Submission to the Senate Standing Committees on Environment and Communications
Inquiry into the status, health and sustainability of Australia's koala population

Please accept the following submission by
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Summary

We recommend that the Commonwealth recognise that the koala is in drastic decline in parts of its range and the Commonwealth should do all that is in its power to protect the species throughout its range. This includes listing it under the EPBC Act. It should be recognised that the koala faces different problems in different parts of its range, so a regional approach to its conservation is required.

We make a special case for the koala population on **North Stradbroke Island (NSI)** to be listed under the EPBC Act in its own right.

The NSI koala population deserves protection in its own right but it also has the capability to act as an "insurance" population for the highly-threatened koalas of S.E. Queensland, as it is:

- a natural island population,
- in good health.

But to do so, it needs urgent attention. This requires:

- accurate population monitoring and funding to do so
- better knowledge of its distribution on the island
- implementation of effective protection measures including:
  - the majority of its habitat being protected under national park
  - cessation of vegetation clearing by sand mining as soon as possible
  - no future developments in prime koala habitat
  - creation and implementation of a koala plan by Redland City Council
  - control of dogs and fire
  - vehicle traffic control and driver-awareness education
  - prevention of damage to the island's hydrology, because koala trees are associated with wetlands and damp areas
  - assessment of the effects of water extraction on favoured koala habitat
  - planning for climate change impacts

Introduction

I am a resident of North Stradbroke Island who has a keen interest in our island population of koalas. I co-ordinate community recording of koala sightings on the island. This submission will be in reference to NSI koalas.

North Stradbroke Island is located off the coast of Brisbane in S.E. Queensland and is approximately 27,500 hectares in area. The island lies at an angle to the coast, the southern end being 4km from the mainland and the northern end some 25km.

The island has a small population of healthy koalas thought to number 300-1000 individuals, although **no population estimate** has ever been done. Because census data have not been collected over

time it is not possible to know if the population is stable, increasing or decreasing. The NSI koala population is one of, if not the only, naturally occurring island population of koalas in Australia. Elsewhere where koalas exist on islands, they have been introduced.

All around Australia, islands are used to try and help save endangered species. These programs can involve great expense to relocate animals and establish breeding populations and to remove predators and invasive weeds from the island refuge. On NSI, the hard work has been done for us as koalas naturally colonised the island many thousands of years ago.

Here in S.E. Queensland, koalas are in drastic decline (Preece 2007; DERM 2009). At the same time we have a healthy natural population on NSI living adjacent to the declining mainland population. The NSI koalas deserve protection in their own right but they are also a valuable insurance policy for the species in S.E Queensland. However, NSI koalas have faced, and continue to face, many threats, and unless these are addressed and the population is given better protection, there is no guarantee it will remain viable into the future.

Currently only 2% of NSI is protected by national park and koalas have not been seen in that park for many years. There is no protection for koala habitat elsewhere on the island. Fifty-two percent of the island is covered by mining leases, and mining companies are still permitted to clear koala habitat.

Now is a crucial time for the island's koalas because the Queensland Government is deciding the future of tenure on NSI, and the outcome of those decisions will have significant impact on our koalas.

Terms of Reference as listed by the inquiry:

1. the iconic status of the koala and the history of its management;
2. estimates of koala populations and the adequacy of current counting methods;
3. knowledge of koala habitat;
4. threats to koala habitat such as logging, land clearing, poor management, attacks from feral and domestic animals, disease, roads and urban development;
5. the listing of the koala under the *Environment Protection and Biodiversity Conservation Act 1999*;
6. the adequacy of the National Koala Conservation and Management Strategy;
7. appropriate future regulation for the protection of koala habitat;
8. interaction of state and federal laws and regulations; and
9. any other related matters.

This submission will deal with items 1-5 as they relate to NSI koalas.

1. The iconic status of the koala and the history of its management

Koalas are a valuable part of Australia's unique biodiversity. They are an iconic Australian animal and an important tourist attraction. Potentially the tourism value could be significant for the NSI economy in the years to come.

As with other large animal species, the koala has special significance, including totemic and spiritual value, to the Quandamooka people of North Stradbroke Island. The Quandamooka people want to ensure the continual survival of the koala on the island into the future.

