Comments on the proposed amendment the plan of management for the South East Forest National Park and Egan Peaks Nature Reserve.

Thank you for the opportunity to comment on your intention to amend the plan of management for the South East Forest National Park and Egan Peaks Nature Reserve.

The implication one could draw from the amendment is an acknowledgement that the NPWS's historically preferred management practises have proven to be inconsistent with the objects of the NPWS Act. Hence, the failure to conserve native species and their habitat requires the NPWS to implement management more likely to achieve the objects of the NPWS Act. Unfortunately, how the amendment to the plan of management and associated works fill the need to achieve the objects of the NPWS Act across the NPWS estate is not clear.

While the feral predator-free area (the area) may well support some threatened and locally extinct ground dwelling species. It is likely that the broad scale reduction in soil fertility, stemming in part from species decline is at or has gone beyond a tipping point in many forest ecosystems. In the absence of concerted broad scale efforts, soil fertility will continue to reduce, forest ecosystems will continue to decline and more species will become extinct in the wild in the South East Corner Bio-region (SECB).

The evidence points to tipping points being reached sooner in areas with higher proportions of silica in soils, generally associated with granitic geologies and probably some granites more than others. This reduced fertility could reduce the potential for ground dwelling species to achieve the pre-European population densities that, with associated ecological processes, maintained ecosystem health.

From that perspective, there is no information about whether the area is intended to be part of a network of such areas, more broadly in the (SECB) or a stand alone tourist attraction. As the NPWS has not supported a smaller feral predator-free area in the SECB that has always been intended to be part of a network and is on sedimentary geology. The difference between what the NPWS has planned and what it doesn't support in the Murrah Flora Reserves, including the ability to readily integrate into complimentary management programs, form the basis of these comments.

Geology and Soils

> " . . . Some soils are naturally more productive than others, but not necessarily more valuable in terms of the role they play in their natural setting (Burger *et al.* 2010). Therefore, it is necessary to measure the extent to which a managed soil is improved or degraded relative to a state that would naturally occur in that setting (Burger *et al.* 2010)." (Moyce et al. 2021)

The management plan for the South East Forest National Park (NPWS 2006) provides broad information information on the various geologies within the park. An important understanding in the plan is that " . . . The escarpment is an erosion feature that separates the coast from the Tablelands." The management plan also acknowledges differential erosion rates also apply to coastal soils that have evolved on different geologies ". . . Soils derived from granite have little clay content and tend to be highly erodible. Those on granodiorite and the Ordovician sediments are more fertile and less erodable while the basalt soils are quite stable."

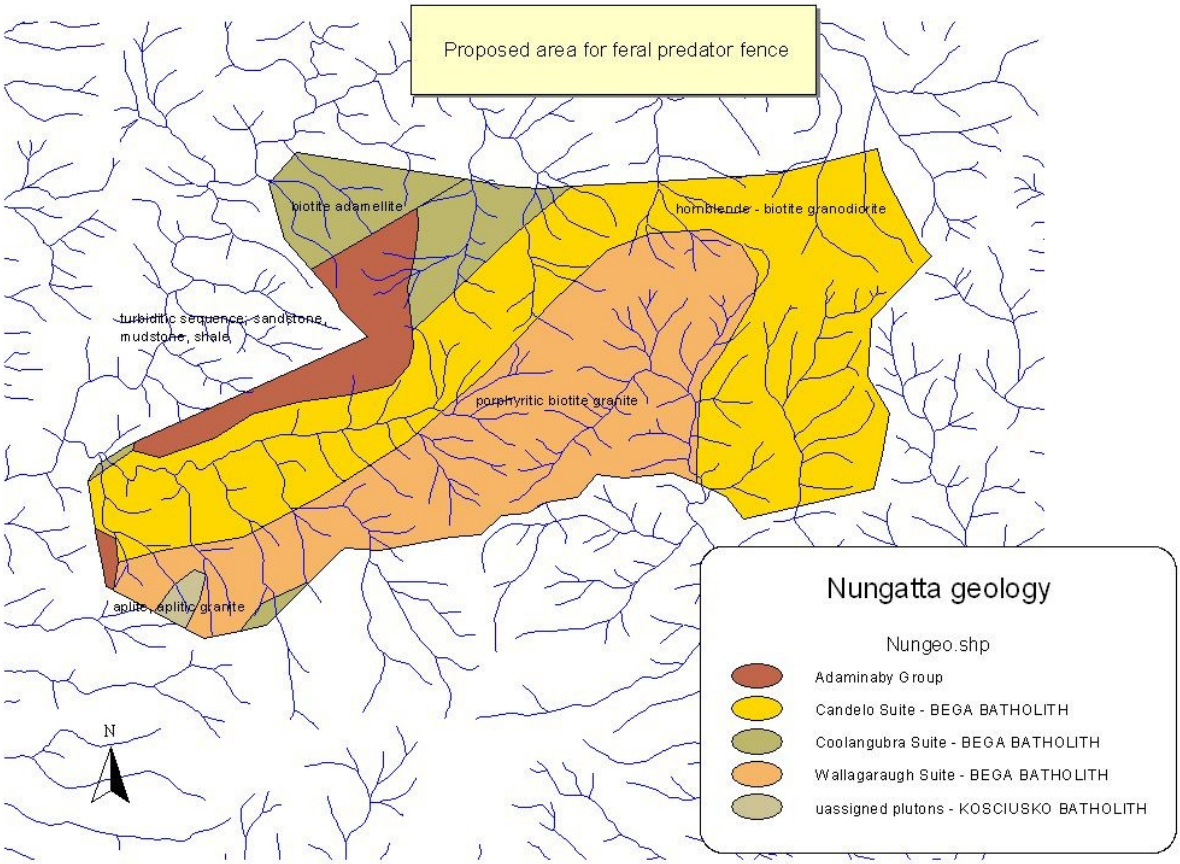
With regard to soils evolved from granites more recent information on soil fertility indicators (Moyce et al, 2021) has found Soil Organic Carbon " . . . increases with decreasing silica of parent

