Conservation of North Ocean Shores Inc.

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Director of Regional Projects
NSW Planning
GPO Box 29
Sydney NSW 2001
18 November 2010

Attention: Brent Devine

re: submission to 3A Major Project 09_0028 Concept Plan & Project Application for "Cultural Events Site" @ Yelgun

Conservation of North Ocean Shores Inc, (CONOS) wishes to formally submit an objection to the Project Application and Concept Plan for a "Cultural Events Site" @ Yelgun/Wooyung. The document titled "A Review of the Effects of Human Intrusion and Disturbance on Wildlife; Reference to a Proposed Permanent Cultural Events Site at Yelgun, NSW" by Dr. Andrew Benwell & David Scotts forms part of this submission and is attached as Appendix 1.

Given the brief time allocated to the public exhibition period and taking into account the massive size of the Environmental Assessment (EA) (2,000+ pg) it has been extremely difficult to thoroughly dissect the information and obtain professional opinion required to address matters of significance. We trust that the department will take this matter into account, particularly in view of the fact that the proponents have had over 21 months to compile their response to the Director General's Requirements.

The information provided in the EA is inconsistent and contradictory, and the applicants have merely skimmed the surface for some important issues and in other cases have omitted them entirely.

We have attached our previous submissions regarding an earlier 'trial' festival event (DA 10.2007.462.1) as Appendix 2. Objections raised in these earlier submissions are still relevant. Given that they now propose numerous festivals year round, the likely impacts on Threatened Species and the Reserve system will be even greater.

Sincerely

Secretary for CONOS

I do not wish to have my name included when you post this submission on the Department of Planning website. Thank you.

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Executive Summary

The Byron Shire is a relatively small shire with a population of approximately 30,000 residents. There are currently 2 permanent festival sites in the shire that have been purposely built to cater for both educational and cultural events. One, located in Tyagarah, is privately owned and is home to the iconic Blues & Roots festival, which originated in Byron Bay 21years ago. The other, located at Ewingsdale, is the council-owned Sports and Cultural Events site (nearing completion), which will cater for the smaller, integrated, more family-orientated events such as the Writers Festival and Fatherhood Festival.

The Yelgun site, the proposed current development, has a colorful history. Over the years numerous consortiums have attempted to develop the land, some of which include Wendell West Corporation, Princess Properties, the Bond Corporation, and in more recent times Dr. John Walmsley (Earth Sanctuaries) and Greenfields Mountain.

At least two Commissions of Inquiry have been held into rezoning proposals for the land: the Simpson Inquiry in 1990 and the Cleland Inquiry in 1997. Furthermore, State Government agencies have issued numerous Interim Protection Orders, Interim Conservation Orders, and Stop-work Orders to stop unauthorised clearing.

Both Inquiries recognised the environmental values of the area and the natural and cultural significance of the Marshall's Ridge (Jones Road) Wildlife Corridor. Commissioner Simpson ruled out rural/residential development due to land constraints, and Commissioner Cleland zoned much of the land 7(k) Habitat.

Based on the findings of the Cleland Inquiry, the RTA moved the southern section of the proposed Yelgun to Chinderah Highway Upgrade further west to avoid impact with the Billinudgel Nature Reserve and the Marshall's Wildlife Corridor.

> *Marshall's Ridge was a major consideration during environmental planning for the Yelgun to Chinderah highway upgrade, which adjoins the study area on the western side. The NSW RTA has purchased compensatory habitat, incorporated fauna movement devices in the highway design (under and overpasses) and carried out extensive habitat rehabilitation in an effort to enhance the function of the wildlife corridor.* (Benwell 2002)

The proposed site footprint at Yelgun and the adjacent area has been repeatedly and consistently identified as high significance habitat, critical to the fecundity of a range of priority species and threatened fauna species in northern NSW. Moreover, this area has been identified as one of the last remaining key wildlife and climate change corridors connecting the coastal plains with the world heritage Border Ranges region.

A review of several NSW State strategies, plans, and court decisions independently and persistently identify and highlight this development site and its surrounds as significant for a range of environmental reasons. The proposed development has the potential to

have a highly negative impact on these corridors and on the Billinudgel Range Corridor and the BNR, including the cultural heritage precinct.

Substantial research undertaken by expert ecologists Benwell and Scotts (2010) unequivocally demonstrates the permanent and severe negative impacts ongoing festivals have on the fecundity of local and regional fauna and flora through the major decline of ecosystem functions and processes. As the proponent proposes essentially an unlimited number of festivals, this will indisputably devastate biodiversity function and habitation of this vital and unique precinct.

Equally important is the Occupational Health & Safety issues associated with the site's incapacity to safely accommodate large crowds of people. The footprint of the proposed festival site incorporates two floodplains, which historically flood during heavy rain events. It is very likely that evacuation from the site will not be possible.

In assessing this application, we ask that the department not lose sight of the biodiversity values that the site itself contains, and that in turn contribute to the biodiversity of the most easterly intact wildlife corridor in Australia which plays a significant role in the biodiversity and ecosystem function of the region, being the most diverse region in New South Wales. The proposal for a large festival site is contrary to the intent of long-term conservation land use, as was stressed some time ago:

> *Of significant relevance in balancing wildlife corridor values and other land use considerations are the precautionary principle and the conservation of biological diversity. These principles reinforce the importance at this point in time of protecting the existing and potential wildlife corridor values in the Jones Road area.*
>
> *Action needs to be taken to protect the environment before there is conclusive scientific evidence that harm will occur from a new or continuing activity - the precautionary principle requires convincing argument that proposed activities will not cause serious or irreversible environmental impacts.* (Cleland 1997)

A regional events site would be far more suitable in one of the inland shires that do not experience the influx of interstate and overseas tourists that flock to coastal towns such as Byron Bay. For example, Casino and Grafton are towns well suited to such development. They have infrastructure in place and are serviced by the Country Rail link. It is likely that they would welcome the economic stimulus that festivals bring to country towns.

Introduction

CONOS has worked diligently for 18 years, along with other environment groups and associations, assisting state and local government governments where possible, in the protection of the BNR and the state significant Marshalls Ridge (Jones Road) Wildlife Corridor. This corridor, which occupies the majority of the proposed development area, provides a vital link between the Billinudgel Nature Reserve and the inland World Heritage rainforests of the Mt Warning caldera.

The application for a permanent festival site, with associated infrastructure, places all this at risk.

The area's high natural and cultural values combined with site constraints such as topography, hydrology, soil types, impact on coastal and rural amenity and the drain on local services such as Police, Rural Fire Service, Ambulance and State Emergency Services, clearly indicates that this development proposal is simply the wrong development for this place.

Visual Impact Assessment - Technical Paper A

The development proposal is not in keeping with the surrounding coastal villages and rural amenity. The villages of North Ocean Shores, South Golden Beach and New Brighton are located to the south, Yelgun and Crabbes Creek to the west, and Wooyung to the north. Immediately east lies BNR and the Pacific Ocean. The development will have a massive and permanent effect on the existing rural amenity, the passive recreation of the BNR, and nearby coastal villages.

The accumulative intrusion of noise associated with construction works, bump-in and bump-out periods, 50,000 festival goers, and high volumes of amplified music throughout much of the year will severely alter and impact on the visual, ecological, and cultural characteristics of the landscape.

For the residents of Jones Road the impact associated with this massive development will be a permanent and constant visual nightmare. For example, several of the event structures exceed the permissible height requirement and will sorely affect the visual amenity of the area.

Jones Road is a very narrow, winding, gravel road and is flanked by large eucalypt trees, many of which are old growth. (See Photo 1)

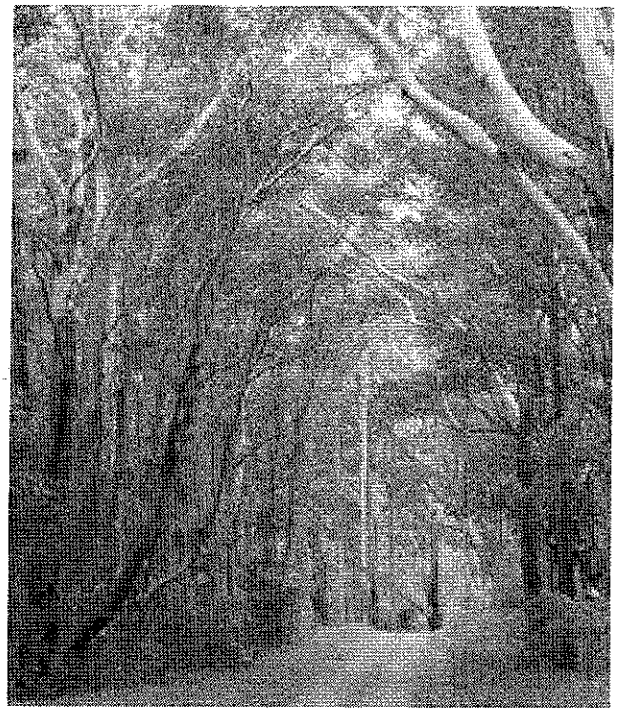

Photo 1: Jones Road

Overall, the development proposal is incompatible with surrounding land uses and is not visually compatible with the immediate area. This fact alone demonstrates the lack of forethought and planning that has gone into the choice of the site.

Noise Impact Assessment - Technical Paper D1

The application outlines the intent to stage "small", "minor", "moderate", and "major" events throughout the calendar year.

Minor events (e.g., doof parties), however, have no limits and therefore could be held on all other days in the year that other events are not scheduled. Although small in patron numbers, the music associated with doof events, or other minor events, can be just as loud. Some, such as doof parties, are known to be even more disturbing and invasive to human health due to the repetitive bass resonance.

This Technical Paper states that music with live bands will operate between the hours of noon to midnight and recorded amplified music from midnight to 3am.

According to Byron Shire Council, the recommended criteria for sleep noise disturbance for "minor" and "small" events is 15dB(A) over the background noise levels. An increase of 6dB(A) is a doubling of sound pressure and is noticeable to the human ear; an increase of 8dB(A) is significant. The recommended criteria for "moderate" and "major" could not be located.

The development site is located in a quiet rural area. The villages of Yelgun (west), Wooyung (north), Crabbes Creek (north west) North Ocean Shores, South Golden Beach and New Brighton (south east) are located within 1-3 km from the site and will be affected by the noise from the site.

Benbow also reports that "the music levels will alter the lifestyle of the nearest affected residents in Jones Road and the conflict with their lifestyle is unable to be completely resolved" (pg iii). Since the noise impact on local residents and surrounding communities cannot be mitigated, the applicants should not be allowed to proceed.

CONOS also has major concerns with the impacts that elevated noise levels will have on the native fauna species dependent on this important coastal reserve. The accumulative impact from noise generated from construction, traffic, bump-in and bump-out periods, human intrusion of 50,000 revellers, combined with high volumes of music for most of the calendar year is likely to have an insidious impact on the very survival of the high number of Threatened Species on and off-site.

Below is a reference comment from Bernie Krause, a field recording scientist who spends time in the wilderness documenting noises made by native fauna. The word Krause uses for the pristine acoustics of nature is biophony. Krause states:

> *the contamination of biophony may soon become a serious environmental issue - and that man-made sounds are already wreaking havoc with animal communication* . (www.wired.com/print/science/planetearth/magazine/16-06st_thompson)

Ecological Assessment - Technical paper E

Flora & Fauna

The site (Lower Yelgun Valley) is listed on the Register of the National Estate Database as an 'Indicative Place' on the Australian Heritage Commission. (Refer Appendix 7)

> *The Jones Road ridge forms a major wildlife corridor allowing movement of wildlife between the Billinudgel Swamp are and the Upper Brunswick Inner Pocket and Burringbar area.* (AHC1996)

Over 50 Threatened Fauna Species are recorded for the overall area including the BNR. Approximately 26 of these species are recorded from the Marshalls Ridge Wildlife Corridor. Four species have been identified under the EPBC legislation.
Several Threatened Flora species and 4 Ecological Endangered Communities (EEC's) are located on the site. (See Photo 2)

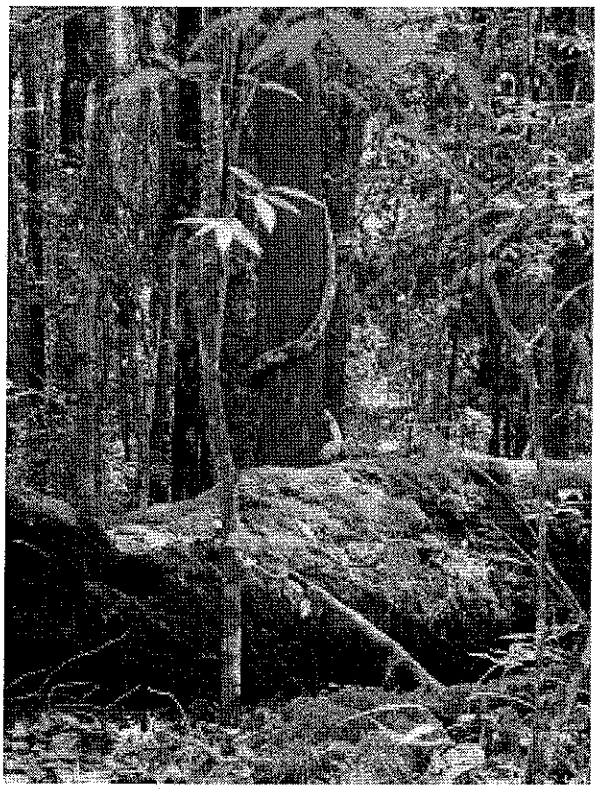

Photo 2: EEC, Parklands Site

The Marshalls Ridge (Jones Road) Wildlife Corridor provides a vital link between the Billinudgel Nature Reserve and the inland World Heritage rainforests of the Mt Warning caldera. This is supported by DECCW, Department of Planning, Byron Council, and other government agencies. Numerous ecological and scientific reports, undertaken over many years support the area's conservation value and the natural and cultural significance on a local, regional, and state level. Key points are:

- All forest blocks within and adjacent to the event footprint are mapped as High Conservation Value vegetation under the Byron Shire Council Biodiversity Conservation Strategy, 2004.

- Byron Shire Council wildlife corridor mapping incorporates all forested areas of the site as well as intervening pasture areas (2004).

- Byron Shire Council Threatened Fauna Habitat modelling covers almost all forest vegetation within the event footprint (BSC 2004).

- All forest types within and adjacent to the event footprint are mapped as Koala Habitat (BSC 2004) with the drier floodplain forest and Forest Red gum dominated forests of the central and eastern portions of Property 2A mapped at the highest quality habitat for Koalas.

A comprehensive Review, outlining the likely impacts that a permanent event site would have on native fauna species and the reserve system, was undertaken on behalf of CONOS by Andrew Benwell and David Scotts. The findings form part of this submission and are reported in Appendix 1. This well-received review has been distributed to relevant government agencies and ecologists throughout NSW.

Biodiversity, Habitat, Ecosystem Functions and Processes

The development and ongoing usage of a permanent festival site will unequivocally result in a fundamental decline or loss of fauna and flora species and habitats of northern NSW. A festival site would severely negatively impact upon local and landscape-scale ecosystem processes and functions. These claims are supported through current research and recent assessments undertaken by the NSW Government. The festival site footprint and adjacent habitat has been repeatedly identified as possessing high priority habitat significance by the following detailed research and assessments:

- DECCW Northern Rivers Biodiversity Management Plan (2010)
- DECCW Border Ranges Biodiversity Management Plan (2009)
- DECCW Key Habitats and Corridor research (2003)
- DECCW draft Far North Coast Conservation Plan (2009)
- Byron Shire Biodiversity Strategy (2004)

The Bureau of Meteorology data demonstrates that Australia's temperatures are progressively becoming hotter and that Climate Change is acknowledged as a key priority for all levels of government. It is therefore imperative that these few remaining climate change corridors are treasured and conserved to act as ecological conduits. This position is further substantiated in that the area's significance occupies a key coastal corridor as identified within the NSW Great Eastern Ranges (GER) initiative. As evidence of the corridor's rarity, the next southern linkage does not occur until some 300km further south.

A significant loss of fauna habitat space and resources will be lost to infrastructure such as roads, clearing of vegetation, introduction of fill, conference and cultural centre, gatehouse and resource centre. The author of the Ecological Assessment identifies many adverse impacts on threatened species and on ecological communities or their habitats from the proposed development. For example:

> *...activities considered likely to produce impacts on fauna include the presence of large numbers of people, vehicle traffic, noise and artificial lighting associated with the staging of events. Interactions between disturbance phenomena are also likely and to a large extent unpredictable.* (p 886)

Rather than suggest true solutions for these adverse effects, however, the author simply indicates that compensatory plantings will do the trick and that fauna species will remain in forested areas and/or move into adjoining areas of the Billinudgel Nature Reserve during times of disturbance.

.....birds displaced by event-related disturbance can find suitable habitat within short distances of the event footprint. (pg 902)

This is absurd. Risks to species include habitat destruction and overall disruption to foraging areas and to breeding cycles. Their very survival will be placed at risk by this development.

The author of the Ecological Assessment has undertaken a cursory analysis in relation to the impact on Threatened fauna species throughout the 7-point test. Threatened species such as the Wallum froglet, Wallum Tree frog and Barking Owl, all recorded in the locality, have not been included.

The Assessment undertaken is inadequate and contradictory. For example on pg 10 of the Assessment the author states that grazed pastoral lands to the south of Jones Road have not been surveyed due to low habitat values; yet in Sec. 2.2 of the report he states that exotic pasture also provide habitat for species such as grass owl, bush hen and grassland melomenys etc.

Koala

CONOS has compiled extensive records of Koala from this location since1980, clearing outlining the importance of the area in providing suitable habitat and foraging areas for dispersing koala. Several of these Koalas were taken into care by 'Friends of the Koala', and were later released back into their home environment. The mapped Koala Habitat (BSC 2004) is worthy of consideration in this context.

The Australian Museum undertaking a Koala survey for RTA states the following..

One capture and four sightings of Koalas along with regular finds of scats indicate that a stable group of koalas are living along the Marshalls Ridges. (AM,1999)

A Koala habitat assessment in 2007 recorded a small area of core Koala habitat in the central-east of the Parklands site, outside the current Application Area (Biolink 2007, see Appendix H)

A Koala Plan of Management was accordingly prepared, based on staging SITG in 2008. A subsequent koala habitat assessment in 2008 (See Appendix H) recorded significantly lower levels of koala activity and the disappearance of core Koala habitat from the Parklands site (Biolink 2008)

The above statement that Core Koala Habitat has disappeared from the Parklands is misleading. The criteria for Core Koala Habitat is determined either by presence or evidence of Koala activity or by assessment criteria for specific vegetation types i.e. Forest Red gum. The vegetation in the Core Koala Habitat has not changed and therefore must still be given consideration and thorough assessment .

The author of Koala Assessment states..

> *Given the demonstrated dynamic nature of core Koala habitat at the Parklands site, it is proposed to defer the completion of a further KPOM until a contemporary assessment of Koala habitat is undertaken in late 2010 or early 2011. Given observed fluctuations in Koala presence over this time period, it is considered that it is important to use the most up to date information to develop optimal strategies for managing Koalas at the site.* (Biolink 2008)

The proponent has not provided convincing argument that the proposal will not cause serious or irreversible impact to Koala.

It is encouraging to learn that in recent days, a Federal Senate Inquiry has been called to investigate the status, health and sustainability of Australia's koala population. This iconic species is in serious decline and needs urgent protection against threats to its environment and survival of the species.

Removal of Vegetation - Tunnel Construction & Upgrade of Jones Road

Jones Road is one of the few roads in Byron Shire that is afforded 7(k) Habitat zoning. It has important historical linkages with the indigenous tribes of the area dating back thousands of years and from a planning perspective is recognised on a regional and state level for its natural and cultural significance.

The proposed construction of the "Spine Road" combined with either option of an "at grade" or tunnel crossing of Jones Road will have an irreversible impact on the existing environment and cause a barrier effect to certain fauna species. The upgrade of Jones road will require the removal of high conservation value habitat including several "old growth" trees and an important hollow stag which is critical habitat for a wide range of hollow dependent species.

This development proposal is contrary to the very purpose and functionality of a wildlife corridor. It will place vulnerable fauna species at risk, during and after the construction phase, with the destruction of habitat and the potential to increase wildlife fatalities.

If allowed to proceed, this clearing of vegetation would contradict the findings of Commissioner Cleland who states:

> *To ensure proper consideration is given to wildlife corridor values all existing vegetation should be retained. This is particularly evident for the western end of Jones Road ...* (Cleland, 1997)

The overall impact of the removal of native vegetation and habitat, the proposed upgrading the western end of Jones Rd, the construction of the Spine Road, and the construction of the tunnel will be cumulatively significant. The wildlife corridor at this location is very narrow and simply cannot sustain such drastic impacts.

Threat activities that could result from the proposed development are, clearing and fragmentation, habitat modification, wildlife fatalities, degradation and disturbance of nests and roosts, introduced weeds, alteration to existing environment, alteration to flow regimes of floodplains and wetlands, activation of acid sulfate soils, pollution of Yelgun Creek, siltation/sedimentation, fire and peat fires, degradation, vandalism and impacts to the BNR.

The DA fails to demonstrate any monitoring evaluation, reporting and implementation (MERI) framework which is a fundamental requirement for demonstrating management activities. The DA fails to offer any strategic assessment process and reporting structure to track, monitor and address impacts on the biodiversity of the proposed site across the ongoing long term. There is no clear linkage back to state government authorities on management and ongoing activities within or surrounding the proposed festival grounds.

Impacts on Nature Reserve

The Billinudgel Nature Reserve lies to the south, east, north-east and west of the development site. There is no reference or mapping in the EA that outlines the area of the BNR (compensatory habitat) that adjoins the events site in the south-western corner immediately to the north of Jones Road. Potential impacts have not been addressed.

It is inevitable that a high number people will enter the BNR in order to set up camp and listen to the music without having to pay exorbitant entrance fees. The proponents have not demonstrated how they intend to protect the Reserve System from this intrusion. It will surely be impossible to secure due to the extensive and convoluted nature of the Reserve boundary.

Extensive peat deposits exist throughout the development site and adjoining properties. The combination of thick vegetated areas, peat soils and lack of access indicates that fire presents a major threat to adjoining properties including the BNR. A detailed history of fire for this locality is provided in the section on Bushfire Hazard Assessment on page 20.

Precautionary Principle

In 2.0 Impacts from the Proposal - Seven Part Test, the author states that

> *Given multiple potential influences and the species-specific variability of fauna, the nature and extent of impacts and interactions is at least in part, unpredictable.*

This statement clearly indicates the need to exercise the Precautionary Principle, one of the main guiding principles with regard to Ecological Sustainable Development.

In relation to the Yelgun site Commission Cleland states:

> *The precautionary principle, which encapsulates current environmental values, specifically does not require scientific proof before appropriate conservation*

processes are activated. As well the conservation of biological diversity necessitates the maintenance of wildlife corridors to promote genetic exchange between populations of native species and to enhance species survival in the long term. (Cleland 1997)

The proponent has not provided a convincing argument that the development will not cause serious or irreversible environmental impact.

***SEPP 14 Wetlands** (No. 57)*

The Yelgun Catchment is classifies as a High Hazard-Flood Storage area and all floodwaters flow east into the wetlands.

This raises the following concerns:

- the effluent irrigation area (comprising 3 ha) is located in the western section of the Yelgun Catchment, in close proximity to Yelgun Creek with the potential to pollute both the creek and wetlands and alter the existing environment.

- all fuels, oils, and other pollutants will be washed into the SEPP 14 wetlands and BNR

- in 6 Conclusions of the Flooding Impact Assessment it states.

The modelling methodology is conservative with regards to impacts upstream of the Spine Road, as culverts under the spine road have not been considered in the analysis.

Results show that the car parking area and event area are on flood prone land, and two locations along the spine road are overtopped in all modelled events. (Con. pg. 1372)

This serious problem has not been addressed and merely highlights the proponents lack of attention to the likely impact the proposal could have on the surrounding Reserve System and state significant wetlands.

Buffer Zone

The author repeatedly indicates that a 30 metre buffer in the 1(a) Rural cross-hatched zone, will serve to protect the wetlands form any impact from the adjoining car park area. (p 657) However, Byron Council outlined in an earlier consent condition that a 50 metre buffer was necessary in order to protect the State Significant wetlands. A court appeal by *Greenfields Mountain Pty Limited v Byron Shire Council [2002] NSWLEC229* was unsuccessful.

Yelgun Creek

As the current landowners have made no attempt to conform with the Court Order imposed several years ago to restore Yelgun Creek, their current proposal to rehabilitate Yelgun Creek must be questioned. Work should have begun on this a long ago as top priority. (The Court Order stemmed from the NSW Fisheries.)

Agricultural Land

As climate change and global warming has become more pronounced, the coastal strip of NSW, and particularly the North Coast with its high rainfall, has become vitally important to retain for agriculture.

"Landline" (ABC TV, 23 Sept 2007) stated that lands along the NSW coastline will be the only viable lands available for food crops in the future as a result of climate change. As more and more farmers west of the Great Dividing Range are abandoning their traditional lifestyles, due to lack of rain and failing food crops, these arable coastal lands are being highly sought after.

If this proposal is approved, valuable land zoned for agriculture by Cleland (1997) will be lost to the construction of roads, conference and cultural centre, gatehouse, carparking, and resource centre. If it is considered vital to protect all existing agricultural lands, this proposal should be rejected.

The effluent irrigation area, gatehouse, and shuttle turnaround are located on Regionally Significant Farmland (FNCAg. Lands, 2005). The proponents have not mentioned this fact in their proposal.

Flooding Impact Assessment - Technical Paper G

Yelgun Creek - Marshall's Creek Floodplain is classified as High Hazard - Flood Storage.

The Floodplain Development Manual defines "High Hazard" as ...

> *where floodwaters present a danger to life and limb, could cause structural damage to buildings, and where the resultant social disruption and financial losses could be high.*

Construction of the gatehouse, carpark, bus turnaround and effluent irrigation area are all proposed for the Yelgun Catchment.

Eastern sections of the Yelgun Catchment, where the carpark is to be located are below 3-3.5 AHD. Based on modelling in flood events we can expect approximately 2 metres of water over the majority of this area.

In an earlier DA for a trial festival event (10.2007.462.1), the proponent's hydrologist, H. Fiander, 2007, gave a 20 minute warning time in a flash flood event. This important information has not been included in the current application.

However, the author of the Flood Assessment states that cars will not be able to be evacuated in a flood event and recommends that "patrons be advised that the car park is located on flood-prone land". (See Photo 3)

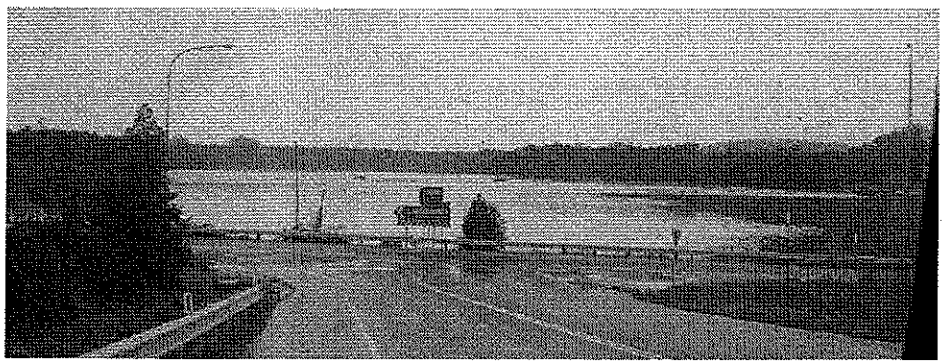

Photo 3: Car Park Area, July 2005

The above recommendation leads to the following questions.

'In the event that the vehicles (11,000+) cannot be evacuated due to floodwaters, who is legally responsible for the damage incurred to thousands of vehicles?' and

'Who will be legally responsible for the damage incurred to the State Significant wetlands from pollutants, contaminants and damaged vehicles washed into this environmentally sensitive area by floodwaters?'

Mooball Catchment - Crabbes Creek

The section in the North-eastern part of the events site lies below 3 metres AHD and the remaining section below 2 metres AHD.

The events area, which includes the conference, cultural and resource centres, camping, market stalls VIP and car parking are all proposed for the Crabbes Creek Catchment.

With climate change now a reality, the existing flood regime will be intensified. Flooding is becoming more frequent and at times of the year that would not ordinarily experience heavy rainfall. For example, on the 3 October (normally a dry month) this year, the Wooyung and Yelgun area received 215 ml of rain overnight and on the 10 October received another 110ml.

Given that the current proposal is for numerous small, minor, moderate and major events throughout the calendar year, this proposal is frightening. The health and safety of patrons, staff, artists and emergency services should be paramount.

The Marshalls Creek Floodplain Management Plan, 2007

The proposal is contrary to this Plan which prohibits "fill" in the floodplain. All internal roads are to be raised to a height of 300ml, however, details of the type of "fill" or where it will be sourced from could not be found.

Commissions of Inquiry

The areas ecological significance was not disputed and recognised at a local, regional and state level with the NSW Government investing millions of dollars into its conservation.

In 1990 a Commission of Inquiry was held into the rezoning of lands at North Ocean Shores, which at that time was owned by the Bond Corporation. Commissioner Simpson concluded that most of the land, if not all, should be protected. (Simpson Inquiry,1990)

Again in 1997, the NSW Planning Minister called a Commission of Inquiry into the rezoning of the Jones Rd wildlife corridor. Commissioner Cleland stated that the areas ecological significance is acknowledged by all parties present at the Inquiry and recommended the majority of the wildlife corridor be zoned for environmental protection and the remainder zoned for agricultural protection. (Cleland Inquiry, 1997)

> '*Of significant relevance in balancing wildlife corridor values and other land use considerations are the precautionary principle and the conservation of biological diversity. These principles reinforce the importance at this point in time of protecting the existing and potential wildlife corridor values in the Jones Road area.*
>
> *Action needs to be taken to protect the environment before there is conclusive scientific evidence that harm will occur from a new or continuing activity - the precautionary principle requires convincing argument that proposed activities will not cause serious or irreversible environmental impacts.*' (Cleland 1997)

Aboriginal & European Heritage Assessment - Technical Paper H

The Australian Heritage Commission has listed the area (Lower Yelgun Valley) on the Register of the National Estate Database "as Places of Significance to Aboriginals" with the legal status described as an "Indicative Place". (Refer Appendix 7)

> *The site contains the Byron and Tweed Shires' most unique and valuable portion of our living heritage and culture.* (AHC 1996)

Marshall's Ridge is highly significant to Aboriginal people and records indicate that it was utilised for thousands of years as an important tracking route from the Mt. Warning caldera through to the coast. It provided a safe, flood free access to their ceremonial grounds, important tool making sites and food gathering areas.

This is evidenced by the high number of cultural sites recorded for the overall area. Of the 32 archaeological sites recorded on the AHIMS, 22 of these are protected within the BNR. However, 9 of these sites are scattered along the ridgeline and fall within the footprint of the Project Application.

Archaeologist Jackie Collins, in an earlier DA (10.2007.462) describes the overall area ..

> *"the study area's sites, form part of a complex that is unique in the local and regional archaeological record".....and "are assessed to have a moderate to high level of scientific / archaeological significance."* (sec. 9.2 p. 37)

Ridge of High Archaeological Sensitivity

Of particular concern to CONOS, is the proposal to excavate a tunnel through the Jones Road ridgeline, in order to provide access for semi-trailers, construction and delivery vehicles, buses and cars to access the events area. We strongly object to this proposal as it will not only impact on a ridgeline of high archaeological sensitivity but it will also impact on the cultural values and the overall integrity of the area which has existed in its present form for thousands of years. (Navin 1990, map Appendix 8)

The archaeological significance of Marshall's Ridge and associated Aboriginal cultural sites, including the Bora-ring site complex located further to the east cannot be underestimated. These sites cannot be looked at in isolation, and collectively form a heritage 'precinct' as defined under the Heritage Act,1977.

Advice from Tweed-Byron LALC and other informants consulted in conjunction with this assessment indicates that the study area's sites, as group, are of high social significance due to "consistency of artifact density in a small area".(cf Piper 2002)

Regionally Significant Archaeological site

Another major concern that CONOS has, is the impact the development will have on the regionally significant archaeological sites, #4-2-114 and #4-2-115 located south of the ridgeline. These sites are located on the eastern foot slopes of a prominent knoll that were surveyed by A. Piper in 2002. The landform indicates, however, that this site may be far more extensive than what was surveyed and may encompass the entire knoll. Please note the spine dissects this knoll .

Archaeologist, Adrian Piper, considers the archaeological significance of Open Campsite # 4-2-115 as moderate/high in a local and regional context.

I consider this area to be the most archaeologically sensitive when considering the study area south of Jones Road. The site though disturbed, is locally (Tweed Brunswick River) and regionally unique.

- The presence of beveled pounders extends their previously known range from Moreton Bay and the Tweed River, south to the Brunswick River System.

- The site represents a contrast to shell midden sites typical of the dunal areas to the east and the low-density single function open campsites identified on Marshall's Ridges.

- The site also contains material with potential for further research through use wear analysis. (Piper 2002)

The Tweed/Byron Aboriginal Lands Council have also outlined in correspondence (Oct. 2006) to Jackie Collins, the proponents archaeologist, that a major concern is the proposed road on the southern end of the survey behind the old service station as there are artifacts in this area.

Sec 7.3 outlines that a recent archaeological dig undertaken at the location where the Spine road dissects the knoll, uncovered a further 24 artifacts (p.1427). This confirms the overall archaeological significance of the area and further supports a refusal of the development application.

The draft Far North Coast Regional Development Plan (2010) describes the Billinudgel Range - corridor between Mount Jersualem and Billinudgel Nature Reserve as

One of the few remaining coast to ranges habitat corridors in the Far North Coast Region and is home to a number of threatened species, EEC's and large areas of old-growth forest, which is a relatively rare occurrence in the Far North coast Region. The corridor will be critical in terms of adaption to climate change and linkages with the Great Eastern Ranges corridor.

The Billinudgel range corridor provides significant Aboriginal cultural heritage linkages that are part of the natural landscape.' (DECC, 2007)

The overall impact from either option of an at-grade crossing or tunnel through Marshalls Ridge (Jones Road) combined with the impact the Spine road will have on Regionally Significant Archaeological sites in order to provide access to events area, simply cannot be justified.

The proposal to tunnel through the ridgeline is clearly at odds with the zonings implemented by Commissioner Cleland and further illustrates that the site is not suited to accommodate festival events, and has no suitable access roads leading in or out of the site. The proposal to bulldoze and tunnel through a ridgeline of high natural and historical significance is unethical and unwarranted.

In 1996, one of the current landowners was employed by Council to undertake an Environmental Study as part of the rezoning process that led to the Cleland Inquiry, and was aware of the areas significance at the time of purchase.

