. This observation applies to many sections within the report that erroneously designate this incorrect forest type. It appears as if the proponent should have designated the eucalypt forest community in the gorge as KMA's Blue Gum-Spotted Gum Tall Forest which is Barratt's Moist Tall Open Forest.

The community designated in Table 2 as Coachwood/Ironwood Warm Temperate Rainforest is in fact two separate communities according to KMA (1998). They occur as distinct separate communities with little overlap and thus should not have been combined.

With regard to the description of the so-called Spotted Gum-Blackbutt Forest it should be noted that on rocky sites the understory can be sparse and that the spotted gum often extends beyond the gorge margins via re-entrants where it does not occur with Blue Gum but combines with other species such as Turpentine, Red Bloodwood and Blue-leaved Stringybark.

Table 3 (pages 13-16), Table 4? (page 20) & Table 5? (page 23-24)

(Some of these table numbers are followed by a question mark as there are two tables designated as Table 4, one on pages 14-16 and one on page 20)

Cryptostylis hunteriana is entered in the above three tables as a potential occurrence due to assumed suitable habitat occurring in the offset lands. However, delacey et al (2010) described eight south coast plant communities in which the species has been recorded, none of which occur in the Bomaderry Creek Bushland. The closest community was Bloodwood/Scribbly Gum/Silvertop Ash Forest of which the last species (*Eucalyptus sieberi*) has not been recorded in the Bushland nor anywhere on the coastal plain between Nowra and Wollongong (Van Klapthake 2009). It is important to point out that local terrestrial orchid specialist (Stephenson 2011 pers. comm.) has stated that *C. hunteriana* is one of the most difficult orchid species to predict suitable habitat for. He goes further by stating that this species has so many habitat types that it is not possible to predict its presence by habitat type. In other words, the proponent is drawing a very long bow in trying to enhance the biodiversity values of the offset lands by suggesting the possible occurrence of *C. hunteriana*. Furthermore, if it can be used in this way, it would be reasonable to add it to the list of species that should be assessed in terms of the EPBC Act as it is listed as Vulnerable in that Act.

Similarly, if *Triplarina nowraensis*, which has not been identified by Barratt (2006) after 18 years of identifying plants in the Bushland, can have the potential of occurring in the offset lands it should also be assessed in terms of the EPBC Act as it is listed as Endangered in that Act.

How appropriate is it too try to associate *C. hunteriana* and *T. nowraensis* with plant communities in the offset lands in an attempt to enhance the habitat values of those lands while making no mention of them in Appendix F Biodiversity Assessment Part 1 in the process off downplaying the importance of the same plant communities through which the road routes would pass?

It is also noted that Table 4? (page 20) lists the Spring Tiny Orchid (*Speculanthia vernalis*) as a potential species while no mention is made of it in Table 3 and Table 5? (page 23-24). This would seem to be a somewhat inconsistent oversight?

Further, the Spotted-tailed Quoll (EPBC Act listed as Endangered) is regarded as a potential occurrence in the Bushland in Table 4 (pages 14-16), whereas it is considered unlikely to occur there in Appendix F Biodiversity Assessment Part 1. And, the Large-eared Pied Bat (EPBC Act listed as Vulnerable) is also regarded as a potential occurrence while in Appendix F Biodiversity Assessment Part 1 we are told there is no suitable habitat in the Bushland for this species.

It is noted that Figure 4 (page 19) shows a location for the Greater Broad-nosed Bat (TSC Act listed as Vulnerable) and yet it is not listed in tables 4 to 6? nor is it mentioned in Appendix F Biodiversity Assessment Part 1.

It is further noted that Figure 4 (page 19) does not show where the Large-footed Myotis occurs. On the other hand, KMA (2008) records eleven sites (Figure 4, page 24).

Figure 2 (page 17)

This figure is titled "Vegetation communities within the offset land, as mapped by KMA (1998)". This KMA publication is listed in References (page 33) as "Illawarra Vegetation Studies Paper Number 7: Vegetation Survey Methods and Natural Vegetation Types in the Coastal Parts of the City of Shoalhaven". A careful inspection of that particular document failed to reveal any map of vegetation in the Bomaderry Creek Bushland. Given the possibility of a typographical error "KMA (2008) Final Flora and Fauna Assessment, North Nowra Link Road, Environmental Assessment...", the only other KMA report listed in the References that could provide the mapped information referred to, was carefully inspected, but revealed no mapped data from which Figure 2 could have been derived. It is indeed quite intriguing as to where Figure 2 could have come from – obviously not from field survey work by Eco Logical. On the other hand Map 5 in Barratt (2006) shows data derived from Table 1 of Barratt (2006) which is a much more accurate, detailed and complete depiction of the vegetation communities of the Bomaderry Creek Bushland.