material, indicative of soils of higher clay content and fertility which contribute to higher vegetation growth and stabilisation of soil carbon."

With regard to soil bulk density " . . . The positive correlation with silica reflects the higher bulk density typically associated with sandy soils and the lower bulk density in clay rich well-structured soils."

With regard to soil pH " . . . Parent material and soil type, as represented by the silica index, were revealed as the dominant drivers of soil pH. pH increases, i.e., become more alkaline, with decreasing silica content of parent material, indicative of soils of higher clay content and fertility."

And " . . . Previously derived results for total phosphorus (Ptotal), from NSW wide analyses (OEH 2018) indicate a clear dominance of parent material/soil variables, particularly silica index, as a controlling driver. A clear increase with mafic, clay rich soils is again revealed."



Based on an approximation of the location of the area in the map above, the area is dominated by Bega batholith associated granitic plutons with a small area of Adaminaby group meta-sediments in the north west corner.

While meta-sediments and basalt overlaying the granite in the vicinity of Brown Mountain are generally considered to be less erodible and more stable, mass movement events resulting from subsoil dispersion are becoming more frequent.

For example, Ordivision meta-sediments in Dampier State Forest are considered to be in an area where mass movement prescriptions do not apply (Forestry Corporation, 2019). Yet there is a large and seemingly recent area of mass movement in a compartment currently approved for logging. While in this case logging has been excluded from the area of mass movement and it is to be

mapped as a ‘tree retention clump’. The harvesting plan confirms “ . . . Localised mass movement forming hollows around the heads of 1st order streams are not uncommon in this terrain.”

> “ . . . Recovery plans may provide for community education for particular species such as the koala, for which significant habitat occurs on private land.” (NPWS 2006)

> “ . . . Much of the area has coarse granitic soils with a eucalypt species mix that appears to sustain koalas at lower densities than those growing on metasedimentary geologies that occurs over most of the koala study area.” (Environment, Energy and Science 2021)

The consistent features with the two statements above are that there is no evidence of koalas on private land or ‘granitic soils’, but believing otherwise is consistent with the belief that pretty well every where is suitable koala habitat.