Bushfire Hazard Assessment - Technical Paper L

There is no reference in this assessment to the highly inflammable peat soils that are widespread across the site & throughout the Billinudgel Nature Reserve.

Given the fire history of the area and the presence of peat soils, the proposal to locate 4 bonfires on the event site is irresponsible. The area in general has a history of fire, including peat fires which have burnt for months at a time. In 2004 peat fires burnt throughout the winter months. (RFS, 2001 & 2004)

Toxic smoke from peat fires was detected up to eight kilometres away. Serious health problems such as asthma, breathing difficulties and headaches were reported from nearby residents and those in surrounding villages. (refer Northern Rivers Public Health, 2004 & DOCS, 2004)

The second fire in October 2004 enacted a Declaration of Emergency (Section 44). Over 50 fire units attended from over regional NSW and 3 helicopters were brought in as areas within the Reserve were inaccessible by road. The operation continued for 3 days and cost the State $1million. If it was not for heavy rain extinguishing the fires, the cost to the environment and the State would have been far greater.

It is important to note that the October fire started on northern side of Jones Road (where the event site is proposed) and quickly jumped the road and into the Billinudgel Nature Reserve.

Brief Fire History of BNR and surrounding properties.

1981 Fire ignited on Central Trail in BNR and burned for 7 days. Residents were evacuated, hundreds of hectares were burnt out and native wildlife perished.

1986 Fire ignited on Optus Trail in BNR and quickly escaped north towards Wooyung and west along the Jones Road ridge. The fire was extinguished after several days by the local bushfire brigade.

The RFS almost lost one of their Strikers when it came close to disappearing in the deep peat deposits. Residents warned of the danger and to keep children away.

1992 Fire ignited on the Central Trail in BNR. Hundreds of hectares were burnt and native wildlife perished.

1995 A lightening strike ignited a fire in BNR south of Jones Road residences. Due to inaccessibility and strong southerly winds, NPWS advised residents to evacuate.

1999/00 Fire escapes into peat deposits north of Jones Road. The fire burnt underground for months, emitting toxic smoke and causing much distress. Cases of respiratory problems, headaches, and asthma were reported.

2004 (May) Fire escapes into peat during clearing operations north of Jones Road. Fire burnt underground for 3 months (RFS, 2004). Toxic smoke was reported kilometres away, and cases of respiratory problems, headaches, and asthma were reported to the NSW Health Department NRPH & DOCS, 2004). Due to health issues, a number of residents had to find alternative accommodation.

2004 (Aug) The 'above' peat fire was ignited by strong westerly winds and engulfed properties at the eastern end of Jones Road. Extensive damage is caused to one home and cottage whilst the occupants, including children, escaped with their lives. All three properties were damaged, fire fighting equipment was burnt, and the lives of rural fire fighters were put at risk. Residents were evacuated.

During the clearing operations, a large excavator sank and disappeared into deep peat deposits. Large earthmoving equipment had to be brought in from Queensland to retrieve the excavator.

2004 (Oct) Prolonged drought and unfavorable conditions sparked the peat fire which jumped Jones Road and spread south to the BNR. Fifty fire units, five helibombers and 120 fire-fighters, including crews from the mid-north coast, battled the fire for three days. Hundreds of hectares were burned out and native wildlife perished. Consecutive days of heavy rain finally extinguished the main blaze.

NSW Police requested nearby residents, a primary school, and a housing estate to evacuate. A Declaration of Emergency [Section 44] was issued by the Minister of Emergency Services, the cost to the State was in excess of $1 million.

Acid Sulfate Soil Assessment - Technical Paper M

Both Actual Acid Sulfate and Potential Acid Sulfate soils are widespread throughout the property.

4.1 Coffey Geotechnics-Geotechnical Investigation (March 07)

'A review of the laboratory certificates (E7052; Coffey 2007) indicates that the soils collected were highly acidic with levels of oxidisable sulfur recorded as above limits of detection.'

4.1 Proposed Excavation Works / Acid Sulfate Soil Management Plan

The following construction works have the potential to disturb and expose acid sulfate soils. Excavation of new dam and new open drain in Forest Block C (refer Stormwater Management Plan, Ardill Payne & Partners, June 2010). In addition the construction of

drainage works, open drains, collection wells, roadworks, erection of temporary and permanent structures and service trenching must be considered a potential risk.

In this Assessment, EAL Consulting Service also outline the risks associated with acid sulfate soils, i.e. acid runoff, contamination and associated fire risk and recommended that soil should remain in-situ.

6.4.1 Potential Peat Fire Hazard

Peat soils under drought conditions, or having been significantly drained may represent a considerable fire risk.

6.5 Potential for Disturbance of ASM

The mobilisation of dissolved metals such as aluminum, iron, manganese and cadmium may have serious toxilogical impacts upon aquatic and terrestrial biota exposed to suitably high concentrations of such substances.

6.5.1. Potential Acid Sulfate Material

The excavation proposed for the Parklands development would result in the intersection and excavation of large quantities of potential ASM. Such works would require intensive acid sulfate soil management actions in order to prevent the generation of chronically acidic groundwater's and acidification by-products.

Construction Management Plan - Technical Paper O

Internal roads

As there are no adequate access roads into the property, the spine road has been proposed to provide a link between land to the north and south of Jones Road. A tunnel will be excavated through the ridgeline to provide access for construction machinery, heavy transport, service vehicles, buses and cars through to the events area, located on the northern side of the ridge.

The spine road traverses 7(k) Habitat CH zoning both north and south of Jones Road, and is one of the few roads in Byron Shire that is afforded a 7(k) zone. This proposal disregards the L&E Court findings *of Conservation of North Ocean Shores Inc v Byron Shire Council & Ors NSWLEC (6 May 2009).*

In the very northern section of the events site, the spine road will connect to a narrow, floodprone access track (tenure unsure) which runs through private properties before connecting to Wooyung Road. The Tweed Coast Road is located approximately 3 km. to the east. Please note that the Wooyung Road cannot be considered for emergency evacuation as historically, it is one the first low lying roads to be cut off in a flood event.

Tunnel

The EA does not include a Section on the construction and design details for the proposed tunnel through the Jones Road ridgeline.

Given the amount of major earthworks involved in the construction works, this is a major oversight particularly because close detail was given to it in the DA for the trial festival event. It is important to note that Jones Rd is afforded a 7(k) Habitat zoning under the Byron LEP and that the proposed Spine Road that services the tunnel also runs through 7(k) Habitat zone. Commissioner Cleland applied cross hatching (cl. 38A B,LEP) to all zones along the wildlife corridor to give added protection against inappropriate development.

Also of interest, and following the Commissioner's recognition of the importance of the Jones Road ridgeline, the RTA decided to relocate the southern section of the Yelgun to Chinderah Pacific Highway Upgrade further west. The RTA also invested over $5 million in fauna mitigation measures (underpasses and overpass) and compensatory habitat north west of Jones Road and now part of the BNR.

The Jones Road wildlife corridor meets the criteria of a Heritage 'precinct' as defined under the Heritage Act, 1977. The proposal to sever this historic and unique ridgeline is unacceptable and outrageous. It is apparent that the owners of the land did not do their homework before purchasing the property as the property has not suitable access.

The proponent is required under Roads Act to get Council consent for the lease of airspace under Jones Road, prior to the construction of the tunnel. Approval cannot be assumed as Council does not support this development.

Camping Prescriptions - Tecnical Paper R

Camping is located to the north east of the site in 1(a) *General Rural* hatched zone under the B,LEP. Caravan Parks are prohibited in a1(a) zone With festivals planed for most of the year, it is difficult to comprehend how the proponents can justify placing hundreds of patrons, staff and artists in floodplain. (See Photo 4)

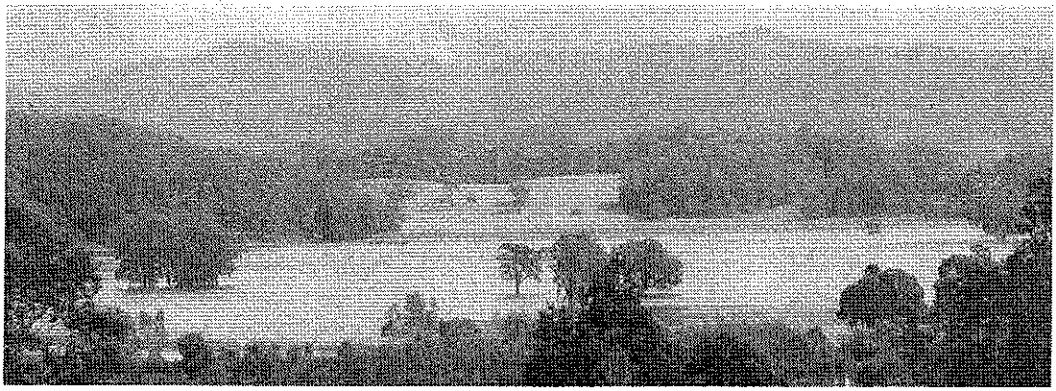

Photo 4: Camping Area at Parklands Site, October 2010

Statutory Assessment - Technical Paper T

The following Statutory and Planning Polices apply

Ecologically Sustainable Development.

The principles which underlie the concept of ecologically sustainable development include:

(i) the precautionary principle;
(ii) intergenerational equity;
(iii) biodiversity conservation; and
(iv) improved valuation pricing and incentive mechanisms.

SEPP Rural Lands

SEPP 55 - Remediation of Land

SEPP 44 - Koala Habitat Protection

NSW Coastal Policy and NSW Coastal Design Guidelines

Although the Parklands site does not fall within 1 km of the coastline, the development proposal has the potential to impact on coastal public land within the BNR.

North Coast Regional Environment Plan now a SEPP

Northern Rivers Catchment Action Plan 2005.
Contrary to target categories B i.e.
Ensure amenity is maintained on public land and on-site;

Byron Local Environment Plan

The proponent states that "existing uses" across the site comprise of agriculture and

roads, however does not mention environmental protection.

The EA has not addressed the requirements of Clause 38A of the B,LEP. Many of the zones along the Jones Road wildlife corridor are cross-hatched. Although map 4.1 illustrates the cross hatching, it has not been adequately addressed in the EA. Table 4.1 makes reference only to the 1(a)cross-hatched lands pertaining to Lot 30 DP 880376 & Lot 102 DP 1001878 adjoining the BNR in the southern section of the site.

This is a serious omission given that clause 38A applies to most of the zones where the main footprint of the events site and associated infrastructure such roads, tunnel & dam construction, event areas, administration and cultural centres are proposed.

Areas of 1(a) *Rural* hatched zones (cl 38 B,LEP) apply to the north of the events area.

The proponent has ignored the findings of the Land & Environment Court Ruling in this application. Judge Preston found that a Place of Assembly was prohibited in a 7(k) Habitat zone under the Byron LEP and ruled that an approval for a Trial event was '*invalid and of no effect.*'

The development is contrary to the objectives of the1(a) *General Rural* zone, the 1(b)1 *Agricultural Protection* zone and the 7(k) *Habitat* zone of the Byron LEP.

Also, it is important to note that the cross hatching clause (Am. 51) was applied to all the zonings by Commissioner Cleland (1997) in order to provide additional protection against inappropriate development. This has NOT been considered.

The development is contrary to the following clauses of B,LEP

Clause 24 - Development of flood liable land
Clause 36 - Development adjoining Wetland
Clause 38 - Development within the 1(a) General Rural zone shown hatched
Clause 38 - A development of land shown cross hatched within zones 1(a), 1(b)1 and 7(k) adjacent to Environmental Protection Zones.

The development proposal is contrary to many of the following **Local, Regional and State Planning Strategies**, many of which have outlined the significance of the wildlife corridor along Marshalls ridge.

Northern Rivers Biodiversity Management Plan (DECCW, 2010)
Far North Coast Regional Planning Strategy (DoP)
draft Far North Coast Regional Conservation Plan (DECCW, 2009)
Climate Change Corridors (DECCW, 2009)
Border Ranges Biodiversity Management Plan (DECCW, 2008)
Billinudgel Nature Reserve Plan of Management (NPWS, 2000)
The Great Eastern Ranges (GER) Initiative (DECCW, 2007)
Key habitats and corridors for forest fauna (NPWS, 2003)

Byron Events Policy (BSC, 2010)
Byron Shire Tourism Policy (BSC)
Marshalls Creek Flood Plain Management Plan (BSC, 2007)
Byron Shire Biodiversity Conservation Strategy (BSC, 2004)
Byron Flora & Fauna Study (BSC,1999)
Far North Coast Bush Fire Risk Management Plan (NSWRFS,2010)

SEPP - The Far North Coast Regional Environment Plan (DoP)
SEPP 44 - Koala Habitat Protection
SEPP 21 - Caravan parks Pg 91
SEPP 14 - Wetlands
NSW Farm Dams Policy-DECC
Local Government Act – Primitive camping.

Summary of Court Ruling

Conservation of North Ocean Shores Inc. v Byron Shire Council & Ors NSWLEC, 2009

Conservation of North Ocean Shores Inc. (CONOS) challenged the development consent granted by Byron Shire Council (Council) to *Splendour in the Grass* to develop land for holding the Splendour in the Grass music festival, as a trial and one-off event. CONOS challenged the consent on the following two main grounds:

1. Council acted outside its power and consented to impermissible use of the land, namely a place of assembly, which was in part zoned under local planning law for habitat protection; and

2. Council failed to form a positive opinion that the development was consistent with the objectives of the habitat zone under the Byron Shire Local Environmental Plan and it ought to have.

Council lodged a submitting appearance to the challenge and therefore the proponent (as the 2nd respondent) defended the development consent.

On the first ground, the proponent argued that the development was permissible in the habitat zone. It argued that although places of assembly are prohibited in the habitat zone, the part of the development for the place of assembly that fell within that zoning was roads, that roads are permissible with consent in that zone and further that the roads could be supported by an ancillary permissible (with consent) use, namely agriculture.

On the second ground, the proponent contested that there was evidence that Council had reached the requisite positive opinion.

However, CONOS prevailed on both challenges, so the development consent was declared invalid and of no effect by the Chief Judge of the Land and Environment Court.

CONOS argued on the first challenge that Council exceeded its powers when it consented

to the development for the festival (in other words, their consent was ultra vires). The Environmental Planning and Assessment Act, 1979 provides that development can be classified one of three ways: prohibited, permitted with consent, and permitted without consent. Environmental Planning Instruments and zoning regulations determine how a type of development is classified. Part of the land at issue was zoned for Habitat under 7(k) of the Byron Shire Local Environmental Plan 1988, which prohibits most development, but permits certain types of development (with consent of Council), most notably roads and agriculture. Therefore, consent of an application is ultra vires if it is not for a permissible use of the land.

The Court determined that the proper characterisation of the use of the land as a festival site was for an assembly, which is not one of the permissible uses in the 7(k) Habitat zone. The Court rejected the proponent's argument that the development components of the festival within the habitat zone, namely roads could be separated from the development and could be supported in their own use as roads or failing that for agriculture. In other words the proponent claimed that the proposed development was for the purpose of creating a festival, but that the infrastructure accompanying it was a permissible use or could support a permissible use. The court was not persuaded because the argument neglected the purpose of the permanent infrastructure to be developed. If the development included some roads that would be used for agriculture after the festival the Court found that such purposes were ancillary to the assembly. The Court emphasised that Council's Planning Report itself stated that another development application would need to be submitted for the construction of roads not used in the festival, which was a strong enough indication that Council had no authority to consent to the development.

The Court sustained the second challenge as it found that Council did not consider whether development of all the proposed structures was consistent with the objectives of the habitat zone. Certain parts of the Planning Report prepared by Council staff made it evident that certain aspects of the development would threaten efforts to conserve wildlife in the area. The logical conclusion, therefore, was that the Council did not form the requisite positive satisfaction, that the development was consistent with the objectives of the habitat zone, which are, amongst other things, 'to identify and protect significant vegetation and wildlife habitats for conservation purposes,' and 'to protect development within the zone that is likely to have a detrimental effect on the wildlife habitats which exist.'

The proponents' only argument to the second challenge was that the development appeared to be for a permissible purpose. However, the Court had already ruled that it was not. Furthermore, it is noted that this alone, is not sufficient to demonstrate that Council properly formed a positive opinion about the effect on conservation as required.

Therefore the Court found that the development consent was 'invalid and of no effect'. See Appendix 3 for the complete court ruling.

Evacuation Management Guide - Technical Paper W

The Crabbes Creek Catchment, where the events area, food stalls, VIP, camping, conference and cultural centres are proposed is a floodplain. On pg. 2196 of the Flood Evacuation Assessment it states that "it may not be possible to evacuate patrons and their property from the site". (See Photo 5)

Photo 5: Parklands Events Area, January 2009

Their response to this serious problem is to escort patrons to higher ground. This approach is bordering on insanity. It is not difficult to imagine the chaos and danger associated with herding 50,000 patrons onto the Jones Road ridgeline in flood conditions, with no services and the likely possibility of rain continuing for days at a time.

This is another example of the proponents lack of knowledge or blatant disregard for the numerous constraints associated with this site. They have had 4 years to study the site in various weather conditions and have had 4 years to correlate the numerous studies, reports and reviews carried out in relation to the site. The majority of findings point to the fact that this site is seriously constrained and not suitable, nor safe for the type of development they envisage.

Evacuation in Flood & Fire Events

Safety and evacuation of patrons is a serious issue and must be given full consideration. The proponents have a duty of care to all patrons and personnel on and off-site whose health & safety is paramount.

In a report undertaken for the earlier Splendour in the Grass 'trial' festival event, the proponent's hydrologist, Toby Fiander gives a 20 minute warning time in a flash flood event. Historical information and local knowledge supports this scenario. Statements in the EA have acknowledged that evacuation of patron and workers (50,000+) is simply not

possible. The consultant has therefore recommended that patrons be evacuated to higher ground i.e. the Jones Road ridgeline. This is totally unacceptable and negligent.

The Far North Coast Bushfire Risk Management Plan 2009, has categorised the Jones Road area as ***catastrophic*** and ***most likely to happen***.

In a fire scenario, however, evacuation to Jones Road ridge would not be possible due to the heavy vegetation along the road. On numerous occasions the residents of Jones Road and North Ocean Shores (including the Ocean Shores Primary School) have had to evacuate their homes with fires from adjoining Reserve and bushland out of control, threatening homes and peoples safety.

The proponent's attention to this problem is totally inadequate and merely highlights their lack of knowledge regarding the fire constraints associated with the property. Given the inflammable nature of peat soils, which are widespread throughout the property and adjoining reserve, their proposal to have several water tankers located in strategic positions is naive to say the least. Combine the scenario of bonfires at night with thousands of patrons, musicians and staff enjoying cigarette smoking and an inevitable disaster is likely. These matters must deserve the upmost consideration otherwise peoples lives and property will be at risk.

The report outlines that the northern and central carparks can be evacuated through Cudgera Creek Road to the north. This road is a narrow, dirt road, fairly steep in parts with very sharp bends and although, may not be flood prone, is totally unsuitable for evacuation purposes.

Land Swap with DECC

The proponents have consistently and repeatedly advertised their intention to give certain lands to the NPWS for additions to the Reserve System. Whilst this is beneficial to long term conservation, it must be noted that Parklands will also gain from this exchange, by receiving an area of DECC owned land [zoned1(a)] that runs through the middle of the Parklands site, south of Jones Road.

Chronology of NSW Government's Protection of the North Ocean Shores/Yelgun Site

See Appendix 4 for a complete chronology of government actions relating to this site.

Land and Environment Court
of New South Wales

CITATION :	**Conservation of North Ocean Shores Inc v Byron Shire Council & Ors [2009] NSWLEC 69**
PARTIES :	APPLICANT Conservation of North Ocean Shores Inc FIRST RESPONDENT Byron Shire Council SECOND RESPONDENT Billinudgel Property Pty Ltd THIRD RESPONDENT Splendour in the Grass Pty Ltd
FILE NUMBER(S) :	41115 of 2008
CORAM:	Preston CJ
KEY ISSUES:	Judicial Review :- development consent granted for development for a purpose prohibited on part of the land to be developed - failure to form positive opinion that development consistent with objectives of relevant zone - exercise of power to grant consent ultra vires
LEGISLATION CITED:	Environmental Planning and Assessment Act 1979 (NSW) Local Government Act 1993 (NSW)
CASES CITED:	Australian Broadcasting Tribunal v Bond (1990) 170 CLR 321 Blair v Blue Mountains City Council (1997) 93 LGERA 189 Bruce v Cole (1998) 45 NSWLR 163 Chambers v Maclean Shire Council (2003) 57 NSWLR 152; 126 LGERA 7 Chamwell Pty Limited v Strathfield Council (2007) 151 LGERA 400 Clifford v Wyong Shire Council (1996) 89 LGERA 240 Coffs Harbour City Council v Arrawarra Beach Pty Ltd (2006) 148 LGERA 11 Currey v Sutherland Shire Council (2003) 129 LGERA 223

Hortis v Manly Council (1999) 104 LGERA 43
Hurstville City Council v Renaldo Plus 3 Pty Ltd [2006] NSWCA 248
Kindimindi Investments Pty Ltd v Lane Cove Council (2006) 143 LGERA 277
Manly Council v Hortis (2001) 113 LGERA 321
Minister Administering The Crown Lands Act v New South Wales Aboriginal Land Council (No 2) (1993) 31 NSWLR 106; 80 LGERA 173
Parramatta City Council v Precision Rubber Service Pty Ltd [1995] NSWLEC 34 (10 March 1995)
Schroders Australia Property Management Ltd v Shoalhaven City Council [2001] NSWCA 74
Shire of Perth v O'Keefe (1964) 110 CLR 529; 10 LGERA 147
The Australian Gas Light Company v The Valuer General (1940) 40 SR (NSW) 126
Tuite v Wingecarribee Shire Council (No 2) [2008] NSWLEC 321
Warehouse Group (Australia) Pty Ltd v Woolworths Ltd (2005) 141 LGERA 376
Winn v Director General of National Parks & Wildlife (2001) 130 LGERA 508
Woolworths Ltd v Pallas Newco Pty Ltd (2004) 136 LGERA 288

DATES OF HEARING: 16 February 2009, 17 February 2009 and 18 February 2009

DATE OF JUDGMENT : 6 May 2009

LEGAL REPRESENTATIVES:

APPLICANT
Mr P C Tomasetti SC and Mr N M Eastman
SOLICITORS
Environmental Defender's Office

FIRST RESPONDENT
Ms K Gerathy (solicitor)
SOLICITORS
HWL Ebsworth

SECOND AND THIRD RESPONDENTS
Mr B A J Coles QC and Ms A M Mitchelmore
SOLICITORS
McCartney Young Lawyers

THE LAND AND ENVIRONMENT COURT OF NEW SOUTH WALES

PRESTON CJ

6 MAY 2009

41115 OF 2008

CONSERVATION OF NORTH OCEAN SHORES INC v BYRON SHIRE COUNCIL & ORS

JUDGMENT

1. **HIS HONOUR:**

A development consent is challenged

Byron Shire Council granted a development consent dated 6 August 2008 to carry out development described as "temporary place of assembly with camping and associated infrastructure" on land in the Wooyung/North Ocean Shores locality of Byron Shire. The land is formally described as Lots 46, 402, 403, 404 and 410 in Deposited Plan 755687, Lots 2 and 12 in Deposited Plan 848618, Lots 10, 12 and 14 in Deposited Plan 875112, Lot 30 in Deposited Plan 880376, Lots 102 and 107 in Deposited Plan 1001878, Lot 101 in Deposited Plan 856767 and Lot 31 in Deposited Plan 880376. All of the land is zoned under *Byron Local Environmental Plan* 1988 but different lots are in different zones and subject to different controls. Of relevance to the challenge in this case, part of the land is zoned 7(k) Habitat Zone. The controls applicable to land in the 7(k) Habitat Zone restrict the purposes for which development may be carried

out on that land to seven nominate purposes, all of which require development consent. All other purposes are prohibited. Development for the purpose of place of assembly is not one of the nominate permissible purposes and is therefore prohibited.

2. The applicant, Conservation of North Ocean Shores Inc, challenges the validity of the development consent. Its primary argument is that the consent purports to permit the carrying out of development for a purpose (place of assembly) that is prohibited on part of the land (the land zoned 7(k) Habitat Zone) over which the development is to be carried out and, hence, is ultra vires the power to grant consent.

3. The Council made a submitting appearance. The second respondent, Billinudgel Property Pty Ltd, is the owner of the land. The third respondent, Splendour in the Grass Pty Ltd, is the organiser of the temporary music festival to be called "Splendour in the Grass". The second and third respondents had common legal representation. They submitted that, notwithstanding that the development consent stated that the development was for the purpose of temporary place of assembly, the proper characterisation of those components of the development on the part of the land zoned 7(k) Habitat Zone, including roads and pedestrian pathways, should be considered to be for the purpose of "roads". This purpose is a nominate permissible purpose in the 7(k) Habitat Zone and, hence, the exercise of power to grant consent was intra vires.

4. The applicant responds to that argument by saying that the proposed roads and pedestrian pathways in the 7(k) Habitat Zone cannot be characterised as being for an independent purpose of roads, but rather are subordinate to the dominant purpose of place of assembly.

5. The applicant also challenges the consent on other grounds. A second ground was that the Council failed to take into account a relevant consideration, namely whether the proposed development was prohibited. This ground adds nothing to the primary ground. If the applicant is correct

on its primary ground, namely, that the development is prohibited on part of the land, then the Council had no power to grant consent to that development and the consent is invalid. If, however, the development is not prohibited on any part of the land but it is permissible, then the applicant's second ground would be factually wrong. Accordingly, I need not determine this second ground of challenge.

6. A third ground of challenge was that the Council failed to consider and form a positive opinion that the carrying out of the proposed development is consistent with the objectives of the 7(k) Habitat Zone. This ground focuses on the requirement in cl 9(3) of *Byron Local Environmental Plan* 1988 that "the Council shall not grant consent to the carrying out of development on land to which this plan applies unless the Council is of the opinion that the carrying out of the development is consistent with the objectives of the zone within which the development is proposed to be carried out". The applicant argues that the Council failed to form the requisite positive opinion in respect of objectives (a) and (b) of the 7(k) Habitat Zone. The applicant argues that formation of an opinion under cl 9(3) that the proposed development is consistent with the zone objectives, is a necessary pre-condition to the Council having power to grant consent. Since the pre-condition in cl 9(3) was not satisfied, the Council had no power to grant consent.

7. The second and third respondent contest the applicant's claim that the Council failed to consider the objectives of the 7(k) Habitat Zone. They submit that there is evidence in the Planning Report considered by the Council at its meeting where it resolved to grant development consent, considering each of the objectives, including objectives (a) and (b), of the Habitat Zone.

8. The applicant argues in the alternative to the third ground, and this is its fourth ground of challenge, that the Council's decision that the development was consistent with the objectives of the 7(k) Habitat Zone was an exercise of discretion that was so manifestly unreasonable or

manifestly illogical as to constitute a judicially reviewable error. The applicant argues that the carrying out of the infrastructure works in the 7(k) Habitat Zone and the holding of the music festival will have significant detrimental effects on wildlife habitats and wildlife. Accordingly, the applicant argues, it was manifestly unreasonable for the Council to conclude that the carrying out of the development is consistent with the objectives of the 7(k) Habitat Zone.

9. The second and third respondents submit that the applicant's submission that the Council's decision in relation to the consistency of the development with the objectives of the 7(k) Habitat Zone is manifestly unreasonable cannot be sustained on a close analysis of the Planning Report before the Council and its annexures.

10. In respect of both the third and fourth grounds of challenge, again, if the applicant's primary argument is correct, and the development is prohibited on the land in the 7(k) Habitat Zone, the power to determine a development application by the grant of consent would not be available and there would be no occasion to consider the requirement of consistency with the zone objectives in cl 9(3). The necessity to consider the requirement in cl 9(3) of consistency with the zone objectives can only arise if the development is for a permissible purpose.

Summary of decision

11. I have determined that the applicant's primary ground of challenge should be upheld. The Council has purported to grant consent to a development for a purpose (place of assembly) that is prohibited on part of the land on which the development is to be carried out (the land in the 7(k) Habitat Zone). The Council had no power to grant consent to a prohibited development.

12. I have also found that the pre-condition in cl 9(3) of the *Byron Local Environmental Plan* 1988 was not satisfied because the Council failed to

form the requisite positive opinion, and one unaffected by error of law, that the proposed development in the 7(k) Habitat Zone was consistent with objectives (a) and (b) of the 7(k) Habitat Zone, and as a result the Council had no power to grant consent.

13. For each of these reasons, the development consent should be declared invalid and of no effect.

The applicable law

14. Environmental planning instruments made under the *Environmental Planning and Assessment Act* 1979 (NSW) classify development into three broad categories: development that does not need development consent, development that needs development consent, and development that is prohibited. A development application may be made seeking development consent only for development that is classified as needing consent (see ss 77(a), 76A(1) and 78A(1)). A consent authority has no power to grant development consent to development that does not need consent (see ss 76(1) and 77(a) and *Parramatta City Council v Precision Rubber Service Pty Ltd* [1995] NSWLEC 34 (10 March 1995)) or development that is prohibited (see ss 76B and 77(a) and *Chambers v Maclean Shire Council* (2003) 57 NSWLR 152 at 169 [117]; 126 LGERA 7 at 25 [117] and *Currey v Sutherland Shire Council* (2003) 129 LGERA 223 at 231 [34]).

15. In this case, the relevant environmental planning instrument is *Byron Local Environmental Plan* 1988. The land on which development is proposed to be carried out falls within four zones: 1(a) General Rural Zone, 1(b1) Agricultural Protection Zone, 7(k) Habitat Zone and 9(a) Proposed Road Zone.

16. Clause 9 of the *Byron Local Environmental Plan* 1988 specified the purposes for which development may be carried out without development consent, or with development consent, or for which development is prohibited, in each zone: see cl 9(2) and the Table for each zone. Of

relevance in this case is the 7(k) Habitat Zone. The Table specifies in item 2 (without consent) no purpose for which development may be carried out without development. The Table specifies in item 3 (only with development consent) purposes for which development may be carried out only with development consent, being agriculture (other than animal establishments and clearing of land); bushfire hazard reduction; environmental facilities; home industries; primitive camping grounds; roads; utility installations. The Table then specifies in item 4 that any purpose other than a purpose specified in item 2 or 3 is prohibited. Development for the purpose of place of assembly, not being specified in item 2 or 3, is therefore prohibited.

17. Clause 9 of *Byron Local Environmental Plan* 1988 also deals with the objectives of each zone. Clause 9(1) states that the objectives of each zone are those set out in the Table under the heading "Objectives of the Zone" for the relevant zone. The objectives of the 7(k) Habitat Zone are:

> "(a) to identify and protect significant vegetation and wildlife habitats for conservation purposes;
>
> (b) to prohibit development within the zone that is likely to have a detrimental effect on the wildlife habitats which exist;
>
> (c) to enable the carrying out of development which would not have a significant detrimental effect on the wildlife habitats; and
>
> (d) to enable the careful control of noxious plants and weeds by means not likely to be significantly detrimental to the native ecosystem."

18. Clause 9(3) sets a pre-condition by reference to the zone objectives. It provides:

> "(3) Except as otherwise provided by this plan, the Council shall not grant consent to the carrying out of development on land to which this plan applies unless the Council is of the opinion that the carrying out of

> the development is consistent with the objectives of the zone within which the development is proposed to be carried out."

19. The clause requires the Council, as the consent authority, to form the requisite opinion that the carrying out of the development is consistent with the relevant zone objectives before it embarks on a consideration of the merits of the development application and before it has power to grant consent: *Clifford v Wyong Shire Council* (1996) 89 LGERA 240 at 249, 251-252; *Hortis v Manly Council* (1999) 104 LGERA 43 at 87 [171], [172], affirmed in *Manly Council v Hortis* (2001) 113 LGERA 321 at 329 [28]-330 [32]; *Schroders Australia Property Management Ltd v Shoalhaven City Council* [2001] NSWCA 74 at [7]; *Coffs Harbour City Council v Arrawarra Beach Pty Ltd* (2006) 148 LGERA 11 at 22 [42]-[44]. If the Council fails to form the requisite opinion that the carrying out of the development is consistent with the relevant zone objectives, the power to grant consent will not be enlivened and any purported exercise of the power will be ultra vires.

20. A consent authority has power, and is under a duty, to determine a development application: see s 80(1). The power may be exercised to grant consent to the application, either unconditionally or subject to conditions, or to refuse consent to the application: s 80(1)(a) and (b). The exercise of the power to grant consent to a development must result in a consent under the statute (that is, that answers the description of a consent under the statute), and furthermore, a consent to the development application made under the statute. A consent for development significantly different to the development for which consent was sought in the development application, is not a consent to the application made: *Winn v Director General of National Parks & Wildlife* (2001) 130 LGERA 508 at 514 [13], [14]; *Kindimindi Investments Pty Ltd v Lane Cove Council* (2006) 143 LGERA 277 at 292 [54]; *Hurstville City Council v Renaldo Plus 3 Pty Ltd* [2006] NSWCA 248 at [62], [90].

21. Development under the statute is also required to be for a purpose: *Shire of Perth v O'Keefe* (1964) 110 CLR 529 at 534-535; 10 LGERA 147 at 150; *Minister Administering The Crown Lands Act v New South Wales Aboriginal Land Council (No 2)* (1993) 31 NSWLR 106 at 121; 80 LGERA 173 at 188; *Chamwell Pty Limited v Strathfield Council* (2007) 151 LGERA 400 at 406 [27]. This is made clear under the *Byron Local Environmental Plan* 1988. The threefold classification under cl 9 of *Byron Local Environmental Plan* 1988 operates by reference to the purpose of the development. Hence, a development application seeks consent to carry out development for a purpose that is classified as being a purpose for which development consent is required.

22. The consequence is that the exercise of the power to grant consent must result in a consent to a development for the purpose or purposes for which consent was sought in the development application made.

23. With these principles in mind, I come to deal with the development application made by the third respondent, the consideration of that application by the Council, and the development consent granted by the Council to that application.

The development application made

24. The third respondent lodged the development application with the Council on 16 August 2007. The development application was in the standard form. Under the heading "Step 3 Describe the development you wish to carry out", the application stated "Temporary Place of Assembly with camping and associated infrastructure – 2008 Splendour in the Grass Festival".

25. The development application form was accompanied by a Statement of Environmental Effects dated August 2007 by Balanced Systems Planning Consultants. The Statement notes on p 5 that:

"Consent is sought for the following development, being the carrying out of work on the land the subject of the application:

- A temporary music festival (Splendour in the Grass) with associated infrastructure, camping and carparking for Friday 1st August to Sunday 3rd August 2008 (or Friday 8th August to Sunday 10th August 2008).