On 20 June 2010, Premier Anna Bligh announced that by 2027, 80% of NSI will be made national park, and sand mining will be phased out by that date. Further, 56% of the island will be made national park by the end of 2011 *(http://www.derm.qld.gov.au/stradbroke/index.html)*. The island's economy will be transitioned from one dominated by mining to one where nature-based tourism is the key economic driver. The government also states "The island's koala population will become an increasingly important biological reserve for south east Queensland."

Up until a few years ago, NSI koalas were not even on the official government mapping of koala distribution. They are on the map now, but they do not have effective protection.

2. Estimates of koala populations and the adequacy of current counting methods

No accurate population estimates have been carried out for NSI koalas. The figure of 300-1000 individuals is really just a rough guess.

There was an island-wide habitat mapping project conducted in 2008 (GHD, 2009a). During that project, only 8 koalas were found outside the urban areas, and 16 within the urban footprint.

Redland City Council (RCC) again organised volunteers to count koalas in the three townships in 2009 and 2010. A total of 32 individual koalas were found in 2009 and 28 in 2010.

The RCC counts give some indication of how few koalas are actually being seen during dedicated population surveys.

There is an urgent need for follow up census work on the island to obtain a more reliable estimate of the island's entire population. Only then will we know how many animals we are dealing with. This need is further reinforced by the knowledge that NSI koalas suffer many of the threats that the population in S.E. Queensland suffers, albeit on a smaller scale. We also urgently need to know if there are any isolated pockets of koalas on the island so they can be protected.

Population census work is time-consuming and costly. If we want to seriously assess koala status, we need to recognise the importance of accurate population estimates and fund such surveys.

Moreover, much of the islands 27,500 hectares is comprised of thick bush or swampland that is difficult to access on foot for census work. We suggest it would be worthwhile training a sniffer dog to locate koalas and koala pellets to help in census work, particularly for low-density populations scattered over a large area like we have on NSI.

3. Knowledge of koala habitat

As stated above, there is an urgent need on NSI to find all remaining pockets of habitat on the island so we can ensure their protection and ensure there are adequate, safe corridors between those patches.

We know that koalas favour trees that get adequate moisture and we probably have a good handle on the species of trees that koalas prefer on NSI (Woodward et al. 2008). However we also know that, for any one species of food tree on the island, koalas favour particular individual trees. Why they don't feed on all trees of the right species, we don't fully understand. There is a need for research into this phenomenon. There has been interest in planting koala feed trees on the island away from urban areas and the main roads to offset losses of habitat and make up for koalas killed by dogs and traffic. But to do that successfully requires better understanding of what conditions make for suitable koala habitat. Whilst tree planting potentially has value, protecting original habitat should be the main priority.

We are concerned that mainland criteria for grading koala habitat into high, medium and low value (GHD 2009a, b) should be adjusted when dealing with an island population such as that on NSI. The application of mainland criteria resulted in no high value habitat being officially recognised on NSI. As state regulations are written to place greater weight to high value habitat, NSI habitat will lose out. On NSI, koalas tend to favour trees along the margins of wetlands or other damp areas. That kind of habitat is primarily found on the west and north of the island. However there are also patches of preferred habitat scattered elsewhere including, in the past at least, on the east coast (author's, unpublished data). The whole island is rightly designated koala habitat but the preferred feeding areas are restricted. So in the case of NSI, where koalas feed is critical habitat and it should be considered high value in terms of how it is protected. Having no official "High Value Habitat", as is currently the

case, leaves our island koalas vulnerable.

Koala habitat is not just about food trees; it includes resting and shelter trees (Clifton et al. 2007; Ellis et al. 2009) and habitat connectivity corridors. Koalas have been found on the east, west, north, south and some central parts of the island. When you factor in that koalas also need to disperse and travel to preferred habitat pockets, then for NSI we need a whole of island approach to koala conservation.

4. Threats to koala habitat such as logging, land clearing, poor management, attacks from feral and domestic animals, disease, roads and urban development

There is a misconception that the koala population is secure on NSI. We consider this is erroneous for many reasons as listed below (not in order of relative importance):

1. The current Queensland government has announced that 80% of the island will be made national park by 2027 and mining phased out by 2017. 56% of the island is to be declared national park of by the end of 2011. However until the new park is actually gazetted, the land is not protected. The only national park on NSI at present (Blue Lake National Park) is very small – less than 2% of the island. Koalas have not been sighted there for many years. Environmentalists argue that now that the majority of the island has been earmarked for national park, it is not in the public interest to mine it first. They advocate that mining should be brought to an end and as much as possible of the 80% national park declared in this term of government – not in 16 years time. Many of the mining leases on NSI have expired and environmentalists argue they should be not be renewed. (*savestraddie.com*, *simo-stradbroke.org.au*).