Figure 3: Threatened flora (page 18)

This figure maps the distribution of *Zieria baeuerlenii*, *Genoplesium baurei* (sic) and *Eucalyptus langleyi*. Two sets of the distribution of *Z. baeuerlenii* are depicted, one set derived from Barrat (sic) 1997 and the other from KMA 2008. The latter source has been taken from Figure 5 of KMA which was derived from a critical habitat report by NPWS 2002, the details of which were derived from the field work by Barratt 1997. The mapped distribution by Barratt (1997) was a result of estimated locations determined in the field and thus the distribution of the species according to KMA is fourteen years old and not to be relied on as an accurate data set. The Barrat (sic) distribution is not to be relied on either. The correct reference indicator is Barratt (1999), not as stated in Figure 3, and that reference derived its distribution data from Barratt 1997 plus additions following field work carried out over a number of years which, as with the 1997 work, was based on estimated location of the species. The only accurate and up to date distribution data for this species is available through Barratt 2007. This report was commissioned by DECCW and a hard copy and CD provided to the proponent in the same year that it was prepared. The mapped data was accurately located in the field using GPS technology. Thus, for all intents and purposes, Figure 3 is not to be relied as far as *Z. baeuerlenii* is concerned.

Although a minor point, it is a pity that the incorrect spelling of *G. baueri* in Figure 3 was not picked up by the proponent prior to public release of this assessment. Of great importance, however, is the correct mapping in Figure 3 of the *G. baueri* site on the northern side of the powerline easement. This places the plants recorded there on the proposed route of Option 1 (the Central Route). This accurate recording is in stark contrast to Figure 22 in Appendix F Biodiversity Assessment Part 1 which shows the distribution of the species totally on the southern side of the easement.

Figure 4: Threatened fauna (page 19)

Although Table 4 (pages 14-16) lists the Gang-gang Cockatoo and the Large-footed Myotis, they are not mapped in Figure 4.

Biodiversity Assessment (pages 21-26) and Individual Offset Parcel Descriptions (pages 27- 31)

It appears as if the proponent believes that the weir is within the offset lands. This is incorrect – this structure is within the Bomaderry Creek Regional Park.

It would seem that the proponent has got things wrong with the location of the recreational facilities within the Bushland. In the third last paragraph on page 22 they appear to be describing the lookout, toilet amenities and car park associated with the Nerang Picnic Area which is within the Regional Park. They have described them as being in offset parcel 3. While it is true that there is a lookout in parcel 3, the other facilities are not found there.

The proponent has totally missed the remnant evidence of the old Camellia Garden in parcels 2 and 3. Here we have an old deteriorating cyclone wire fence, two concrete slabs, formed internal access tracks, some other remnant items and rubbish items associated with the old garden days and a few camellias and gardenias still surviving. Since the Camellia Garden has been gone for some 6 or 7 years and these items are still extant, regardless of requests from the Bomaderry Creek Bushcare Group for Council to clean them up, it would appear that the proponent sees this as a future job for DECCW when they take over the poorly cared for site.

Erosion in the offset lands is regarded by the proponent as minor and yet there are a number of eroded tracks within parcels 1, 2, 3 and 4. Some tracks are used for fire fighting purposes as required, but the majority of these tracks are used as informal walking tracks. Council has not at any stage carried out maintenance of these tracks to arrest erosion or improve them for walkers.

It would appear that the proponent sees the formal walking track system as a degrading element in the value of these offset lands – a strange position to take indeed. Appropriately located and adequately maintained walking tracks should be regarded as an asset as they allow visitors to access the Bushland, enjoy it and learn about it without causing unacceptable levels of degradation.

The proponent states that the weed disturbances in offset parcels 5 and 8 are associated with edge effect and predominantly confined to boundaries. Although edge effect is a very significant factor, to this must be added disturbed weed infested sites along the creek. Also, the weed infestations on the boundaries of parcels 5 and 8 (which are highly infested) are not confined to the edges, but extend in places well into the Bushland and to the margins of the creek in some locations.

No mention is made of the highly disturbed and weed infested disused spoil depot at the northern end of parcel 5. This is a totally destroyed piece of land and has no value whatsoever for addition to national park estate.

