18th December 2023

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

RFI: Lot 1 DP 1215893, 144 Bayshore Drive, Byron Bay - DA No. 10.2023.287.1

Background

Biodiversity Assessments & Solutions (BA&S) Pty Ltd has completed a review of information requested by BSC with respect to Lot 1 DP 1215893, 144 Bayshore Drive, Byron Bay. This assessment has been undertaken in response to Byron Shire Council's RFI dated 03 November 2023, regarding DA No. 10.2023.287.1, which seeks consent for coastal protection works.

The RFI requested the following information:

1. Potential impact on Bush Stone-curlew

Council's ecological consultant commented that there is an active pair of Bush Stone-curlew (Burhinus grallarius) and possibly others which occur near the proposed coastal protection works.

Please provide an addendum to the ecological assessment report including a Test of Significance for Bush Stone-curlew in accordance with s.7.3 of the Biodiversity Conservation Act 2016. The addendum should include a sufficient level of detail to determine where these birds are resting during the day and where they might be nesting (which usually occurs November to January) and to determine what impacts the works may have on the birds breeding and movements. Specific contingencies should be prescribed depending on the assessment findings and based on the proposed timing and duration of the works.

2. Vegetation removal

The footprint of the proposed geobag wall appears to encroach into an area of dune vegetation to the north of the proposed works. Potential disturbance of vegetation is also noted on page 48 of the submitted ecological assessment report.

If any vegetation removal is likely to occur, please provide a vegetation removal and retention plan clearly identifying the location and species of vegetation to be removed or retained in proximity to the proposed works. Trees to be removed should be itemised and counted, and suitable compensation should be provided in accordance with Chapter B1 of the Byron DCP 2014.

Response to Information Requested by Byron Shire Council

1. Potential impact on Bush Stone-curlew

The Test of Significance (ToS) is set out in Section 7.3 of the Act. The ToS is based on the footprint and the design of the development. In determining the nature and magnitude of an impact, the following factors have been considered:

- Pre-construction, construction and occupation/maintenance phases;

- all on-site and off-site impacts, including location, installation, operation and maintenance of auxiliary infrastructure and fire management zones;
- all direct and indirect impacts;
- the frequency and duration of each known or likely impact/action;
- the total impact which can be attributed to that action over the entire geographic area affected, and over time;
- the sensitivity of the receiving environment; and
- the degree of confidence with which the impacts of the action are known and understood.

A ToS under Section 7.3 of the Act was undertaken in the ecological assessment (BA&S 20th June 2023) for those species either historically recorded at the site and/or those species considered likely to occur and with some potential to be directly or indirectly impacted by the proposal.

The following seventeen (*n* = 17) species were assessed by way of a ToS:

- White-bellied Sea Eagle (*Haliaeetus leucogaster*)
- Eastern Osprey (*Pandion cristatus*)
- Beach Stone-curlew (*Esacus magnirostris*)
- Glossy Black-Cockatoo (*Calyptorhynchus lathami*)
- Greater Sand-plover (*Charadrius leschenaultia*)
- Lesser Sand-plover (*Charadrius mongolus*)
- Sooty Oystercatcher (*Haematopus fuliginosus*)
- Pied Oystercatcher (*Haematopus longirostris*)
- Little Tern (*Sternula albifrons*)
- Sanderling (*Calidris alba*)
- Curlew Sandpiper (*Calidris ferruginea*)
- Great Knot (*Calidris tenuirostris*)
- Black-tailed Godwit (*Limosa limosa*)
- Southern Myotis (*Myotis macropus*)
- Common Blossom-bat (*Syconycteris australis*)
- Loggerhead Turtle (*Caretta caretta*)
- Green Turtle (*Chelonia mydas*)

The following species, Bush Stone-curlew (*Burhinus grallarius*) is assessed below by way of a ToS as an additional species requested by BSC due to recent observations of the species in the vicinity of the proposal area.

a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Bush Stone-curlew (*Burhinus grallarius*)

The Bush Stone-curlew stands about 55 cm tall. It has a grey to light brown back, marked with black blotches, and a streaked rump. It has buff and white underparts with dark streaks, and a black band that runs from near its eye down its neck. This species has large, bright yellow eyes and a hunch-shouldered stance on long spindly legs. When disturbed it lies flat on the ground, with its head and neck outstretched. Its call is a loud eerie wailing "wee-loo", mostly heard at night.