2. The Queensland Government's new vision for NSI includes expansion of the urban footprint in the three townships – townships that have been built on prime koala habitat. The expansion will mean clearing more koala habitat. The "Vision" map also shows provision for developments outside the townships in koala habitat on the west and north coasts. *(North Stradbroke island Future Vision Map http://www.derm.qld.gov.au/stradbroke/maps.html)*.

3. The Queensland Government chose not to include NSI koalas in the new State Planning Regulatory Provisions and it will now be up to Redland City Council (RCC) to develop a set of regulations (using the SPP). RCC koala regulations for NSI are at least two years away from being law. In the meantime, koala trees can be cleared in developments of any kind on the island.

4. Mining leases cover 52% of the island. Mining companies have cleared koala habitat in the past and are still permitted to do so, as long as they wait for the koala to vacate the tree before felling it. Sand mining has also been exempted from the new State Planning Regulatory Provisions (SPRP), not that the SPRP currently applies to North Stradbroke Island.

5. Koalas do feed and breed in some rehabilitated areas after sand mining (Cristescu, PhD in prep). However we do not know if koalas have returned to all the areas they once occupied before such areas were mined. We also don't know if koalas will re-establish in the same densities they were pre-mining. We simply do not have the historical data to be able to evaluate the net effect of mining on the koala population of the island as a whole. We also don't know the fate of individual koalas whose habitat was cleared for mining. The time between habitat clearing, mining and rehabilitation is many years. Whether those koalas displaced by mining survive is unknown. Also unknown is what effect the large cleared areas created during mining have on koalas wanting to travel across the island to different areas of their range.

6. Koalas prefer leaves of a certain moisture content and in fact their survival may be dependent on water content of foliage for part of the year (Ellis et al. 1995). Therefore its reasonable to assume they prefer trees that get adequate moisture. This is borne out by koala distribution on the island which shows they favour trees growing on the margins of wetlands or other damp places. Thus their trees are dependent on the island's hydrology. How water travels through this sand island is still poorly understood. Potentially, any activity that damages the island's hydrology could affect koala feed trees. The effect could be subtle: the tree may not die, it just might not have enough moisture to be attractive to koalas.

7. The internal structure of the dune landscape is not uniform, it has various layers of different hardness and water porosity. These layers will affect how water moves through the dune. Heavy mineral sand mining on NSI involves dredge mining sometimes to a depth of 100 metres below the surface. The dunes are effectively homogenised in the process of extracting the minerals. Thus soil horizons that took hundreds if not thousands of years to create are destroyed. The homogenised sand is then used to reform the landscape. How this affects the hydrology of the dunes is unknown.

Whether these potential changes in hydrology and soil horizons impact on koala habitat is also unknown. However it does not seem unreasonable to think there could be impacts.

8. The main road connecting each of the three townships on NSI travels straight through koala habitat and the townships themselves are built on preferred koala habitat. Thus koalas suffer the same traffic and dog threats as they do on the mainland. Our recording of koala deaths by vehicle strike and dog attack has improved in recent years. In 2009, 19 koalas were evacuated from NSI; most were either already dead or died in care. Six died from vehicle strikes and 3 were killed by dogs. These data come from areas frequented by people, primarily the townships and main roads, which represent about 10% of the island's area. We have almost no mortality data for the majority of the island either because it's thick bush and\or public access is prohibited (the public are not permitted on mining leases). However, we do know that feral and rogue dogs range throughout much of the island; some live off the wildlife, others just chase and attack fauna. Their toll on koalas is unknown. If the koala population is at the low end of the estimate, say 300, then these death rates are likely to be having a significant impact on the population. As tourism increases on the island, it will bring more traffic and more dogs and inevitably more koala deaths unless serious management of these threats is implemented.

9. So far, efforts to get road speeds slowed on NSI to help reduce road kills of koalas and other wildlife have failed at local council and state government level. Reducing speed limits on roads is only part of the solution. Driver awareness education is required so that people actually look out for wildlife whilst driving.