Ecosystem health

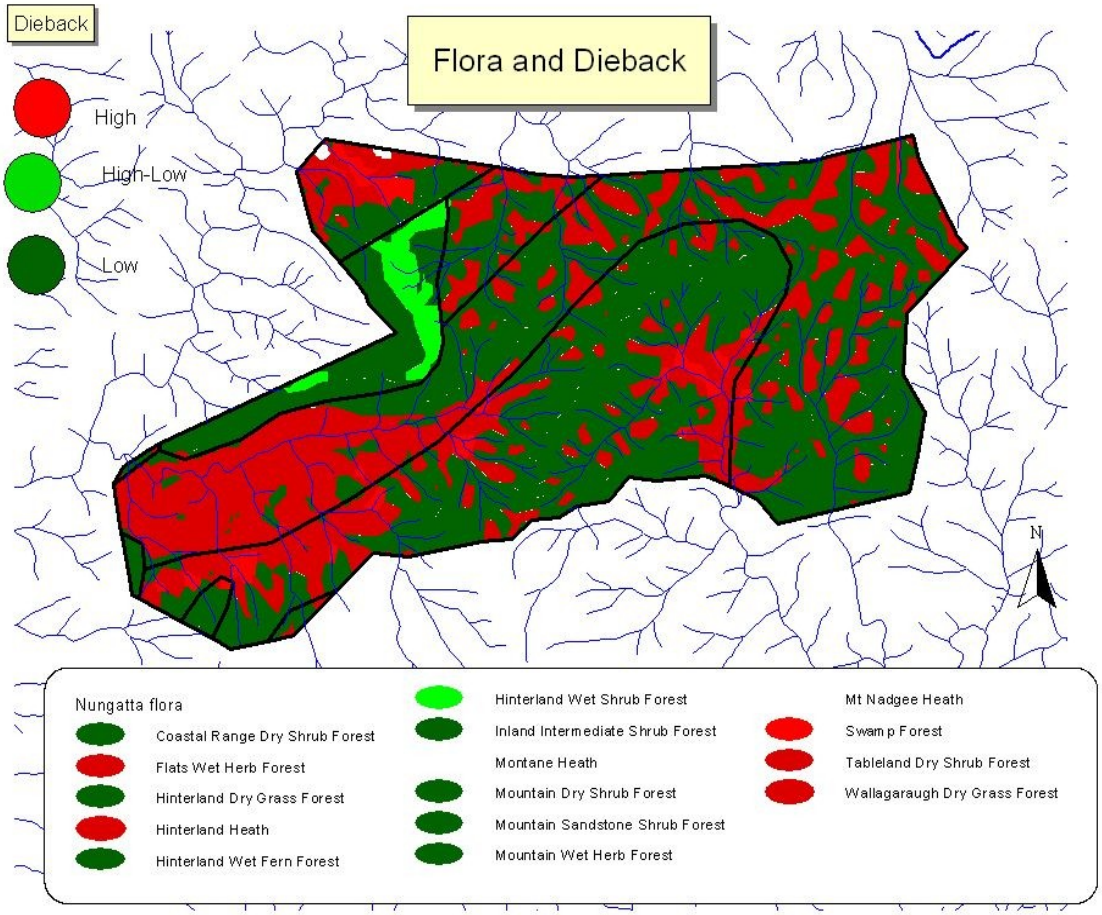
> “ . . . However, should the higher temperatures and more severe periods of drought predicted for the region (OEH 2016c) occur, additional declines are likely to occur, particularly due to wildfire, degradation of browse quality (Lawler et al. 1997) and defoliation (Jaggers 2004). Changes in other more complex threats such as die-back are less clear.” (Environment, Energy and Science 2019)

Improving ecosystem health is frequently referred to in the amendment, although the 2006 plan of management for the South East Forest National Park and Egan Peaks Nature Reserve only refers to Bell miner (*Manorina melanophrys*) and phytophthora (*Phytophthora cinnamomi*) dieback existing in parts of the park.

In 2007 the NSW Scientific Committee made a final determination indicating that while koalas are not endangered, ‘extensive canopy die-back’ is a threat to the specis in the South East Corner bio-region. The phenomena was first observed in the years preceding the determination, during a short dry spell late last century and during the drought between 2002 and 2004.

The following map reproduces what is referred to as either ‘defoliation’ (Jaggers 2004 and Environment, Energy and Science 2019) or ‘chronic decline’ (Jurskis and Walmsley 2012) and employs the same die-back rating system as the latter in approximate area.

The ecosystems with a high chronic decline rating in the area aren’t on Ordovician meta-sediments and are at generally lower topographies. The research points to “ . . . weak positive relationship with TWI (Topographic Wetness Index), suggests higher DP (Dispersion Percentage) and sodicity on lower parts of the landscape, in accord with accepted pedologic theory.”