No mention is made of the Mother of Millions infestation of a site in parcel 5 and a Mother of Millions infestation in parcel 6 a few metres from a *Z. baeuerlenii* site.

Given the combination of edge effect and creek bank disturbance, parcels 4, 5, 6 and 8 must be considered as exhibiting significant weed infestation problems.

There is no problem with agreeing with the assessment of parcel 10. In fact it is in much the same condition as parcel 8. The mention of powerline clearing and the contribution to the weed problem of adjacent housing for parcel 10 applies equally to parcels 5 and 8. Along the full urban/bushland interface of 5, 8 and 10 we have a cleared powerline easement, intensive weed infestations, extensive rubbish dump sites and stormwater drains delivering polluted water from properties and the nearby Princes Highway.

Offset parcel 9 is the most highly disturbed and weed infested parcel. The proponent has underestimated the extent of the problems associated with this parcel. It has suffered past cattle grazing and logging activities (with a constructed log snagging track extending down into it from Jamieson Road, North Nowra. It is a highly dynamic section of the creek system, being situated at the junction of a major bend of the Bomaderry Creek estuary and a tributary, Mahogany Creek where a small flood plain has developed. The main creek flow during flood time has deflected the Mahogany Creek downstream and built up a levee bank which has resulted in formation of a small lagoon. It is consequently a naturally disturbed landscape which would have had to be carefully managed and kept free of human disturbance in order to retain any semblance of naturalness. Although the margins of this parcel are relatively free of the above disturbance issues there is not a great deal of old growth vegetation remaining although regenerating *Eucalyptus saligna* x *botryoides* trees are making a comeback. Other than for the extensive and intensive nature of past human disturbance this would have been a first class piece of natural environment that the NSW nature conservation agency (DECCW) would have been delighted to take possession of. In the current circumstances however, they would have to have their judgement seriously questioned were they to do anything but to ask Council to restore this highly degraded environment before offering it as anything but an unwanted imposition.

Figure 5 (page 26) reflects the significant underestimate of poor habitat values in the offset lands.

Barratt (2008) provided a much more accurate picture of the weed infestations of the offset parcels than this assessment does. The infestations have been mapped, classified according to degree of infestation and the degree of intervention needed at each level of infestation assessed. It was concluded that the weed infestation of the Council land was extremely bad. This land is the most heavily weed infested part of the Bushland. Barratt (2008) was provided to the Council in July 2008.

No mention has been made of the risk of bushfires for Princes Highway residents whose properties back onto the Bushland where parcels 5, 6, 7, 8 and 10 would carry a fire across the Bushland from the north-west. This risk was identified in a bushfire management plan (Shoalhaven City Council, 1998).

Conclusion (page 32)

Given the overly positive picture of the offset lands on offer from the proponent, it is not surprising to find that the proposed transfer of the 50 ha is considered a very positive and beneficial proposition from a biodiversity conservation and park management perspective.

However, given the above detailed contradictions of many of the benefits advocated by the proponent, it is clear that a different picture emerges. There are many significant management problems and challenges inherent in these offset lands that have not been recognised and/or been glossed over. This is partly due to the omission of some very important reference material some of which is known to be in the possession of the proponent, a rather limited knowledge of the on-ground features of the offset lands possibly due to insufficient field work and/or limited natural area management experience, and a clearly apparent mindset of emphasizing the positive and avoiding the negative.

It is quite surprising to learn that some important parts of the nominated Critical Habitat of *Z. baeuerlenii* and the habitat of *E. langleyi* are to be excluded from the offset lands because of Council's commitment to a grand expansion of the Narang tennis courts. The destruction of this and other habitat values could however be avoided as there is more than adequate suitable land available which has been degraded beyond repair for biodiversity purposes within the Park and parcel 5 of the offset land.

Another interesting feature of the proponent's decision to retain some of the land in its ownership is its plans to develop a section of the Bushland fronting West Cambewarra Road for housing. This would create a serious management challenge for DECCW, as it would create a difficult boundary situation with the attendant impacts from proximity of natural areas and residential areas and would impose a significant fire management responsibility on the park agency. It is interesting to note that when it comes to the financial benefits of urban development, the proponents generosity in giving away land for biodiversity benefits has its limits. This proposed urban development will take place partly within the identified habitat of the Giant Burrowing Frog.

Another telling indicator of what a very poor effort this assessment has turned out to be, is the promotion of the idea that transfer of the 50 ha will include park infrastructure that is already in the Regional Park.