The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range.

The Bush Stone-curlew inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. It is largely nocturnal, being especially active on moonlit nights. They feed on insects and small vertebrates, such as frogs, lizards and snakes. Bush Stone-curlew nest on the ground in a scrape or small bare patch, with generally two eggs laid in spring and early summer.

Threats identified for this species include:

- Predation by foxes and cats.
- Trampling of eggs by cattle.
- Clearance of woodland habitat for agricultural and residential development.
- Modification and destruction of ground habitat through removal of litter and fallen timber, introduction of exotic pasture grasses, grazing and frequent fires.
- Disturbance in the vicinity of nest sites.
- Negative impacts of pesticides on wildlife when used around nesting sites and habitat.

Potential Impacts of the Proposal

The proposal submitted to Council by the applicant for the extension of a geobag coastal protection wall is unlikely to require the removal of any native vegetation[1], nor directly or indirectly impact on any significant areas of native vegetation or ecological communities. Excavation is required proximal to a thin finger of disturbed littoral rainforest vegetation at the top of the existing dune, which is being incrementally lost to erosion.

Although it is known that Bush Stone-curlew occurs in the locality, as noted in the ecological assessment report, subsequent sightings of the species as both an individual and in a pair in the general locality of the proposal on the resort grounds warrants additional mitigation measures to minimise any potential impacts as a result of the proposal. There is currently no evidence of nesting by this species occurring in the vicinity of the proposal, and this species is known to have a large home range.

As no timeframe is available for likely implementation of the proposal, current information relating to

[1] Refer RFI item # 2 on page 8 of this RFI.

presence of this species is of some value, however, would require an on-ground re-assessment prior to construction commencing to ascertain any movement patterns that may be impacted by the proposal.

As there is no indication that nesting is currently occurring in the vicinity of the proposal, and presence is likely only associated with general foraging and nocturnal movement for this species, and implementation of the proposal is not likely during the nesting season, it is highly unlikely that the proposal would have an adverse effect on the life cycle of the Bush Stone-curlew such that a viable local population of the species is likely to be placed at risk of extinction.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

Addressed in ecological assessment report.

c) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Addressed in ecological assessment report for EEC (littoral rainforest) and those seventeen (n = 17) threatened species that were identified in report.

When applying this factor for the Bush Stone-curlew, consideration has been given to all short-term and long-term impacts (direct and indirect) on habitat which is likely to support threatened species and ecological communities regardless of whether the habitat occurs on the subject site.

With respect to (i), the proposal would not require the removal or modification of preferred or significant habitat, nor would it directly or indirectly impact on any habitat that occurs at the site or in adjacent areas, nor would it impact on known nesting or roosting locations.

With respect to (ii), vegetation which may potentially be impacted to accommodate the proposal occurs as the exposed edge of a small patch of young age class vegetation already partially separated from other areas of habitat significance. The proposal would not impact on any areas of high habitat value, would not result in areas of habitat becoming fragmented or isolated from other areas, nor impact on the functionality of the foreshore corridor.

With respect to (iii), habitat to be potentially removed for the proposal is either generally in poor condition due to storm damage and exposure, and its biodiversity value in the local context is minimal

and unlikely to represent significant habitat for any threatened species with the potential to occur. The actions of the proposal would not significantly affect the long-term survival of any species, populations or ecological communities in the locality.

d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)

This applies to declared areas of outstanding biodiversity value ("AOBVs") under Part 3 of the *BC Act* and is aimed at assessing whether a development or activity is likely to affect any declared AOBV.

The subject land does not contain any area which has been identified and declared as an AOVB, and therefore, no AOVBs would be affected.

e) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

Threatening processes gazetted pursuant to Schedule 4 of the *BC Act* are as follows:

- Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners, *Manorina melanocephala*;
- Alteration of habitat following subsidence due to longwall mining;
- Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands;
- Anthropogenic climate change;
- Bushrock removal;
- Clearing of native vegetation;
- Competition and grazing by the Feral European Rabbit, *Oryctolagus cuniculus*;
- Competition and habitat degradation by Feral Goats, *Capra hircus*;
- Competition from Feral Honey Bees, *Apis mellifera*;
- Death or injury to marine species following capture in shark control programs on ocean beaches;
- Entanglement in or ingestion of anthropogenic debris in marine and estuarine environments;
- Forest eucalypt dieback associated with over-abundant psyllids and bell miners;
- Herbivory and environmental degradation caused by feral deer;
- High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition;
- Importation of Red Imported Fire Ants, *Solenopsis invicta*;
- Infection by Psittacine Circoviral (beak and feather) disease affecting endangered psittacine species and populations;
- Infection of frogs by amphibian chytrid causing the disease, chytridiomycosis;
- Infection of native plants by the fungus, *Phytophthora cinnamomi*;
- Introduction and establishment of exotic rust fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae;

- Introduction of the large earth bumblebee, *Bombus terrestris*;
- Invasion and establishment of exotic vines and scramblers;
- Loss or degradation (or both) of sites used for hill-topping by butterflies;
- Invasion and establishment of Scotch Broom, *Cytisus scoparius*;
- Invasion and establishment of the Cane Toad, *Bufo marinus*;
- Invasion, establishment and spread of Lantana, *Lantana camara*;
- Invasion of native plant communities by African Olive, *Olea europaea subsp. cuspidate*;
- Invasion of native plant communities by Bitou Bush, *Chrysanthemoides monilifera*;
- Invasion of native plant communities by exotic perennial grasses;
- Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes*, into NSW;
- Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants;
- Loss of hollow-bearing trees;
- Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*;
- Predation by the Mosquito Fish, *Gambusia holbrooki*;
- Predation by the European Red Fox, *Vulpes vulpes*;
- Predation by the Feral Cat, *Felix cattus*;
- Predation by the Ship Rat, *Rattus rattus*, on Lord Howe Island; and
- Removal of dead wood and dead trees.

The proposal would not lead to an increase in threatening processes. The proposal submitted to Council by the applicant is not likely to require the removal of any significant native vegetation and would not result in any significant direct or indirect impact on any native vegetation or habitat. The proposal would not adversely affect threatened species or ecological communities, or cause species or ecological communities that are not threatened to become threatened.

Proposed contingencies for Bush-stone Curlew

Mitigation measures proposed seek to incorporate an adequate pre-construction assessment which can be adopted to mitigate potential impacts on other threatened species with the potential to occur. To manage for the potential presence of the Bush Stone-curlew during the construction phase of the new development, the following measures are recommended.

- Prior to the commencement of works, the proposal area and buffer of approx. 100 m should be inspected by an ecologist to ensure Bush Stone-curlews are not nesting on the site or present in the general locality (Attachment 1, Figure 1). As part of the inspection, the ecologist should seek advice from the resort groundsmen who may know where the birds are roosting or nesting, or where they have been sighted in the recent past.

- If nesting is observed, an exclusion zone of at least 30 m is to be established around the nest site using an exclusion fence. The exclusion fence should allow for the non-flying chicks to move out of the nest area.
- All works are to cease in the exclusion zone until chicks have hatched and moved from the nest site by the adults, which occurs soon after hatching.
- Works elsewhere on the site (outside of any required exclusion zone) are to be conducted under the recommendations of an ecologist, so the behaviour of the nesting birds can be monitored.
- Where birds are observed roosting on the site, no construction work is to take place within 20 m and an unfenced exclusion zone is to be established marked with flagging tape while the roost is in use. This is especially important if there are young birds in evidence.
- All employees, contractors and sub-contractors working on the site will undergo site induction training and should be made aware of all matters regarding fauna management, particularly in relation to Bush Stone-curlew if they have or are sighted in the general area at the time of project implementation. All site personnel are to be made aware of the location of the nest or roosting areas (if present), and the extent of the exclusion zones as required.
- Posters with photographs and information of the Bush Stone-curlew should be placed on the exclusion fencing if they are known to be utilising the general area of the proposal.
- Maintain no or low artificial lighting in the construction area overnight if night work is not a part of the project. This is to prevent the birds being attracted to the area by insects around the lights.
- The construction site should be inspected at the start of each work day to ensure no Bush Stone-curlews have entered the sites. This includes under temporary structures or storage areas from approx. August onwards, when nesting may commence.
- If a Bush Stone-curlew is found in the construction area, a qualified person (wildlife carer or ecologist) should be contacted to move the bird away from the construction area. Contacts for the qualified person should be established prior to construction commencing.
- Review construction site controls such as access and vehicle speed limits if Bush Stone-curlews are identified within 100 m of the construction area.
- All fallen branches or logs in the proposal area are to be placed in the nearest available 'forest' habitat adjacent to the proposal, to potentially enhance roosting and nesting habitat. Any landscaping or offsets required in the general area must only be comprised of local native species.
- To prevent an increase in predator activities in the resort grounds, general hygiene around the construction site should be maintained so that food scraps are not left on the ground or in places that could attract high predator use. Appropriate bins should be placed in easy to access locations, especially those for food scraps.
- Restrictions to the general proposal area, including exclusion fencing must be established, maintained and enforced, including during evenings through the construction process.
- No domestic animals should be brought into the resort grounds by construction personnel.