The event is to be undertaken as a trial event to comprehensively monitor the site and impacts of the temporary event."

26. The Statement similarly states on p 7:

"This application is for the purpose of undertaking the 2008 Splendour in the Grass music festival to occur as a 'trial' event to assess and monitor the performance of the site and assess the actual impacts of the single temporary event.

Splendour in the Grass Pty Ltd, festival organisers, seek approval for the temporary use of the North Byron Shire Parklands (NBSP) site at Tweed Valley Way and Jones Road, North Ocean Shores/Wooyung for the following:

- A single trial music festival with associated infrastructure and management, temporary camping and car parking Friday 1st August to Sunday 3rd August 2008 (or Friday 8th August to Sunday 10th August 2008). Camping commences Friday 7am until Monday 4pm.

27. The trial event is summarised on pp 8-9:

"The trial event, in August 2008, is for a maximum of 22,500 patrons plus a maximum of 2000 staff, performers, guests and associated personnel. The patron numbers comprise 7,500 campers with 15,000 day patrons.

...

The trial event comprises the construction phase of the identified infrastructure, the assembly and dismantling of the event (bump in/bump out periods) and the actual event occurrence".

28. The event layout is summarised on pp 9-10 of the Statement. The event footprint is said to be designed to conform with the existing site zoning provisions. The Statement summarises the associated infrastructure, facilities and works as follows:

> "The application nominates the associated infrastructure, facilities and works required to be undertaken to carry out the proposed event on the site. These are detailed within the application and summarised as follows:
>
> - Upgrading of the western portion of Jones Road, from a current unsealed single lane to a sealed two lane road for some 400 metres from Tweed Valley Way east to the existing property entrance
> - New site entrance at the main carpark at the southern end of the site
> - Carparks as located within the site layout plan
> - Internal road and pedestrian network, including underpass at Jones Road
> - Drain crossings and drain maintenance and improvements
> - Temporary fencing to secure site
> - Temporary stages, portable amenities, lighting and facilities such as food stalls, bars, markets and other temporary facilities".

29. The Statement states at p 10 that it assesses the potential impacts of the temporary event. It was accompanied by various specialist assessments of the potential impacts of the temporary event.

30. The Statement lists on p 28 the event components to be:

> "• administration of the site and music festival;

- assembly and dismantling the temporary infrastructure for the event (bump in and out periods) which will occur in the 21 days prior and 7 days following the event;
- entertainment in performance tents and spaces;
- temporary camping with associated infrastructure and services;
- provision of facilities including stalls, food outlets, bars and toilet facilities;
- upgrading of western portion of Jones Road to a two lane sealed road as described within Appendix D1;
- construction of internal road, carparks and pedestrian network, including an underpass under Jones Road, as described within Appendix D1;
- construction of associated infrastructure including drain crossings and drain maintenance, diversion and profiling;
- vehicle car parking and pedestrian access including bus/taxi/car set down and pick up areas;
- management of the site and event as described within this application;
- application and monitoring of management strategies;
- initial implementation of the preliminary Vegetation Management Plan with compensatory plantings."

31. The "associated infrastructure" is described on pp 37-39 of the Statement. The Statement outlines that "the following works are required in association with undertaking the event" and then lists the works to be site entrances; internal roads and walking paths; upgrading Jones Road; Jones Road underpass; and drainage.

32. The development application also included an application under s 68 of the *Local Government Act* 1993 for the installation of temporary structures,

use of a building and temporary structures as a place of public entertainment, installation of a fuel heater, carrying out water supply work and operating a temporary camping ground. The period of approval under s 68 was proposed to be four weeks to account for the erection and removal of all structures for which application is sought.

33. After receipt of the development application, the Council responded by letter dated 11 September 2007 which requested additional information. One of the matters the Council requested to be addressed was the permissibility of land use. The Council noted that the development application form describes the proposed development as a "Temporary Place of Assembly with camping and associated infrastructure – 2008 Splendour in the Grass Festival". The Council noted that the plans submitted with the development application indicate that the proposed development is to be carried out within a number of land use zones, including the 7(k) Habitat Zone. The Council noted that a 'Place of Assembly' is a prohibited land use within the 7(k) Habitat Zone. The Council requested the applicant to submit details to demonstrate that the proposed development is both permissible and consistent with the objectives of each of the land use zones in which the development is to be carried out. It noted that the applicant may be required to submit amended plans to contain the development within land use zones where the proposed land use in not prohibited.

34. The third respondent's consultant, Mr Rob Doolan of Balanced Systems Planning Consultants, responded to the Council's request for additional information relating to the permissibility of the development by a letter dated 27 November 2007. Mr Doolan noted that the proposed development includes upgrading existing roads and construction of new roads. Mr Doolan states:

> "Proposed upgrading of existing roads and construction of new roads comprise the following within the application:

- Upgrading of Jones Road – Jones Road, a public road, unsealed and generally narrow, services the NBSP site, some five small rural holdings and the Billinudgel Nature Reserve. The application seeks to upgrade the first 400 metres of Jones Road to a two lane standard and seal the road. While being used for the proposed event for three days of the 2008 calendar year, the road upgrading will benefit the residents, in terms of safety and amenity and removal of dust, on an ongoing permanent basis.

- The NBSP site – existing roads are to be upgraded with new roads (and the Jones Road underpass) also being constructed. These roads are required for normal farm and property activities and will be utilised for the temporary event. Upgrading of roads is to be minimal to attain a suitable level of service.

As addressed below, the existing and new internal roads, are located within four zones of the Byron LEP, 1988. These roads will provide a functional network for the variety of uses throughout the site. While being utilised for the temporary music event, the roads will be servicing the range of ongoing permanent land uses on the site, independent to the temporary festival use.

It is the intention that the roads will be permanent infrastructure, where required, to service the land uses on the site. The roads works will form the initial stage of implementing the property upgrading program; so as to be able to manage the overall site as an integrated unit. Permanency and staging of infrastructure is dependent on a number of factors including funding and sustainability issues relating to use of resources and energy."

35. In relation to the proposed roads in the 7(k) Habitat Zone, Mr Doolan states:

"Existing and proposed roads to service and facilitate other uses and the proposed use (for the event) are included within this zone. Roads are permissible within the zone.

...

Parts of the overall site are within the Zone 7(k) Habitat Zone. The site has areas within this zone comprising cleared pasture with existing and proposed roads traversing

this zone. The event layout for the proposed temporary event has respected the Zone 7(k) areas and boundaries, irrespective of their current ecological value.

The application only seeks approval for use of existing roads and construction of new roads within this zone. No part of this zone is proposed for use of the temporary place of assembly".

36. In his conclusion, Mr Doolan states:

"The application is characterised as being for the following:

- temporary use of part of the site within Zones 1(a) and 1(b1) for Place of Assembly, within the defined event area, which is a permissible use within these zones

- temporary use of the southern part of the site within Zone 1(a) for a carpark which is a permissible use within the zone

- roads for vehicle and pedestrian use – use of existing road network and construction of new roads to improve the road network for the site, within a variety of zones, all zones of which permit roads. The roads are to be used for independent ongoing existing land uses including agricultural use in addition to the proposed temporary use of the roads for the event

The proposed uses are demonstrated to be consistent with the applicable zone objectives.

The application involves the use of existing permanent site infrastructure together with new infrastructure such as additional roads and the Jones Road underpass. This infrastructure will service the temporary event and the various independent existing site uses. Such infrastructure is by its nature, permanent. It is not consistent with Ecologically Sustainable Development criteria such as resource conservation and energy avoidance, to consider removal of the underpass or the roads".

37. On 19 March 2008, Mr Doolan on behalf of the third respondent wrote to the Council amending the development application and providing additional information. One amendment was to change the dates of the

event from 2008 to 2009. The dates of the event would be 31st July 2009 and 1st and 2nd August 2009 or 17th and 18th July 2009. There were also amendments to the site layout and provision of another access option to the Jones Road underpass, as an alternative (this option ultimately was not pursued). No amendment was made to the development application to seek consent to use the roads and pathways comprising the permanent infrastructure, whether located in the 7(k) Habitat Zone or any other zone, for the purpose of roads or agriculture or any other purpose.

38. A similar letter was sent by Mr Doolan to the Council on 18 April 2008, describing the amendment of the dates of the event to be three days of actual festival usage with four days of camping usage in the July/August period of 2009.

39. Revised site layout plans were submitted by the third respondent on a number of occasions. These still showed associated infrastructure including roads, pathways and fencing to be located in the 7(k) Habitat Zone.

The Council's consideration of the development application

40. The development application was eventually considered by the Council at its meeting on 31 July 2008. The Council Planning Report to that meeting noted the proposed development to be "Temporary Place of Assembly with camping and associated infrastructure for the 2009 Splendour in the Grass Music Festival." The Report noted that the land is in part in the 7(k) Habitat Zone. The Report identified, as one of the issues the Council needed to address, the "permissibility within land zones".

41. In the summary, the Report states:

> "Development Consent is sought to host a music festival with associated camping and infrastructure within the subject site. The application is for a one off trial event to be carried out in late July/early August 2009.

To facilitate the one off event, a number of permanent works are required. The most significant of these are roadworks associated with access and internal vehicle and pedestrian movement for the festival. The Applicant has presented two options for Council's consideration. One being the construction of an underpass through Marshall's Ridge/Jones Road to facilitate access from the southern to the northern parts of the property. The second being an at grade crossing. Both options will require vegetation removal from the site and road reserve.

The land is located within a number of land use zones being the 9(a) Proposed Road Zone, the 7(k) Habitat Zone, 1(a) General Rural Zone and 1(b1) Agricultural Protection Zone. The proposal includes uses that could be inconsistent with the permissible land uses and objectives of the some of the respective zones.

The site includes a number of planning constraints including ecological and archaeological sensitive areas. The proposal will potentially impact on one or more of these areas.

...

It is important to note that this proposal is for one event only.

In considering the proposal under Section 79C of the *Environmental Planning and Assessment Act* 1979, it is concluded that the Development Application as proposed could be granted consent. Additionally, a number of potential reasons of refusal have been provided within this Planning Report. However, should consent be granted to the Development Application, draft conditions of approval have also been included in this report."

42. In the main body of the Report, the proposed development is described under headings of general and infrastructure.

"**General**

The proposed development is described by the Applicant within the Statement of Environmental Effects that was submitted with the Development Application. This document and the amended Development Application are included as

Attachments to this Planning Report. A summary of the development proposed is provided below.

Development consent is sought to hold a temporary music festival (defined as a temporary place of assembly), known as 'Splendour in the Grass', within privately owned property located within the far north of the Byron Local Government Area. The proposed temporary festival will attract a maximum of 22,500 patrons per day, of which 7,500 are proposed to camp within the property, and 15,000 will be day patrons.

Approval is sought for a single event only, scheduled to be held over four (4) days commencing in late July 2009. The Applicant intendeds to conduct the event as a one off 'trial' so as to determine the capability of the site and the surrounding area for the proposed future use of the site.

The temporary festival is to provide entertainment in the form of local, national and international music artists and performers on a number of stages within a designated event area. It is also to include a number of other performance spaces, food stalls, bars and market stalls within the event area for use by patrons.

The festival (including camping) is proposed to be held on:

- Friday 31 July 2009
- Saturday 1 August 2009
- Sunday 2 August 2009
- Monday 3 August 2009

The Statement of Environmental Effects that was submitted with the Development Application provides that patron camping on the site would commence on Friday morning and cease on Monday afternoon."

...

"**Infrastructure**

The proposed festival is to be carried out within a large rural property that has previously been used for agricultural and residential uses. As with previous Splendour in the Grass music festivals, a substantial amount of temporary infrastructure would be brought onto the site to stage the event. However, due to the size and layout of the proposed

event and the associated camping and carparking areas required, the proposal also seeks approval for extensive permanent infrastructure works.

The proposed works are summarised below:

Permanent

Although approval is sought for a one off trial event, the works described below are to remain as permanent infrastructure within the development site:

- Construction of new intersection and property access road from Tweed Valley Way
- Construction of new internal gravel access roads from intersection to carparking areas
- Construction of internal gravel roads from carparking areas to camping and event areas
- Construction of new and upgrading existing internal gravel roads to provide access throughout the site
- Construction of crossings over drains and streams associated with new gravel roads
- Construction of either a vehicle and pedestrian underpass beneath Jones Road (with associated tree removal) or an at-grade crossing (with associated tree removal) to provide a link between the northern and southern portions of the property
- Widening/Upgrading of Jones Road (with associated tree removal) for a distance of approximately 400m from Tweed Valley Way and construction of internal gravel roads from Jones Road to event and camping areas
- Realignment, upgrading and modification of existing drains
- Revegetation/Compensatory planting works

It is noted that the most substantial works proposed is to create a crossing over Jones Road, which runs east – west along a ridgeline known as Marshall's Ridge. The original Development Application comprised the construction of a vehicle and pedestrian underpass. However, the amended Development Application submitted in March 2008 includes

an alternative to the underpass, being 'at grade' vehicle and pedestrian crossings over Jones Road.

This assessment report considers both of the proposed options. The Applicant has agreed to Council approaching this issue in this fashion. The Statement of Environmental Effects and supporting information that were submitted with the Development Application indicates that the proposed underpass would require substantial earthworks to place pre-cast concrete arches within the road reserve to create a tunnel between the northern and southern sections of the property.

The proposed alternative, the 'at grade' crossing, also requires substantial earthworks (including filling) to cross the ridgeline in almost the same location as the underpass option. Each option requires the removal of vegetation. Revegetation works are proposed as part of the Development Application.

Temporary

- Provision of perimeter and internal security fencing and entry gates
- Provision of pedestrian pathways, footbridges and drain crossings
- Erection of stages, tents, bars, market stalls, food stalls, first aid facilities, administration centre, artists areas, ticket booths, bonfires, performance and dance spaces etc. within event area
- Provision of designated camping areas (for both campervans and tents) with toilet and shower facilities
- Provision of designated emergency helicopter pad
- Provision of grass carparking areas
- Provision of water supply, effluent collection and waste removal systems

Generally, the temporary works associated with the proposal require 21 days to set up (known as the 'bump in' period), and 7 days to dismantle (known as the 'bump out' period). It is proposed that workers involved with the 'bump in' and 'bump out' periods will camp within the site for the duration of each of these periods and the festival itself. The permanent

construction works proposed will occur over a longer timeframe (several months) prior to the bump-in period.

In light of the works proposed, this Planning Report provides a dual assessment:

1. An assessment of the temporary music festival, camping and associated temporary infrastructure; and

2. An assessment of the permanent infrastructure works and the continued use of such works in the long term."

43. The Report notes that upgrading of existing roads and construction of new roads, pedestrian paths and security fencing will be in the 7(k) Habitat Zone.

44. In the section of the Report dealing with the requirements of *Byron Local Environmental Plan* 1988, the Report notes the requirement to meet the objectives of the 7(k) Habitat Zone and refers to comments within the issues section later in the Report. The Report provides the definition of "place of assembly", and states:

> "The proposed use falls within the definition of a temporary *place of assembly*. This use is permissible with the consent of Council within the 1(a) General Rural Zone and the 1(b1) Agricultural Protection Zone. The use is also permissible within the 9(a) Proposed Road Zone subject to the concurrence of the RTA under Clause 44 of Byron LEP 1988. The proposal also includes works within the 7(k) Habitat Zone. A place of assembly is prohibited within this zone. Refer to Issues Section below".

45. In the Issues Section, the Report addresses the permissibility of the proposed development, in particular in the 7(k) Habitat Zone. The Report states:

> "Clause 9 – Zone objectives and development control table
>
> The site of the proposed development is located within four (4) separate land use zones under *Byron Local Environmental Plan* 1988:

*1(a) General Rural Zone	* 7(k) Habitat Zone
* 1(b1) Agricultural Protection Zone	* 9(a) Proposed Road Zone

The Development Application form that was submitted to Council describes the proposed development as follows:

Temporary Place of Assembly with camping and associated infrastructure – 2008 Splendour in the Grass Festival

The amended Development Application now proposes that the event be held in 2009. From the plans submitted with the amended Development Application, it is clear that the main land uses proposed are the festival, the camping, and all the associated roadworks, carparking, temporary fencing and subsidiary uses associated with the festival and the camping. The Dictionary contained within Byron LEP 1988 defines a place of assembly as below:

place of assembly *means a public hall, theatre, cinema, music hall, concert hall, dance hall, open-air theatre, music bowl or any other building of a like character used as such and whether used for the purposes of gain or not, but does not include a place of worship, an institution or an educational establishment.*

The proposed temporary festival is consistent with this land use definition as it comprises a use that is 'of a like character' to a music hall, an open-air theatre or a music bowl. Council has consistently applied this definition to previous 'Splendour in the Grass' and 'East Coast Blues and Roots' Festivals over the past seven years. The definition of camping within *Byron Local Environmental Plan* 1988 is discussed separately below (refer to 1(a) General Rural Zone).

The proposal also includes a number of other uses associated with the temporary place of assembly. These include:

- Resource Centre
- Market stalls
- Food stalls and restaurants
- Bar areas

- Cinema
- Emergency helicopter pad
- Carparking

With the exception of the carparking, helicopter pad and the Resource Centre, all of the above uses are to be contained within the fenced and gated festival area. As such, they are regarded as ancillary uses to the principal 'place of assembly' land use that consent is being sought for the site. The resource centre, emergency helipad and carparking are also regarded as being ancillary to the 'place of assembly', even though are not located within the fenced event area. Places of assembly are permissible with the consent of Council within the 1(a) General Rural Zone, 1(b1) Agricultural Protection Zone and the 9(a) Proposed Road Zone (subject to the concurrence of the RTA under Clause 44 of Byron LEP 1988). The concurrence of the RTA was provided within email correspondence dated 12 February 2008.

Permissibility within 7(k) Habitat Zone – Place of Assembly and Roads

Large areas of the site, particularly following Marshall's Ridge and extending north and south of the ridge to lower lying areas, fall within the 7(k) Habitat Zone. Places of assembly are prohibited within this zone. Substantial permanent infrastructure works, including the Jones Road underpass/at grade crossing, roads and pedestrian paths are proposed within the 7(k) Zoned areas of the property.

The only land uses that may carried out with the consent of council within the 7(k) Habitat Zone are listed below:

> *Agriculture (other than animal establishments and clearing of land); bushfire hazard reduction; environmental facilities; home industries; primitive camping grounds; roads; utility installations*

All uses other than those listed above are prohibited within the zone.

During the assessment of the Development Application the Applicant was requested to provide details of how the proposal is permissible with the consent of Council and how it meets the objectives of the land use zones in which it is situated. Of particular concern was the fact that places of

(referred to as Area 1) is to be planted with over 3,400 trees over a six year period.

Area 1 is located within the 7(k) Habitat Zone on the southern side of Jones Road. It is bound by the Billinudgel Nature Reserve to the east and Tweed Valley Way to the west. Although this land is to be revegetated, it is proposed to construct a sealed road and a pedestrian path leading to the proposed underpass within this area. In addition, a temporary bus pick up and set down area is proposed adjacent to an existing vehicle access point to Tweed Valley Way. The proposed underpass is located entirely within the 7(k) Habitat Zone shown cross-hatched on the map.

The indicative plans submitted to Council propose a 25 metre long underpass constructed of Humes Bebo pre-cast concrete arches and rock headwalls. It is to be installed using a 'cut and cover' method of construction.

In addition to the works within and adjacent to the Jones Road Reserve, hundreds of metres of other roads (both existing and proposed) to be used for service vehicles, shuttle buses and campers, as well as pedestrian paths and temporary fencing are proposed within the 7(k) Zone.

It is apparent that the works to be carried out are primarily to facilitate the operation of the proposed festival, but are proposed to be used for the existing activities carried out within the property. The Applicant was requested to provide details as to the need for the permanent works proposed. The Applicant provided a detailed response, dated 27 November 2007, stating that the proposed roads (including the underpass) are to *'provide a functional network for the variety of uses throughout the site'* such as *'normal farm and property activities'*. In addition, the Applicant states:

> *The current land uses on the NBSP site comprise property maintenance, repair and improvements and agricultural activities including grazing, bee farming and grass seed harvesting. Initial ecological restoration works including environmental weed control, tree planting and fencing of habitat areas are well advanced....*
>
> *....While being utilised for the temporary music event, the roads will be servicing the range of ongoing permanent land uses on the site, independent to the temporary festival use.*

assembly are prohibited within the 7(k) Habitat Zone. Following a meeting with Council Management on 23 October 2007, the Applicant provided the following response (in part) to address the provisions of the 7(k) Habitat Zone:

> *Parts of the overall site are within the 7(k) (Habitat Zone). The site has areas within this zone comprising cleared pasture with existing and proposed roads traversing this zone. The event layout for the proposed temporary event has respected the Zone 7(k) areas and boundaries, irrespective of their current ecological value.*
>
> *The application only seeks approval for use of existing roads and construction of new roads within this zone. No part of this zone is proposed for use of the temporary place of assembly.*
>
> *The application specifically reflects the habitat zone objectives and includes a range of measures to protect and enhance the ecological values of the site.*

(Correspondence from Balanced Systems Planning Consultants dated 27 November 2007)

Amended plans were submitted to accompany the details above to ensure no part of the event area, camping areas or carparking areas were located within the 7(k) Habitat Zone. However, permanent infrastructure works, being primarily roadworks, are proposed within the 7(k) Zone.

Inspections of the site confirmed that while large areas of the 7(k) Habitat Zone have previously been cleared of vegetation, substantial stands of vegetation do remain. The proposed underpass and at grade crossing of Jones Road and the proposed roads leading to these works are located within the 7(k) Zone. Jones Road itself, which is proposed to be widened/upgraded, is also within the 7(k) Zone.

To facilitate both the Jones Road underpass/grade crossing and upgrade it is proposed to remove existing vegetation on either side of the existing carriageway. To compensate for the removal of this vegetation, it is proposed to provide vegetation planting and corridor enhancement planting as outlined within the Preliminary Vegetation Management Plan by Mark Fitzgerald, dated 5 July 2007. This report indicates that planting has already commenced (also confirmed during an inspection of the site) within an area on the southern side of Jones Road. The Preliminary Vegetation Management Plan indicates that an area of approximately 8 hectares

It is the intention that the roads will be permanent infrastructure, where required, to service the land uses on the site. The road works will form the initial stage of implementing the property upgrading program; so as to be able to manage the overall site as an integrated unit. Permanency and staging of infrastructure is dependent of a number of factors including funding and sustainability issues relating to use of resources and energy.

Places of assembly are a prohibited land use within the 7(k) Habitat Zone, the ancillary works proposed within this zone could be problematic. However, 'roads' and 'environmental facilities' (which can include walking tracks and boardwalks) are listed as land uses that are permissible with the consent of Council within the 7(k) Zone. As such, the Applicant could make application to Council for the proposed road/pedestrian network, including the construction of an underpass/at-grade crossing and the upgrading of Jones Road, as a completely separate proposal to the place of assembly, and they would be considered as land uses that are permissible with the consent of Council.

Council could, via a condition of consent, also require the removal of any of the permanent roads within a designated timeframe should this be considered necessary. A draft condition of consent has not been included in the draft conditions attached to this report."

46. The second last paragraph in the quoted section of the Report is of importance. It notes that the applicant "could make" a development application to the Council for the proposed road/pedestrian network as a completely separate proposal to the current development application for the place of assembly and they could be considered as land uses that are permissible with the consent of the Council. But the applicant had not done so. The proposed development remained that described in the development application and quoted earlier in the passage from the Report set out above, namely "Temporary Place of Assembly with camping and associated infrastructure for the 2009 Splendour in the Grass Festival". The applicant had not made application to the Council to use the proposed road/pedestrian network for an independent purpose of "roads" or "agriculture" or any other purpose of land use permissible with the consent of the Council in the 7(k) Habitat Zone.

47. The Report also addressed the consistency of the proposed development with the objectives of the 7(k) Habitat Zone. The Report stated:

> "Consistency with objectives of 7(k) Habitat Zone
>
> The objectives of the 7(k) Habitat Zone from *Byron Local Environmental Plan* 1988 are as follows:
>
> *(a) to identify and protect significant vegetation and wildlife habitats for conservation purposes.*
>
> *(b) to prohibit development within the zone that is likely to have a detrimental effect on the wildlife habitats which exist.*
>
> *(c) to enable the carrying out of development which would not have a significant detrimental effect on the wildlife habitats.*
>
> *(d) to enable the careful control of noxious plants and weeds by means not likely to be significantly detrimental to the native ecosystem.*
>
> The comments provided by the Applicant within the Statement of Environmental Effects and additional information offer very little to demonstrate that the proposed works are consistent with the objectives of the 7(k) Habitat Zone. However, it is ultimately Council's decision as to whether the proposed development is consistent with the objectives of the zone.
>
> The proposed festival has been designed, as much as possible, to avoid vegetation stands. It is proposed to fence off and protect many of the vegetation stands within the 7(k) Habitat areas. However, the vegetation removal associated with the proposed widening of Jones Road and the construction of the cut and cover tunnel or grade crossing do not serve to protect the existing vegetation within the zone.
>
> The Development Application was referred to Council's Ecologist to provide an assessment of the proposal having regards to the flora and fauna impacts of the development. Whilst Council's Ecologist supported the proposal subject to conditions, the consistency of the proposal with the zone objectives was not specifically addressed.

In relation to Objective (a), land within the subject site has already been identified as containing significant vegetation for conservation purposes. The site was rezoned to its current zones as a result of a Commission of Inquiry conducted by Commissioner Kevin Cleland in late 1997.

While the entire report on the Inquiry can be accessed through the Office of the Commissioners of Inquiry for Environmental Planning website (www.coi.nsw.gov.au), the recommendations of the report pertaining to the subject site are as follows:

I recommend that the subject land be zoned 1(a) General Rural, 1(b1) Agricultural Protection (b1), 7(k) Habitat, and 8(a) National Parks and Nature Reserve as indicated in Figure 5. Cross-hatching should apply to the 1(a) General Rural Zone, 1(b1) Agricultural Protection (b1) Zone and the 7(k) Habitat Zone so that clauses 38A and 38B are relevant. Clause 38B in particular provides for a Property Plan to be developed so that planned agricultural activities need not be subject to any undue control by Council. I do not support other options put to the Inquiry given the environmental and the actual and potential wildlife corridor values of the land. The zonings I recommend recognise both the important agricultural and ecological values of the land based on a thorough and balanced assessment of the evidence before the Inquiry. There is sufficient evidence to consider a 7(j) Scientific zone for the Marshall's Ridge area.

The recommended zonings are generally supported by Council and the NPWS. NSW Agriculture did not object to the proposed zonings. DUAP while expressing some doubt as to the zoning of lands planted to bananas as 7(k) Habitat nevertheless generally supports the recommendations. CONOS and the community members who appeared would prefer an Environmental Protection Zone over the whole of the subject land but are prepared to concede limited agricultural zoning providing cross-hatching is used.

Other than the 8(a) National Parks and Nature Reserve Zone for land purchased by NPWS Greenfields Mountain generally opposes the zones I recommended by claiming its agricultural pursuits will be severely restricted. Greenfields Mountain seeks a 1(a) General Rural Zone without cross-hatching over most of its land with a 7(k) Habitat Zone over the remaining relatively intact natural vegetation. I do not support this option for the reasons I state in the report.

The 8(a) National Parks and Nature Reserve Zone proposed for land purchased by the NPWS is not in dispute.

(Office of the Commissioners of Inquiry for Environmental Planning, Cleland Commission of Inquiry Report. December 1997)

The recommendations above were gazetted by the Minister and remain in place as the current land use zones over the site. The proposal seeks to carry out works and uses within areas that were identified for protection due to their "important ... ecological values".

In relation to Objective (b), the only land uses that may carried out with the consent of council within the 7(k) Habitat Zone are listed below:

Agriculture (other than animal establishments and clearing of land); bushfire hazard reduction; environmental facilities; home industries; primitive camping grounds; roads; utility installations

All uses other than those listed above are prohibited within the zone. The Development Application submitted to Council seeks consent for a temporary place of assembly with camping and associated infrastructure. The provision of associated infrastructure includes vegetation removal and earthworks to create roads and pedestrian paths to enable the festival to operate effectively.

In relation to Objective (c), whilst 'roads' are listed as a permissible land use within the 7(k) Habitat Zone, the extent of works proposed to create roads within the development site is such that the proposal could have a detrimental effect on the wildlife habitats which exist. While Council's Ecologist acknowledged that the proposed compensatory planting works will be of benefit to wildlife habitats in the long term, his report confirmed the likely impacts of the proposal on existing wildlife habitats and corridors, including Threatened Species habitat and Endangered Ecological Communities. In an attempt to minimise these impacts Council's Ecologist recommended a number of draft conditions.

A review of the Ecologist's report found that the recommended conditions require a substantial increase in works proposed, and (in relation to the possible requirement to increase the length of the underpass tunnel) exacerbate the footprint of permanent infrastructure in what is proposed as a one off trial event. Without applying these conditions to improve the environmental outcomes of the proposal, it is possible the development could detrimentally affect wildlife habitats.

> In relation to Objective (d), the proposal includes a preliminary vegetation management plan which aims to direct the commencement of environmental repair and to improve the biodiversity values of the site. Council's Ecologist raises no objections to this plan."

48. In the "Conclusion in relation to Land Use Zones", the Report notes the link between the infrastructure and festival events, not only the trial event in respect of which consent is sought, but also possible future events. It states:

> "As discussed within the following Sections of this Planning Report, should consent be granted to the subject Development Application, it is possible, subject to the 'success' of the trial event, that future applications will be received for further festival and camping uses of the site. By granting consent to the Development Application, Council will be endorsing substantial permanent infrastructure that could be used for future events. The 'trial' event is being used as a guide to determine the suitability of the site as an event site within Byron Shire.
>
> A document attached to the Statement of Environmental Effects submitted with the Development Application states that *"The primary goal is to use the study area as a venue for music and arts festivals for around 20 days per year"*. Despite this statement the application before Council is only for a one-off trial event in 2009.
>
> The proposed 'trial' event is a stepping stone for the future use of the site. However, it is also possible that no future events may be held on the site and, if that occurs, some of the permanent infrastructure may need to be removed in the future."

49. The Conclusion also returns to the problem of the permissibility of certain components of the development. The Report states:

> "It is apparent from the assessment of permissibility and consistency with land use zone objectives above that in some areas the current zoning of the site does not necessarily align easily with the uses proposed with the Development Application.

...

> When considering the works and uses proposed within the 7(k) Zone, the layout of roads and pedestrian paths, the provision of a shuttle bus stop and the upgrade and crossing of Jones Road, are all obviously important elements of the 'place of assembly' use, which is a prohibited land use within the zone. These works, and in particular the removal of vegetation to enable the proposed works to be carried out, are also contrary to a number of the objectives of the zone. However, as stand alone uses, these components may be permissible uses.
>
> As discussed above, counter arguments are available as to the permissibility of the proposed land uses. Given the potential anomalies with the current land use zones, it is appropriate that the long term use of the site be considered as a rezoning application, prior to the submission of a Development Application for the permanent use of the site.
>
> The anomalies with the permissibility and objectives of LEP zones are listed as potential reasons for refusal of the Development Application which may arise if Council are not satisfied with the approach to characterisation of the various components of the proposal as detailed above."

50. Again, the reference to the roads and pedestrian paths being permissible as "stand alone uses" underscores the fact that they were not proposed as stand alone uses but rather for the purpose of the place of assembly use.

51. Later in the Report, there is a section on long term impacts which notes that the permanent infrastructure is to enable the trial event to function adequately. The Report states:

> "As outlined throughout this report, the proposal comprises a three day trial event. However, by granting consent to the Development Application, Council will be endorsing permanent infrastructure that could be a stepping stone for the future use of the property as a permanent event site.
>
> Should consent be granted to the subject Development Application, it is always possible that Council could receive other Development Applications either for one off events within the site, or receive a Development Application for the use of the property as a permanent event site. It is also possible that the existing primary use of the land might

continue or that alternative permissible land uses may be pursued.

Whilst the future use of the site is mentioned within the documents submitted with the Development Application, the proposal currently before Council comprises only a single event. As such, only the impacts of the single event have been and can be considered.

The proposal before Council seeks approval for extensive permanent infrastructure works to enable the trial event to function adequately. These works include a vehicle under pass or at grade crossing of Jones Road and roadworks throughout the site."

52. A little later in the Report in the conclusion on impacts, it states:

> "The permanent building works associated with the proposal have considerable weight when considering the impacts of the development. As stated above, they potentially provide a stepping stone for future and/or permanent uses of the property as a festival site. For a one off event, the proposed works seem to be extensive, however in terms of viability the issue is a commercial decision for the applicant."

53. The final section, being the Conclusion, repeats a number of the statements made earlier. Relevant parts are:

> "As discussed throughout this Planning Report, should consent be granted to the subject Development Application, it is likely that future applications will be received for further festival and camping uses. By granting consent to the Development Application, Council will be endorsing substantial permanent infrastructure that could be used for future events.
>
> Concern is raised over the substantial amount of capital investment required to host the proposed trial event. All major events generally require significant capital investment in order to be successful and issues in this regard are commercial decisions for applicants.
>
> ...
>
> When considering the works and uses proposed within the 7(k) Zone, the layout of roads and pedestrian paths, the provision of a shuttle bus stop and the upgrade and crossing of Jones Road, are all obviously important elements of the

'place of assembly' use, which is a prohibited land use within the zone. These works, and in particular the removal of vegetation to enable the proposed works to be carried out, are also contrary to a number of the objectives of the zone. However, as stand alone uses, these components may be permissible uses.

As discussed above, counter arguments are available as to the permissibility of the proposed land uses. Given the potential anomalies with the current land use zones, it is appropriate that the long term use of the site be considered as a rezoning application, prior to the submission of a Development Application for the permanent use of the site.

The anomalies with the permissibility and objectives of LEP zones are listed as potential reasons for refusal of the Development Application which may arise if Council are not satisfied with the approach to characterisation of the various components of the proposal as detailed above.

...

The submission of the proposal as a 'trial' event provides Council, the Applicant, the Community and Government Departments with the opportunity to examine the suitability of the site first hand. The benefits and weaknesses of the site are certain to be exposed should the trial event proceed. However, as the proposal is for a single event only, the suitability of the property as a permanent site is yet to be assessed.

...

The proposal will be of benefit to the community in many areas, but will potentially result in adverse impacts in others. The 'trial' nature of the proposed event provides Council, the Applicant, the Community and Government Departments with the opportunity to examine the suitability of the site first hand.

Upon consideration of all issues affecting the Development Application that has been submitted to Council, it is concluded that consent should be granted to the proposal subject to deferred commencement and other conditions as contained in this report.

Should Council not agree with the recommendation, a list of the potential reasons for refusal are provided within Section 8 of this Planning Report below."