Five management issues are recognised as being better managed by virtue of merely changing the management agency of these offset lands. A sixth issue should be added to the list and that is: *a huge investment of funds from the NSW State Treasury.*

Of course, it would be obvious to any experienced professional park manager that there would be many more issues involved in taking responsibility for the 50 ha on offer in return for approval of the Central route. DECCW could find itself with a whole range of additional management responsibilities, in particular a major costly weed management commitment, and in return would face the major impost of a high speed sub-arterial road through the middle of this expanded Park.

This would a win/win outcome, but the beneficiary would not be DECCW!

It can also be argued that it would not be to the benefit of the community. It is highly likely that the generous and financially beneficial level of involvement by the Landcare/Bushcare group would dissipate and most certainly the access to community government grants would cease. During the current year DECCW has a very small budget available to it and this is committed to weed management. At the same time the Landcare/Bushcare Group has managed to obtain a grant of \$6,000 for rabbit control and, in conjunction with Council, has obtained a further \$15,000 grant for weed management, native plantings and erection of barriers to illegal vehicle access. These grants are not available to State agencies and thus important resources would go begging if the management of what would be left of the Bushland after Council had implemented its housing and tennis court plans were to be left to the under-resourced DECCW.

What has not been mentioned by the proponent in this assessment is the very beneficial management partnership that has developed in recent years between DECCW, Council and the community (through the Landcare/Bushcare Group). Upgrading and maintenance of recreational facilities, including provision of interpretive signs, weed management and bush regeneration have been carried out by DECCW and

Council in consultation and with the assistance of the Landcare/Bushcare Group. A program of guided community walks have also been commenced by the Group.

As well as improvements to the tourist potential of the Bushland and the financial benefits of this arrangements, it must be appreciated just how much community goodwill is being generated.

All of this is seriously at risk given the dubious benefits of the proponent's land deal offer.

References (page 33)

In addition to the documents referenced by the proponent the following ones should be included:

Barratt, T. (1997). *An investigation into the distribution and status of Zieria "baeuerlenii"* the Bomaderry Zieria: a case for declaration of Critical Habitat. A report prepared for the Australian Conservation Foundation (Shoalhaven Branch), Nowra NSW.

Barratt, T. (2006). *Bomaderry Creek Bushland draft plan of management*. 6th edition. Prepared for the Australian Conservation Foundation (Shoalhaven Branch), Nowra NSW.

Barratt, T. (2007). *Condition and management needs of Zieria baeuerlenii: Bomaderry Creek Bushland NSW South Coast*. A report prepared for the Bomaderry Creek Landcare Group, Bomaderry NSW.

Barratt, T. (2008). *Bomaderry Creek Bushland: weeds of Crown and Council land*. A report prepared for the Bomaderry Creek Landcare/Bushcare Group, Bomaderry NSW.

Barratt, T. (2009a). *Endangered Population nomination for the Bomaderry population of Eucalyptus langleyi – Nowra (Albatross) Mallee*. Report prepared for Australian Conservation Foundation (Shoalhaven Branch), Nowra NSW.

Barratt, T. (2009b). *The Bomaderry Creek habitat of the Grey-headed Flying-fox*. Report prepared for presentation at the Flying-fox Information Conservation Network conference 1-2/08/09, Nowra NSW.

deLacey, C., Bell, S., Chamberlain, S. & Bossard, K. (2010). *Prediction of habitat for cryptic plant species: the Leafless Tongue Orchid Cryptostylis hunteriana Nicholls as a case study*. Report prepared through funding by the NSW Environmental Trust, Sydney NSW.

Roberts, B., J. (2009). Shoalhaven City Council/Transport- land/North Nowra and Bomaderry/NSW/ North Nowra link road. Submission to Dept of the Environment, Water, Heritage and the Arts. School of Environment, Griffith University, Yamba NSW

Shoalhaven City Council (1998). *Bushfire management plan: Bomaderry Creek Bushland*. Prepared for the Shoalhaven Bushfire Management Committee, Nowra NSW.

Van Klaphake (2009). *Eucalypts of the Sydney Region*. Van Klaphake, Byabarra NSW.

North Nowra Link Road – Concept Plan Application No. 07_0037

Review of Appendix G: Aboriginal Archaeological Assessment – Stage 2, July 2010

In this report the proponent claims to present a holistic assessment of the Aboriginal cultural heritage within Bomaderry Creek Gorge within the framework of the 2005 guidelines issued by DEC. However, these were replaced with two separate sets of guidelines in 2010 (DECCW 2010a, 2010b). Given that all but one of the sites described in this assessment were carried out in 2007 and that the only Aboriginal contact was established with one person on one day during 2009, there is a high degree of uncertainty over the proponent's compliance with the appropriate guidelines.

