

Dear DPIE Staff,

Thank you for the opportunity to give feedback on this significant project.

The Biodiversity Assessment Report attached to the Environmental Impact Statement for the M1 extension to Raymond Terrace concluded, 'that the project is not expected to significantly impact the movements of koalas and no targeted connectivity measures are required for koalas.' However, a review of the Environmental Impact Statement with local knowledge would suggest that koalas may move away from the proposed Motorway. Therefore, this submission will outline strategies to counteract the project's potential impact on koalas in the Heatherbrae and Raymond Terrace areas.

Including fauna fencing and underpasses to protect connectivity

There are two maps of the fauna corridor from Tomago to Heatherbrae (EIS, Appendix I, pages 29 to 30). The fauna corridor is adjacent to the proposed Motorway from Tomago to the Botanical Gardens. It then moves northeast away from the project footprint and goes through Masonite Road (Scotts, D. 2003).

Road construction noise and road traffic can startle nearby animals and cause a physiological stress response (Kight and Swaddle 2011). Consequently, animals may move away from the noise-affected area, either temporarily or permanently (Parris, K. 2015).

Therefore, the disturbance caused by the M1 may result in animals migrating to the northeast, where they will need to cross Masonite Road. Consequently, a fauna protection fence on both sides of the road will prevent wildlife deaths. The fence should commence near the proposed Masonite Bridge and continue to the east side of the fauna corridor. Given the tall trees along Masonite Road, a floppy top fence would be less effective when branches fall onto it. A chain mesh 1.5-metre fence with flashing along the top would be less likely to become entangled with branches. In addition, NSW Transport needs to consider installing escape structures such as wooden posts for long stretches of road, near crossings and at the end of fences. These posts will allow koalas to climb on and avoid predators (Environment, Energy and Science 2020).

A fauna crossing should be constructed where the fauna corridor crosses Masonite Road on the east side of Heatherbrae. A fauna crossing will improve connectivity and give koalas on both sides of the road more opportunities to access koala habitat in the corridor. It will also save wildlife from vehicle strikes.

Loss of koala habitat

The Environmental Impact Statement reported that modelling presented in Eco Logical Australia 2013 determined that the project footprint would remove 51 hectares of potential koala habitat. In addition, the Motorway will isolate 5.3 hectares. Hence the total loss of habitat is 56.3 hectares (Eco Logical Australia 2013).

In response to this estimate, a 'koala habitat assessment tool' (DoE 2013 a) was applied according to the Environmental Protection and Biodiversity and Conservation Act to determine the impact of the M1 footprint. The assessment concluded that ...' based on the habitat present and previous records in the local area, the construction footprint was identified as having '**habitat critical to the survival of the koala**' in the Tomago and Heatherbrae areas (Environmental Impact Statement, Chapter 9, p 57).

In response to this assessment outcome, the Biodiversity Assessment Report concluded that the loss of koala habitat was 'minor' given the extent of core koala habitat throughout the Port Stephens Local Government Area. This estimate is calculated from the amount of habitat identified in the Port Stephens Comprehensive Koala Plan of Management 2002 (Environmental Impact Statement, p 345. [Appendix D in Appendix I]). This Comprehensive Koala Plan of Management has not been updated to reflect the critical loss of core koala habitat from land clearing and bush fires in Port Stephens over the past twenty years. Hence this assessment over-estimates available habitat and minimises the loss of habitat that this project will create. The Threatened Species Scientific Committee reviewed the Port Stephens Koala Population in 2018. It gave the opinion that this population 'is facing a very high risk of extinction in NSW in the near future...'. (NSW Threatened Species Scientific Committee, 2018). Therefore, this population is highly vulnerable to any threats, including loss of vegetation.

Conserving Local Habitat as an offset

The proposed strategies described in the Environmental Impact Statement to offset the loss of critical habitat will not replace the loss of habitat in the construction footprint. Most biodiversity offsets have been issued, but the locations of the purchased offsets are not in the impacted areas. Two modest sized pieces of land have been purchased by Transport; however, the locations of these properties are unknown. Therefore the benefit of these properties as habitat is not clear.