54. The potential reasons for refusal included, as reason 1, that the proposal includes a 'place of assembly' which is a prohibited land use within the 7(k) Habitat Zone, and as reason 3, that "Key components of the proposal are inconsistent with the objective of the 7(k) Habitat Zone."

55. The Council nevertheless resolved to grant consent at its meeting on 31 July 2008.

The development consent

56. The terms of the development consent are important. It is a deferred commencement consent, stated to operate from 6 August 2008. The "Proposed development" in respect of which the consent is granted is described as:

> "Temporary Place of Assembly with camping and associated infrastructure for the 2009 Splendour in the Grass Music Festival".

57. Under the heading of "Parameters of this Consent", Conditions 1 and 2 are critical. They provide:

> **"1. Description of development and structure of consent**
>
> Consent is limited to the use of the site as a Temporary Place of Assembly (Splendour in the Grass Music Festival) incorporating temporary camping and carparking, and the provision of temporary and permanent infrastructure to facilitate the event. Only the permanent infrastructure specified within this consent shall be retained for ongoing uses beyond those associated with the temporary place of assembly.
>
> This Development Consent is divided into three (3) parts:
>
> **Part A** – contains Conditions that are applicable to the permanent infrastructure/site enhancement works as specified within the consent;

Part B – contains Conditions that are applicable to the operation of a temporary place of assembly (music festival) and all carparking areas; and

Part C – contains Conditions that are applicable specifically to the operation of camping areas associated with the temporary place of assembly (music festival).

The 'Parameters of this Consent', 'Terms of Integrated Development Approval' and 'Notes' apply to all three Parts of the development consent. Conditions nominated within each Part also apply to the development consent as a whole.

2. Terms of trial event

This development consent provides approval for the provision of infrastructure and the use of the site for a one off event only. Any person or body that enacts this development consent does so on the understanding that the works approved as part of the consent provide no leverage for future events to be carried out within the site, whether temporary or otherwise. Nor does the provision of infrastructure and the approval of a one off event guarantee that any future uses of the site will be supported by Council.

Any further temporary or permanent use of the site (other than uses that may be carried out without the consent of Council) must be submitted to Council as a separate Development Application and will be assessed on its merits."

58. These conditions are limiting in relation to the permanent infrastructure, such as roads and pedestrian paths (the permanent infrastructure is described in condition 10). Condition 1 makes clear that the purpose of the use of the permanent infrastructure is limited to "Temporary Place of Assembly". No authority is given by the consent to use the permanent infrastructure for any other purpose. The consent does not itself authorise ongoing uses beyond those associated with the temporary place of assembly. This is corroborated by Condition 2 which states that the consent provides approval for the provision of the permanent infrastructure and the use of the site (including of the permanent infrastructure on the site) for a "one off event only". Condition 2 further states that any further temporary or permanent use of the site, including of the permanent

infrastructure on the site, other than uses that may be carried out without the consent of Council (of which there are none in the 7(k) Habitat Zone), must be the subject of a separate development application.

59. As a consequence of these conditions, the consent purports to approve the construction and use of the permanent infrastructure on the site for the purpose of place of public assembly only. The consent cannot be construed as approving the construction and use of the permanent infrastructure on the site for any independent purpose of roads or agriculture or any other purpose permissible with consent in the 7(k) Habitat Zone.

60. The nature and location of the permanent infrastructure is shown in the plans approved as part of the consent and is referred to in the conditions including Conditions 10, 20 and 119.

The development application and development consent are for a prohibited purpose

61. The development application made by the third respondent, the Council's consideration of that application, and the development consent granted by the Council to that application, are consistent in characterising the proposed development as being for the purpose of place of assembly only.

62. The development application and accompanying Statement of Environmental Effects described the development as being "Temporary Place of Assembly". The roads and pedestrian paths were proposed as ancillary infrastructure to enable the carrying out of the temporary music event for the purpose of temporary place of assembly.

63. The development application never sought development consent to construct or use the roads and pedestrian paths for the purpose of roads, agriculture or any other purpose which is a permissible purpose in the 7(k) Habitat Zone. It is not sufficient that the third respondent's consultant, in

his letter to the Council dated 27 November 2007, said that the roads and pedestrian pathways constructed for the temporary music event could be used beneficially in the future for "independent ongoing existing land uses including agricultural use".

64. The proposed upgrading of existing roads and construction of new roads and new pedestrian paths involved the carrying out of development. They were not part of the ongoing, existing land uses on the site; they involved new development. On land in the 7(k) Habitat Zone there are no purposes for which such development could be carried without development consent. Development for the purpose of agriculture is permissible in the 7(k) Habitat Zone but only with the consent of the Council. However, the upgrading, construction and subsequent use of the proposed roads and pedestrian paths for the purpose of agriculture on that part of the site in the 7(k) Habitat Zone would only be permissible if a development application was to be made and development consent was to be granted to carry out such development for that purpose.

65. The development application made by the third respondent originally did not seek consent to upgrade, construct and use the proposed roads and pedestrian pathways for the purpose of roads or agriculture and, although the application was amended subsequently in certain respects, it was never amended to seek consent for development for the purpose of roads or agriculture. Accordingly, whatever the potential for the proposed roads and paths to service "ongoing existing land uses including agricultural use" on the land, development consent was not sought to use the roads and paths for such purposes.

66. The Council Planning Report found that the purpose of the development, including the permanent infrastructure, for which consent was sought in the development application, was for place of assembly. Whilst the Planning Report noted that the permanent infrastructure could be the subject of a separate development application seeking consent for the roads and pedestrian paths as stand alone uses, the actual development

application that had been made did not propose such stand alone uses and no separate development application for such stand alone uses had been lodged.

67. The development consent, particularly conditions 1 and 2, makes clear that consent was granted to the carrying out of the development only for the purpose of place of assembly and not for any other purpose, including roads or agriculture. The development consent also makes clear that it provides approval for the provision of infrastructure and the use of the site for a one off event only (the temporary music festival for a period in July-August 2009) and any further temporary or permanent use of the site (after the one off event) must be the subject of a separate development application. This too speaks against consent having been granted for any ongoing use of the site, including the roads and paths, for any purpose.

68. Insofar as some components of the development, including the roads, pedestrian pathways and security fencing, are to be constructed and used on land in the 7(k) Habitat Zone, the Council's exercise of power to grant consent to that development was outside power. Development for the purpose of place of assembly is prohibited in the 7(k) Habitat Zone. There is no power to grant consent to prohibited development. The components of the development in the 7(k) Habitat Zone are fundamental elements of the development. The roads and paths provide the access for and enable the holding of the event. Accordingly, those components of the development are not able to be severed and the whole consent fails.

69. This case differs from other judicial review cases involving a challenge to a development consent on the ground of characterisation of the purpose of the development the subject matter of the consent. Most challenges involve an applicant seeking consent to carry out development for a purpose that is permissible, not prohibited, and the consent authority granting consent for the permissible purpose. However, the challenger argues that the development proposed is not, in fact, for the permissible purpose, but rather, on a proper characterisation, for a prohibited purpose.

The question of the true characterisation of a proposed development has been held to be a jurisdictional fact: see *Woolworths Ltd v Pallas Newco Pty Ltd* (2004) 136 LGERA 288 and *Warehouse Group (Australia) Pty Ltd v Woolworths Ltd* (2005) 141 LGERA 376 at 410 [76], 420 [132], 421-422 [142]. An example is the *Pallas Newco* case. There the consent was granted for development for a "drive-in, take-away establishment". However, this Court at first instance and the Court of Appeal on the appeal held that the proposed development could not be characterised as falling within the purpose of "drive-in, take-away establishment" and, as there were no other nominate permissible purposes within which the proposed development could fall, the proposed development was prohibited.

70. This case differs from such cases in that the development application sought consent for development for a purpose (place of assembly) that is prohibited in the 7(k) Habitat Zone and the Council granted consent to development for that purpose (place of assembly). There never has been a development application seeking consent for development for the purpose of roads or agriculture or any other purpose permissible with consent in the 7(k) Habitat Zone and the Council did not grant development consent for development for the purpose of roads, agriculture or any other permissible purpose.

71. If a development application were to be made in the future to carry out development for the purpose of roads or agriculture or other purpose permissible with consent on the land in the 7(k) Habitat Zone, the Council will need to consider whether, having regard to all of the facts disclosed in the development application then made and applying proper principles for the characterisation of the purpose of development, the proposed development can be characterised as being for the purpose of roads, agriculture or any other permissible purpose and not subordinated to the purpose of place of assembly. Such characterisation would be a jurisdictional fact able to be reviewed by the Court, but that is a matter for the future. The current development consent is a determination of the current development application. Neither dealt with development for the

purpose of roads or agriculture or any purpose permissible in the 7(k) Habitat Zone.

72. For completeness, I should also note that the development consent cannot be legally sustained on the basis of the existence of an alternative category of permissible development, such as the purpose of roads. A consent granted to a development application for development for a purpose that is prohibited cannot be sustained by the existence of a permissible purpose of development in respect of which no development application has been made: see *Blair v Blue Mountains City Council* (1997) 93 LGERA 189 at 198-199.

Failure to consider relevant matters

73. The above conclusion, that the development consent is outside power in granting consent to development that is prohibited on land in the 7(k) Habitat Zone, makes it unnecessary to consider the applicant's second ground of challenge that the Council failed to consider that the development was prohibited.

Failure to form positive opinion of consistency with the zone objectives

74. The Applicant's third ground of challenge is that the Council failed to form the positive opinion, under cl 9(3) of the *Byron Local Environmental Plan* 1988, that the components of the proposed development to be carried out on land in the 7(k) Habitat Zone were consistent with zone objectives (a) and (b) of the 7(k) Habitat Zone.

75. Where a proposed development is to be carried out in two or more zones, satisfaction of a requirement in a environmental planning instrument that the development be consistent with the objectives of the zone in which the development is to be carried out, such as cl 9(3) of the Byron LEP 1988, necessitates matching each component of the proposed development with the objectives of the zone in which that component is to be carried out:

Tuite v Wingecarribee Shire Council (No 2) [2008] NSWLEC 321 at [30]. Hence, in this case, it involved comparison of the permanent infrastructure of roads and pedestrian paths and the temporary infrastructure of security fencing to be carried out on land in the 7(k) Habitat Zone and the use of those works for the purpose of the place of assembly, with the objectives of the 7(k) Habitat Zone, for the purpose of ascertaining whether the carrying out of such development is consistent with the objectives of the 7(k) Habitat Zone.

76. The evidentiary material Council had before it to form an opinion under cl 9(3) included the Council Planning Report together with its attachments, including the amended development application and Statement of Environmental Effects.

77. In relation to the applicant's material, as the Council Planning Report correctly noted, "the comments provided by the Applicant within the Statement of Environmental Effects and additional information offer very little to demonstrate that the proposed works are consistent with the objectives of the 7(k) Habitat Zone". It is not to the point, as the second and third respondents sought to argue, that there is material in the Statement of Environmental Effects and accompanying assessments that might be said to be relevant to the subject matter of the objectives of the 7(k) Habitat Zone, such as the vegetation and wildlife and the impacts on them. The mere existence of such general material without any analysis of that material for the purpose of satisfying the requirements of cl 9(3) is insufficient. Clause 9(3) requires separate consideration and satisfaction from the merit considerations of the development, which only come into play if cl 9(3) if satisfied. Clause 9(3) requires positive attention and the making of particular findings and inferences, having regard to the particular wording of cl 9(3) and of the objectives of the relevant 7(k) Habitat Zone. However, the development application, Statement of Environmental Effects and accompanying assessments do not pay positive attention to cl 9(3) and do not contain particular findings or

inferences demonstrating that the proposed development is consistent with the objectives of the 7(k) Habitat Zone.

78. The Council was, therefore, left with the analysis in the Council Planning Report of the proposed development's consistency with the zone objectives. (There was also a report of the Council's Ecologist but this did not consider the consistency of the proposed development with the objectives of the 7(k) Habitat Zone).

79. In relation to objective (a) of the 7(k) Habitat Zone, "to identify and protect significant vegetation and wildlife habitats for conservation purposes", the Council Planning Report finds the vegetation removal associated with construction of the roads in the 7(k) Habitat Zone, does "not serve to protect the existing vegetation within the zone". The Report notes "land within the subject site has already been identified as containing significant vegetation for conservation purposes". The site was rezoned to its current zones, including the 7(k) Habitat Zone, as a result of a Commission of Inquiry in late 1997. The Report notes that "[t]he proposal seeks to carry out works and uses within areas that were identified for protection due to their 'important ... ecological values'." Such observations logically would lead to the conclusion that the carrying out of the proposed works and uses within the 7(k) Habitat Zone would not be consistent with objective (a). Whilst this is not expressly stated in this section of the Report addressing objective (a), it is implicit in the subsequent conclusion of the Report that the development is contrary to a number of the objectives of the 7(k) Habitat Zone (see below).

80. In relation to objective (b) of the 7(k) Habitat Zone, "to prohibit development within the zone that is likely to have a detrimental effect on the wildlife habitats which exist", the Council Planning Report notes that the development application seeks consent for a temporary place of assembly with camping and associated infrastructure, which are prohibited uses in the 7(k) Habitat Zone. The Report states that "[t]he provision of associated infrastructure includes vegetation removal and earthworks to

create roads and pedestrian paths to enable the festival to operate effectively". Again, the logical conclusion from the observations that the development application seeks consent for prohibited development and that the provision of associated infrastructure for that prohibited development will involve vegetation removal and earthworks, would be that the proposed development is not consistent with zone objective (b). Whilst this is not expressly stated in this section of the Report dealing with objective (b), it is implicit in the subsequent conclusion that the development is contrary to a number of the objectives of the 7(k) Habitat Zone.

81. At the end of the section analysing the development's permissibility and consistency with the zone objectives, the Council Planning Report makes clear that the development is a prohibited land use in the 7(k) Habitat Zone and is not consistent with a number of the objectives of the 7(k) Habitat Zone and that long term use of the site will require rezoning. Under the heading "Conclusion in the relation to Land Use Zones", the Report states that:

> "It is apparent from the assessment of permissibility and consistency with land use zone objectives above that in some areas the current zoning of the site does not necessarily align easily with the uses proposed with the Development Application.
>
> ...
>
> When considering the works and uses proposed within the 7(k) zones, the layout of roads and pedestrian paths, the provision of a shuttle bus stop and the upgrade and crossing of Jones Road, are all obviously important elements of the 'place of assembly' use, which is a prohibited land use within the zone. These works, and in particular the removal of vegetation to enable the proposed works to be carried out, are also contrary to a number of the objectives of the zone.
>
> ...
>
> Given the potential anomalies with the current land use zones, it is appropriate that the long term use of the site be considered as a rezoning application, prior to the submission

of a Development Application for the permanent use of the site".

82. These statements that the works and uses proposed in the 7(k) Habitat Zone are prohibited land uses, are contrary to a number of the objectives of the zone and will require a rezoning to be used permanently, are repeated in the final conclusion at the end of the Report.

83. The conclusion that the works and uses in the 7(k) Habitat Zone are contrary to a number of the objectives of the zone logically leads to the result that development consent cannot be granted. The forming of a positive opinion under cl 9(3) that the development is consistent with the zone objectives is necessary to enliven the power to grant consent to the development.

84. The Council Planning Report's only "counter argument" is to say that the works and uses proposed in the 7(k) Zone, "as stand alone uses, ... may be permissible". This is not an answer to the requirement in cl 9(3) that the Council form an opinion that the carrying out of the development will be consistent with the zone objectives, but only to the issue of categorisation of the development as to whether it is for a permissible purpose. The requirement of consistency with zone objectives is a separate and posterior step to the requirement that the proposed development be for a permissible purpose. Even if a proposed development is for a permissible purpose, that does not lead necessarily to a conclusion that the development is consistent with the zone objectives. Separate consideration and formation of a positive opinion of consistency with the zone objectives is required. The counter argument involves misdirection in law.

85. The result is that neither the Council Planning Report nor the attachments to the Report, considered by the Council in making its decision under cl 9(3), provided an evidentiary basis for a conclusion that the proposed development is consistent with the objectives of the 7(k) Habitat Zone,

and, in fact, supported the opposite conclusion that the proposed development is contrary to a number of the objectives of the 7(k) Habitat Zone.

86. If the Council adopted the analysis in the Council Planning Report concerning consistency with the zone objectives, the Council would have reached the same negative opinion as was reached in that Report that the proposed development was contrary to a number of the objectives of the 7(k) Habitat Zone. Hence, the pre-condition in cl 9(3), namely, the forming of a positive opinion that the proposed development is consistent with the zone objectives, would not have been satisfied.

87. If, however, the Council is to be taken, by reason of it having resolved to grant development consent, implicitly to have formed the opinion that the proposed development is consistent with the zone objectives, such opinion involved error of law. The making of findings and the drawing of inferences without any evidence to support them is an error of law: *The Australian Gas Light Company v The Valuer General* (1940) 40 SR (NSW) 126 at 138; *Australian Broadcasting Tribunal v Bond* (1990) 170 CLR 321 at 355-356; *Bruce v Cole* (1998) 45 NSWLR 163 at 188. A conclusion that the proposed development is consistent with the objectives of the 7(k) Habitat Zone is without evidentiary support in the material before the Council. Insofar as the Council might have sought to overcome the conclusion in the Council Planning Report that the proposed development was contrary to a number of the objectives of the 7(k) Habitat Zone, by adopting the counter argument in the Report that the proposed works and uses in the 7(k) Habitat Zone could, as stand alone uses, be permissible, the Council misdirected itself in law. Accordingly, if the Council did form an opinion that the proposed development is consistent with the objectives of the 7(k) Habitat Zone, such opinion is wrong in law and does not satisfy the pre-condition in cl 9(3).

88. Either way, the pre-condition in cl 9(3) that the Council form a positive opinion that the proposed development is consistent with the objectives of

the 7(k) Habitat Zone, and one unaffected by error of law, has not been satisfied. Absent satisfaction of the pre-condition in cl 9(3), there was no power to grant development consent to the development.

89. This provides another ground for setting aside the Council's decision to grant consent to the proposed development.

Manifest unreasonableness of opinion of consistency with zone objectives

90. In light of the earlier conclusions on the first and third grounds of challenge, it is unnecessary to determine the alternative ground of challenge that any decision of the Council under cl 9(3) that the proposed development was consistent with the objectives on the 7(k) Habitat Zone is manifestly unreasonable or manifestly illogical.

Conclusion

91. The Council's decision to grant development consent was outside power and the consent should be declared invalid and of no effect. Costs should follow the event. As the Council made a submitting appearance, the second and third respondents should pay the applicant's costs.

92. The Court:

1. Declares that development consent dated 6 August 2008 granted by Byron Shire Council to development application No. 10.2007.462.1 for a Temporary Place of Assembly with camping and associated infrastructure for the 2009 Splendour in the Grass Music Festival is invalid and of no effect.

2. Orders the second and third respondents to pay the applicant's costs of the proceedings.

Conservation of North Ocean Shores

PO Box 828 Billinudgel NSW 2483 Tel/Fax: (02) 6680 1276

The General Manager
Byron Shire Council
PO Box 219
Mullumbimby NSW 2482
28 September 2007

ATTENTION: Joe Davidson

RE: Music Festival & Temporary Camping Ground (Splendour in the Grass)
DA 10.2007.462.1

CONOS wishes to register its objection to the proposal to hold a 'trial' festival event with associated permanent infrastructure at Yelgun.

The letter of advice from the EDO attached, forms part of this submission and addresses our concerns regarding the ecological assessment and also addresses our concerns on Council's legal obligations regarding planning matters. (refer attached PDF file)

Introduction

We wish to make it quite clear that CONOS does not oppose festivals per se however, we strongly oppose the use of this site for a 'trial' festival due to the areas high natural and cultural values, constraints associated with topography, soil types, and hydrology, impact on rural amenity and local services such as Police, RFS, SES, etc.

Although the DA is for a 'trial' only, there is a clear intention to establish the venue for a regional festival site with the possibility of introducing larger, louder and longer events.

CONOS has worked diligently for over 15 years, along with other environment groups, in the establishment of the Billinudgel Nature Reserve and the protection of the state significant wildlife corridor at Marshall's Ridge.

The current development application by Splendour in the Grass for a 'trial' festival with associated infrastructure, now places all this at risk.

It is disappointing to see that Council's corporate memory has been lost considering the role it took in having the Marshall's Ridge wildlife corridor protected. It is recommended that council staff, particularly the planning department, familiarise themselves with the findings of the Cleland Inquiry (1997), called by the Planning Minister into Council's rezoning of this regionally significant area.

It is important to recognise that not only is the Marshalls Ridge wildlife corridor the most easterly corridor on the Australian mainland, but it is also listed on the Register of the National Estate as an Indicative Place for both its Natural and Cultural significance.

Over 50 Threatened fauna species are recorded for the Billinudgel Nature Reserve with approx. 26 of these Threatened fauna species recorded along the Marshalls ridge wildlife corridor.

Council's Mapping / wildlife corridor

All forest blocks within and adjacent to the event footprint are mapped as High Conservation Value vegetation under the Byron Shire Council Biodiversity Conservation Strategy, 2004.

Byron Shire Council wildlife corridor mapping (BSC 2004) incorporates all forested areas of the site as well as intervening pasture areas.

Byron Shire Council Threatened Fauna Habitat modelling (BSC 2004) covers almost all forest vegetation within the event footprint.

Similarly all forest types within and adjacent to the event footprint are mapped as Koala Habitat (BSC 2004) with the drier floodplain forest and Forest red gum dominated forests of the central and eastern portions of Property 2A mapped at the highest quality habitat for Koalas.

Commissions of Inquiry

The areas ecological significance is not being disputed and is recognised at a local, regional and state level. The NSW state government has long recognised the area's importance and has invested approx. $15 million in its protection.

Following a Commission of Inquiry into the re-zoning of lands at North Ocean Shores by the Bond Corporation, Commissioner Simpson concluded that most of the land, if not all, should be protected. (Simpson Inquiry, 1990)

Again in 1997, the NSW Planning Minister called a Commission of Inquiry into the rezoning of the Jones Rd wildlife corridor. Commissioner Cleland clearly stated that the areas ecological significance is acknowledged by all parties present at the Inquiry and that this was not being disputed. Cleland recommended that the majority the wildlife corridor be zoned for environmental protection with the remainder zoned for agricultural protection. This was generally supported by government departments and community groups. (Cleland Inquiry, 1997)

Approval of this DA, would be contrary to Council's own planning principles and the planning initiatives undertaken by numerous State Government agencies in resolving a long drawn out dispute between conflicting landuses.

The current Environmental Protection and Agricultural Protection Zonings for the Jones Road wildlife corridor were recommended by Commissioner Cleland following thorough assessment and signed off by the NSW Planning Minister.

> *"Of significant relevance in balancing wildlife corridor values and other land use considerations are the precautionary principle and the conservation of biological diversity. These principles reinforce the importance at this point in time of protecting the existing and potential wildlife corridor values in the Jones Road area.*
> *Action needs to be taken to protect the environment before there is conclusive scientific evidence that harm will occur from a new or continuing activity - the precautionary principle requires convincing argument that proposed activities will not cause serious or irreversible environmental impacts."* (Cleland 1997)

The proponent has not provided convincing argument that the proposal will not cause serious or irreversible environmental impact.

Ridgeline of **'High Archaeological Sensitivity'**

Records indicate that the Marshalls Ridge/Jones Road, was utilised for thousands of years by Aboriginal people as an important tracking route from the Mt. Warning caldera through to the coast. It provided a safe, floodfree access to their ceremonial grounds, important tool making sites and food gathering areas. This is evidenced by the high number of cultural sites recorded for the overall area.

There are 32 registered archaeological sites (NPWS) of regional and state significance scattered along Marshalls Ridge and throughout the Billinudgel Nature Reserve located at the eastern end of the ridgeline.

The 'cut & cover' tunnel will impact on the cultural values and the overall integrity of the area which has existed in its present form for thousands of years. Marshalls Ridge / Jones Road is identified as a ridge of 'High Archaeological Sensitivity' (Navin, '90, Canb.)

In the Archaeological Assessment undertaken for SIG, Ms. Collins states that....

> '*the study area's sites, form part of a complex that is unique in the local and regional archaeological record*'.....and '*are assessed to have a moderate to high level of scientific / archaeological significance*.'

The Tweed/Byron Aboriginal Lands Council have outlined in correspondence (Oct. 2006) to Jackie Collins who undertook the archaeological assessment for SIG, that a major concern is the proposed road on the southern end of the survey behind the old service station as there are artefacts in this area.

Habitat Clearing along Ridgeline

NPWS states that...

> "*Inspection of satellite imagery of the NSW north coast between Murwillumbah and Ballina shows that the North Ocean Shores area connecting along Marshalls Ridges with the Burringbar and Koonyum Ranges to the west, provides the only substantial link of native vegetation between coastal remnants in the area and the hinterland.*" (NPWS, 1995)

In order to carry out the excavation of Jones Rd ridgeline, SIG are proposing to remove important habitat and native vegetation, including an important hollow stag, which is critical habitat for a wide range of hollow dependent species.

This proposal contradicts the comments and findings of Commissioner Cleland who stated....

> *'To ensure proper consideration is given to wildlife corridor values all existing vegetation should be retained. This is particularly evident for the western end of Jones Road .....'.* (Cleland, 1997)

The overall accumulative impact of the removal of native vegetation and habitat proposed for upgrading the western end of Jones Rd and for the 'cut and cover tunnel' also at the western end of the corridor will be significant.

The wildlife corridor at this location is very narrow and simply cannot sustain further impact.

Environmental Significance / Marshalls Ridge

It is important to acknowledge that one of the reasons the RTA moved the Pacific Highway Upgrade (Yelgun to Chinderah) further west in this locality, was because of the Billinudgel Nature Reserve and the sensitivity of the Jones Road Ridgeline.

Furthermore in 1997 the RTA acknowledged the findings of the Cleland Inquiry, in recognising the importance of the Marshall's Ridge wildlife corridor. Consequently it invested over $6 million in fauna mitigation (underpasses / overpass) and 'compensatory habitat' in the Jones Rd area during the Upgrade.

> '*Marshall's Ridge was a major consideration during environmental planning for the Yelgun to Chinderah highway upgrade, which adjoins the study area on the western side. The NSW RTA has purchased compensatory habitat, incorporated fauna movement devices in the highway design (under and overpasses) and carried out extensive habitat rehabilitation in an effort to enhance the function of the wildlife corridor.*' (Benwell 2002)

If the RTA can decide against severing the Jones Road Ridge, due to environmental constraints outlined by numerous state government agencies and specialists in their field, how is it that SIG can now propose to cut and tunnel through the ridgeline?

2.3.1 Land use zoning

The proponent has not outlined the relevant zonings and zoning objectives that apply to the site under the above Section. Byron LEP, Amendment 51, subject of the Cleland Inquiry, clearly outlines the zones for the wildlife corridor. They are 1(a)ch, 1b(1)ch & 7(k)ch.

During the Cleland Inquiry, government agencies also agreed to apply a *Special Provisions* clause 38A & 38B to the zonings to ensure that Council consider the flora, fauna, habitat values and appropriate buffers to adjoining lands, to ensure that any future development will not impact on corridor values.

The internal roads proposed, cross through environmentally protected zones both north and south of the Jones Road ridge and are permissible in a 7(k)CH zone, only with consent of Council. Given that the *special provisions* clause also applies to the zoning and that the zonings were adopted at a state level, clearly for environmental protection, it would not be prudent of Council to approve the construction of these roads.

The 'cut & cover' tunnel is also proposed in a 7(k) CH zoned for environmental protection, and yet it will require massive excavation & earthworks. This is **prohibited** in a 7(k) CH zone under the Byron LEP.

The proposal is contrary to the objectives of the **7(k) Habitat** which is primarily for environmental protection.

The proposal is contrary to the objectives of the **1(b1) Agricultural Protection** zone in the B,LEP. It is also noted that '*Recreation areas*', '*markets*', '*rural tourist facilities*' and '*tourist facilities*' are listed as a Prohibited use under the B,LEP.

The proposal is also contrary to some of the objectives of the **1(a) Rural** zoning and in particular subclause (e), (f) and (j).

Council must also consider clause 24 *Flood Liable Land*, clause 31 *Development on ridgetops,* Clause 36 *Development adjoining wetland* and clause 38, 38A & 38B of the B,LEP.

Part of Clause 2 of B,LEP outlines the Guiding Principles of Ecological Sustainable Development.

Commissioner Cleland's comment in relation to the *Precautionary Principle* ..

> *"The precautionary principle which encapsulates current environmental values specifically does not require scientific proof before appropriate conservation processes are activated. As well the conservation of biological diversity necessitates the maintenance of wildlife corridors to promote genetic exchange between populations of native species and to enhance species survival in the long term."* (Cleland 1997)

Critical Agricultural land

As climate change and global warming become more pronounced, the coastal strip of NSW, and particularly the North Coast with its high rainfall, is vitally important to retain for agriculture. Byron Council needs to protect all existing agricultural and rural lands.

'Landline', ABC TV (23 Sept 2007) stated that lands along the NSW coastline will be the only viable lands available for foodcrops as a result of climate change.

As more and more farmers, west of the Great Dividing Range are abandoning their traditional lifestyles, due to lack of rain and failing food crops, these arable coastal lands are being highly sought after.

Regional Environment Plan

Council must consider clause 15 Development control - rivers, streams and wetland, of the Regional Environment Plan as well as clause 28 &.29A The natural environment.

Far North Coast Regional Strategy

The proposal is contrary to the Far North Coast Regional Strategy which does not support development east of the Pacific Highway.

Flooding

The Yelgun Creek Flooplain, east of the Pacific Highway is predominantly classified as "High Hazard - Flood Storage" in accordance with the NSW Floodplain Development Manual, due to excessive depth of floodwaters.

Examination of rainfall records for Mullumbimby highlight 4 rainfall events in 42 years, for this area. This indicates a 1 in 10 year flood event, and not, a 1 in 20 year flood event as stated in the PFA.

In the Preliminary Flood Assessment (PFA), the engineer states that the Yelgun Catchment has a short response time of one hour.

Toby Fiander, however, states in Sec.3.6 Hydraulic Hazard that '*it is estimated that there would be approximately 20-30 minutes warning time available from the the beginning of the rainfall burst.*'

The engineer has not given any detail in the PFA, on the amount and type of fill that is needed to raise the internal roads and shuttle turnaround area. He has stated 300 mm of fill will be required for internal roads but has not provided any further details on amount etc.

The proponent needs to demonstrate how they intend to improve the hydrologics and drainage of the area.

The MCFMP states that '*major infrastructure crossings of the Marshalls Creek Floodplain have the potential to increase flood levels (normally called "afflux") caused by either the bridges required for the crossings, the embankments forming part of the crossings or site works at the crossing.*'
The proposed road infrastructure is therefore, contrary to the MCFMP and has the potential to increase floodwaters in the south.

In sec. 5.9 Integrated Catchment Management of the MCFMP it outlines that future development, including changes in land use, shall not result in increased flood flows or pollution in the creek system.

In the Preliminary Flood Assessment (PFA) the engineer has referred to the Yelgun Creek as a 'drain'. Please note, that the previous landowner was given a Court Order to restore the Yelgun Creek and that this Order has now passed onto the new owners.
As far as can be ascertained the proposal to rehabilitate the Yelgun Creek has not been outlined in the DA Given that the land has been owned by SIG for over 12 months now,and given its environmental credentials, one would have expected that the Court Order be given priority with works well underway.

The logistics of evacuating 23,000 people is a farce. It presents real problems associated with human health and safety, not to mention damage to thousands of cars proposed for the parking area.

In Sec 3.2 of Appendix K the engineer states that '*there may also be some regrading of the parking area to improve its functionality for parking and also to allow it to be used as a playing field.*' It is noted that other than this comment there has been no reference to a playing field throughout the DA.

Furthermore, it is our understanding that playing fields cannot be sited on private lands and must be located on Council owned land.

Sec. 68 Application/Bonfires

The proposal to locate 4 bonfires on the event site is irresponsible, given the

areas fire history, the presence of peat soils throughout the site and the surrounding nature reserve.

The area in general has a history of fires, including peat fires which have burnt for months at a time. In 2004 peat fires burnt throughout the winter months. (RFS, 2001 & 2004)

Toxic smoke from these fires was detected up to eight kilometres away. Serious health problems such as asthma, breathing difficulties and headaches were reported from nearby residents and those in surrounding villages. (refer Northern Rivers Public Health, 2004 & DOCS, 2004)

With the second fire in October 2004 a Section 44 Emergency was declared. Over 50 fire units attended from over regional NSW and 3 helicopters were brought in as areas within the Reserve were inaccessible by road. The operation continued for 3 days and cost the State $1million. If it was not for heavy rain extinguishing the fires, the cost to the environment and the State would have been far greater.

It is important to note that the October fire started on northern side of Jones Road (where the event site is proposed) and quickly jumped the road and into the Billinudgel Nature Reserve.

3.8 Noise

The "Noise Monitoring Protocol" (NMP) prepared for the festival by consultant Greg Alderson and Associates indicates that day time and night time background noise levels (for the purpose of calculating allowable intrusive noise levels) were measured using a sound level meter at various locations in the vicinity of the site. However, no specific details were provided in relation to the methodology used to collect the background noise levels.

Bats, flying foxes and Koala are particularly vulnerable to high noise levels.

> '*Some effect on local Koalas from the event is likely, mainly from noise and pre-event activities (which may go for weeks, and include road-making, installation of infrastructure and noise from trucks and heavy machinery*.' (C. Moon, KS&MS, 2007)

In the Ecological Assessment, the consultant has not demonstrated beyond reasonable doubt that threatened species(TSCA) will not be impacted by the high levels of noise that will be generated from the trial event.

3.1 The Trial Event - Summary

A proper appraisal of the DA is difficult, as a comprehensive and thorough assessment of the 'trial' event pertaining, to both the permanent infrastructure

and temporary structures, has not been undertaken.

For example, the proponent has not outlined / assessed / provided..

* the amount and type of fill that will be introduced into the Yelgun Catchment for internal roads and shuttle base
* the amount and type of fill that will be introduced into the Crabbes Creek catchment
* any ecological mapping
* the amount of soil that will be extracted from the 'cut & cover'.
* the disposal of extracted soil from 'cut & cover'
* no assessment or details on proposed impact from helipad eg. noise
* fencing for camping area and around VIP tent etc.
* fencing of adjoining NPWS land at western end including the old road corridor, the old G'day Roadhouse site & Compensatory Habitat land
* location or details on generators (Drawing B)
* any details on pool, Drawing C indicates pool fence only.
* lacks detail on service vehicles (size & carrying load) traversing Jones Road eg. sewerage trucks and semi-trailers, toilet facilities etc.
* the number of vehicle movements per day that will be generated along Jones Road from sewage and water trucks etc.