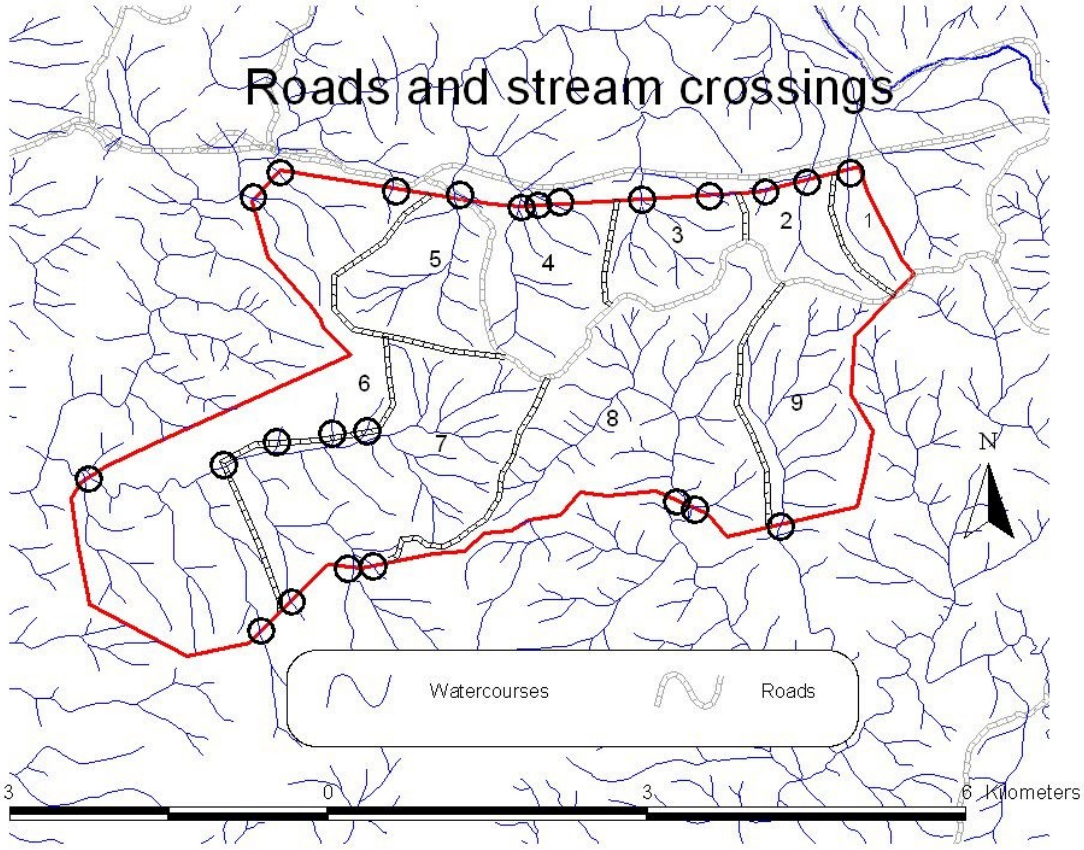


The research goes on to add -" . . . Additionally, because total cations are low in siliceous soils, even a small addition of sodium through airborne salts derived from the ocean, can result in a relatively large increase in DP."

Such as situation appears to be evident with the now endangered koalas on the NSW south coast. In this case there is a north/ south bias in the distribution of the species (Adamack et al. 2016). So from an environment science perspective they are essentially trapped between the granitic soils to the west and the increasingly sodic soils to the east. However, the government believes these areas are suitable koala habitat because they ignore the environmental science explaining why there are no koalas and why there management eliminates them.

Catchments and roads

> " . . . Soils associated with Orogenic Granites in the Genoa area are highly erodible and are very sensitive to the effects of intense wildfire and disturbances such as clearing and road building. Section 4.3.3 provides for closure of unwanted forestry trails and other roads that are subject to erosion problems. Regeneration of former logging coupes will also reduce the potential for soil erosion in the park." (NPWS 2006)



The >25 black circles on the map above indicate locations where a road or around the approximate red perimeter of the area a road and a fence, intersects with a mapped water course stream orders. There are about 15km of road within the area and 23km around the perimeter, including roads with 'erosion problems' that are planned to be re-opened. The numbers within the perimeter road and fence are a count of the individual areas created by the unnatural roads.

The erosion and significant changes to natural hydrology from the roads does not contribute to maintaining either the spatial or temporal diversity of functional habitats.

The much smaller Murrah feral predator-free area encompasses a 180 hectare sub-catchment of the Murrah river. It has a perimeter road that requires one stream crossing and several locations where the fence is not immediately adjacent to the road so tree branches interlace above the fence, enabling access for arboreal species. A 250 metre side-cut section of private access road with erosion problems was closed in the Murrah feral free area and replaced with erosion free concrete strips on the outer perimeter of the fence along the original access road.

Fire

According to the amendment " . . . Fire will be managed to minimise the risk of a single wildfire affecting the entire feral predator–free area and to maintain a spatial and temporal diversity of functional habitats for reintroduced and existing native animals within the feral predator–free area."

The area was burnt during the 2020 Border fire and is likely to be burnt again in another uncontrollable fire coming from the south. Another source of uncontrollable fire could well be the extensive pine plantations only a couple of kilometres to the west.