It is further noted that none of the road route figures in this assessment coincide with the Proposed Refinement to Option 3 as mapped and described in Section 7 of the EAR Concept Plan report by JBA Planning. The proposed route is shown along the alignment of the constructed road until its termination near Bomaderry Creek which then follows a route north of the unconstructed road reserve where it crosses the creek and proceeds to Moss Vale Road through the cattle sale yard paddock. The Proposed Refinement to Option 3 (referred to hereunder as the parallel route) is, on the other hand, located within the Bushland at least 50 m to the south of the route shown in the archaeological assessment for its full length. Clearly, there has been no reconsideration of the implication of this new route as to its impacts on Aboriginal cultural heritage within the Bushland.

This is a serious shortcoming of the assessment which must be rectified through production of an amended report.

For example, based on the original route, the proponent concluded that three sites would be impacted, ie, BCRP 014 (open site), BCRP 015 (isolated find) and BCRP 028 (grinding grooves), two of which are classified as having moderate significance (BCRP 014 & BCRP 028). The new (parallel) route would, however, place these latter two sites outside or at the very edge of the 50 metre survey corridor and would render them highly unlikely to be impacted by the road and bridge construction. The new route would, however, still threaten site BCRP 015. This latter site is rated as having low significance and consists of an isolated core. Nevertheless, it would probably be possible to avoid this site with a small variation of the route.

In contrast to this changed circumstance for Option 3, the Central route (Option 1) has three sites that would be impacted, ie, BCRP 012, BCRP 011 and BCRP 006. BCRP 012 consists of an isolated core and is rated as having low significance. It would, however, be possible to avoid this site with a small variation of the route. There is some risk of impact on BCRP 006 (a rock shelter) by the bridge construction which is rated as having low significance. With care during construction it is possible that this site could be avoided. Destruction of BCRP 011 (artifact scatter) would, however, be unavoidable, but is rated as having low significance.

There are, however, some interesting observations that must be made about BCRP 011. The proponent considers this site to be the same as a previously registered site 52-5-0390 recorded by T. Barratt on 7/09/2000. However, the more recent finds only consisted of two items of some undetermined rock type, whereas Barratt (2000) recorded 20 items mostly of variously coloured chert and a few quartz and quartzite flakes. Plate 30 shows a recorder at the junction of the new route of the powerline access track and the old route. This new route was established in 2007 (presumably shortly before the field work for this assessment) and would appear to have exposed

the two artifacts recorded at the time. The position of the recorder shown in Plate 30 is a short distance to the east of the site where artifacts were located by Barratt (2000). This latter site is on the old route and the artifacts recorded had been exposed by erosion of that track. During 1999 Integral Energy partly filled the eroded section with blue metal thus protecting the archaeological site from further exposure. The old route is now difficult to ascertain and that, plus a cutting created for the new route (where the more recent artifact finds were made), probably distracted the recorder from trying to relocate the artifacts previously found in 2000. From the forgoing, it is reasonable to assume that both recordings were of the same site, but one that is of reasonably larger extent than realised by the proponent. The greater number and variability of artifacts previously recorded at BCRP 011 would suggest the need for a reassessment of its significance and that of the other nearby sites.

Given these details the proponent should be required to reassess the importance of this site.

Another matter could be considered during this reassessment. There are now four sites recorded in the immediate locality of Option 1 near the western approaches to the proposed bridge, three shelter sites in the gully and one open site on the spur above these gully sites. It is reasonable to assume that there would have been a high level of interchange activity between all sites, making it inadvisable to assess site significance on the basis of single site characteristics. The views of local Aboriginal people could be sought on this matter.

Clearly, there is more to consider about the impact of Option 1 on the Aboriginal cultural heritage of this part of the Bushland.

Consultation

The Aboriginal cultural heritage consultation requirements for proponents were changed in 2010 (DECCW 2010b) and compliance with them was required as from April of that year.

Although there was some attempt to establish contact with a number of Aboriginal groups, it appears that there was not a great deal of recognition of the special approaches needed to facilitate effective participation by Aboriginal people and there is some doubt held about the proponent's compliance with the above requirements.

The procedures described by the proponent, which only achieved the involvement of one Aboriginal person for a one day visit to the Bushland, were not very proactive ones. Given this, it is not surprising to learn that they did not produce a very effective outcome.