1.2 Circumstances of the Case

In **Sec.1.2 The Event Layout**, the applicant states that the event 'footprint' area is only 27% of the overall site, whereas Illustration 4 clearly outlines that the **event area** is only 27% of the site. A more accurate estimate of the overall event footprint, including camping, parking, internal roads and walking tracks, shuttle areas and event areas etc., is more likely in the vicinity of 60-70% of the overall site.

In **Sec.1.2 Potential Impacts**, the proponent states that the proposed temporary event planning and design is based on respect for the ecological and cultural values of the locality and the amenity of nearby residents.

It is more likely, the temporary event planning and design is based around the current restrictive environmental zonings along the wildlife corridor.

Sec 2.1 The Site, Local and Regional Context The Billinudgel Nature Reserve is of State significance. The proponent has not demonstrated how SIG intend to protect the important values of this Reserve from hundreds of revellers who will enter from the beach and set up camp to enjoy the music without paying. It would be difficult to control these convoluted boundaries which extend for kilometres.

In sec **2.3.3 Site Characteristics** the proponent states that '*the owners have also offered to undertake land swaps and place the more significant parts of the*

site into the NSW National Parks Reserve system.'

The above statement cannot be taken seriously as there is no information in the DA indicating what lands are being considered as additions to the Reserve system or how far this proposal has progressed. Furthermore, the major access road and walking track is located on the land 'mooted' for dedication to the Parks Service.

In sec **3.2 Objectives** dot points, include,
* monitoring the trial and site performance covering a range of key factors before, during and after the event.

The main mitigation strategy recommended in the ecological assessment appears to be scientific research in the form of before-and after-event fauna surveys and monitoring. No information is given about how research methods would be systematically applied or what questions would be researched. Are fauna surveys to be carried out before infrastructure development or only before the event? One has to ask whether monitoring or surveys are likely to be able to demonstrate whether or not threatened fauna species were adversely affected by the event (and/or infrastructure development), because of the complexity of the ecological processes involved. The subject site is too important to allow it to be used as an experimental area to determine the tolerances of threatened fauna species to levels of human activity and disturbance. (A. Benwell per comm)

* a safe, secure or healthy site for patrons, guests and workers.

This statement is naive and indicates that the proponent has little knowledge of the potential dangers to human safety associated with holding such an event on this site. Historic information is available which clearly indicates that the Yelgun site has far too many constraints to host a festival of this size and nature.

3.3.1 Community Benefits The DA outlines that 92% of the the patrons are from out of the Byron Shire, indicating that the festival is catering more to the distant, interstate and international festival-goer. The festival is opposed by the major local environment groups and the majority of associations north of the Brunswick River.

According to Robert Waldersee, Professor in Tourism Management QUT, financial benefits to the community from the SIG festival are minimal, whilst the social impacts far outweigh any advantages.

The promoters could be acting prematurely in offering financial contributions to the RFS, Rescue Squad and local schools etc. as the festival DA is yet to be determined.

3.3.2 Environmental Initiatives No amount of energy, waste or environmental initiatives will compensate for the impact the festival will have, if

approved, on the significant natural and cultural values of the site and in particular Threatened Species (TSC,A).

3.4.4.4. Solid waste management DA has not outlined how they intend to control any leakage or contamination from the toilet facilities, stalls, bars etc..

3.5.1 Site Entrances The Traffic Impact Study (Appendix D1) clearly outlines that all existing entrances to the site are not safe, nor suitable to cater for the high volume of vehicles that will be generated from this development.

As a result, a new entrance is proposed into the Yelgun Catchment, however, this area provides for parking only. With no other suitable entrances into the event site, the proponent is now suggesting to cut and tunnel through the Jones Road ridge to provide access to the event site, located on the northern side.

Billinudgel Nature Reserve

The proponent has not demonstrated how they intend to protect the Reserve System from hundreds of people who will enter from the beach, set up camp and listen to the music without paying. alienate threatened species accumulative overall impact on the environment, threatened flora and fauna species and the adjoining Billinudgel Nature is significant.

Council needs to gather historic information of the site. It doesn't require a huge amount of research to understand that the site is NOT suitable for an event of this nature putting the well being of thousands of patrons at risk. It is clear that the new owners of the site did not thoroughly investigate the constraints associated with the land and the likely consequences that could result from the proposed festival.

Conclusion

CONOS predicts that the accumulative, overall impact on the environment, Threatened Flora and Fauna Species and adjoining Billinudgel Nature Reserve from the 'trial event' will be significant. We ask Council to refuse the application.

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Our Ref: SH: 11606

28 September 2007

CONOS
Conservation of North Ocean Shores
PO Box 828
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By Email: conos@linknet.com.au

Dear CONOS,

Development Application for Splendour in the Grass at Wooyung
DA Number: 10.2007.462.1

1. You have sought advice from our office for the purposes of including it in your submission to Byron Shire Council regarding the above mentioned development application (the DA). In particular you have asked for advice in relation to the ecological assessment that has been submitted by the proponent as part of the DA. In this regard we have engaged the services of a number of ecologists and experts including Mr Dave Scotts and Mr Chris Moon as well as the EDO's Scientific Director Mr Tom Holden and the EDO's Scientific Officer Kristy Graham. Their comments form part of this advice. Further you have sought comment upon the DA and particular aspects of the legal framework within which Council must consider the DA.

2. The DA seeks development consent for a trial music festival (Splendour in the Grass), the associated infrastructure, camping and car parking. The trial festival is proposed in winter for Friday 1st August to Sunday 3rd August 2008 or Friday 8th August to Sunday 10th August 2008. We note that there will also be a high degree of activity on the site some weeks before and after the 3 day event for the 'bump in' and bump out' of the event and that the DA must also consider these impacts.

3. The DA envisages that 22,500 people will attend the event this will comprise 7,500 campers and 15,000 day attendees. There will also be some 2000 staff, performers, guests and associated personnel. The presence of an estimated total of 24,500 people is an intensive use of the site concerned.

4. Although the DA is for a trial event, in our view the DA has been made with the clear intention to establish the site as a regular venue for large festival events and the possibility of increases in attendance, length of events or noise levels. This intention is evidenced by the scale and extent of roadworks and other infrastructure which are to be constructed before the event and by the proponent's proposal to monitor the impacts of noise generated by the festival on fauna. In our view that the impacts that the infrastructure including roading and

the cut and cover tunnel will have on the site given its biodiversity and landscape values are hard to justify in the granting of consent for a trial single music festival event and could possibly be considered legally unreasonable.

5. It is undisputed that the site is of high biodiversity value, is significant from a landscape connectivity perspective and as found in the Cleland Inquiry in 1997 has wildlife corridor value (which has been subsequently confirmed by the Department of Conservation and Climate Change and Byron Shire Council) in need of protection. In considering the lands the subject of this DA the Cleland Report thought it relevant to cite the Place Report regarding the Natural Area National Estate Listing which describes the significance of the land in the following way:

> *The Jones Road ridge forms a major wildlife corridor allowing movement of wildlife between the Billinudgel Swamp area and the Upper Brunswick, Inner Pocket and Burringbar areas. This is the only area on the far North Coast which affords an unbroken link of natural vegetation between the coast and the world heritage rainforests of the Mount Warning Caldera... It is the most easterly corridor in the Byron Shire and therefore is the most easterly corridor on the Australian Mainland. Wildlife habitat is also linked via wildlife corridors to significant wildlife habitat to the north along Mooball Creek estuary and south along the Marshalls Creek estuary and Lower Brunswick River. The continuity and habitat values of the three areas reinforce the effectiveness of each area in conserving particular species and regional biotic diversity.*[1]

Species Impact Statement

6. Before Council can determine the DA it must satisfy itself that the DA complies with all legislative requirements. This includes a determination of whether the development is likely to have a significant impact on the threatened species known and likely to occur on the site such that a Species Impact Statement (SIS) is required. Section 78A(8) of the *Environmental Planning and Assessment Act* 1979 states:

> *(8) A development application must be accompanied by:*
>
> ...
>
> *(b) if the application is in respect of development on land that is, or is a part of, critical habitat or* ***is likely to significantly affect*** *threatened species, populations or ecological communities, or their habitats—a species impact statement prepared in accordance with Division 2 of Part 6 of the Threatened Species Conservation Act 1995.*(emphasis added)

7. The Courts have given much consideration to the terms 'likely' and 'significant' in relation to impact. The term 'likely' is defined by the Courts as 'a real or not remote chance'; it is not used in the sense of 'more probable than not'.[2] The term 'significant' is defined by the Court as meaning 'important', 'notable', 'weighty' or 'more than ordinary'[3]

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[1] Commissioner K.Cleland, Report to the Minister for Urban Affairs and planning and Minister for housing, *Proposal to Rezone Land at North Ocean Shores*, Byron Shire p15.

[2] *Jurasius v Forestry Commission of NSW* (1988) 71 LGRA 79; *Drummoyne Municipal Council v Roads and Traffic Authority of NSW* (1989) 67 LGRA 155; *Drummoyne Municipal Council v Maritime Services Board* (1991) 72 LGRA

8. Section 5A of the *Environmental Planning and Assessment Act* provides a list of matters that must be considered in determining significant effect. While the ecological assessment submitted with the DA addresses the s5A test of significance for a number of threatened species and endangered ecological communities, the actual decision as to whether a species impact statement is in fact required to be submitted with the DA rests with Council.

9. We note some major concerns regarding the ecological assessment including the lack of survey data, the difficulty in assessing the likely impacts on threatened fauna, the opinion of the author of the assessment that there will be no significant impact on threatened species and the distinct lack of scientific data regarding the likely impacts that the proposed intensive use of the site, the noise generating activities and the associated infrastructure works will have. We address these concerns below.

Impacts of the whole development

10. Council should be concerned that the ecological assessment is split into two parts, the first dealing with the impacts of the temporary component of the Splendour in the Grass festival, the second, as an addendum deals with the permanent infrastructure that is being proposed to widen the road and create an underpass. The author of the ecological assessment justifies this split by claiming that the infrastructure construction processes result in permanent landscape modification and that they comprise different disturbance phenomena from the conduct of the festival event which is a temporary event.

11. Whilst the disturbance phenomena may differ, the ecological assessment is meant to assess the likely impacts of the DA as proposed. The impacts of the DA must be assessed as a whole and integrated development. This separated and fragmented approach blurs the ecological assessment and does not assess the possible cumulative impacts on threatened species of the whole development. Council has a legal obligation to consider the impacts of the development proposed as a whole on threatened species, populations and ecological communities, and their habitats.

Survey methodology and effort

12. The ecological assessment does not provide any detail on survey methodology and survey effort. It is not clear which threatened species were targeted, what methodologies were used to target species, what the survey effort for each species was, and whether the surveys were undertaken at the right time of day/night or season for the targeted species.

13. The author of the ecological assessment acknowledges that the fauna survey conducted is only preliminary. We view that two nights with a two person team can not possibly constitute an adequate assessment to determine the DA given the biodiversity and landscape significance of the site. Surveys must be undertaken in accordance with accepted methodologies set out in relevant guidelines, such as the 'draft Threatened Biodiversity

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186; *Minister Administering the Crown Lands Act v Deerubbin Local Aboriginal Land Council* (No 2) (2001) 50 NSWLR 665 at p674

[3] *Drummoyne Municipal Council v Maritime Services Board* (1991) 72 LGRA 186; *Oshlack v Richmond River Council* (1993) 82 LGRA 155.

Survey and Assessment: Guidelines for Developments and Activities' (DEC, 2004), which specifies survey methodologies and minimum survey effort required to satisfy the Department of Conservation and Climate Change. The ecological assessment has clearly not met the minimum requirements of the Department of Conservation and Climate Change guidelines.

14. The ecological assessment has identified that further surveys will be undertaken in August 2007 and March 2008. We understand that the results of any August 2007 survey are not yet publicly available. Surveys in August should include determination of whether the site and surrounds provides breeding and roosting habitat for any threatened fauna over the winter. Intuitively the impacts of noise on fauna are likely to be more significant during breeding seasons.

15. The site falls within a general location that is known to be a particularly important autumn-winter refuge for fauna, including threatened species. The Billinudgel Nature Reserve Plan of Management (NPWS, 2000) identifies the area as a regionally important autumn-winter refuge area. The area is particularly important for threatened species such as Eastern Blossom-bat, Grey-headed Flying-fox, Black Flying-fox, many insectivorous bats, fruit doves and Square-tailed Kite, as well as a whole suite of other species that over-winter in the general location, find critical autumn-winter foraging and nesting resources in this area. As stressed by the author of the ecological assessment, the impacts of disturbance of the type proposed on these species are largely unknown but may well be locally considerable for the month required to stage a festival. It is of particular concern therefore that the proposed festival falls in late winter when coastal nectar, fruit and associated resources are critical to many fauna.

16. The overall lack of targeted survey such as for the Long-nosed Potoroo and autumn – winter survey for nectar and fruit eating species to inform the DA is of major concern. Targeted survey for species such as the Long-nosed Potoroo and Common Planigale, to investigate the significance of the site and associated habitat outside the ecological footprint are required as a prerequisite to Council making any decision regarding the DA. Council must be properly informed about the ecological values that are likely to be impacted in order to make a legal decision.

17. The fact that the Long-nosed Potoroo may occur on-site and within adjacent habitats (including Billinudgel Nature Reserve) suggests the need for targeted survey. This species is listed at State and National levels and it is pre-disposed to extinction risk, as evidenced by the decline of coastal populations at Cobaki and Cudgen. Coastal NSW populations are reduced and disjunct and all coastal populations are highly important. Targeted investigations may reveal the site to be of marginal importance or not, either way, the DA and decision process should be properly informed and such information would be considered a relevant consideration in the decision making process.

18. The lack of targeted surveys within the autumn – winter period, when flowering and nectar production by key flora species such as Forest Red Gum, Swamp Mahogany and paperbarks peak, and the availability of fleshy fruit (e.g. figs) may also peak, is of concern. The proposed festival occurs in late winter (early August 2008). Therefore, during the event the site is likely to be part of a larger focus area for threatened fauna associated with remnant

and declining coastal and floodplain habitats including nectarivores, frugivores, bats, foliage predators (square-tailed kite and other diurnal raptors), powerful owl and masked owl.

19. It is generally accepted that nectar and fruit resources have been greatly reduced in overall availability along coastal north-east NSW courtesy of extensive clearing of native vegetation for agriculture and urban development. It is also apparent that nectar, fruit and associated resources are a limiting factor for suites of dependant fauna and that autumn – winter food flushes are critical for many species including migrants and residents. Impacts within important over-wintering focal areas may have consequences extending well beyond recognised boundaries. These aspects require investigation prior to any decision in relation to a DA of this scale.

20. It is our view that the survey efforts conducted are not adequate for the author of the ecological assessment to conclude that there will not be a significant impact on threatened fauna when viewed in light of the lack of data regarding impacts on fauna caused by noise, light and intensive human activity. We note the following comment of the author of the ecological assessment:

> *The pattern of occurrence of fauna species on the site is not well known at present and will vary according to the seasonal abundance, presence or absence of key forage resources: e.g. blossoms, fruits*.[4]

Off-site impacts

21. The ecological assessment focuses largely on the on-site impacts of the project. The potential off-site impacts of the project, particularly potential noise impacts on Billinudgel Nature Reserve, which is located immediately adjacent to the project site, is not adequately addressed.

Relevant existing studies

22. The ecological assessment identifies that threatened fauna habitat modelling undertaken for Byron Shire Council (2004) covers most of the project site. However, any relevant information from this document is not clearly discussed in the ecological assessment. This document is likely to provide valuable information on the threatened fauna likely to be impacted by the project and the extent and importance of habitat types that occur at the site and surrounds.

23. The ecological assessment identifies that the author has been involved in assessing the impacts of the 'Splendour in the Grass 2006' event at Belongil Fields on fauna. It is not clear whether noise impacts on fauna was an issue in that case and/or whether any monitoring of noise impacts was undertaken. The results of any noise impact monitoring should be described and analysed as part of the ecological assessment.

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[4] Mark Fitzgerald, *Ecological Assessment of Splendour in the Grass 2008 at North Byron Shire Parklands Prepared for Billinudgel Property Trust for Splendour in the Grass Pty Ltd* 4th April 2007, p180.

Lack of scientific data & uncertainties in relation to impact assessment

24. The author of the ecological assessment states:

> *Given the paucity of reliable published information on the actual interactions between fauna and noise (and lighting) in an Australian context; and the large variation in critical variables, the nature and severity of effects of the proposal on Threatened fauna and their habitats at the NBSP site are to a large extent unpredictable.*[5]

25. It would appear that the impacts of noise, light and the type of intensive human activity proposed on threatened fauna are unknown and somewhat difficult to quantify. Therefore any actual assessment of the degree of impact in this regard including an assessment of significance would come down to personal opinion.

26. The ecological assessment includes 7 part tests of significance for 34 threatened fauna species; 1 threatened flora species, and 2 endangered ecological communities. While the assessment concludes that there will be no significant impact on any of the 34 threatened fauna species, the discussions in the 7 part tests for a number of species in fact seem to suggest an impact that should be considered significant. For example the Comb-crested Jacana is likely to have its breeding disrupted and Bush Stone-curlews may experience reduced breeding success if eggs were abandoned for a long period of time, but these impacts are considered not to be a significant impact by the author of the assessment. Generally, if breeding for a species is to be disrupted this should be considered a significant impact and hence trigger the need for a SIS.

27. There are a number of significant uncertainties/unknowns in the ecological assessment, which in our opinion do not enable the decision-maker to make an adequately informed decision on whether the project is likely to have a significant impact on threatened species, populations, ecological communities or their habitats as required under the *Environmental Planning and Assessment Act*. These include:

    (a) The ecological assessment identifies that there is little or no quantitative information available on the impacts of different noise levels on fauna, including impacts on breeding, roosting, and foraging behaviour. This makes it very difficult or impossible to determine to a reasonable level of certainty whether the project would have a significant impact on threatened species, populations or ecological communities, or their habitats.

    (b) The DA does not quantify the noise levels that would be generated by the project. Despite point (a) above, this makes it very difficult to get even a general idea of the fauna and extent and types of fauna habitats potentially impacted by noise (eg. are predicted noise levels significantly above background noise levels, what areas surrounding the project site are affected by high noise levels?).

    (c) The ecological assessment does not identify to an adequate level of certainty the threatened fauna and flora known to occur at the site and surrounds, including

[5] Mark Fitzgerald, *Ecological Assessment of Splendour in the Grass 2008 at North Byron Shire Parklands Prepared for Billinudgel Property Trust for Splendour in the Grass Pty Ltd* 4th April 2007, p180

threatened fauna within the Billinudgel Nature Reserve, which may be impacted by the project.

(d) The ecological assessment does not identify the size and conservation significance of threatened fauna populations known to occur at the site and surrounds, including populations within the Billinudgel Nature Reserve that may be impacted by noise.

(e) The ecological assessment does not adequately identify the extent and types of fauna habitats including breeding sites, roosting sites, foraging areas, and shelter sites, which may be impacted by the project, including habitats within the Billinudgel Nature Reserve that may be impacted by noise.

(f) The ecological assessment does not adequately identify whether important fauna life-cycle events such as breeding events are likely to be impacted by the project, including events within the Billinudgel Nature Reserve that may be impacted by noise.

Impacts of road kill

28. Given the numbers of vehicles that would be travelling to the site, there appears to be a significant risk of road kill, which may impact a number of threatened fauna, despite the proposed 'go slow' areas. The ecological assessment has not qualitatively assessed this risk (eg. by reference to existing studies or any previous monitoring at similar events).

Impacts of the diversion drain

29. The ecological assessment identifies that a diversion drain would be constructed to replace an existing overgrown drain. The potential impacts of this drain on the threatened ecological community 'Swamp Sclerophyll Forest on Coastal Floodplain' immediately adjacent to the drain has not been assessed.

The wildlife corridor and landscape connectivity

30. The wildlife corridor was originally mapped as part of a regional conservation assessment project undertaken by the then Department of Environment and Conservation. The importance of the corridor was confirmed by the Byron Biodiversity Conservation Strategy. The corridor was identified as a regional corridor of very high conservation importance for a suite of target fauna, linking from Billinudgel Nature Reserve to hinterland forests. As pointed out in the ecological assessment overall landscape connectivity is compromised by the fragmenting impacts of the Pacific Highway. Mitigatory measures such as the underpasses and overpass have been provided to enhance potential connectivity as part of the highway upgrade providing scope for faunal movement and connectivity.

31. The intent of the corridor mapping was to identify target parts of the broader landscape where the promotion of habitat protection, recovery and restoration might provide strategic benefits in the form of enhanced habitat connectivity at the regional scale. The Pacific Highway tunnels / overpass to the west of the subject site have been provided in that light.

32. The native forest patches occurring within the subject site appear, from perusal of aerial photos, to be connected to some degree but are considered in the ecological assessment as

separate patches and any connectivity, functional or otherwise, is ignored. It can be assumed that the proposal will lead to the further isolation of the patches, as opposed to the concept of restoration that was envisaged in developing the wildlife corridor mapping for this area.

33. It is acknowledged that the proposal includes a rehabilitation planting scheme to the south of Jones Road. This is a positive aspect of the proposal. There are, however, extenuating impacts associated with the placement of car parking south of Jones Road, and the associated infrastructure, that may further impact connectivity values. Access from these car parking areas to the festival area is through the proposed restoration area.

Monitoring program

34. The author of the ecological assessment states:

> *The lack of specific information on the potentially adverse effects on [sic] noise (and lighting) on Australian fauna is to [sic] problematic, however, the detailed fauna monitoring proposed before, during and after SITG 2008 will provide useful baseline data on the actual rather than potential occurrences of fauna species at the site, and potentially on their behaviour as the event progresses.*[6]

35. For any weight to be given to this statement the ecological assessment should describe in detail the proposed monitoring program, particularly given the importance of the program given the uncertainties over predicted impacts. The monitoring program needs to be able to determine the impacts on fauna during the event and any longer term impacts, particularly in relation to impacts on any breeding activities. It is difficult to see how the monitoring program could achieve this.

36. The monitoring proposal must not be used in any justification to circumvent the consideration and application of the precautionary principle in decision making which, as we address below, Council is legally obliged to consider.

Koala Survey and Plan of Management

37. Mid June is not an optimal time for koala scat surveys, since ranging is usually reduced through autumn and winter. A spring/summer survey might produce more extensive results, and the current survey may slightly underestimate koala activity. Survey intensity works out at about 1 plot (of minimum 30 trees) every 2 hectares, supplemented by opportunistic checks of koala food trees as encountered, which is adequate for a site of this size and landscape. The Spot Assessment Technique is somewhat controversial and not accepted by many koala biologists as a valid technique for distinguishing levels of koala occupation of an area of habitat.

38. The Plan specifies a 65m buffer between event areas and core koala habitats. The only events proposed adjacent to currently identified core koala habitats do not appear to be noise-generating (Chai Tent etc), but we would have concerns about noise impacts should other areas of core habitat be subsequently identified within, say, 100m of a loud activity such as rock music. The Plan specifies that further core habitat surveys be carried out prior to staging the event. This should preferably be done in summer.

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[6] Mark Fitzgerald, *Ecological Assessment of Splendour in the Grass 2008 at North Byron Shire Parklands Prepared for Billinudgel Property Trust for Splendour in the Grass Pty Ltd* 4th April 2007, p181.

39. The Plan says that effects of noise on koalas are unknown. The work undertaken by Chris Moon at Iluka (loud music from Bowling Club) and Coffs Harbour (road upgrade works) gives an indication that koalas move away from such disturbance, returning after a few days but retreating again if the disturbance continues.

40. The SEPP 44 requirement to consider impacts on linkages between areas of habitat is considered minimal in the KPoM because of the "temporary nature of the event". However, should the event become regular and ongoing, consideration would need to be given to securing and enhancing linkages to counter the effects of more regular use. This issue should be a consideration in the proposed monitoring program.

Legal and planning Considerations

41. The land the subject of the DA is zoned 1(a) (General Rural Zone), 1(b1) (Agricultural Protection (b1) Zone) and 7(k) (Habitat Zone). There are areas within the rural and agricultural zones that are further controlled by cross hatching which places greater controls on the uses of the lands and a greater onus on Council to consider the likely effects that certain activities will have on the fauna, flora, water table and habitat value of the adjacent 7(k) lands. The DA does not consider the compatibility of the proposal with the objectives of the zones in any detail rather it simply states that the proposal is permitted with consent.

42. The proposed development conflicts with many of the stated zone objectives in the Byron Local Environmental Plan. Generally, the development is not in keeping with the rural and agricultural character of the area and it is likely have a detrimental effect on the wildlife habitats which exist.

43. The proposed use of a camping facility proposed for the 1(b1) (Agricultural Protection (b1) Zone) is arguably not compatible with the zone objectives. We note that under the Byron Local Environmental Plan a primitive camping ground (being the use of land for the placement of tents and camper vans on a temporary basis) is included in the definition of tourist facilities which are wholly prohibited under the agricultural protection zone.

44. The underpass tunnel and roading proposed within the Zone No 7(k) (habitat zone) are controversial. While roads are permissible in the zone the proposal is for a road and underpass for the purpose of access for a car park, this is arguably incompatible with the zone objectives which are:

(a) to identify and protect significant vegetation and wildlife habitats for conservation purposes,

(b) to prohibit development within the zone that is likely to have a detrimental effect on the wildlife habitats which exist,

(c) to enable the carrying out of development which would not have a significant detrimental effect on the wildlife habitats, and

(d) to enable the careful control of noxious plants and weeds by means not likely to be significantly detrimental to the native ecosystem.

Suitability of the site

45. Pursuant to s79C(1)(c) of the *Environmental Planning and Assessment Act* Council must consider *the suitability of the site for the proposed development*. We note that there would be many other far more suitable sites for the type of activity and development the subject of the DA.

46. The site requires the disturbance and permanent modification by way of major earthworks of a regionally significant wildlife corridor in a 7K habitat zone in order to accommodate a 3 day event. The biodiversity values and the landscape connectivity functions of the site are invaluable for the regions biodiversity significance. The site is located in the most biodiverse area of NSW. Council has a state wide responsibility to protect the biodiversity of the area and to this extent the site is zoned for activities not of the character of that the subject of the proposal.

Ecologically sustainable development

47. Pursuant to s79C(1)(e) of the *Environmental Planning and Assessment Act* 1979 Council must consider the principles of ecological sustainable development (ESD).[7] Council must also consider the principles of ESD in accordance with its legal obligations under clause 2A of the Byron Local Environmental Plan 1988.

48. ESD requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of certain principles and programs

49. The precautionary principle is one of the principles of ESD. The Courts have in recent times set down the tests applicable to the precautionary principle.[8] The following comments are taken largely from various recent judgments handed down in the Land and Environment Court. The Precautionary Principal is most commonly defined 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.*

50. In applying the principle, decisions should be guided by careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and an assessment of the risk- weighted consequences of various options.

51. The application of the precautionary principle and the concomitant need to take precautionary measures is triggered by the satisfaction of two conditions precedent:

    (i) A threat of serious or irreversible environmental damage *and*
    (ii) Scientific uncertainty as to the environmental damage.

[7] *Telstra Corporation Limited v Hornsby Shire Council* [2006] NSWLEC 133
[8] *Telstra Corporation Limited v Hornsby Shire Council* [2006] NSWLEC 133

52. In relation to the first condition precedent it is not necessary that serious or irreversible damage have actually occurred it is the *threat* of such damage that is required.

53. The threat of serious or irreversible damage must be adequately sustained by scientifically plausible evidence. This condition will be fulfilled when empirical scientific data make it reasonable to envisage a scenario, even if it does not enjoy unanimous scientific support. Threats to the environment that should be addressed include direct and indirect threats, secondary and long-term threats and the incremental or cumulative impacts of multiple or repeated actions or decisions. Where threats may interact or be interrelated (for example where action against one threat may exacerbate another threat) they should not be addressed in isolation.

54. Assessing the seriousness or irreversibility of environmental damage involves consideration of many factors including:

    (a) the spatial scale of the threat (eg local, regional, statewide, national, international);

    (b) the magnitude of possible impacts, on both natural and human systems;

    (c) the perceived value of the threatened environment;

    (d) the temporal scale of possible impacts, in terms of both the timing and the longevity (or persistence) of the impacts;

    (e) the complexity and connectivity of the possible impacts;

    (f) the manageability of possible impacts, having regard to the availability of means and the acceptability of means;

    (g) the level of public concern, and the rationality of and scientific or other evidentiary basis for the public concern; and

    (h) the reversibility of the possible impacts and, if reversible, the time frame for reversing the impacts, and the difficulty and expense of reversing the impacts.[9]

55. The assessment of whether the threats are serious or irreversible will be enhanced by broadening the range of professional expertise consulted and seeking and taking into account the views of relevant stakeholders and rightholders. The former is important because of the inter-disciplinary nature of the questions involved. The latter is important because different judgments, values and cultural perceptions of risk, threat and required action play a role in the assessment process

56. In relation to the second condition precedent the lack of full scientific uncertainty is in relation to the nature and scope of the threat of environmental damage. The degree of

[9] *Telstra Corporation Limited v Hornsby Shire Council* [2006] NSWLEC 133

scientific uncertainty that needs to exist in order to trigger application of the precautionary principle varies depending on the magnitude of environmental damage used in the formulation of the first condition precedent of the precautionary principle. For the formulation of "serious or irreversible environmental damage", the correlative degree of certainty about the threat is "highly uncertain of threat" or "considerable scientific uncertainty".

57. The above legal test of the precautionary principle is applicable to the consideration of this development proposal. As noted above there is plausible scientific opinion that the proposal poses the threat of serious environmental damage by the impact of noise and the intensive human activity on threatened fauna and there is a consensus scientific view that the impacts of noise, light and intensive human activity on threatened fauna is unknown and somewhat difficult to quantify.

58. Once it is established that the precautionary principle is applicable to a decision there is to be a shifting of the evidentiary burden of proof. Council must assume that the threat of serious or irreversible environmental damage is no longer uncertain but is a reality.

59. The burden of showing that this threat does not in fact exist or is negligible effectively reverts to the proponent of the development. We would argue that this can only be done through a through species impact statement and the collection of data elsewhere not at the relevant site in relation to noise impacts and the intensive human activity on threatened species.

60. The activation of the precautionary principle results in the taking of measures to prevent environmental damage without having to wait until the reality and seriousness of the threats of environmental damage become fully known.

61. Council is also required to consider all other principles of ESD, in this case most notably the conservation of biological diversity and ecological integrity namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration. We have outlined the biodiversity significance of the site and note that its conservation should be paramount.

62. Council must consider the principle of inter-generational equity namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. Biodiversity loss is recognised as one of the most important environmental issues facing Australia and Australians today. The current generations are responsible for preventing further biodiversity loss for future generations.

Conclusion

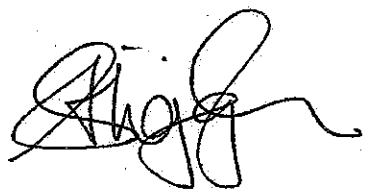
63. We have reviewed the DA and the ecological assessment submitted with the DA. We have engaged the services of scientific experts to assist us with our review. It is our view that there are a number of significant problems with the proposal and the ecological assessment given the lack of data obtained, including targeted survey efforts and the lack of scientific information available regarding the type of impacts that may occur as a result of the proposal.

64. We are very concerned that there has not been adequate consideration of the possible impacts on threatened species in the adjacent Billinudgel Reserve and that the ecological assessment has made incorrect findings that no significantly adverse effects are likely to arise for threatened species and that if in fact the proposal is likely to significantly affect threatened species then a species impact statement should be required.

65. Given the threat of serious harm to the environment and the scientific uncertainty as to the damage Council is bound to properly apply the precautionary principal in this matter. Given the high biodiversity value of the site and the landscape connectivity functions of the site we are of the view that the site is unsuitable for the proposed intensive use both short term and long term.

66. For all of these reasons it is our view that Council should refuse consent to the DA.

Yours faithfully
Environmental Defender's Office (Northern Rivers) Ltd



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Our Ref: SH: 11606

14 March 2008

Attention: Joe Davidson
Byron Shire Council
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Mullumbimby NSW 2482

By Email: council@byron.nsw.gov.au

Dear Sir,

Submission for Amended Development Application for Splendour in the Grass at Wooyung
DA Number: 10.2007.462.1

1. We act for Conservation of North Ocean Shores ("CONOS"). We are instructed to make this submission on behalf of our client.

2. This submission is to be considered in addition to the submission dated 28 September 2007 that our client made to Byron Shire Council ("Council") during the previous exhibition period for the Splendour in the Grass Development Application. We note that our client's previous submission included a detailed letter of advice from us which formed part of our client's submission.

3. The amended DA contains a few amendments to the original proposal. These are:

   - the one off event is now planned for later dates in 2009, although in this regard the DA is unclear what dates the event is actually planned for,
   - the relocation of various areas and structures within the development footprint and
   - the provision of an alternative access option.

   It is our client's view that all of the comments made in its previous submission and our letter attached to that submission are still applicable to the amended development and should be considered by Council in assessing the amended proposal.

Amended DA

4. It is our client's view that the DA in its original form and now its amended form is still totally unsatisfactory and inadequate for the purposes of assessing the proposed development on the proposed site. While our client is of the view that there are a number of problems with the proposal, this submission focuses on matters that are fatal problems with the DA, namely the inadequacy of the ecological assessment.

5. The proposal is for a site which has known and likely high conservation values of significance. Therefore the ecological assessment for the development is of paramount importance to ensure that Council can discharge its legal obligations regarding threatened species under the *Environmental Planning and Assessment Act 1979* and the *Threatened Species Conservation Act 1995.*

6. **In assessing this application, Council should not lose sight of the biodiversity values that the site itself contains, and that in turn contribute to the biodiversity of the most easterly intact corridor in Australia which plays a significant role in the biodiversity and ecosystem function of the region, being the most biodiverse region in New South Wales.**

General Points

7. The amended DA and the DA as a whole is inadequate in that there is no adequate ecological constraints mapping and some mapping presented is deceptive and inaccurate. There is no dispute that the site is highly ecologically constrained. Yet there is no clear view presented to Council of the actual development footprint overlayed upon the constraints of the site. The DA is not transparent in its effects upon the ecological values present upon the site and to this extent it is misleading. Further, the Plans provided in the amended DA are flawed. The Site Plan – Overpass Option Plan delineates the 7(k)CH habitat zone area incorrectly. The area that is actually zoned 7(k)CH habitat is more extensive than that shown on the Plan and in fact reaches all the way up to Jones Road and includes Jones Road, rather than falling short of Jones Road as depicted in the Plan.