An accurate figure on how much of the area was subject to integrated logging before being added to National Park isn't available. However, on the issue of minimising unplanned fire the post fire report in Biamanga NP suggests -

> " . . . One such minimisation strategy is to improve the carbon-sequestration capacity of these forests and their soils, and in this regard the Indigenous cultural burning program that aims to improve soil-moisture retention capacity and reduce fuel hazards (Envirokey 2020) in the koala study area offers a vital contribution.
> In both the post-fire koala survey, and the koala habitat rehabilitation monitoring we have been undertaking in the same period, we have observed massive post-fire germination of *E. sieberi* and *A. littoralis* seedlings, both of which respond well to disturbances such as fire and logging. We are now witnessing a second, greater wave of the shift towards these fire-prone and flammable species in the burnt areas; the first being the ecological response to industrial logging (OEH 2017).
>
> The scale of this shift is so huge that we face a long-term fire management emergency in this part of the study area that, if not effectively addressed, will significantly increase wildfire threat to the entire koala study area and adjacent human assets.
>
> To effectively respond to this emergency, we need to guide post-fire ecological responses away from the shift towards dense stands of fire-prone species towards more open and less flammable habitat, whilst increasing the proportions of tree species that koalas are known to prefer. Initially the focus needs to be along the edges of fire-trails in the western and north-western edges of the koala study area with the key principle to create a low-fuel buffer that reduces the risk of fire incursion into the unburnt heart of the koala study area."
> (Environment, Energy and Science 2021)

The report goes on to suggest-

> " . . . The ferocity and potential extent of the fires in the FSC koala study area were lessened by human intervention, terrain and ensuing milder weather."

Little consideration is given to the seral stages of forest recovery because the NPWS manage forests as if there has been no logging (Bentley & Penman 2017). Having created a situation where eucalyptus frequently do not grow back, the notion one could use fire to 'guide post-fire ecological responses away from the shift towards dense stands of fire-prone species towards more open and less flammable habitat' is logically inconsistent.

Most of the human intervention time was spent preparing to light back-burns, raising the notion that being better prepared for this eventuality should be the focus for fire preparation. The theories about improved soil-moisture retention capacity and reduce fuel hazards from an Indigenous cultural burning program have no basis in science. Similarly the suggestion that the fire 'will significantly increase wildfire threat to the entire koala study area and adjacent human assets.' neglects the fact that in forests south of the Murrah river there was no day with any wind other than a gentle sea breeze during the 2019-2020 fire.

There has been no logging or fire in the Murrah feral predator exclusion area since 1980.

Conclusions and suggestions.

The draft amendment to the South East Forest National Park and Egan Peaks Nature Reserve Plan of Management will not ensure the NPWS will achieve the objects of the NPW Act.

No evidence has been provided to demonstrate the selection of the location " . . . has been guided by a large body of scientific literature and by lessons learned from earlier rewilding initiatives" . Similarly, 'the past and present distribution of target species' would seem to apply to most forests in the bio-region and no evidence is provided to demonstrate what native species are currently in the area.

Having an area that occupies less than 2% of the park where feral cats and foxes are excluded does not mitigate the risk to threatened mammals in the rest of the park. Nor does it demonstrate a commitment to broad scale improvements to forest health. This would seem particularly the case given the NPWS's inability to verbalise its objections to community efforts employing similar methods intended to restore ecosystem processes across tenures.

The significant cost of the proposed large fence must be added the potential for significantly increased water pollution in the White rock and Genoa rivers the due to the high number of stream crossings in highly erodible soils. The roads within the area are counter-productive to the hoped for outcomes and the creek crossings and moister areas will also significantly increase the chances of a breach in the fence and reduce the life of fence materials.

The option is a network of smaller areas, within 5-10 km of each other. Endemic and re-introduced species are protected but 'Felixers' are employed to enable the free passage of native species to adjacent unfenced areas where feral control would be focused.

With regard to the other aspects of the intended amendment namely -

- facilitating establishment of the Bundian Way which will help to foster public appreciation and enjoyment of the natural and Aboriginal cultural heritage values of South East Forest National Park
- facilitating establishment of visitor facilities in the Coolangubra section of South East Forest National Park including a basic camping area at Myanba Gorge and a short loop walking track at Pheasants Peak. This work will also help to foster public appreciation and enjoyment of South East Forest National Park.

It is arguable that neither of the above require a feral predator free area, but a focus on a single large area excludes the potential to compare and contrast the outcomes for endangered, threatened and other native species on soils where, based on the science the NSW ignores, positive outcomes are more likely.

Robert Bertram

16 June 2022

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