This one Aboriginal person restricted his advice on the road options in terms only of the aesthetics and disturbance features of two of the creek crossings, which gives the impression that he had little knowledge and/or interest in such heritage matters. It is hard to be sure of this, however, as no details are provided on the level of information provided by the proponent about the known archaeological sites in the Bushland, the three road proposals and their likely impacts on the various sites occurring along the proposed routes.

The proponent did not report on any feedback to this individual to ensure that his views had been accurately and fully reported and taken into account.

It does not appear as if the proponent has complied with DECCW (2010b) which states:

“The main phases of consultation with Aboriginal people are:

1. Informing Aboriginal people about the nature and scope of the proposal.

2. *Understanding what might be present in the landscape and its cultural significance.*
3. *Determining the potential impacts and the proposed strategies to deal with them.*
4. *Reviewing the report.”*

DECCW (2010b) also makes the point that “*Informed input made by registered Aboriginal parties relating to the significance of Aboriginal objects and/or places will usually require the collective input of a number of knowledge holders and therefore consultation should be designed to allow the internal decision-making processes of Aboriginal people to function effectively.*” Clearly the proponent failed, through lack of persistence and appropriate communication methods to achieve registered Aboriginal parties and thus failed to achieve any meaningful input for the decision making process.

DECCW (2010b) goes on to point out that

1. *Aboriginal cultural heritage has social/cultural, historic, aesthetic and scientific (archaeological) significance. All aspects should be given the same weight and assessed equally by the proponent in the Aboriginal cultural heritage assessment report.*
2. *Aboriginal people are the primary determinants of the cultural significance of their heritage.*
3. *The involvement of Aboriginal people should occur early in the assessment process. This is necessary to ensure their cultural values and concerns are taken fully into account and their decision-making structures are able to function effectively.*

It is hard to see how the needs of the local Aboriginal people have been met by the proponent.

No details are provided about the Aboriginal organisations with whom contact was attempted. It would have been important to know if the Shoalhaven Elders and Friends Group were contacted as they have close ties to Bomaderry Creek. During 2005, DECCW carried out an Aboriginal cultural mapping places project in association with these people and also gained a high level of local Aboriginal participation in the development of Aboriginal interpretive features at the Narang Picnic Area in Bomaderry Creek Regional Park. Through this interaction a first class reconciliation wall was established in the picnic area.

Did the proponent seek the skilled assistance of the local DECCW staff to help facilitate the consultation process?

References:

Barratt, T. (2000). *Standard site recording form*. Submitted to National Parks and Wildlife Service, South Coast Region, Nowra NSW.

DECCW (2010a). *Code of practice for archaeological investigations for Aboriginal objects in NSW*. Sept 2010.

DECCW (2010b). *Aboriginal cultural heritage consultation requirements 2010*. April 2010