8. The ecological assessment for the alternative proposed access by way of an 'overpass' over Jones Road is fundamentally flawed in that throughout the document the author continues to stress the likely low impact of the development on the site, based upon a 3 day event. The DA is not just for a 3 day event it is for major road and earth works and the proposed event which could not reasonably be considered low impact will actually last for more than one month when the necessary 'bump in' and 'bump out' period is considered. The ecological assessment for the DA is flawed in this regard. The actual proposal is not considered in its entirety. Council has not been provided with the necessary information to satisfy itself under s79C of the *Environmental Planning and Assessment Act 1979* regarding the impact the proposal may have on the ecological values of the site.

9. The DA continues to be for a trial event. While the amended DA provides for an alternative access to the originally proposed cut and cover access, our client is of the view that the scale and extent of the proposed alternative access road works which involve cut and fill and widening of the existing road is still excessive for a one off trial event. This is particularly so given the high biodiversity of the area, the habitat protection zoning of the road and surrounding land, and the corridor function of the area.

10. The proposed helipad has been relocated in the amended DA. It would appear that the helipad has now been located closer to koala habitat and a high conservation value forest area. We note that it is unclear what the proposed use of the helipad will be. If it is for some emergency purpose, it is curious that it is not mentioned anywhere in the DA or more particularly in the Emergency Evacuation and Risk Management Plan. A helipad and the use of a helicopter are significant. If the helicopter use is for anything other than for emergency aeromedical evacuation, retrieval or rescue it is likely that the development would be properly characterised as designated development in accordance with Sch 3 item 2 of the *Environmental Planning and Assessment Regulation 2000* and should be processed as such. Council may wish to seek further information from the proponent regarding the proposed use, given the lack of detail in the DA.

Zoning

11. Jones Road is within the 7(k)CH habitat zone under the Byron LEP. The proposal for the road works for access to the site is also within the 7(k)CH habitat zone. While roads are permissible with development consent under the zoning table our client is of the view that a road involving the extensive works proposed for the only purpose of access for a mega festival site is contrary to the objects of the 7(k)CH habitat zone. The objectives of the habitat zone particularly (b) and (c) are breached by the proposal. Our client has formed this view from the ecological assessment submitted with the amended DA.

12. In this regard we note that the author of the ecological assessment recognises many adverse impacts on threatened species, ecological communities or their habitats from the proposed development. In relation to fauna these include increased risk of roadkill, adverse effects from noise and lighting and increased risk of predation. CONOS urges Council not to simply dismiss any adverse and detrimental effects on the wildlife habitats as a result of the proposal as the author of the ecological assessment has done. Rather than assess any adverse effects the author simply negates that they will be of any significance and incorrectly relies on the proposal being for a 3 day event and on the compensatory plantings that are required of the proponent in the event that Council consents to the DA.

13. It is important that Council considers these adverse impacts in relation to its obligations under the Byron LEP zone 7(k)CH habitat. It is our client's view that there will be a detrimental effect on the wildlife habitats which exist. This is the requisite test for Council under the Byron LEP. This is further compounded by the cross hatching of the zone and Council's added obligations to consider the effect of the proposal on the habitat values of the site under s38A(3) of the Byron LEP.

14. Council should not consent to the development of the widening and 'overpass' of Jones Road for the specific purpose of access to a one off festival event site only within the 7(k)CH habitat zone under the Byron LEP. To do so would be contrary to the objectives of the habitat zone. Council is well aware of the regionally and State significant Marshall's Ridge corridor and the reasons that the Jones Road area is zoned 7(k) CH habitat. In this regard Council is referred to the Cleland Inquiry of 1997.

Ecological Assessment

15. It is somewhat alarming that again there is no detail on any survey methodology or survey effort in the ecological assessment. The assumption is that the assessment for the proposed road 'overpass' is based upon some 2 days of survey work of some undescribed type in February 2007. This survey work was considered as preliminary. However, in the amended DA the author now states that substantial survey effort has been invested in researching the fauna and flora of the site and further surveys are planned.[1] The lack of on ground survey work is alarming given the proposal involves substantial earth works, habitat removal and the substantial use of the area and site for an event period lasting for over a month and given the site's known and likely conservation values.

16. The ecological assessment is inadequate. It is our client's view that Council should be very concerned about the inadequacy of the ecological assessment given the known biodiversity and the ecological constraints of the site.

[1] Fitzgerald, M, *Ecological Assessment of car park access road and pedestrian walk way at North Byron Shire Parklands Prepared for Splendour in the Grass Pty Ltd*, 17 March 2008, p12

17. The author of the ecological assessment chose only the 4 threatened species of fauna for the purpose of applying the seven-part test of significance. He states that it is because of the habitats present within the footprint of the proposal. This is not adequate when so many other threatened species of fauna that are likely to use the habitat that will be removed have not been considered. These include the following:

    - Masked Owl (several records in vicinity, prey species known from habitat that will be removed)
    - Eastern Blossom-bat (known from site, food trees Willow Bottlebrush, Pink Euodia will be removed)
    - Black Flying-fox (known from site, food trees Camphor Laurel, Umbrella Cheese Tree, Pink Euodia will be removed)
    - Little Bentwing-bat (known from site, large roosting colony in vicinity, foraging habitat will be removed)
    - Eastern Long-eared Bat (known from site, foraging and shelter habitat will be removed, roost hollows may be present)

18. The Long-nosed Potoroo is another threatened species that may possibly use the habitat that will be removed and disturbed and which has not been considered.

19. There is no adequate assessment or discussion regarding the cumulative impacts of the proposal on threatened species, populations, endangered ecological communities or their habitats. This is clearly a requirement when looking at the test of significance of effect on threatened species.[2] The author of the ecological assessment after some discussion of the Pacific Highway upgrades does acknowledge that in relation to connectivity the proposed Jones Road 'overpass' does have implications for connectivity and movement patterns of terrestrial fauna in the location, and more so now since the construction of the Pacific Highway upgrades.[3] However, further assessment of cumulative impacts is necessary before Council can fully assess the environmental impacts of the proposal.

20. For those threatened species that have been considered namely the Rose-crowned Fruit-dove, the Common Planigale, the Koala and the Grey-headed Flying-fox, the barrier effect of the proposed 'overpass' crossing of Jones Road has been inadequately assessed for the Common Planigale and the Koala. We explain this below.

21. In conducting the seven-part test for the Common Planigale the author clearly states that there will be potential adverse impacts upon the species and its habitat including the barrier effects of the construction of the access road which may affect movement patterns.[4] The author however bases his assessment of the level of any adverse impact on a 3 day event which is clearly incorrect. The barrier effect will be far more substantial than assessed. The DA is unambiguous that a substantial 'bump in' and 'bump out' period is required and that period of time will be at least 1 month if not longer. Furthermore, the effects that the actual proposed works to be carried out may have on threatened species are not assessed.

22. In relation to the Common Planigale the author states that the temporary use of the road (as incorrectly considered for 3 days) is unlikely to have a *severe* impact upon the species and therefore the author concludes that the proposal is unlikely to have an *adverse* effect on the

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[2] *BT Goldsmith Planning Services Pty Ltd v Blacktown City Council* [2005] NSWLEC 210 [89-90]

[3] Fitzgerald, M, *Ecological Assessment of car park access road and pedestrian walk way at North Byron Shire Parklands Prepared for Splendour in the Grass Pty Ltd*, 17 March 2008, p11-12

[4] Fitzgerald, M, *Ecological Assessment of car park access road and pedestrian walk way at North Byron Shire Parklands Prepared for Splendour in the Grass Pty Ltd*, 17 March 2008, p19.

lifecycle of the species.[5] The threshold built within the legal test is clearly an *adverse effect.* The author would appear to have applied a threshold of *severe impact* in determining *adverse effect.* This is clearly questionable and inadequate for the purpose of assessing a development application for an area of such significance for threatened species.

23. At clause d(ii) of the seven-part test for the Common Planigale the ecological assessment incorrectly states that no area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action.[6] This is incorrect and invalidated because an area of habitat *will* be fragmented and isolated.

24. In the seven-part test for the Common Planigale the author relies upon some compensatory plantings to mitigate against the adverse impact the barrier effect will have upon the species. This is a questionable application of the seven-part test. It is unreasonable to conclude that the adverse impacts resulting from the proposed development will be mitigated to any reasonable extent by compensatory plantings which will naturally take years to actually compensate for the loss of habitat proposed.

25. In conducting the seven-part test for the Common Planigale associated effects such as noise, lighting and direct human disturbance have not been considered.

26. As is the case for the Common Planigale the seven-part test for the Koala is incorrect. Again the author of the assessment bases his assessment and conclusions of the impact upon the Koala on a proposal for a 3 day disturbance event. As stated above this is wrong. The DA is for the construction of a permanent road 'overpass' involving substantial earthworks and the 'bump in' and the 'bump out' period necessary for the proposed event, likely to be over 1 month.

27. Further, at clause d(ii) the ecological assessment incorrectly states that no area of habitat for the Koala is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action.[7] This is incorrect and invalidated because an area of habitat *will* be fragmented and isolated.

28. Further at clause f of the seven-part test for the Koala the assessment does not identify the Draft Recovery Plan relevant to the Koala.[8] We advise that the proposed road 'overpass' is not consistent with the Draft Recovery Plan for the species. Again the ecological assessment is incorrect.

29. The Predation by the Red Fox is identified as a Key Threatening Process under the *Threatened Species Conservation Act 1995.* Predation by the Red Fox will be exacerbated by the proposed road 'overpass' development. This has not been considered at all.

30. There are Priority Action Statements issued by DECC in relation to all the Threatened Species in the ecological assessment and these are not consulted whatsoever. The proposed development is contrary to the Priority Action Statements issued by DECC.

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[5] Fitzgerald, M, *Ecological Assessment of car park access road and pedestrian walk way at North Byron Shire Parklands Prepared for Splendour in the Grass Pty Ltd*, 17 March 2008, p20.
[6] Fitzgerald, M, *Ecological Assessment of car park access road and pedestrian walk way at North Byron Shire Parklands Prepared for Splendour in the Grass Pty Ltd*, 17 March 2008, p21.
[7] Fitzgerald, M, *Ecological Assessment of car park access road and pedestrian walk way at North Byron Shire Parklands Prepared for Splendour in the Grass Pty Ltd*, 17 March 2008, p24.
[8] Fitzgerald, M, *Ecological Assessment of car park access road and pedestrian walk way at North Byron Shire Parklands Prepared for Splendour in the Grass Pty Ltd*, 17 March 2008, p24.

Archaeological Significance

31. Our client has grave concerns about the impacts o the proposal on the regionally significant archaeological site located along a spur and foot slopes in the north western corner of Yelgun Flats that is contained on the register of the Department of Environment and Climate Change.

32. Our client has been in discussions with Dr Andrew Benwell who first discovered the site and who reported it to the then NPWS. We have attached a map identifying the regionally significant site of concern, site #4-2-114/115 which was provided to our clients by Dr Benwell.

33. We advise that an assessment of the site was undertaken by Adrian Piper in September 2002, on behalf of NOREDO LTD for Greenfield Mountains, the property owner at the time. Adrian Piper described the open campsite # 4-2-114/115. He stated that the site is:

> *"...unique in a local and regional context. The site contains function specific tools namely bevelled pounders. The site extends the southern range of these implements from Moreton Bay to the Tweed and Brunswick Rivers."*

34. Adrian Piper's Recommendations in his Sept 2002, Archaeological Assessment are:

Recommendation 5
It is recommended the dimensions of the site be professionally surveyed and mapped. Its location in relation to the Billinudgel Nature Reserve surrounding features and adjoining Land Management Units be noted on any future Planning documents.

Recommendation 6
6.1 It is recommended that the surveyed site area be free of mechanical surface or sub-surface works in relation to cultivation, planting or any type of land uses which may require earthworks, unless given by Consent or Permit of the Director General NSW NPWS.

6.2 I would recommend that a buffer zone in the order of twenty metres be imposed around the campsite to be free of the type of land uses stated in 6.1. I recommend that the final area of the buffer zone be negotiated between the Tweed Byron L.A.L.C. and the owners of the property.

6.3 If recommendations 6.1 and 6.2 cannot be adhered to I recommend that a sub-surface investigation using - systematic pit testing be employed to assess the extent and nature of sub-surface archaeological deposits. If other archaeological materials are present they would be considered significant and therefore investigation methods in the nature of trench and or shovel pit testing methods should be employed to assess the significance of any sites found.

6.4 The recommendation 6.3 requires prior written authorisation of the NSW NPWS. To carry out 6.3 the land holder would be required to submit a Preliminary Research Permit detailing the research proposal, procedures, methodology and consultations with the Tweed Byron L.A.L.C. Consent would normally require the written support of the Tweed Byron L.A.L.C.

35. In the *Archaeological Assessment* undertaken by Jackie Collins on behalf of Balanced Systems Planning Consultants for Splendour in the Grass, the maps indicate that the site is located on DECC land (the old 9(a) road reserve only).

36. However, Dr Benwell highlights in the map attached to this submission that the site clearly extends beyond DECC land (old road reserve). The landform in this location supports Dr Benwell's findings as there is a small knoll flanked by fig trees located to the west of DECC land (old road reserve).

37. This regionally significant archaeological site is located between two areas of reserve land namely the old 9(a) road reserve, recently acquired from the RTA, and the old G'day Roadhouse site.

38. The Splendour in the Grass development application is proposing to construct roads and pedestrian walkways throughout this area. This is clearly an unacceptable proposal and is likely to require a permit from the Department of Environment and Climate Change in relation to the damage or destruction of a regionally significant site.

39. It would appear that there is some conflicting information presented within the DA regarding the regionally significant archaeological site. Council needs to be certain of the impacts that the proposal is likely to have on all sites of significance.

40. In 1990 Kerry Navin documented Jones Road as a Ridge of 'High Archaeological Sensitivity'. Both the 'overpass' and the underpass options proposed by SIG for Jones Road will impact upon the High Archaeological Sensitivity.

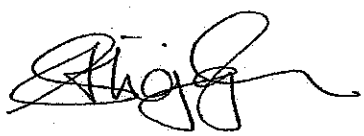
Conclusion

41. Once again, our client urges Council to refuse this development application. CONOS considers that the development application is fatally flawed in that it does not provide the requisite detail required for Council to give proper consideration to the development, given the known and likely biodiversity values of the area, and that the likely impacts on those values will be far too great.

42. The site of the proposal has a detailed history known to Council. It has been the subject of a detailed Commission of Inquiry, it is the most easterly wildlife corridor in Australia and has been mapped as a wildlife corridor of regional significance. While the corridor has been exploited for the purposes of the Pacific Highway, further exploitation of the area must be prevented. Council is obliged to consider the cumulative impacts of the decisions made that will impact on the significance of the area.

If you have any questions regarding this submission please contact the writer on 6622 7381 or 0428 227 363 or by email sue.higginson@edo.org.au.

Yours sincerely,
Environmental Defender's Office Northern Rivers



Sue Higginson
Solicitor






A Review of the Effects of Human Intrusion and Disturbance on Wildlife; Reference to a Proposed Permanent Cultural Events Site at Yelgun, NSW







Andrew Benwell

David Scotts





A Review of the Effects of Human Intrusion and Disturbance on Wildlife; Reference to a Proposed Permanent Cultural Events Site at Yelgun, New South Wales

Prepared for:

Conservation of North Ocean Shores Inc. (CONOS)

Prepared by:

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CONTENTS

Summary

This review aims to highlight the potential significant impacts of increased human intrusion and disturbance on wildlife and seeks to place those impacts within the context of a planned permanent cultural events site at Yelgun, on the north coast of New South Wales. Human intrusion and disturbance refer to the effects of human activities such as movement and congregating of people, increased noise, artificial night lighting, pedestrian and vehicular traffic and other indirect impacts, which intrude on wildlife, but do not involve direct destruction of habitat. Such "non-consumptive disturbances" are often associated with outdoor recreational activity occurring in parklands, reserves and other areas that also function as wildlife habitat. The impact of human disturbance on wildlife is subtle compared to overt forms of disturbance such as deforestation and chemical pollution, which have immediate destructive effects, but human disturbance has insidious and cumulative effects on wildlife (Price 2008). In the context of this review we are primarily considering human-induced effects as manifestations of the impacts of activities associated with a cultural festival site (e.g. elevated people presence, periodic intense noise, artificial lighting, potential changes to species compositions and interactions).

In sensitive species, human activity within or adjoining wildlife habitat elicits various stress-related responses ranging from physiological responses (e.g. changes in chemical and hormone balances), to altered activity and time budgets (e.g. more vigilance and less foraging), to more drastic changes in activity known as escape or flight response (e.g. cessation of feeding or breeding behaviour and vacation of an otherwise suitable area of habitat) (e.g. Blumstein 2003; Price 2008; Ambrose 2009). Research on avifauna generally shows that a large proportion of species in a given area of habitat subjected to human disturbance exhibit behaviour consistent with stress, avoidance or disruption, and the evidence points to other major fauna groups being affected in parallel fashion. These effects have obvious implications for the maintenance of species richness and population viability of threatened species in conservation reserves and other habitat areas affected by encroaching human activity.

Research shows how the level of human disturbance determines the degree of likely impacts on the wildlife that reside, or utilize habitats within or nearby to the site of disturbance. Quantification of the relationship between disturbance type and intensity and the response of biota is not possible with a high degree of precision, but the general trends in the relationship have been demonstrated by research. As group size and disturbance intensity increase, the negative effects on wildlife overall also increase, although there may be species (often exotic) which adapt to exploit new types of habitat created. Intense and concentrated disturbance will tend to alienate habitat within the activity site, exacerbate edge effects emanating into adjoining reserves or protected areas, and increasingly affect sensitive wildlife species. At Yelgun, the sudden intrusion into the landscape of large concentrations of people, high levels of noise, artificial night lighting and other impacts are likely to act as an intense disturbance on a high proportion of species.

Research indicates that for relatively small groups of people in parks and reserves, human activity may exert a direct disturbing effect on avifauna up to 100m from the

activity and considerably greater edge effect distances have been demonstrated for other fauna. Artificial night lighting can have a severe impact on nocturnal insect fauna, undermining the foodweb of consumer species dependant on this resource base. The use of yellow sodium vapour lights in place of normal white lights can greatly reduce this impact, but the extirpation process continues to operate, as insects are drawn in from surrounding habitat albeit at a lower rate (some insects are actually more attracted to yellow sodium lighting).

The effect of noise on wildlife has only recently been considered a potential threat to animal health and long-term survival. Noise can be frightening and disturbing to animals which vary tremendously in their response to noise ranging from apparent near indifference to various escape and flight behaviours. Other common behavioural responses to noise include elevated stress levels, acoustic adjustment and habitat avoidance.

The research reviewed herein indicates that the consequence of intense human disturbance is likely to be avoidance or abandonment of habitat and changed behaviour patterns by a proportion of the vertebrate fauna. On a wider scale this may adversely affect the sustainability of local populations of threatened fauna species, which depend on the surrounding matrix as well as Billinudgel Nature Reserve to maintain viable local populations. A major negative impact of human disturbance on a number threatened fauna seems highly likely from research which demonstrates that the impact of human disturbance is proportional to the intensity of disturbance as measured by group size. One research study found that the relationship between recreation intensity and bird density was log linear, indicating that the exclusion process was exponential (i.e., doubling the amount of recreation activity (people-presence) quadrupled the disturbance effect). The implications if group size (or disturbance intensity) is in the thousands or tens of thousands are obvious, given that in one of the studies reviewed demonstrable effects on wildlife resulted from a relatively subdued music event attended by 200 people.

Research supports the expectation that as intruder group size increases, the negative effect of human disturbance extends further. Consequently a larger area of habitat may be vacated as species withdraw to a perceived safe distance, or move to another area of habitat if available. Fernandez-Juricic (2000) explains how important it is that human disturbance loads are incorporated in management decisions at local and regional scales. It is clear that a legislated land-use planning process is urgently needed for protecting nature conservation areas with appropriate land-use buffer zones. The Yelgun location supports suites of threatened species but requires restoration to enhance long-term viability of wildlife, not further disturbance.

With regard to the proposed cultural events site at Yelgun, there is a tacit assumption that Billinudgel Nature Reserve will act as a refuge or source of unoccupied available habitat for individuals displaced from the festival site by human disturbance. Putting aside the likely impacts of elevated human disturbance as an edge effect on the reserve itself, this assumes that there is available habitat; the reserve is not already at carrying capacity for that species given food resources and predator activity; and that increased density within the reserve will not affect long-term survival and fecundity.

Arguments could be made either way, but essentially we do not know with any certainty what the exact effects of a massive increase in human disturbance (relative to the current situation) will be, but there is a significant risk that survival and fecundity of local populations will be adversely affected, resulting in population declines.

Possible mitigating circumstances for large scale human disturbance at Yelgun include habituation and buffer zones. The term "habituation" is often misused to describe any observed moderation in wildlife responses to human disturbance and is often confused with tolerance which is the intensity of disturbance that an individual tolerates without responding in a defined way; tolerance is often mistaken for habituation (see Sec. 6.2). The phenomenon of habituation appears to depend on the frequency and the intensity of encounters. Wildlife is less likely to habituate to human disturbances entailing either low frequency or high intensity. In the case of the proposed cultural events site at Yelgun, it would appear that human disturbance will be intermittent and probably very high in intensity, a combination least likely to result in habituation behaviour in wildlife.

Narrow buffer zones are unlikely to be effective in mitigating potential loss of wildlife diversity at the Yelgun locality, because of the intensity of human disturbance associated with a large cultural events site and its close proximity to core and matrix habitat (of regional conservation significance). Rather than narrow buffer zones, it is suggested that conservation areas established in rural landscapes that then become subject to increasing pressure from development, require a graded system of land-use buffer zoning that explicitly recognises the level of human disturbance associated with different land uses and their impact on wildlife.

Definitions

connectivity: The degree to which a landscape facilitates or impedes movement among resource patches.

core areas: Reservoirs for the conservation of plant and animal populations and for the maintenance of ecological processes; typically the largest, most intact blocks of habitat and the areas most likely to support diverse habitats and intact faunal assemblages; comprising in large part the system of dedicated conservation areas (Nature Reserves, National Parks etc.).

edge effects: The zone where one land use or vegetation type changes abruptly into another, also referred to as an ecotone; the edge zone may be anthropogenic (e.g. forest into agriculture or grassland into road) or natural (e.g. wetland into forest or heath into forest). Often, however, the edge is more subtle such as mature/regrowth forest or forest community 1/forest community 2.

ecological pattern: the structure (ie. configuration and condition) of habitat within a landscape.

ecological process: the dynamics or interaction between biota and environment that maintain the ecosystem and its manifold functions; for example, species migration, pollination, productivity, biogeochemical cycling.

habituation: a process involving a reduction in response over time as individuals learn that there are neither adverse nor beneficial consequences of the occurrence of a stimulus.

hard matrix: Areas surrounding reserves where ecological processes are alienated by other land-uses.

human disturbance: Applied in the context of this report to mean human activities other than direct clearing or destruction of habitat that have an adverse on wildlife, such as massing of people, increased noise, artificial night lighting and pedestrian and vehicular traffic.

matrix areas: Areas and land-uses surrounding reserves and other protected habitats.

noise: a sound of any kind; environmental noise often refers to unwanted sound; sound is often measured in terms of intensity (as decibels (dB)) and frequency (kHz); the decibel (dB) is a logarithmic unit of measurement that expresses the magnitude of intensity relative to a specified or implied reference level. Since it expresses a ratio of two quantities with the same unit, it is a dimensionless unit.

non-consumptive (human disturbance): human activities that do not cause obvious changes to the physical environment but nonetheless can affect wildlife adversely.

sensitisation: the opposite to habituation - increased behavioural responsiveness over time when animals learn that a repeated or ongoing stimulus has significant consequences for the animal.

soft matrix: Areas surrounding reserves where some level of ecological intactness and integrity is maintained.

tolerance: the intensity of disturbance that an individual tolerates without responding in a defined way.

1 Introduction

1.1 Purpose

Human activities that affect wildlife and their habitats are pervasive and increasing. The effects of these activities are manifested at all ecological scales, from short-term changes in the behaviour of an individual animal through local extirpations and global extinctions (Steidl and Powell 2006).

Study of the response of wildlife to different types of "non-consumptive" human disturbance, that is, activities involving impacts such as increased noise, vehicle traffic, artificial night lighting, pedestrian traffic and recreation, rather than direct clearing or destruction of habitat has become an important field of ecological research. This topic generally falls within the science of behavioural ecology and research in Europe and North America, and increasingly in Australia, has generated a large body of published literature, providing insight into its effect on wildlife (e.g., Geist *et al.* 2005, Price 2008, Price and Lill 2008, Parris *et al.* 2009).

The purpose of this discussion paper is three-fold: -

(i) to review the current state of knowledge concerning the effects of different forms of human disturbance on wildlife, based on a review of scientific literature published in reputable, peer-reviewed journals;

(ii) to discuss the ecological effects of intensified land-use on conservation areas with special reference to a cultural events site proposal at Yelgun in Byron Shire, adjoining Billinudgel Nature Reserve; and

(iii) to highlight the need for planning legislation that protects nature conservation areas with suitable buffer zoning and land-use hierarchies, to safeguard conservation areas established in rural landscapes from spreading urbanisation/intensification of land-use.

The discussion paper was commissioned by CONOS (Conservation of North Ocean Shores) and prepared by ecologists David Scotts and Dr Andrew Benwell. The review was prepared in the context of a proposed music and cultural festival site on 640ha of land owned by North Byron Shire Parklands (NBSP) at Yelgun in Byron Shire, northern NSW. The proposed site has long been recognised as having high conservation value (see Appendix 2) due to the presence of a wide range of threatened fauna species (*Threatened Species Conservation* (TSC) *Act* (1995)), its location straddling a mapped regional wildlife corridor (Scotts 2003), inclusion of pre-existing 7(k) habitat protection zones (Byron Local Environmental Plan 1988 (Amendment No. 51) and abutment to Billinudgel Nature Reserve (NSW NPWS 2000).

An alliance of local conservation groups including CONOS is opposing the cultural events site proposal which is presently being assessed by the Department of Planning under Part 3A of the *Environment Protection and Assessment (EP&A) Act (1979)* on the grounds that it would violate local and regional planning controls, have an adverse effect on threatened species and local biodiversity and result in negative edge effect impacts on Billinudgel Nature Reserve. (Other environmental and socio-economic objections of these groups are not considered in this paper, which is concerned only with ecological issues.)

As there is a lack of information concerning how local fauna, and threatened species in particular, respond to types of festival per se, or the complex of activities associated with carrying out large cultural events, we have reviewed the likely impacts of elevated human disturbance through other surrogate studies of human disturbance and wildlife responses.

The discussion paper begins by describing how the effects of human disturbance must be considered in terms of ecological processes operating at local and landscape scales. We describe landscapes in terms of interconnections of reserves, buffers, corridors and matrix (surrounding) areas, highlight the critical importance of the matrix and its influence on remnant natural areas. We then go on to review scientific literature relating to the effects of particular types of human disturbance on wildlife, including the direct threats of people presence, noise and artificial night lighting, as well as indirect threats of edge effects, habitat degradation and the flow-on effects of associated impacts. We then look at what is known about the effects of human disturbance impacts on particular fauna groups. We also review potential mitigation of human disturbance impacts and discuss potential consequences of elevated human disturbance in both a generalized context and also in relation to Billinudgel Nature Reserve and its environs.

1.2 Fauna of the Yelgun Cultural Events Site and Billinudgel Nature Reserve

Both the Yelgun cultural events site and adjoining Billinudgel Nature Reserve support a diverse vertebrate fauna, including a high number of threatened fauna species. This area, formerly known as Marshall's Ridges and the Billinudgel Swamp has been the subject of numerous ecological studies starting with Gilmore *et al.* (1986). Studies demonstrate that the vertebrate fauna, including the majority of threatened species, utilise both the Nature Reserve and the surrounding matrix of private land composed of a mosaic of cattle grazing pasture with scattered trees and embedded patches of habitat of various types. The habitats found in this area represent examples of productive lowland ecosystems that are poorly represented in the reserve system.

The number of threatened fauna species known or likely to use habitats within the proposed Yelgun cultural event site and Billinudgel Nature Reserve is in excess of 30 species (Wildlife Atlas 2009). Nineteen threatened species are known to use the area are listed in Appendix 1.

2 The Importance of Matrix Areas in Landscape Conservation

2.1 Interconnectedness: patches, buffers, corridors and matrix areas

A predominant paradigm within the modern fields of conservation biology and landscape ecology revolves around the concept of "interconnectedness". Lindenmayer and Franklin (2002) stress the concept of interconnectedness and outline that its acceptance reinforces the premise that "… the small network of existing conservation reserves is crucial for the health of ecosystems extending far beyond their borders". Lindenmayer and Franklin then turn the premise upside down: "… *if the matrix can be affected by what happens in (the relatively small) reserves, how much greater is the effect of the matrix on reserves?*" This review assumes that the long term welfare of biodiversity requires the maintenance of interconnected and functionally operational landscapes at all spatial scales. Matrix areas, those outside reserves and other protected habitats, are vital in that context. A "soft" matrix (where some level of ecological integrity is maintained) will facilitate on-going functioning of natural systems while a "hard" matrix (where ecological processes are alienated by other land-uses) is likely to compromise ecological viability at local, landscape and regional spatial scales.

A widely accepted conceptual model for regional landscape conservation planning describes linked protected area networks, which comprise large core areas, buffers and corridor links, as essential elements within the broader context of an integrated approach to landscape conservation. It is important to note that, while the most ecologically intact areas should always form the basis for protected area networks, core areas, buffers and corridors need not be free of past disturbances. Indeed, the positive correlation between the productivity of a site and its past or present disturbance (Braithwaite *et al.* 1984; Gilmore 1990; Pressey *et al.* 1996; Laurance 1997; Eby *et al.* 1999) means that many important areas have either been cleared or modified. These areas usually retain their inherent productivity, may support remnants of previous species assemblages, and may be candidates for ecological restoration (Recher 1993; Saunders *et al.* 1993; Simberloff *et al.* 1999). Core areas, where conservation is the principal aim, are central to protected area networks (Bennett 1998; Soulé & Terborgh 1999). They are reservoirs for the conservation of plant and animal populations and for the maintenance of ecological processes. Core areas need not necessarily be formally reserved (Bennett 1998). In any landscape, core areas are typically the largest, most intact blocks of habitat; the areas most likely to support diverse habitats, intact faunal assemblages, and to maintain natural disturbance regimes (Bennett 1998).

Where conservation is an important component of a wider multiple land-use regime, buffers can be integrated into protected area networks but are usually supplementary to formal reserves, core areas, or linking corridors. Buffers can be important as zones where exploitative management approaches are ameliorated and integrated with conservation orientated approaches to minimise impacts on adjacent reserves, core areas and corridors (Bennett 1998; Groom *et al.* 1999). The integration of buffers into protected area networks must recognise that they are likely to be sensitive to and change in quality depending on the prevailing land-use regime.

Connectivity, the degree to which a landscape facilitates or impedes movement among resource patches (Bennett 1998), relates particularly to the movement of fauna

and is fundamental to the conservation of natural ecosystems (Noss *et al.* 1997; Beier & Noss 1998; Lindenmayer 1998; Bennett 1998). It follows that landscape configurations promoting movement of fauna and habitation will have benefits for the overall persistence of species and ecological processes they facilitate. Wherever habitat occurs there is some degree of connectivity. The tenets of landscape ecology engender a holistic consideration of ecological processes whereby all habitat patches within a landscape are connected, that is, they exchange biotic or abiotic material at some level, irrespective of our ability to quantify it. That connectivity is often characterised and mapped as linking corridors, but connectivity can also be facilitated through a 'soft' matrix. Habitats that facilitate connectivity, be they embedded within corridors or within the broader matrix, are areas where conservation efforts may be focused in order to maintain, or enhance, regional conservation potential.

At Yelgun, where a major cultural events site is proposed, all the elements of an integrated conservation network currently exist. The locale includes a formally reserved core (Billinudgel Nature Reserve), supplementary habitats of known high conservation value (some zoned 7k for environmental protection) variously occurring as buffer, corridor and matrix elements, and additional areas of suitably "soft" matrix. The landscape connectivity values of the matrix and corridor areas have been formally recognized by a series of planning programs (see Scotts 2003, DECC 2009, Byron LEP Amendment 51) and a judicial investigation (Commissioner Cleland 1997). As identified and formally mapped by DECC (2009) the Yelgun locale qualifies as a regional priority landscape for reservation and restoration due to its known and predicted conservation values at local, landscape and regional scales (see mapping included in DECC 2009).

2.2 Human intrusion & disturbance: altered landscape patterns & processes

Human-induced landscape changes typically involve alteration to habitat pattern (e.g. the physical loss, fragmentation or degradation of habitat) and ecological processes (e.g. altered system dynamics impacting fundamental demographic relationships and energy or nutrient regimes) (Lindenmayer and Franklin 2002). Many pattern impacts are obvious and generally receive most attention within development impact assessments. But process impacts can be subtle, slower to manifest and harder to detect, predict or characterize within the context of a short-term impact assessment. Nevertheless process impacts can be far-reaching in terms of their impacts on biodiversity and natural systems. In dealing with the potential impacts wrought by elevated human disturbance we are dealing mainly with impacts on landscape and population processes.

2.3 Edge effects: deleterious impacts of developments adjoining natural areas

The concept of "edge" is not easily defined (Lidicker and Koenig 1996, Lindenmayer and Fischer 2006) but it is directly applicable to consideration of the impacts of elevated human disturbance adjacent to protected areas. When one community-type changes abruptly into another an objective edge, or ecotone, is formed. These edges may be anthropogenic (e.g. forest/agriculture or grassland/road) or natural (e.g. wetland/forest or heath/forest). Often, however, the edge is more subtle and due to changes in ecological processes rather than change in ecosystem structure or pattern. In the context of this review we are primarily considering human-induced edge effects

as manifestations of the impacts of activities associated with a cultural festival site (e.g., elevated people presence, periodic intense noise, artificial lighting, potential changes to species compositions and interactions).

Edge effects can be "soft," where the transition between different patch types is gradual, or "hard," at boundaries with marked contrasts in vegetation structure or other features. The ecological edge relating to a particular disturbance is the result of interactions between the kind and intensity of the disturbance event (a music festival imposed within an already fragmented landscape in the context of this review) and the ecological dynamics within the adjacent, undisturbed, or at least more natural, environment (Lindenmayer and Fischer 2006).

Edges can be classified according to the kinds of impacts they have on abiotic processes or on biota (Lindenmayer and Fischer 2006). Examples of abiotic edge effects include altered wind penetration, light and noise levels. The impacts of abiotic edge effects can extend tens or hundreds of metres from an edge, depending on various factors including prevailing weather conditions (Lindenmayer and Fischer 2006). Biotic edge effects refer to changes in ecological processes, community composition, or species interactions (Lindenmayer and Fischer 2006). The latter may include increases in diseases, pathogens, predators, competitors and can extend hundreds of metres into vegetation remnants (Angelstam 1990, Laurance 1997).