2. Vegetation removal

As noted in the ecological assessment report, there is some potential for disturbance to the edge of an area of existing young age class littoral rainforest located at the top of the dune to the west of the proposal area. This vegetation is being progressively lost as a result of the coastal erosion that the proposal ultimately seeks to address. Although there is some potential for impact to rainforest trees as a result of construction, it is however considered more likely than not that no trees would be impacted by the proposal.

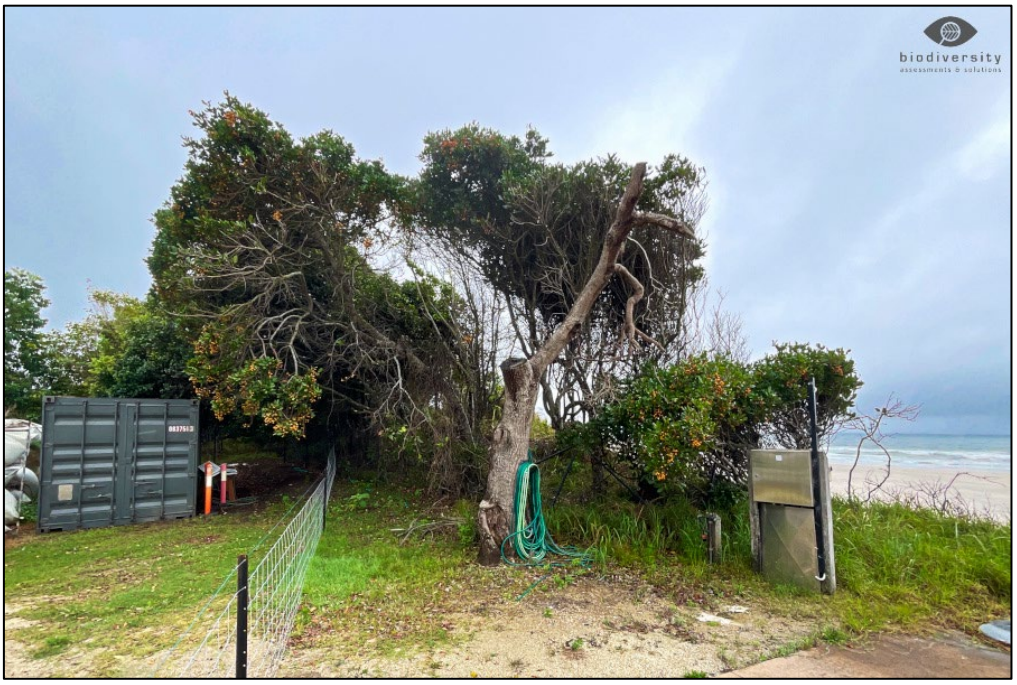

Plate 1: The area of littoral rainforest adjacent to the proposal, which includes a large dead Coast Banksia.