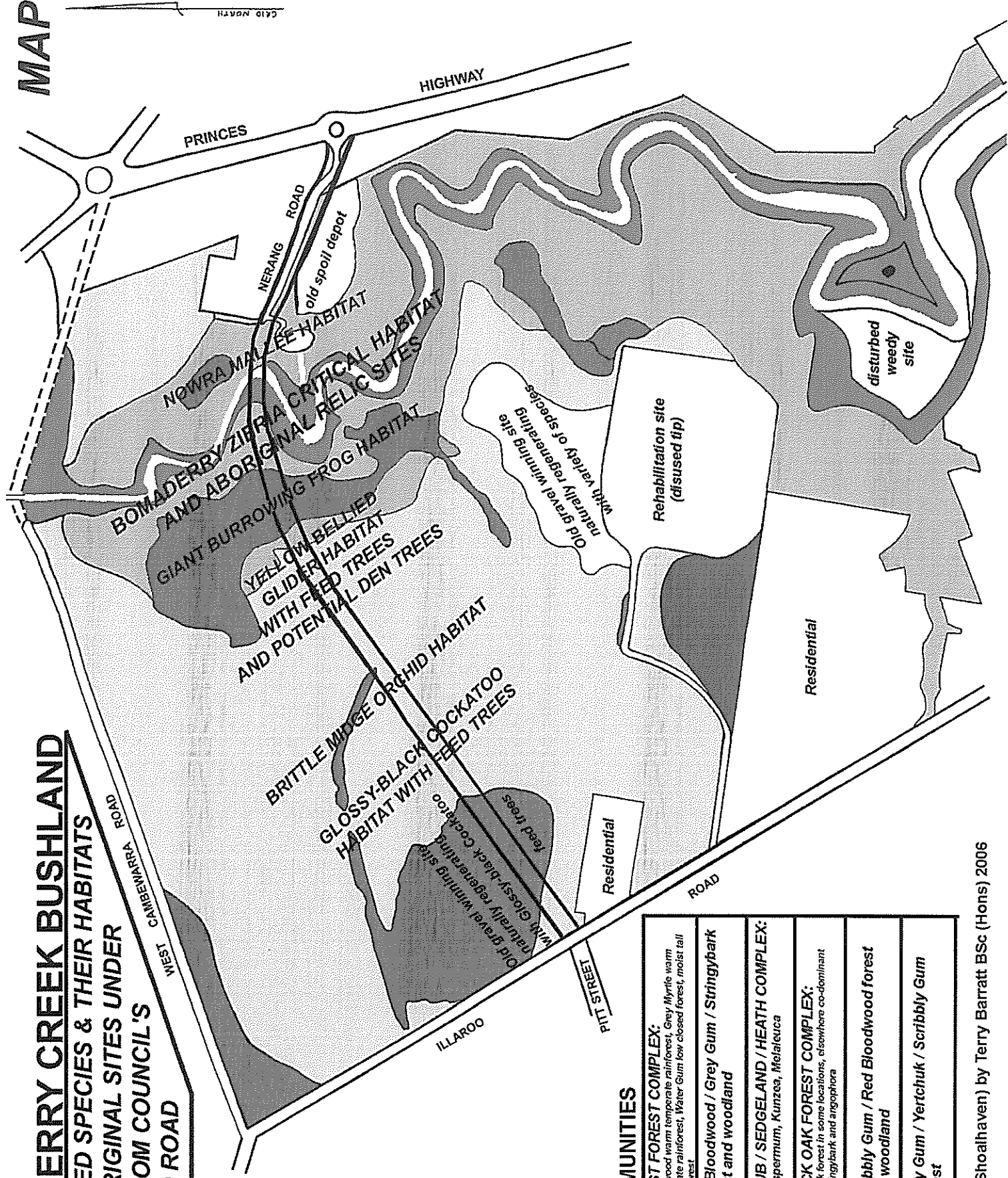
TABLE 1: PLANT COMMUNITIES - BOMADERRY CREEK BUSHLAND

No.	Name	Mills' Equivalents ⁺	Dominant & Rare Species	Occurrence	Conservation Importance
1	Moist Forest Complex : a. Coachwood warm temperate rainforest	Coachwood Warm Temperate Rainforest (CER-WRF)	<i>Ceratopetalum apetalum</i>	On the moister sites below cliffs in gorge.	<ul style="list-style-type: none"> Considerable ecological interest demonstrating several important ecological principles, particularly with regard to the Coachwood rainforest element. Habitat of the vulnerable Large-footed Fishing Bat. Regionally rare Wheat-leaved Orchid grows here. Vulnerable Powerful Owl and Masked Owl sighted in the gorge.
	b. Grey Myrtle warm temperate rainforest	Ironwood Warm Temperate Rainforest (BAC-WRF)	<i>Backhousia myrtifolia</i>	On drier sites adjacent to above community.	
	c. Moist tall open forest	Blue Gum – Spotted Gum Tall Forest (SAL-MAC)	<i>Corymbia maculata</i> <i>Eucalyptus saligna</i> <i>Syncarpia glomulifera</i> <i>Casuarina cunninghamiana</i>	Patches along the gorge amongst rainforest and in adjacent gullies.	
	d. Water Gum low closed forest	No equivalent	<i>Tristaniopsis laurina</i> <i>Acacia floribunda</i>	Amongst rocks in the stream channel.	
2	Red Bloodwood/Grey Gum/Stringybark forest/woodland	Grey Gum – Stringybark Forest/Woodland (PUN-AGG)	<i>Corymbia gummifera</i> <i>Eucalyptus punctata</i> <i>E. agglomerata</i> <i>C. maculata</i> <i>E. langleyi</i> [#] <i>Zieria baeuerlenii</i> [®] <i>Leptospermum sejunctum</i> [*] <i>Acacia subtilinervis</i> [*] <i>Rulingia hermanniifolia</i> [*]	Occurs on both sides of the gorge, on gently sloping terrain where the soils are relatively shallow.	This forest/woodland complex is important to the conservation of the endangered Bomaderry Zieria as it contains the greatest number of sites of the species. It also contains four other rare plant species. It provides the core habitat for the vulnerable Yellow-bellied Glider.
3	Leptospermum/Kunzea closed/open scrub	Kunzea Shrubland (KUN-SHR)	<i>Leptospermum sejunctum</i> [*] <i>Kunzea ambigua</i> <i>Zieria baeuerlenii</i> [®] <i>Acacia subtilinervis</i> [*]	Occurs on broad rocky ledges towards the edge of the gorge, intermingling with community 4 but in drier sites.	Special ecological importance - a complex intermingling of scrub, wet heath, sedgeland, grassland and woodland containing most of the rare and threatened plants of the Bushland. Also the habitat of the vulnerable Giant Burrowing Frog and Yellow-bellied Glider.
4	Sedgeland/heathland	Sandstone Sedgeland (SST-SDG)	<i>Melaleuca thymifolia</i> <i>Leptospermum juniperinum</i> <i>Sedges</i>	Occurs on the same broad rocky ledges of community 3, but on soils with impeded drainage.	