Not all species respond negatively to edges, and some taxa can be more common within edges than elsewhere in a landscape. These may be introduced or exotic species (e.g. feral cat, Red Fox), but also include "generalist" native species (e.g. Australian Magpie, Noisy Miner, Pied Currawong) which find favourable conditions within disturbed environments.

Another question concerns the width of edges and the magnitude of an edge effect. For forest edges it has been found that abiotic effects penetrate up to 50 m into the forest. The invasion of exotic plants and penetration by predators and nest parasites, however, may extend beyond 500 m or more (Wilcove 1985). Similarly, species dependent upon forest interior habitats may respond to edge effects at some distance from the actual boundary (Lidicker and Koenig 1996). The magnitude of an edge effect is dependent upon the parameter of interest- whether it is an environmental variable (e.g. air temperature), an ecological process (e.g. rate of organic matter decomposition), or a community interaction (e.g. predation of one species by another) (Lindenmayer and Franklin 2002).

There exists a body of evidence to show that the processes that occur at habitat edges alter the ecologies of many kinds of habitat islands (Angelstam 1990, Lindenmayer and Franklin 2002). It follows that human influences which exacerbate or favour processes that facilitate edge effects, for example activities that promote the ingress of predators or competitors into natural areas or result in altered community composition, are a threat to local biodiversity.

Edge effects impacting upon reserves or other protected areas can be significantly reduced in intensity and depth by management strategies undertaken within the adjoining matrix to reduce the contrast in structural and biophysical conditions (Lindenmayer and Franklin 2002). Conversely, intense and concentrated disturbance impacts within the matrix will exacerbate edge effects emanating into the reserve or protected area.

3 Non-consumptive Human Disturbance

3.1 Definition

Virtually all human activities can affect wildlife populations either positively or negatively. Activities that are likely to have adverse effects can be divided into those that function primarily by altering the physical environment (or habitat) in a relatively permanent way and those that cause changes to an animal's behaviour. Examples of the former are well known and include clearing of vegetation, forestry and agriculture. The ecological effects of these activities are readily apparent and have been relatively well studied.

Perhaps less obvious in their ecological impacts are those 'non-consumptive' human activities that do not cause obvious changes to the physical environment but nonetheless can affect wildlife adversely (Steidl and Powell 2006). Examples include recreational activities such as bushwalking, bird watching and boating, which are all common activities for visitors to reserves and other natural areas. Within the context of this review, a music/cultural festival represents a form of non-consumptive human activity. As these types of activities escalate within, and adjacent to, reserves and other protected areas, sensitive wildlife species may be increasingly affected (Steidl and Powell 2006).

The magnitude of effects of non-consumptive human disturbances on wildlife is influenced by many factors including the type, duration, frequency, intensity, location, and timing of the disturbance, as well as the particular species of interest (e.g. Burger 1991, 1998; Olson *et al.* 1997; Shirley *et al.* 2001; Bright *et al.* 2004; Fernadez-Juricic *et al.* 2002; Price 2008; Ambrose 2009).

Recognition of human disturbance as a threat to wildlife is beginning to disseminate into mainstream Australian consciousness as formal studies are undertaken (e.g. Price 2008, Price and Lill 2008, Ambrose 2009). Recently the Department of Environment, Climate Change and Water (NSW) recognized 'human interference' as a key threat in developing recovery actions for incorporation within the (draft) Northern Rivers Regional Biodiversity Management Plan (DECC 2009). However, in many circumstances, non-consumptive human disturbance, and activities associated with it, is also an indirect facilitator of other threats such as weed and pest ingress into natural areas, disease and pathogens, and demographic effects (see section 3.2.2 below).

Below we review the direct threats to wildlife of a cultural events site within an area of recognised high conservation value posed by major increases in three human disturbance processes – people presence/human congregation, artificial night lighting and noise.

3.2 Direct threats associated with human disturbance

Effects of human disturbance on wildlife may be harder to identify than more obvious physically destructive disturbances (e.g. habitat loss). Nevertheless detrimental impacts have been documented and direct effects, some with potential consequences extending to lowered overall genetic fitness for impacted individuals and populations (Price 2008), are apparent.

3.2.1 People presence

Human activity can result in many different types of disturbance (e.g. noise, artificial night lighting and grouped presence of people). Here we are concerned with a specific type of disturbance – that brought about by the mere presence of humans. Although most people intend no harm to wildlife, research has shown that in many situations wildlife perceive humans as potential predators and that humans in effect represent "predation-free predators" (Frid and Dill 2002, Beale and Monaghan 2004a). The response of wildlife (birds being the most frequently studied to date) to human presence varies between species and also between individuals of the same species. Real predation attempts and human disturbance both redirect the target bird's time and energy expenditure away from other important activities, such as reproduction and feeding, so both are likely to impact negatively on genetic fitness (Price 2008). In sensitive species the presence, or approach, of humans elicits various stress-related responses ranging from physiological responses (e.g. changes in chemical and hormone balances), to altered activity and time budgets (e.g. more vigilance and less foraging), to more drastic changes in activity known as escape or flight response (e.g. cessation of feeding or breeding behaviour and vacation of an otherwise suitable area of habitat) (e.g. Blumstein 2003; Price 2008; Ambrose 2009). Therefore, although it may appear subtle compared with more destructive impacts (e.g. deforestation), human presence can have insidious and cumulative effects on wildlife (Price 2008). As human influences expand at an ever more rapid rate, remaining natural habitat areas will become vital for the conservation of biodiversity. Many people believe that visiting bushland areas has little or no impact on wildlife or the environment. This is a dangerous assumption and may ultimately counteract the positive conservation benefits of habitat protection and ecotourism. We need to develop conservation strategies that protect species, assemblages and communities in the face of increased human presence (Blumstein *et al.* 2005).

A number of factors can affect the measured or observed response of wildlife to the presence of people (the disturbance response), for example, the species, animal size, disturbance source (e.g. pedestrian, dog walker etc), location of bird (or other animal), number of people, resource availability, direction of approach, rate of approach and starting distance, and even the colour of a researchers clothing (Blumstein *et al.* 2005, Fernandez-Juricic *et al.* 2005, Blumstein 2006, Price 2008). These factors can be used as 'approach tolerance indicators' or predictors of species response for managing bird populations or other fauna groups, but it is essential to consider the variability of responses by different species to a given factor as well as possible interplay between factors.

The cultural context of a country can also affect wildlife responses. Burger and Gochfeld (1991) carried out a unique study where they compared the flush distance of resident and migratory species in India, where the Hindu religion forbids people from harming any living animal. The authors were interested to examine whether migrant species passing through countries where they are commonly disturbed and hunted would be less tolerant of humans than the Indian resident species. Indeed, migrant status was found to be one of the most significant predictors of flush distance.

It is worth noting that studies have demonstrated that it is not necessary for humans to undertake a direct disturbance action for a disturbance impact to be manifested (Fernandez-Juricic *et al.* 2005). The mere presence of people in the vicinity of a

sensitive species, or individual, is in itself sufficient to illicit a disturbance response in many species and is likely to result in altered behaviours, energy budgets, and even vacation of foraging or breeding areas (Fernandez-Juricic *et al.* 2005).

3.2.2 Effect of group size / disturbance intensity

Van der Zande *et al.* (1984) studied the effect of outdoor recreation on breeding bird species in woods adjacent to residential areas in the Netherlands. Data was collected from 6 woods used for passive recreation, representing a relatively high level of human disturbance. They found that increase in human group size was still of significant importance even where intensity was always within the high class and when only common birds species were present. This study included graphs illustrating a threshold of maximum recreation intensity above which a certain species would disappear. Out of 13 species studied in detail, 8 showed significant negative correlations with recreation intensity (visitor traffic). The negative correlations can be regarded as an indication of an effect of recreation or level of people activity upon bird densities. There was a sequence of susceptibility amongst bird species. Notably, the relationship between recreation intensity and bird density was log linear, indicating that the exclusion process was exponential (i.e., doubling the amount of recreation activity (people-presence) quadrupled the disturbance effect).

Similarly, van de Zande and Vos (1984) reported on a study conducted in grove and hedge habitats on a lake shore in the Netherlands. Visitors and breeding birds were counted in the breeding season in 1977 and 1978 (before a car park was opened) and in the breeding season in 1980 (after the car park had opened). All but one of the 12 most abundant species showed a negative difference between experimental units and control units (pre- and post car park) indicating a disturbance effect. It was concluded that "the tendency of most species to be present in lower numbers in 1980 on the parts that had increased in recreation intensity cannot be explained by chance alone and must be regarded as an effect of recreation". Also, "the impacts upon bird densities found in this study can be expected in a recreation intensity range on a standard day between 7.8 and 37.0 visitors per hectare" (van de Zande and Vos, 1984 p. 258)

In an Australian study by Geist *et al.* (2005) titled 'Does intruder group size and orientation affect flight initiation distance in birds?' three different group size treatments (measures of people presence) were applied to Currawongs and Crimson Rosellas. No effect was seen in Currawongs, but group size affected flushing in Crimson Rosellas. "Remarkably, the effect was present with the addition of a single person" and the study concluded that "intruder number should be better integrated into estimates of set back distance to manage human visitation around sensitive species" (p.71). Burger and Gochfeld (1991), in the Indian study referred to above, also found that the larger an approaching group the less it was tolerated and some species were never found near humans (e.g. bustards and flycatchers).

Increases in human recreational activity or group size do not always result in declines in bird density, but generally the positively affected species will be exotic, a native species adapted to human modified habitats, or a species with the same general habitat preference as people. As an example of the latter situation, Bright *et al.* (2004) found that human-made structures and recreational activity had no significant affect on numbers and distribution of New Zealand dabchicks (a grebe). The number of man-made structures was actually positively correlated with the number of grebe, however,

this indicated that they prefer the same habitat as humans (e.g. sites protected from prevailing winds and specific shoreline topography). Similarly, Price (2008) makes the point that tolerance of humans appears to be a major factor contributing to the success of some species such as the Common Mynah and Noisy Miner in disturbed landscapes of south-east Australia.

Summarizing some of the research on the effects of people presence on avifauna shows that in many situations increasing levels of pedestrian/recreation activity results in reduced bird species richness and overall abundance of individuals within 10-100m of that activity. Similar effects are observed for mammals. The tolerance (alert distance) of common adaptable bird species appears to be roughly in the range of 10-20m (Fernandez-Juricic *et al.* 2001). The documented tolerance of less common species appears to be in the order of 20-100m (Fernandez-Juricic *et al.* 2005). Studies indicate that alert distance increases with increasing intruder group size and van de Zande *et al.* (1984) found that this relationship was log linear or exponential. Research supports the expectation that as intruder group size increases, alert distances extend further. Consequently a larger area of habitat may be vacated as species withdraw to a perceived safe distance, or move to another area of habitat if available. Fernandez-Juricic (2000) explains how important it is that human disturbance loads are incorporated in management decisions at local and regional scales. It is clear that a legislated land-use planning process is urgently needed for protecting nature conservation areas with appropriate land-use buffer zones.

The research reviewed above demonstrates how the size of human groups is important in determining the scale of the disturbance effect and appropriate buffer zones. Beale and Monaghan (2004a) concluded that there is a need to ensure that set back distances to prevent the disturbances adversely affecting the foraging and breeding behaviour of wildlife are determined by the *largest party likely to visit a site*. The complexity of derived impacts is indicated by their suggestion that "fixed set back distances and buffer zones are likely to be inappropriate in conservation situations where the numbers of visitors to wildlife areas fluctuates spatially and temporally" (p.335).

3.2.3 Elevated people presence within fragmented landscapes

In Madrid, Fernandez-Juricic (2000) studied the effects on avifauna of pedestrian activity (i) within-park (fragments); in three large parks and (ii) between-park (fragments); in 30 parks ranging from 0.4ha to 100ha in area. Within fragments, increasing levels of pedestrians reduced species richness and overall abundance of individuals. Between fragments, after controlling for fragment size effects, the pedestrian rate was negatively related to species richness in two breeding seasons. Fernandez-Juricic comments that "..it is worth considering how human presence could disrupt bird patch-selection and fragment occupation in other habitats, particularly those which are of conservation value". The author continues, "… human disturbance effects turn out to be particularly relevant in endangered habitats (namely wetlands) and outdoor recreation areas (national parks, reserves, etc) that harbour threatened species." (p.253). Fernandez-Juricic (2000) goes on to say "Irrespective of the relatively independent effects of area, isolation and (human) disturbance, interactions among them could trigger synergistic effects. For instance, area could interact with disturbance increasing its negative effects in small fragments." Because small fragments have higher edge/area ratios than large ones, applying similar disturbance

loads could decrease the proportion of suitable area of small fragments beyond that in large ones.

From his observed results Fernandez-Juricic (2000) concludes that "… higher disturbance loads (in this case human disturbance) could decrease fragment (population) densities, increasing local extinction probabilities." "As such high disturbance loads (high people presence) ought to be incorporated in management decisions at local and regional scales" (Fernandez-Juricic, 2000 p.254).

The conclusions of Fernandez-Juricic (2000) echo a warning regarding the potential impacts of elevated people presence within and adjacent to protected areas, particularly within landscapes that are already fragmented. Human disturbance may act to intensify the effects of fragmentation, reducing landscape suitability (Soule *et al.* 1992). The potential implications for Billinudgel Nature Reserve and those smaller fragments and remnants within the Yelgun location that are zoned 7k for environmental protection, in the face of the proposed cultural events site, are apparent.

3.2.4 Artificial night lighting

The effects of artificial night lighting on biodiversity can be particularly lethal to insects, which are, of course, a fundamental component of most ecosystems (terrestrial and aquatic). Research indicates that dark zones in the landscape have a much richer insect fauna than do lighted zones. In a study described by Eisenbeis (2006) that attempted to determine the capacity of light traps to capture insects relative to the supply of insects in the local area, all the aquatic insects emerging from a mountain stream were counted and the next night all the insects flying to a street lamp positioned near the bank were counted. It was found that different taxa of aquatic insects reacted differently, but in many instances light catches significantly outnumbered the number of emerging insects. "Therefore, the lamp had a long-distance effect for light susceptible insect species and many more insects are attracted than potentially would be found in the immediate surroundings of a lamp. By extrapolation, if there were a row of streetlamps along a stream, a species could become locally extinct in a short time" (p.288-9). Professor Gerhard Eisenbeis describes this process whereby night lighting sucks insects out of surrounding habitat as the "vacuum cleaner effect" (Eisenbeis 2006).

In older publications, entomologists frequently reported extremely large light trap catches of the order of 50,000 per trap per night. Although simple figures do not allow statistical evaluation, much lower numbers are now caught indicating progressive decline in insect populations. Malichy (1965) reported from observations at a newly built and strongly illuminated fuel station there was high initial flight activity of insects but that numbers diminished rapidly in subsequent years indicating significant change in local insect populations caused by the vacuum cleaner effect. In Germany, 1.5 million individual mayflies were caught in a single night on an illuminated bridge surface. In Germany, steep gradients in insect abundance exist between the few remaining natural habitats and urban areas (Eisenbeis 2006).

Rare species are endangered by artificial lighting in Europe where 85% of the land surface is subjected to artificial night sky brightness 10% greater than natural night sky brightness (Longcore and Rich 2008).

Shirley *et al.* (2001) investigated the impact of a music festival, and associated artificial lighting, on a maternity colony of Daubenton's Bat (*Myotis daubentonii*) in north England. They observed that any delay in "lights out", at the end of a particular evening, significantly impacted bat emergence time. This species forages for insects over water and insect availability is known to decrease quickly after sunset; therefore bats need to forage as soon as possible in order to meet constraining energy budgets. Any loss of early evening foraging time is likely to be a critical factor for this species' energy budget, particularly for lactating females (Shirley *et al.* 2001). Within the context of the current review, it is worth noting that the music festival referred to by Shirley *et al.* (2001) features 'early church music' and caters for 200 people. The festival is held in close proximity to the bat roost, in fact in the same large stone building. Human disturbance impacts, including levels of artificial lighting, will be many times greater for the proposed cultural events site at Yelgun. Impacts and consequences for bats that may roost nearby or even forage within the vicinity of a large festival site remain unknown but are conceivably significant.

Studies have found that lamp type may influence impacts on insect fauna and that the ratio of insect captures using high pressure sodium and high pressure mercury lamps is 0.45 for all insects and 0.25 for moths (Eisenbeis 2006). This is a large reduction, but it remains apparent that insects would still be vacuumed from the surrounding landscape, *albeit* at half the rate.

Artificial night lighting removes vast numbers of insects from ecosystems and has the potential to influence the foraging regimes of many nocturnal insectivorous species. Studies are precious few in this regard but any alterations to insect, and other nocturnal invertebrate, population dynamics and species composition caused by artificial night lighting may have cascading effects and impacts on existing predator-prey dynamics. It is not improbable that flow-on impacts could be significant for suites of predatory nocturnal insects, frogs, reptiles, birds and mammals.

Generally, artificial night lighting is only considered from an aesthetic standpoint and its ecological effects are ignored. However, these are potentially far reaching, particularly with regard to insects which form a basis of food chains. The effects of artificial night lighting on species, habitats and ecosystems is only likely to be mitigated in the development process if a policy and legal framework exists to regulate environmental impacts from this particular human disturbance (Rich and Longcore 2006). It is worth noting that light pollution is now regarded as a major environmental issue in Europe, partly because of its ecological impacts and some countries have started to legislate to control its proliferation (http://www.darksky2007.si/).

3.2.5 Human-induced noise

Noise pollution, as it affects humans, has been a recognized problem for decades, but the effect of noise on wildlife has only recently been considered a potential threat to animal health and long-term survival. Noise can be frightening and disturbing to animals which vary tremendously in their response to noise ranging from apparent near indifference to various escape and flight behaviours (Memphis State University 1971). Approaching research on the impact of noise from a holistic perspective, Dr B. Krause found that in undisturbed natural environments, vocalising species divide up the soundscape so that the frequencies of sounds emitted by each species are distinct

and non-overlapping ("a biophony"), as in a symphony orchestra, which is one reason why communities of organisms coexist so well. The intrusion of man-made noise, depending on the level of human activity and intensity of sound, may interfere with the sound niche space so that some animals can't make themselves heard and disrupting communication, foraging, and breeding behaviour patterns (http://www.acousticecology.org/wildlandbiology.html).

As is the case for humans, in many circumstances noise can be considered an animal stressor with potential impacts on physiological, psychological and behavioural characteristics of individual animals or populations (Memphis State University (1971), AMEC Americas Limited (2005)).

Response to noise disturbance cannot be generalized across species or even within species. An animal's response to noise can depend on a variety of factors, including (AMEC America Limited 2005):

- intensity
- frequency distribution
- duration
- number of events
- variation over time
- rate of onset
- noise type, e.g., white noise versus harmonic or pure tones
- existence and level of ambient (background) noise
- time of year
- time of day (many animals might rely on auditory cues more at night than during the day (Larkin *et al.* 1996).
- animal activity and location
- age and sex class
- past experience (Larkin *et al.* 1996)

Potential effects of noise on wildlife are numerous, and include(AMEC America Limited 2005):

- acute or chronic physiological damage to the auditory system
- increased energy expenditure
- physical injury incurred during panicked responses
- interference with normal activities, such as feeding
- impaired communication among individuals and groups

The impacts of these effects might include habitat loss through avoidance, reduced reproductive success and mortality. Generally speaking, noise thresholds for species are unknown, evidence for habituation is limited, long-term affects are generally unknown, and how observed behavioural and physiological response might be manifested ecologically and demographically are poorly understood and seldom addressed (Brown 2001, AMEC Americas Limited 2005).

The inability to hear important environmental cues as well as signals from other animals because of the presence of other noise is called masking. Masking of signals of significance to animals may result in difficulties in finding mates, in escaping predators, and in communicating with other members of the same species. However, little is known about these effects in animal communication (Wollerman and Wiley 2002), even though masking might be one of the most significant effects of a general

increase in background noise on most vertebrates (AMEC Americas 2005). Amphibians, whales and birds are obvious candidates for such effects, but vocal communication is part of the behaviour of many other species. The biological implications of signal masking will depend greatly on the function of the signal and its context (OSB 2003). For example, male frogs call to attract females for mating and to defend territories from rival males. Female frogs of some species prefer lower-pitched calls, which indicate larger, more experienced males. Noisy environments can interfere with this communication process, and create problems with respect to detection, discrimination and localization of appropriate signals. In a healthy population, there might be little effect, but in a severely depleted population, interference with mating via acoustic cues could be serious (OSB 2003). Parris *et al.* (2009) report the phenomenon of frogs calling at a higher pitch in a situation of high traffic noise apparently constituting a trade-off between audibility and attractiveness to potential mates. These authors found evidence that the spectral characteristics of *Litoria ewingii* calls are changing with increasing road-traffic noise, but insufficiently to reverse the masking effect of noise. Given the large and increasing proportion of habitats around the world that are affected by roads and other noises mediated by people this phenomenon has the potential to affect many populations of frogs that are already vulnerable to threats such as habitat loss and fragmentation, pollution, and disease (Campbell 1999, Stuart *et al.* 2004). Parris *et al.* (2009) discuss the trade-offs facing frog populations exposed to chronic noise. The point of relevance here is that frog populations in such circumstances are impacted to the extent that natural call characteristics, evolved over millennia, are suddenly inadequate in the face of an elevated human disturbance regime. In the case of chronic highway noise Parris *et al.* (2009) state that frogs will suffer substantial acoustic interference, which, if translated into reduced breeding success, could eventually lead to the local extinction of populations in otherwise suitable habitats. The implications for intermittently high levels of noise associated with an activity such as a music festival remain patently unclear but impacts on frog populations within and adjacent to the proposed site appear highly likely.

Responses to noise disturbance might have impacts on the energy budget of wildlife (AMEC Americas 2005). For example, Stockwell *et al.* (1991) found that the winter foraging efficiency of desert bighorn sheep (*Ovis canadensis nelsoni*) in Grand Canyon National Park was reduced by 43% as a result of disturbance from helicopter overflights. Indirect evidence suggests that habitat loss is a potential impact of noise disturbance. For example, the distances of woodland caribou from such disturbances as roads, seismic lines and well sites were so large that 22 to 48% of their preferred habitats were avoided in their northern Alberta study area (Refs in AMEC Americas 2005).

Typical behavioural responses to traffic noise include elevated stress levels, acoustic adjustment and road avoidance. Researchers link traffic noise with reduced bird diversity and species abundance adjacent to roads to distances of up to 1,750 metres from highways through forests and further through other habitats (e.g., van der Zande *et al.* 1980, Trombulak and Frissell 2000). An important Australian study in this context is the work of Dawe and Goosem (2007, 2008), who examined the effects of traffic noise on wildlife in the Qld wet tropics. They found that abundance of bird species most dependent on rainforest increased significantly with distance into the forest, with greatest abundances found in the forest interior (100 and 200 metres from the edge). Species richness of rainforest-dependent birds was also greatest in these

interior zones. No rainforest obligates were recorded at the edge zone. By way of contrast, opportunist species not normally associated with rainforest were found only at the edge zone. Nine of eighteen species showed significant differences in dominant song frequencies between individuals recorded at the edge of the forest closest to traffic noise and individuals recorded in the forest interior. Traffic noise at the edge of the forest was louder at ground level than in the canopy, whereas traffic noise levels in the forest interior were greater at canopy level than near the ground. Traffic noise was still a significant component of the acoustic environment at two hundred metres inside the forest away from the rainforest edge.

The dominant frequency of traffic noise in the studies by Dawe and Goosem (2007, 2008) on the Kuranda Range was 1 kHz however traffic noise caused changes to the forest sound frequency spectrum from 31.5 Hz to 2 kHz, which has the potential to blanket areas in which some bird and frog species communicate, particularly at the edge of the forest. Modelling prepared for the Kuranda Range Road Upgrade Impact Assessment Study by acoustic engineers underestimated road noise at the edge by 17 to 31 dB. In some cases, the edge of the road was approximately four times as noisy as had been modelled.

Dawe and Goosem (2007) in their literature review section note that other studies of acoustic responses to noise by fauna (mostly birds) have been predominantly laboratory-based, finding traffic noise to impede the recognition of mating calls in five North American frog and toad species, and to induce raised amplitude levels in songs or calls of tree swallow nestlings, zebra finches, lovebirds, African bush shrikes, nightingales, canaries and budgerigars. They also note that field experiments have found some temperate birds overcome the blanketing effects of traffic noise by singing louder or by making adjustment to the pitch of their songs. This may impact their general fitness by requiring expenditure of greater amounts of energy. Birds singing songs with higher dominant frequencies appear, in some cases, to be less affected. Anthropogenic noise in the range of 65-85 dB(A) caused flight and alert responses in birds and behavioural changes (Dawe and Goosem (2007).

In reporting on the findings of their study in south-eastern Australia, Parris *et al.* 2009 refer to studies demonstrating a variety of responses to road-traffic noise that have been observed in birds (e.g., singing at a higher pitch; singing louder, changing singing patterns to avoid peak traffic periods) and frogs (e.g. altered chorusing behaviour, interference with advertisement call perception). The relative impacts of these responses, in terms of overall fitness and breeding success remains unclear but decreases in the species richness and relative abundance of frogs have been observed hundreds of meters away from a highway in eastern Ontario, Canada (Eigenbrod *et al.* 2009).

The Environmental Impact Statement for New Acland Coal Wetalla Water Pipeline Project (SKM 2009) found that the amount of information available on the effects of general construction noise on Australian fauna is relatively sparse. It was noted that noise affects fauna differently from humans and the effects can vary from serious to non-existent in different species and situations. Direct physiological effects of noise on fauna are difficult to measure in the field and a lot of the impacts are observed by behavioural changes. For repeated construction noise, some form of habituation may occur and the animals may simply maintain activities in their natural habitat after an initial period of acclimatisation. An issue of concern may arise when acclimatisation does not occur.

Research into the effects of noise disturbance on individual animals, their habitat and the ecosystems in which they reside, is required to determine "safe" levels of exposure. Larkin (1996), in a recent review of the effect of military noise on wildlife observed that, research is hampered by a preponderance of small, disconnected, anecdotal or correlational studies as opposed to coherent programs of controlled experiments. Gathering ecological information that is meaningful in determining safe noise level guidelines for species, even within a representative sample of habitat types, is going to be difficult to achieve. Prudence is going to require application of the precautionary principle in most management regimes. Most of the studies on noise and animals can be placed into categories: field observations, field-based experiments and laboratory-based experiments. Baseline studies, while not measuring effect, provide critical information on natural acoustic environments in which organisms live and against which measures of intrusive human generated noise can be assessed. Brown (2001) found that, overall, work in this area is still sparse and sporadic (and much of the information is only available in unpublished documents and government reports). Much of the literature deals with the impact of military activities, seismic and other exploration activities and the influence of transport noise. Very few studies in this field have designed experiments with a level of precision that can identify a threshold stimulus below which the target animal is unlikely to experience detrimental effects. Habituation to noise could enable animals to increase tolerance but, as with humans, anecdotal evidence of habituation is inadequate, and will need to be tested by appropriate studies. The influence of habituation, and overall tolerance to acoustic disturbance, are areas that require further investigation. There is still an absence of understanding how observed behavioural and physiological effects translate into ecological consequences for wildlife.

Radle (2007) provides a succinct perspective regarding the imposition of noise impacts on wildlife; "Most researchers agree that noise can affect an animal's physiology and behaviour, and if it becomes a chronic stress, noise can be injurious to an animal's energy budget, reproductive success and long-term survival. Armed with this understanding it should follow that humans would attempt *to minimize the threat to wildlife by reducing the amount of noise that they are exposed to in natural areas;* but this has not been the situation. Natural areas continue to be degraded by human-made noise, wildlife continues to suffer from these disturbances, and to date the majority of the debate revolves around the egocentric demands of people to either produce more noise in nature (through motorized recreation, scientific research, military exercises etc.) or experience natural areas in the absence of anthropogenic noise."

3.3 Indirect threats associated with human disturbance

The impacts of elevated levels of human disturbance, associated with a major cultural events site can be direct (see section 3.2 above) or indirect. Indirect threats may be less obvious but nonetheless severe in terms of long-term impacts.

3.3.1 Habitat degradation

It is clear that access to suitable habitat is fundamental to the persistence of individual species and loss of suitable habitat will threatened a species' survival (e.g. Lindenmayer and Fischer 2006). Habitat can be lost rapidly or it can degrade in

quality over time. Habitat degradation means that many attributes of the original habitat remain, but the quality of the habitat is reduced for the given species or community of interest. For example, the quality of the habitat may be diminished in ways that do not preclude individuals of a particular species from persisting, but prevent them from breeding. Habitat degradation is common in landscapes subject to human modification (references in Lindenmayer and Fischer 2006). Processes that lead to reduced foraging opportunities, increased predation, harassment or competition, or reduced reproduction potential contribute to overall habitat degradation and reduced long term population viability.

Lindenmayer and Fischer (2006) make the point that habitat degradation can be a species-specific process and, as a result, it can occur somewhat independently of vegetation deterioration. This can make habitat degradation difficult to detect, particularly for less common, more cryptic species. A species may appear to be flourishing at one point in time but slowly disappear off the radar. Apparently suitable habitat may still be present, and even appear unchanged, but conditions may have deteriorated in subtle ways. The species or population may persist at reduced densities and, if long-lived (e.g. some large cockatoos and owls), its demise and reduced viability may go undetected until too late. In this context it is important to note that the on-going presence of a species within a modified habitat or landscape does not necessarily indicate a healthy situation; the habitat may in fact be chronically degraded but the species persists. In such cases an extinction debt (Tilman *et al.* 1994, Lindenmayer and Fischer 2006) remains to be paid.

The threat of habitat degradation appears relevant within the context of a cultural events site. The direct impacts of elevated human disturbance associated with music or other festivals discussed above, all have the potential to degrade habitat. The results may not be obvious, particularly in the short term, as the habitat mosaics remaining embedded within the festival site or within the adjacent Billinudgel Nature Reserve may appear unchanged. However, if ecological processes have been undermined to the extent that the habitats are degraded then ecological impacts may be severe in the long term.

3.3.2 Indirect impacts of human disturbance

The construction, establishment and running of a permanent music festival site brings with it significant levels of human activity and associated infrastructure. Three direct impacts have been considered and discussed in section 3.2:

- Episodic intense concentrations of people (Sec. 3.2.1 to 3.2.3);
- Episodic intense noise levels (Sec. 3.2.5);
- Episodic elevated levels of artificial lighting (Sec 3.2.4).

There is a suite of indirect impacts that are also likely to be facilitated by the activities associated with a permanent music festival site. Some of these have been alluded to as part of discussion of direct impacts because they are likely to flow-on from non-consumptive human disturbance within and adjacent to natural areas as a result of alterations and imbalances to ecological processes. Most are considered formal threats to regional biodiversity by DECC (2009) (now DECCW) and, within the context of the proposed permanent festival site at Yelgun, most are likely to impact high

conservation value habitat areas embedded within the festival site (zoned 7k for environmental protection) and the adjoining Billinudgel Nature Reserve; they include:

- Demographic and small population effects (e.g. Potential desertion of habitat by sensitive species; highly likely altered species compositions (fauna and vegetation communities) in response to altered foraging opportunities; likely elevated ingress of generalist native competitors suited to disturbed systems at the expense of more specialized native fauna);
- Pests (e.g. Inevitable elevated ingress of pest species such as Cane Toad, Red Fox, Cat, Black Rat, House Mouse associated with festival catering, enhanced roading, presence of garbage and other human waste);
- Weeds (e.g. Unavoidable ingress of seeds and other propagules of weed species on construction equipment, vehicles and people);
- Inappropriate fire regimes within embedded and adjacent protected areas (e.g. Festivals occurring within periods of high fire danger will result in higher likelihood of accidental or deliberate (arson) fires);
- Disease and pathogens (e.g. Elevated likelihood of the ingress and establishment of pathogens such as the Cinnamon fungus (*Phytophthora cinnamomi*) associated with construction equipment and vehicles);
- Human interference (e.g. Elevated likelihood of direct contact with, and persecution of, native fauna including insects, frogs, lizards, snakes, Koala, possums, wallabies, flying-foxes and bats);
- Chemicals and waste (e.g. Elevated likelihood of accidents involving chemicals and human waste with contamination risk for drainage lines, creeks and other habitats).

4 Effects of Human Disturbance on Major Faunal Groups

Section 3 has considered the impacts of elevated non-consumptive human disturbance and in that context we have included reference to all faunal groups. This section provides some additional information gleaned from the literature of relevance to the impacts on fauna of activities associated with a music festival site. In an effort to be succinct and avoid repetition as much as possible we also refer to section 3 of this review in regard to certain species and studies.

4.1 Invertebrates

Terrestrial invertebrates may act as good indicators of habitat quality and the overall state of ecosystems (e.g. Hochuli *et al.* 2004). Terrestrial invertebrates are affected by habitat fragmentation and subsequent disturbance in many systems and they are a valuable potential measure of an area's ecological integrity because they mediate many fundamental ecological processes (e.g. pollination, herbivory, predator-prey balances, seed dispersal, decomposition) (Hochuli *et al.* 2004). They also form strong associations with plant assemblages (e.g. Panzer and Schwarz 1998). As such, impacts on invertebrate assemblages may have far-reaching influences on the long-term welfare of natural areas.

One of the most obvious impacts of increased human disturbance on wildlife is the impact of artificial night lighting on insects (see section 3.2.4). Most people have seen how swarms of moths, beetles and other insects are drawn to street lights and outdoor lighting, often with fatal consequences. The attraction is apparently due to the structure of the insect compound eye and the internal navigation mechanism of insects which confuses an artificial light source for the moon or stars (Walker 2007). Outdoor lighting has greatly increased in recent decades as urban areas expand. Frank (1988) describes how outdoor lighting disturbs many aspects of moth behaviour including flight, navigation, vision, migration, dispersal, oviposition, mating, feeding and crypsis. In addition it may disturb circadian rhythms and photoperiodism, as well as expose moths to increased predation by birds, bats, spiders. Frank (1988) noted that despite the destruction of vast number of moths in light traps, diverse moth biota have been found in urban environments, however, some moth populations may be disrupted or eliminated; reducing exposure to lighting may help protect moths in small, endangered habitats.

Insects have differing levels of attraction to different light spectra. Bhattacharya and Mishra (1995) tested eight insect species and found all were most strongly attracted to natural light and least to blue light. Eisenbeis and Hassel (2000) compared insect attraction to white mercury (HME), orange sodium (HSE) and sodium-xenon vapour lamps (HSXT). By using sodium vapor street lamps (HSE), the number of insects caught in light traps was reduced significantly by more than 50%, and in the case of Lepidoptera by about 75%. By using HSE lighting, the 44,000 insects caught during the experiment would be reduced to 22,000. In Germany again, Kolligs (2000) also found that sodium vapour lamps attracted fewer insect species and individuals than mercury vapour lamps. However, for swift moths (Hepialidae) and the geometric moth *Idaea dimidiata*, more individuals were recorded at the sodium-vapour lamps. No significant correlation was found between the size of a light source and the

number of Lepidoptera attracted by it. Included in the light trap catches were 31 beetle species of the Red List of Schleswig-Holstein (the regional locality of the study).