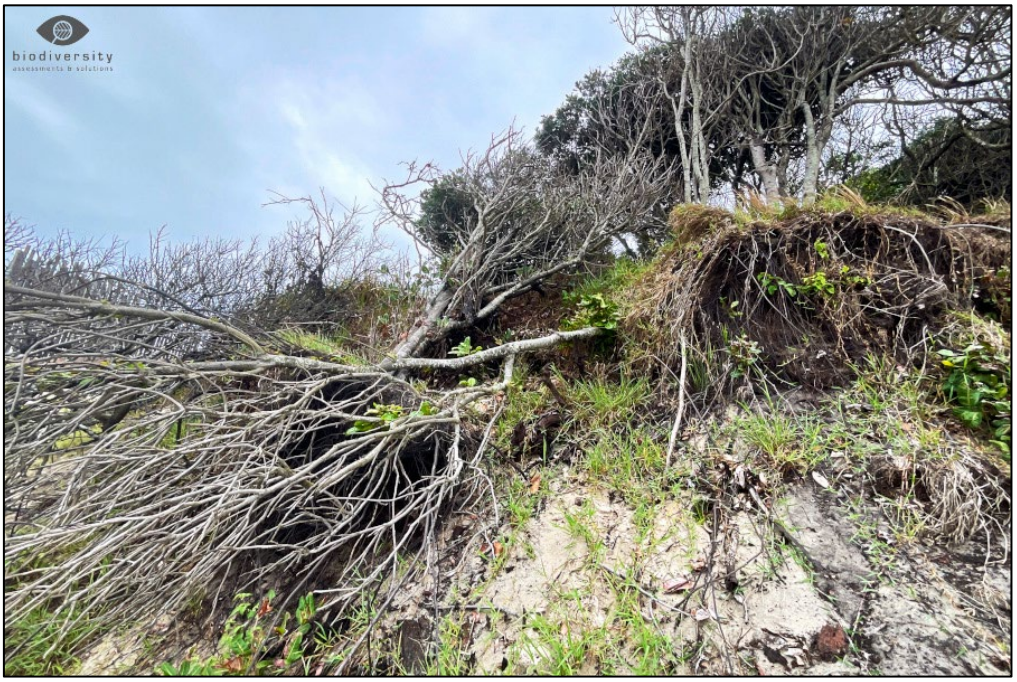

Plate 2: Trees lost to erosion on the top of bank from an area of littoral rainforest adjacent to the proposal.

A survey of trees located in the area was undertaken as a baseline for potential tree loss (Attachment 1, Figure 2). The indicative Tree Protection Zone (TPZ) and Structural Root Zone (SRZ) buffers are marked for those trees most proximal to the proposed construction footprint to indicate their likely survivability.

However, should any trees require removal or be directly impacted to accommodate the proposal, tree loss would be offset at a ratio of 10:1, i.e. A tree is taken to be any tree, shrub or palm growth form that has a Diameter at Breast Height (DBH) of >10 cm and/or > 3m in height.

Conclusion

The proposal is for the extension of coastal protection works (sandbags and sand nourishment) for a period of (nominally) 5 years, dune fencing and revegetation while the Coastal Management Program (CMP) for the Byron Shire Northern Coastline (Cape Byron to South Golden Beach) is completed.

As for other threatened species assessed by way of a ToS within the ecological assessment report, it is considered that the proposal is unlikely to have an adverse effect on the life cycle of the Bush Stone-curlew, such that a viable population of the species is likely to be placed at risk of extinction.

With regards to loss of top of dune native vegetation, it is unlikely that the proposal would ultimately impact on currently viable rainforest trees, however, it is proposed that any trees impacted as a result of construction of the proposal be offset at a ratio of 10:1 or as Council sees appropriate.

Please don't hesitate to contact me should you require further information.

Regards

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Attachment 1 – Figures

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Figure 1: Bush Stone-curlew assessment area.

Legend

- Subject Land - Lot 1 DP 1215893
- Contours_1m

Proposed Sandbag Wall Extension

- Excavation
- Sandbag Wall
- 100m Buffer_Construction Area

0 10 20 30 40 50 m

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Figure 2: Tree survey plan.

Legend

- Subject Land - Lot 1 DP 1215893
- Tree survey points
- Contours_1m
- TPZs - most adjacent viable trees only
- SRZs - most adjacent viable trees only

Proposed Sandbag Wall Extension copy

- Excavation
- Sandbag Wall

ID	Sp.	DBH (cm)	Status
1	Coast Banksia	55	Trunk only - Dead
2	Tuckeroo	20	Lost - Erosion
3	Tuckeroo	10	Lost - Erosion
4	Tuckeroo	20	Currently viable
6	Tuckeroo	30	Currently viable
7	Tuckeroo	20	Currently viable
8	Beach Alectryon	18	Currently viable
9	Beach Alectryon	30	Currently viable
10	Tuckeroo	8	Currently viable
11	Tuckeroo	8	Currently viable
12	Tuckeroo	10	Currently viable
5	Tuckeroo	15	Currently viable

0 1 2 3 4 5 m