No.	Name	Mills' Equivalents [†]	Dominant & Rare Species	Occurrence	Conservation Importance
5	Black Oak Forest	No equivalent	<i>Allocasuarina littoralis</i> <i>Acacia subtilinervis</i> [*] <i>Leptospermum sejunctum</i> [*]	Mature and regenerating forest on old gravel extraction site.	<i>A. littoralis</i> provides the sole food item for the vulnerable Glossy Black Cockatoo in this district.
6	Scribbly Gum/Red Bloodwood forest/woodland	Scribbly Gum – Bloodwood Forest (SCL-GMF) Scribbly Gum – Bloodwood Woodland (SCL-GUM) Scribbly Gum – Casuarina Forest (SCL-CAS)	<i>Eucalyptus sclerophylla</i> <i>Corymbia gummifera</i> <i>E. imitans</i> <i>E. consideniana</i> <i>Allocasuarina littoralis</i> <i>Zieria baeuerlenii</i> [®] <i>Dampiera scottiana</i>	Covers most of the level topography where soils are deeper than near the gorge.	Glossy Black Cockatoo habitat, ie, abundant nesting hollows & patches of sheoak. Contains one site of the Bomaderry Zieria & is the habitat of the botanically significant <i>E. imitans</i> & <i>D. scottiana</i> .
7	Stringybark/Angophora / Sheoak forest	Scribbly Gum – Casuarina Forest (SCL-CAS)	a. <i>Eucalyptus globoides</i> <i>Allocasuarina littoralis</i> <i>Angophora floribunda</i> <i>Corymbia gummifera</i> <i>E. scias</i> ssp. <i>callimastha</i> b. <i>E. agglomerata</i> <i>Allocasuarina littoralis</i> <i>A. distyla</i> <i>C. gummifera</i> <i>E. punctata</i> <i>C. maculata</i> <i>Zieria baeuerlenii</i> [®]	Occurs on NW corner of Bushland probably due to different soil type. Adjacent to eastern side of tip.	Glossy Black Cockatoos feed here. Contains some Bomaderry Zieria sites and feed trees for the Glossy Black Cockatoo. Largest patch of <i>A. distyla</i> in Bushland.
8	Grey Gum/Yertchuk/ Scribbly Gum forest	No equivalent	<i>E. punctata</i> <i>E. consideniana</i> <i>E. sclerophylla</i>	South-west corner of Bushland, west of tip.	Unusual combination of tree species.

[®] Endangered Species (Threatened Species Cons. Act 1995); [†] Vulnerable Species (TSC Act); ^{*} ROTAP species (Briggs & Leigh 1996); ^{*} Mills, K. (1998). *Vegetation survey methods and natural vegetation types in the coastal parts of the City of Shoalhaven, New South Wales. Illawarra Vegetation Studies* (7), Coachwood Publishing, Jamberoo. NSW. September.

**BOMADERRY CREEK BUSHLAND
THREATENED SPECIES & THEIR HABITATS
PLUS ABORIGINAL SITES UNDER
THREAT FROM COUNCIL'S
PROPOSED ROAD**



PLANT COMMUNITIES

MOIST FOREST COMPLEX: Coachwood warm temperate rainforest, Grey Myrtle warm temperate rainforest, Water Gum low closed forest, moist tall open forest
Red Bloodwood / Grey Gum / Stringybark forest and woodland
SCRUB / SEDGELAND / HEATH COMPLEX: Leptospermum, Kunzea, Melaleuca
BLACK OAK FOREST COMPLEX: Pure oak forest in some locations, elsewhere co-dominant with stringybark and angophora
Scribbly Gum / Red Bloodwood forest and woodland
Grey Gum / Yertchuk / Scribbly Gum forest