10. Local council has implemented some dog control measures but much more is needed. Whilst some people are responsible dog owners, many are not. Many holiday-makers bring dogs to beach camp grounds, to holiday rentals that have no fencing and fail to keep dogs on a leash in the bush. Current attempts to fix these problems are inadequate. Even where a dog is in a fenced yard or on a lease, we have still had incidents of dogs attacking and killing koalas that walk too close.

11. Bushfires and cool burns that "get away" can also be lethal to koalas. The biggest stand of blue gums (*Eucalyptus tereticornis)* on the island was wiped out by a hot fire some time before the 1970s. Koalas were known to live there *(Greg Litherland pers.comm).* Mostly we do not have the data to know how many koalas die as a result of fire.

12. Genetic data have shown that there is less genetic diversity in the NSI population *(Lee et al. 2010)*. This is not surprising given the island population's isolation and its small size. Generally, low genetic diversity makes populations more vulnerable and less viable in the future. If the population size of koalas on NSI is allowed to decrease in size, genetic variability may further decrease.

13. NSI koala population currently appears healthy and fecund. They have been found to carry disease; Chlamydia (Cristescu et al., in review) and Koala retro-virus (Lee et al. 2010); but rarely are these diseases expressed. Potentially this could change if the koalas become stressed because it's stress that appears to bring on expression of Chlamydia and Koala retro-virus (Weigler et al., 1988, Ellis et al., 1993). Also, individual koalas on NSI have been found with health problems involving organ disfunction that often results in death *(information from volunteer wildlife carers on NSI).*

14. Climate change will result in sea level rise and more extreme weather events including increased storm surge along the coast. Most of the best koala habitat on NSI exists along the low lying coastal fringe which will be vulnerable to these changes. In many places the coastal swamps abut a sand dune escarpment and it may not be possible for swamps and their margin of koala trees to "migrate" inland. Better prediction of what is likely to happen to these low-lying habitats and whether we can ameliorate the consequences in any way would seem a wise step in the protection of koalas on the island. Other reports have drawn attention to the effects of climate change altering leaf composition in ways that will make them unsuitable for koalas (Ellis et al. 2010).

15. Over-extraction of water from the island's aquifer and/or swamps for human use has the potential to impact on koala habitat including via salt water intrusion.

Part of understanding the threats to koalas is appreciating that they are an animal living on the edge of what is ecologically possible (Cristescu, in prep). Their food is very low in nutrition and they have minimal fat reserves. They only need a few things to go wrong in their daily life for them to be under pressure and more vulnerable to threats, most of which are now anthropogenic in origin.

5. The listing of the koala under the *Environment Protection and Biodiversity Conservation Act 1999*

So far, state regulations in Queensland have failed to stop the drastic decline of its koalas. Perhaps it's time the Commonwealth became involved to protect this iconic and important species. One step in that direction would be to list koalas under the EPBC Act. Koalas in different parts of Australia face different problems. Whilst some populations may not be declining, those in other areas including S.E. Queensland are in drastic decline. We submit that the Commonwealth needs to recognise these differences and take a regional approach to koalas in assessment of a listing under the EPBC Act.

The population on NSI needs special recognition in its own right for protection under the EPBC Act. It is unique in the sense that it is one of, if not the only, naturally occurring island population in Australia and is adapted to living on a sand island. It is thought NSI koalas have been isolated from the mainland koala population for 8000 years when sea levels rose, and show genetic differences from the mainland population (Cristescu et al., in review). They are more similar genetically to the Gold Coast koala population than to those of the Redlands, suggesting colonisation of the island was originally from the south (Cristescu et al., in review).

Island populations of animals are particularly valuable in the portfolio of conservation measures to protect a species. The NSI population is a good insurance policy for the mainland population in S.E. Queensland. Risks can potentially be managed in a "contained" isolated population.

It's not possible to present a case for listing of the NSI koala population under current criteria for EPBC listing based on population decline because no population estimates have been made. If we wait for all that data to be collected it may be too late for this population. There would appear to be ample justification for listing this population based on: its small size, its genetic isolation and low genetic diversity, the threats it faces, the lack of protection of its habitat and its value as an important part of the conservation of the koala in S.E. Queensland.

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