4.2 Amphibians

Laboratory experiments have demonstrated that dark-adapted frogs exposed to rapid increases in illumination may be temporarily "blinded" and unable to gather visual information on prey, predators, or conspecifics until their eyes adapt to the new illumination. Permanent increases in nocturnal illumination may facilitate or inhibit a variety of behaviours. Foraging may be facilitated in frogs that hunt around lights because the ambient illumination is increased to a level that allows the frogs to see prey or because lights attract abnormally large quantities of prey (e.g., insects). Reproductive activity may be inhibited in species that normally reproduce only at very low illuminations. Increased illumination may allow predators to see frogs that may not normally be visible to them. Circadian rhythms, activity patterns, and intraspecific visual communication may also be affected by increased illumination. Much more field and laboratory research is necessary to assess the full extent of direct and indirect effects of artificial night lighting on the behaviour, ecology, and evolution of frogs (Buchanan 1993).

We have already discussed the impact of noise on frog populations (see section 3). Traffic noise was found to impede the recognition of mating calls and impact mating behaviour in studies from Australia (e.g. Parris *et al.* 2009) and overseas. Parris *et al.* (2009) discuss the trade-offs facing frog populations exposed to chronic noise and conclude that in such circumstances frogs will suffer substantial acoustic interference, which, if translated into reduced breeding success, could eventually lead to the local extinction of populations in otherwise suitable habitats. The implications of intermittently high levels of noise associated with an activity such as a music festival remain patently unclear but impacts on frog populations within and adjacent to the proposed site appear highly likely.

Other impacts of increased human disturbance on frogs relate directly to their requirement for breeding sites with good quality water. Any increase in the run-off of contaminants and pollutants associated with human activities such as road building, car park consolidation and general construction has the potential to impact frog breeding potential (e.g., see Campbell 1999 for numerous references). Similarly, altered hydrological regimes associated with activities such as re-routing drains or providing fill (road-base) to consolidate car parks and roads can have implications for resident frog populations. Typically, in coastal north-east NSW, human influences impact sensitive frog species, including threatened species, to a greater degree than more resilient generalist native species or introduced species such as the Cane Toad, *Bufo marinus*. Seabrook (1993) states that cane toads are less abundant within natural remnants and more abundant within the agricultural / suburban landscape. So any “urbanisation” of an area (perhaps the impacts ~20,000 people and associated infrastructure are akin to periodic urbanisation) has the potential to lead to increased prevalence of this pest. Cane Toad may be transported on-site in vehicles, particularly catering trucks and may find favourable conditions within the human-modified landscape and more “urbanised” conditions than currently exist at Yelgun.

4.3 Reptiles

Increased human disturbance and presence within natural and semi-natural environments has the potential for detrimental impacts on reptile faunas. Likely impacts, in the context of urban remnants, are outlined by White and Burgin (2004) and include:

- direct human interference resulting in death or removal of individuals that are perceived as a threat to human safety (e.g. goannas, snakes, tortoises);
- direct human interference resulting in death or removal of individuals that are perceived as a novelty by visitors (e.g. lizards, tortoises, small goannas and snakes);
- Increased presence of predators (e.g. fox, cat, black rat);
- Increased likelihood of fire;
- Potential direct habitat trampling or removal (e.g. firewood).

4.4 Birds

Birds have been the most studied of the major faunal groups with regard to the impacts of human disturbance. Avoidance of human disturbance is expected to influence habitat selection by sensitive bird species, particularly when it is intense or long-lasting (Beale and Monaghan 2004a, b; Fernandez-Juricic *et al.* 2005; Price 2008). Observed and documented impacts include:

- Physiological responses reflecting stress effects;
- Altered time and energy budgets leading to lowered genetic fitness;
- Habitat desertion;
- Depression of breeding success;
- Altered species assemblages with sensitive species being replaced by more common, generalist native or introduced species.

In that context, it appears that certain types of birds may be more sensitive to human disturbance impacts. The work of several authors including (e.g., Blumstein 2006) suggests that larger species may be most susceptible, although that is not a universal finding. Some raptors have been known to permanently abandon territories due to human disturbance leading to local population declines (e.g. Carrete *et al.* 2002, references in Price 2008). Cascading effects are also possible whereby the loss or reduction in one species influences predators or prey associated with that species (references in Price 2008). As estimated predation risk and available energy vary seasonally, tolerance of humans is also likely to vary seasonally. So human disturbance during breeding periods is likely to induce greater response and impact overall.

In relation to birds as a group it is worth reiterating reference to the work of Fernandez-Juricic (2000) who studied the impacts of human disturbance on birds within landscapes that are already fragmented and noted that impacts can be synergistic. In this context area could interact with disturbance increasing its negative effects in small fragments. The implications of such a relationship for small remnants

of protected habitat at Yelgun (zoned 7k for environmental protection due to their high conservation values) is clear; further to that Billinudgel Nature Reserve is itself a remnant within a landscape that is largely fragmented and degraded (see section 7).

Waterbirds, or waders, have received a fair bit of attention with regard to human impacts as they often occur in close proximity to areas favoured by humans for recreation such as estuaries and beaches (e.g. Burger 1991, 1998; Burger and Gochfeld 1991; Pfister *et al.* 1992; Burton *et al.* 1996). Ambrose (2009) reviewed the effects of recreational boating on waterbirds and found that boating disturbance during the breeding season was predicted to produce adverse impacts on six species through increased absence from the nest, predation of eggs, reduced nest building and nest failure. Outside the breeding season, boating disturbance was predicted to impact five species. One might question the relevance to the proposed cultural events site at Yelgun of a study of boating disturbance on waterbirds. However, such studies indicate how resident bird communities are affected by the intrusion of human disturbance. It is not unreasonable to predict that the avian community presently found within the Yelgun site and edges of Billinudgel Nature Reserve would be affected by human disturbance associated with large cultural events in analogous fashion to the effects of recreational boating on waterbirds. The sudden intrusion into their surroundings of large concentrations of people, high levels of noise, artificial night lighting and other impacts are likely to act as an intense disturbance on a high proportion of bird species.

The research reviewed above indicates that the disturbance impact associated large concentrations of people, high levels of noise, artificial night lighting and other indirect impacts is likely to result in avoidance or abandonment of habitat within the events site and adjoining Billinudgel Nature Reserve by a significant proportion of the vertebrate fauna. On a larger scale this may adversely affect the sustainability of local populations of threatened fauna species, which depend on Billinudgel Nature Reserve and the surrounding matrix to maintain viable local populations. Research demonstrating that the impact of human disturbance on fauna is positively related to the intensity of disturbance as measured by group size (see Section 3.2.2) indicates that cultural events involving thousands of patrons may have a severe negative impact on fauna, including threatened species, within the events site and adjoining Billinudgel Nature Reserve.

4.5 Mammals

The impacts of a music festival, albeit a much smaller affair than that proposed at Yelgun, on a resident bat colony (Shirley *et al.* 2001) have already been discussed in section 3.1. Shirley *et al.* (2001) make the point that "The effect of human disturbance on bats has been documented for autumn shelters and hibernacula, the result of which is to cause the bats to abandon their shelters for winter roosts earlier than undisturbed bats." Given the apparently precise, precarious, and largely uncharacterized, patterns with which bats utilize roost sites any impacts of human disturbance that might influence roost use, temporally or spatially, are likely to be significant. As stressed by Shirley *et al.* (2001), more research and targeted monitoring is needed regarding the effects of human disturbance on bat ecology.

As with other faunal groups, different mammal species display different levels of tolerance and sensitivity to disturbance pressures mediated or facilitated by elevated human presence. The impacts of intense periodic human activity associated with a

music festival site have many parallels with the impacts of urbanisation (see section 3.2.3); in fact the periodic, but regular, impact of large crowds, together with permanent and episodic infrastructure, is at least akin to periodic, regular urbanisation. In an investigation of the impacts of urbanisation in and around Melbourne, Victoria, Van der Ree (2004) noted that certain mammal species had disappeared from urbanised landscapes while others had persisted. Small ground mammals, including quolls, bandicoots and echidnas, appear to be particularly susceptible to human-related disturbance impacts (Van der Ree 2004). The causal agents of disturbance and the mechanisms for mammal species' susceptibility remain unclear but are likely to include combinations of the impacts already discussed as associates of elevated human disturbance levels including increased predator and competitor levels, altered community species composition and dynamics, as well as direct disturbance effects (see section 3).

5 Generalized Consequences of Elevated Human Disturbance

As already stressed the response of wildlife to elevated human disturbance varies between species and also between individuals of the same species. Responses of individual species and major faunal groups, as reported in the literature, or in relation to the principles of landscape ecology, have already been discussed (see sections 3, 4 above). The following is a discussion of generalized response patterns and the potential applicability of buffers.

5.1 Wildlife response measures

Understanding the short and long-term consequences of interactions between humans and wildlife requires that relevant response measures be chosen and implemented in field studies (Steidl and Powell 2006). Table 1 is an extract from Steidl and Powell (2006) and illustrates potential impact parameters and serves as a list of generalized consequences of elevated human impacts on wildlife.

Table 1. Potential response measures for assessing effects of human activity on wildlife and wildlife populations.

Appropriate study period	Measure
Short-term	Physiological responses — heart rate, stress hormones
	Behavior and activity budgets
	Space and habitat-use
Long-term	Reproductive success and productivity
	Survival or mortality rates
	Abundance or density
	Distribution or occupancy rates
	Species richness
	Species diversity

5.2 Demographic consequences

Many studies have shown that animals will avoid areas where humans are present and that some species show a greater degree of avoidance than others (Gill *et al.* 2001). It is assumed that species showing the greatest degree of avoidance require the greatest consideration and protection within conservation planning regimes, however, this assumption is often made without any data or knowledge of actual demographic consequences. From a conservation perspective, *human disturbance of wildlife is important only if it affects survival or fecundity and hence causes a population decline.* Do observed effects of elevated human disturbance (e.g. avoidance, displacement, interrupted breeding) actually result in population decline?

Gill *et al.* (2001) surmise that a high availability of habitat sites elsewhere, allowing animals to move readily, can result in a strong decrease in numbers even when the fitness costs of disturbance are low. The contrary may also apply; animals with no suitable habitat nearby will be forced to remain despite the disturbance, even if the fitness costs are high. This argument hinges on the availability of other *unoccupied*

habitat areas. Males generally divide habitat into territories, which they defend aggressively from invasion by other males. The sizes of territories are determined by resource availability. Individuals may die resulting in a territory being unoccupied, but such opportunities are probably relatively few. Individuals forced to exist in suboptimal habitat or small areas on the edge of territorial mosaics probably seldom breed and may have a high mortality rate (e.g., Pulliam 1988, With and King 2001).

This concept has some resonance with regard to the Yelgun situation where resident and migratory faunal species exist in a landscape that is inherently productive (as evidenced by its land-use history) but consequently already somewhat fragmented and compromised from a resource availability perspective. So, nomadic species such the Grey-headed Flying-fox (a threatened species at state and federal levels) might continue to forage within the landscape over the autumn-winter period when nectar is scarce elsewhere and when favoured coastal feed tree species are generally flowering (see Eby *et al.* 1999). But this may reflect an adherence to historical seasonal foraging patterns or a lack of options elsewhere. A similar scenario could be painted for other species at Yelgun, including the Koala. It cannot be assumed that the persistence of animals within disturbed landscapes and habitats represents viable populations, healthy ecosystems, or adequate baselines from which to assess disturbance impacts. They may be persisting under suboptimal conditions having already been subjected to habitat loss and fragmentation impacts. Without alternative measures such as measurement of stress levels or overall reproductive success their viability cannot be assumed. A pertinent point here is that the imposition of further stresses and impacts, in the form of a music festival, will exacerbate current edge effects. The Yelgun location supports suites of threatened species but requires restoration to enhance long-term viability of wildlife, not further disturbance.

Gill *et al.* (2001) make a valid point, that interpretations of 'alert distance' can be misconstrued; birds may remain, in the face of a disturbance, even though they are stressed, because they have no other reasonable habitat to go to; and birds may fly to feeding grounds elsewhere without any change in overall population number. However, there is also abundant evidence that 'Alert Distance' (AD) and ' Flight Initiation Distance' (FID) (indices that are commonly applied in studies of human impacts on birds) are indicators of perceived predation risk and good predictors of the effects of disturbance (Beale and Monaghan 2004a). Avoidance behaviours reduce population viability, as a proportion of available habitat is avoided or rendered non-available, as a consequence of disturbance. Avoidance has the potential to affect survival and fecundity, but the actual fitness cost in terms of these parameters needs to be quantified before AD or similar measures can be used as reliable estimates of the impact of disturbance on populations (Gill *et al.* 2001).

Human disturbance may also produce a cascading effect on non target species. If a species flees, other species that benefit from its presence may be adversely affected; predator species increase to exploit abandoned nests (Price 2008). Field studies/observations are needed before effects of disturbances of different intensity can be predicted with any confidence but observed alterations to species assemblages and communities are good indicators of demographic impacts.

The reproductive success of wild birds subject to human disturbance is often negatively affected (e.g., Beale and Monaghan 2004b). In addition to stimulating increased nest defence and altering nest site choice, the presence of humans can increase egg and chick mortality, nest desertion, premature fledging and acute and

chronic stress and decrease parental care, singing frequency and nestling mass gain (references in Price 2006). Stress may not only affect breeding adults, it can also be stimulated in offspring by transference of stress hormones. Even moderate levels of stress can have detrimental effects on cognition, behavioural development and learning ability and health including skeletal calcification and induced osteoporosis later in life. Parents should nest in areas that will increase their reproductive success, reduce the chance of predation and / or decrease the number of encounters with people (Price 2008).

With regard to the proposed cultural events site at Yelgun, there is a tacit assumption in the ecological assessment, that Billinudgel Nature Reserve will act as a refuge or source of unoccupied available habitat for individuals displaced from the festival site by human disturbance. Putting aside the likely impacts of elevated human disturbance as an edge effect on the reserve itself, this assumes that there is available habitat; the reserve is not already at carrying capacity for that species given food resources and predator activity; and that increased density within the reserve will not affect long-term survival and fecundity. Arguments could be made either way, but essentially we do not know with any certainty what the exact effects of a massive increase in human disturbance (relative to the current situation) will be, but there is a significant risk that survival and fecundity of local populations will be adversely affected, resulting in a population decline.

6 Mitigating Circumstances

At this point, two possible mitigating circumstances need to be considered – (i) buffer zones and (ii) habituation.

6.1 Buffer Zones

An important goal of wildlife management is to promote coexistence between wildlife and people by creating buffer zones. 'Alert distance' (AD) and 'flight initiation distance' (FID) or flush distance are commonly applied as measures of this disturbance effect and various metrics are used to express it quantitatively. For example, MAD or minimum approach distance is defined as the point at which 95% of individuals become alert (Fernandez-Juricic *et al.* 2005). Typically, buffer areas are estimated with a formula based on empirical estimates of the distance at which humans disturb animals (Fernandez-Juricic *et al.* 2005). "There are two general steps to develop buffer areas. Managers first estimate the distance at which humans should be separated from wildlife (minimum approaching distance), and then the areas where humans should not encroach to avoid displacing wildlife (buffer areas)" (Fernandez-Juricic *et al.* 2005, p.226).

Alert distance is a conservative indicator of bird tolerance of specific situations. The alert distance for 4 common bird species in 5 large wooded fragments in Madrid (Spain) was found to be 9-18 metres (Fernandez-Juricic *et al.* 2001). In the case of grassland birds in Argentina, the MAD of 5 species studied (4 endemic) varied from 20 to 100m, depending on the species and the type of metric used (Fernandez-Juricic *et al.* 2005). These results should only be applied to the bird species studied, but they suggest that habitat areas should be separated from humans by a minimum of 100m to prevent disturbance of sensitive species. Similar MAD's might be expected for avifauna in other types of habitat. Alert distances can be used to design footpaths for visitors with enough undisturbed areas for birds to forage and breed and for pedestrians to enjoy their visit. From a conservation perspective, a significant difference between alert and flight distances underscores the need to consider alert distances as a more conservative indicator of tolerance, because it includes a buffer zone in which birds may adapt their reactions to the behaviour of visitors (Fernandez-Juricic *et al.* 2001).

A study by Beale and Monaghan (2004a) emphasises how easy it is to misinterpret animal behaviour. They compared the flush distance of turnstones a group fed on supplementary mealworms every day for 3 days and in a control group. Birds whose condition had been enhanced by the mealworms showed greater responsiveness to human disturbance, flying away at greater distances from the observer, scanning more frequently for predators and flying further when flushed. This result shows how assessments based solely on behavioural measures may be inaccurate (i.e,. the most responsive or flighty animal may not be the most vulnerable). There is a kind of inconsistency in this argument though, as Beale and Monaghan (2004a) suggest that the richest feeding grounds (rendering wildlife in better condition and more responsive) would require less protection as the animals were not vulnerable, just responsive. However, surely these areas should have better protection because they enhance the health of wildlife populations. Buffers would enable optimum function, without unnecessary flushing caused by human disturbance.

With regard to the proposed cultural events site at Yelgun, consideration of buffer zones is relevant to habitat areas within the festival site (currently zoned 7k for environmental protection due to their recognized high conservation values) and land adjoining Billinudgel Nature Reserve. Byron Shire Council in its approval of the trial event (now overturned by the Land and Environment Court) specified a buffer distance of 20 m, but in the case of birds, available evidence on alert distance suggests that this may only be appropriate to common native and exotic species, Given the apparent scale of the cultural events site proposed at Yelgun and its close proximity to core and matrix conservation areas, it is doubtful wether it is possible to effectively mitigate the potential adverse impacts of human disturbance on local biodiversity using conventional buffer zones.

6.2 Habituation

Habituation refers to learned behaviour whereby wildlife constantly exposed to non-threatening human stimuli, learn that humans are relatively harmless, and disturbance response indicators such as 'alert distance' and 'flight initiation distance', consequently decrease in magnitude (Price 2006; Walker *et al.* 2006). This can be observed in nature conservation areas where birds and mammals are often "tamer" than outside the conservation area. Habituation depends on the frequency (e.g. number of encounters/day) and the intensity of encounters (group size, level of noise etc). Wildlife is less likely to habituate to low frequency and/or high intensity human disturbance. By establishing and enforcing the use of pathways in parks and reserves, birds habituate to predictable patterns of human movement. Similarly, some laboratory studies show that animals may become accustomed to noise, such that certain physiological reactions to noise no longer occur; this is often referred to as habituation (Memphis State University 1971). Habituation to intermittent noise, however, is reported to be less likely. In the case of the proposed cultural events site at Yelgun, it would appear that human disturbance will be intermittent and probably very high in intensity, a combination least likely to result in habituation behaviour in wildlife.

Studies have indicated that repetitive visitation can facilitate partial habituation. This is not inevitable as in another study, a number of gull species did not habituate despite relatively harmless human visitation (Price 2006). Habituation is affected by a number of factors such as intensity and duration of disturbance. It appears that even within a species certain individuals are less likely to habituate to disturbance than others (e.g. Martin and Reale 2008). An interesting study indicating the effect of habituation to human presence on bears was carried out by Olsen *et al.* (1997). The study compared the feeding behaviour of habituated and unhabituated bears to an extension of the tourist season on a salmon river in Alaska. During the extension period, unhabituated bears were fewer in number, reduced overall activity, delayed arrival and were generally less active.

Habituation is often raised as a mitigating circumstance where there is significant level of human disturbance to wildlife. Sometimes it is simply assumed that habituation will occur because wildlife is repeatedly exposed to anthropogenic disturbance. However, habituation is a complex behavioural process that is easily misinterpreted and requires systematic observation and experimentation to unravel its

effects (Bejder *et al.* 2009). While habituation represents a learning process over time, the term is often misused to describe any observed moderation in wildlife responses to human disturbance. Tolerance is the intensity of disturbance that an individual tolerates without responding in a defined way and is often mistaken for habituation (Nisbet 2000). When habituation, or its behavioural opposite 'sensitisation' occur, a range of potential explanatory mechanisms should be considered including (1) learning, (2) displacement (less tolerant individuals have moved affecting response spectra), (3) physiology (repeated exposure has caused physiological impairment) and (4) ecology (ecological factors account for habituation type responses, such as absence of suitable habitat to relocate to) (Bejder *et al.* 2009).

Bejder *et al.* (2009) conclude that "Studies of the effects of human activity on wildlife have often operated under the assumption that (1) the behavioural habituation of wildlife to anthropogenic stimuli is relatively easy to demonstrate, and (2) habituation-type responses imply an absence of detrimental consequences for targeted animals. We have shown that neither assumption is entirely correct and that the misinterpretation of scientific findings resulting from reliance on these premises can lead to inappropriate conclusions and potentially detrimental consequences for wildlife."

7 Land-use Buffer Zones

To maintain biodiversity in the Yelgun locality, a buffer strip between the proposed cultural events site and Billinudgel Nature Reserve may appear a constructive measure, but only if the Nature Reserve is viewed as an 'island' of natural habitat. As discussed in Section 2, the ecological sustainability of a core conservation area depends less on narrowly defined buffer strips, than on the structure and function of the surrounding matrix. A matrix with a normal 'rural' level of human disturbance and supporting broadly compatible land-use (including agriculture) is necessary to maintain ecological sustainability and realise regional conservation planning goals (e.g. DECCW 2009).

A buffer adjoining a reserve or other habitat area can represent a relatively narrow strip of land designed to provide protection from environmental impacts such microclimatic extremes, fire, weed invasion or human disturbance; or it can be designed as a wider zone of compatible or non-antagonistic land use. Such land-use zones do not necessarily require formal environmental protection zoning or management obligations, but entail land-uses that support matrix and core conservation values, as well as allowing an appropriate level of residential and economic use. Non-conflicting land-use might include rural residential living and livestock grazing that effectively provide *a land-use buffer zone* to maintain the locality's conservation values in the face of increasing regional development.

Effective conservation networks/reserve systems depend not just on the protection of core areas represented by formal reserves, but appropriate land-use zoning and buffers, interconnecting corridors and protection of high conservation patches within the surrounding matrix. Research on landscape-scale conservation planning demonstrates matrix areas, that is, areas surrounding formal reserves have a major effect on the integrity and sustainability of ecosystems within reserves. The long term welfare of biodiversity requires the maintenance of landscapes composed of core areas, buffers and inter-connecting links.

Regional landscape conservation planning is generally based on a model of linked protected area networks, where large core areas, buffers and corridor links form essential elements in an integrated approach to landscape conservation. At Yelgun, where a music festival is proposed, all the elements of an integrated conservation network currently exist. The locale includes a formally reserved core (Billinudgel Nature Reserve), supplementary habitats of known high conservation value (some zoned 7k for environmental protection) variously occurring as buffer, corridor and matrix elements, and additional areas of suitably "soft" matrix. The landscape connectivity values of the matrix and corridor areas have been formally recognized by a series of planning programs (see Scotts 2003, DECC 2009, Byron LEP Amendment 51) and a judicial investigation (Commissioner Cleland 1997). As identified and formally mapped by DECC (2009) the Yelgun locale qualifies as a regional priority landscape for reservation and restoration due to its known and predicted conservation values at local, landscape and regional scales (see mapping in DECC 2009).

The land-use planning system in NSW still allows development to occur right up the boundary of nature reserves, creating major problems for reserve management due to

the exacerbation of edge effects and degradation of habitat quality, mainly through direct and indirect impacts of human disturbance. There is a need to recognise that conservation reserves in developing landscapes are sensitive to changes in land-use in the surrounding matrix. A modification to the land-use zoning system designed specifically to direct development in a coordinated manner so as not to consume and degrade conservation values in designated natural areas is long overdue. Some land-uses are more compatible with conservation land-use than others, partly because they involve different levels of human disturbance. In designing a system of *land use buffer zones*, the degree of human disturbance implicit in permissible land-uses or zones would increase with increasing distance from core conservation areas in a hierarchical or gradational fashion. Explicit and systematic landscape-scale protection for conservation areas is urgently required to minimise future land use conflict, provide more certainty for land developers and security for conservation areas.

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Appendix 1: Threatened fauna species recorded on or within 1km of the proposed cultural events site at Yelgun

(Source: DECCW Wildlife Atlas 2010)

Species	Locality and Source	General Habitat Range
Amphibians		
Wallum froglet *Crinia tinnula*	Billinudgel NR	Floodplain swamp sclerophyll forest, heath, swamp, paddocks .
Wallum tree frog *Litoria olongburensis*	Jones Road private property	Floodplain swamp sclerophyll forest, heath, swamp, paddocks; adjacent hillslopes in rain
Mammals		
Common planigale *Planigale maculata*	Billinudgel NR	Wet and dry sclerophyll forest, rainforest.
Koala *Phascolarctos cinereus*	Billinudgel NR, study area	Prefers dry sclerophyll on fertile soils, also in wet sclerophyll and remnant vegetation.
Long-nosed potoroo *Potorous tridactylus*	Billinudgel NR	Wet sclerophyll, rainforest and heath with a dense ground layer.
Common blossom bat *Syconycteris australis*	Billinudgel NR, study area	Forest, woodland and heath with pollen and nectar producing plants.
Grey-headed flying fox *Pteropus poliocephalus*	Billinudgel NR, study area	Wet and dry sclerophyll forests.
Little bent-wing bat *Miniopterus australis*	Billinudgel NR, study area	Wet and dry sclerophyll forests, adjacent cleared land.
Eastern long-eared bat *Nyctophilus bifax*	Billinudgel NR, study area	Wet and dry sclerophyll forests, adjacent cleared land.
Birds		
Black bittern *Ixobrychus flavicollis*	Billinudgel NR	Swamp sclerophyll, remnant vegetation along creeks and drains.
Square-tailed kite *Lophoictinia isura*	Billinudgel NR, study area	Wet and dry sclerophyll forests, adjacent cleared land.
Red goshawk *Erythriotriorchis radiatus*	Billinudgel NR	Wet, dry and swamp sclerophyll forest.
Bush hen *Amaurornis olivaceus*	Billinudgel NR	Swamp sclerophyll, weedy regrowth vegetation.
Bush thick-knee *Burhinus grallarius*	Billinudgel NR	Dry sclerophyll and adjacent cleared land.
Wompoo fruit-dove *Ptilinopus magnificus*	Billinudgel NR	Wet sclerophyll and rainforest
Rose-crowned fruit-dove *Ptilinopus regina*	Billinudgel NR, study area	Wet sclerophyll and Camphor Laurel regrowth.
Eastern grass owl *Tyto capensis*	Billinudgel NR	Swamp, heath, woodland and paddocks with long grass.
Masked owl *Tyto novaehollandiae*	Billinudgel NR, study area	Dry sclerophyll forest and adjacent cleared land.
White-eared monarch *Monarcha leucotis*	Billinudgel NR, study area	Wet sclerophyll forest and advanced regrowth.

Appendix 2: Chronology of NSW Government Protection of the North Ocean Shores / Yelgun site

1985 SEPP 14 Wetlands No. 57 gazetted by NSW Dept. of Planning.

1987 NSW Labor Minister for Planning & Environment places Interim Conservation Order (ICO) over lands at North Ocean Shores / Yelgun following the bulldozing of culturally significant coastal lands.

1989 Large areas of North Ocean Shores / Yelgun Referenced by NPWS.
N.B. Only areas of high conservation value meet this criteria.

1990 Commission of Inquiry (COI) into Rezoning of Lands at Ocean Shores, North. Commissioner Simpson recommends the majority of lands be zoned for environmental protection due to the areas natural and cultural values.

1990 Survey uncovers 22 Aboriginal Archaeological sites & identifies Marshalls Ridge (Jones Road) as a Ridge of 'High Archaeological Sensitivity' (Navin, Canb.)

1994 The Natural and Cultural Values of the North Ocean Shores / Yelgun area, are listed on the Register of the National Estate, Canberra, as an 'Indicative Place'.

1995 NSW Coalition Government acquires 325 ha of SEPP 14 Wetlands and the Billinudgel Nature Reserve is created.

1995 NSW Labor Government places a 12 month Interim Protection Order over environmentally sensitive lands at North Ocean Shores / Yelgun.

1995 NSW NPWS Satellite Imagery highlights the Marshalls Ridge wildlife corridor as the only substantial link of native vegetation connecting coastal remnants through to the hinterland and World Heritage rainforests of the Mount Warning caldera.

1996 NSW Labor Government purchases a further 350 ha of environmentally sensitive lands at North Ocean Shores / Yelgun for additions to the Billinudgel Nature Reserve.

1996 NSW Labor Minister for Environment extends IPO for a further 12 months over North Ocean Shores / Wooyung lands.

1997 NSW Labor Government purchases a further 40 ha of culturally significant land at Wooyung for additions to the Billinudgel Nature Reserve.

1997 RTA redrafts section of Pacific Highway Upgrade at Yelgun to avoid impact on SEPP 14 Wetlands and the Billinudgel Nature Reserve.

1997 NSW Minister of Planning places a 'Stop-Work Order' over lands in the Marshalls Ridge (Jones Road) wildlife corridor to halt clearing in habitat areas.

1997 NSW Minister of Planning calls a Commission of Inquiry into the Rezoning of Lands at North Ocean Shores to resolve issues surrounding conflicting land uses i.e. environmental & agriculture.

1997 Commissioner Cleland acknowledges the scientific information supporting the environmental & cultural significance of Marshalls Ridge (Jones Road) wildlife corridor, despite its partial degradation. The Commissioner strengthened and expanded Byron Council's draft environmental zonings to prevent inappropriate development.

1998 NSW Minister of Planning adopts Commissioner Cleland's recommended zonings for North Ocean Shores / Yelgun and Amendment 51 of the Byron LEP is gazetted.

1998 RTA recognises the findings of Cleland COI and invests $3.5 million for a 'Cut and Cover' overpass to maintain connectivity to the Marshalls Ridge (Jones Road) wildlife corridor to enable a safe passage for fauna. This initiative was the first of its kind in NSW, possibly Australia. RTA invests a further $1 million on fauna mitigation devices i.e. underpasses.

2002 RTA acquires additional lands as 'Compensatory Habitat' in the Marshall's Ridge (Jones Road) locality to enhance the wildlife corridor servicing the Billinudgel Nature Reserve.

2002 A regionally significant Aboriginal archaeological site is discovered (Piper 2002) bringing the total of registered sites with NPWS to 32 for this precinct.

2002 NSW Labor Minister for Environment issues a 'Stop-Work Order' over the Marshalls Ridge (Jones Road) wildlife corridor to stop unauthorised clearing.

2002 NSW Labor Minister for Environment issues another 12 months Interim Protection Order over the Marshalls Ridge (Jones Road) wildlife corridor.
N.B. IPO's & ICO's are rarely enacted, however, NSW Labor Ministers have enacted this legislation on numerous occasions over this site.

2002 NSW Labor Minister for Environment writes to Byron Council reminding it to enforce Amendment No 51 of its Local Environment Plan.

2002 NSW Fisheries takes landowner to court over the clearing and pollution of Yelgun Creek. Landowner was convicted and ordered to rehabilitate.
N.B. Government agencies e.g. Byron Council, NPWS, Dept. of Agriculture & NSW Fisheries have spent valuable resources in numerous court battles defending the high conservation values of the site.

2004 Fire escapes into peat deposits along Marshalls Ridge and burns underground for months. (RFS, 2004) Toxic smoke was reported kilometres away and cases of respiratory problems, headaches and asthma were recorded by the NSW Health Department. (NRPH & DOCS, 2004)

2004 A second fire escapes into Reserve lands. A Declaration of Emergency [Sec. 44] was issued by the NSW Fire Service and the cost to the State was approx. $1 million. Fifty fire units, 5 helibombers and 120 fire fighters, including crews from the mid-north coast, battled the fire for 3 days until heavy rain extinguished the main blaze. An adjacent Primary School and housing estate were evacuated.

2004 Byron Council incorporates all forested areas and intervening pasture along Marshall Ridge (Jones Road) in their wildlife corridor mapping (BSC, 2004). In addition, all forest blocks are mapped as High Conservation Value, Koala Habitat and Threatened Fauna Habitat. (BCS, 2004)

2005 Director General of the NPWS places a 'Stop-Work Order' on lands within the Marshalls Ridge (Jones Road) wildlife corridor at North Ocean Shores / Yelgun. Landowner ordered to rehabilitate.

2006 Billinudgel Property Pty. Ltd. purchases 2 adjoining properties (256 ha) at North Ocean Shores / Yelgun and names the site North Byron Shire Parklands. Billinudgel Property Pty. Ltd. is a consortium of 14 people. One is the Owner/Director of 'Splendour in the Grass', another is the Executive Producer of 'Loud' & 'Noise' festivals, Sydney.

2008 Byron Council grants approval to hold a one-off 'Trial' festival for a Splendour in the Grass festival (DA No. 10.2007.462.1) at Yelgun. (1,000+ submissions received)

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2009 *Northern Rivers Regional Biodiversity Management Plan*. (DECC, May 2009) Marshalls Ridge is identified as part of an important Climate Change Corridor.

2009 Billinudgel Property Pty. Ltd. submits a proposal to establish a Permanent Cultural Events site at North Byron Shire Parklands (Yelgun) under the 3A Major Project legislation with the NSW DoP.

2009 'Splendour in the Grass' announces that they are temporarily relocating their 2010 music festival to Woodford, Queensland.

2009 *Draft Far North Coast Regional Conservation Plan,* DECC 2009
The Billinudgel Range is identified as a rare east-west escarpment, that 'will be critical in terms of Climate Change and linkages with the Great Eastern Ranges corridor'. corridor'.

Appendix 4

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2009 Northern Rivers Regional Biodiversity Management Plan (DECC May 2009) identifies Marshalls Ridge as part of an important Climate Change Corridor.

2009 Billinudgel Property Pty. Ltd. submits a proposal to the NSW Department of Planning to establish a permanent 'Cultural Events' site at North Byron Shire Parklands (Yelgun). The proposal is lodged as a Major Project, subject to the guidelines of Part 3A of the Planning Act. (Later in the year, the promoters announce that they will temporarily relocate their 2010 music festival to Woodford, Queensland.)

2009 In the Draft Far North Coast Regional Conservation Plan (DECC 2009), the Billinudgel Range is identified as a rare east-west escarpment that 'will be critical in terms of Climate Change and linkages with the Great Eastern Ranges corridor'.

* "An Archaeological Assessment, Greenfields Mountain Pty. Ltd. Yelgun - North Ocean Shores, North Coast NSW" by A. Piper (2002).