Preserving vegetated corridors close to the impacted areas will ensure the genic biodiversity of fauna and flora impacted by the project's footprint. The Environmental Impact Statement reported that NSW Transport is seeking more land to offset the loss of habitat. There are two pieces of land connected to the construction footprint with remnant vegetation and histories of koala sightings that could be used as offsets. One of these properties is owned by Transport, and the other is a private property on the market. Please view Figure 1 for the locations of each property in the attachment window. Securing this acreage for conservation will protect koalas from habitat loss.

The aerial photograph of the site for the Raymond Terrace Interchange shows a sectioned off piece of land with diagonal stripes. This land is attached to the Pacific Highway. The property has been described as '*project land owned by Transport*'. (Figure 14-6, Map 8 of 8, page 28, Chapter 14, EIS M1 to Raymond Terrace). The land is divided into three lots. The DP number for the most considerable portion of land is DP846612, Lot 14. The DP number for the smaller pieces of land is DP 840996 Lots 14 and 15.

If NSW Transport does not have a conservation plan for this land, one must be implemented. The northwest corner of this property is adjacent to the Grahamstown Canal Bridge fauna underpass for the Pacific Highway. This underpass connects to the primary koala habitat through Elizabeth Reserve and along Grahamstown Drain. See Koalamap 2021 in Figure 2 in the attachment window. Furthermore, there are two clusters of *Eucalyptus Parramattensis* subsp. *decadens* growing on this property in the M1's footprint (Appendix I, Figure 4-5, map 5 of 5 pages 156). There may be more clusters of this threatened koala food species on this property, which will increase its conservation value.

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The eastern boundary of this property is connected to the Tilligerry State Conservation Area. This Conservation Area extends from Raymond Terrace to Tanilba Bay. Koalas and their preferred food trees inhabit it.

The address of the land which is on the market is 6c Elizabeth Avenue, Raymond Terrace, DP 853008, Lot 42. It is 8.44 hectares and zoned as a rural landscape (Commercial Real Estate). Figure 3 in the attachment window shows this property and the adjacent habitat. The northeast corner of the property borders a forest that connects to the south side of the Grahamstown Drain fauna underpass. The boundaries of this property form a triangle. The eastern side of the property joins the Pacific Highway. The north side connects to Elizabeth Reserve. Figure 3 has a white circle around this Reserve. The Muree Golf Course is on the north side of Elizabeth Reserve. Figure 3 has a blue boundary around the golf course. In addition, Boomerang Park and Pioneer Hill Cemetery connect to the west edge of the Golf Course. The above sites contain preferred koala food trees.

The preservation of native vegetation on these two properties will ensure koalas have a viable corridor from the east and west side of the Motorway. Furthermore, this will allow the recolonisation of koalas into Raymond Terrace.

David Paull, an ecologist, conducted an environmental assessment of Boomerang Park in 2016 and confirmed the existence of koala habitat. He also reviewed the easterly connectivity from Boomerang Park through to the Golf Course. He said,

'...the high number of koala records from the adjacent Muree Golf Course complex provides enough evidence to show that this area provides valuable habitat for Koalas. The existing native vegetation offers valuable habitat and dispersal opportunities for fauna. The Golf Course, in turn, has good connectivity with other larger remnants, including public land to the south (6c Elizabeth Avenue) and east of Raymond Terrace.'

The land to the east Paull referred to includes project land owned by Transport connecting to Tilligerry State Conservation Area.

'Boomerang Park has good connectivity with surrounding habitat offering means of dispersal off the Park through Muree Golf Course. The existence of connecting habitat implies that re-use of the Park by Koalas and other fauna is highly possible at any time' (Paull, D. 2016).

The koala corridor is vital to the Raymond Terrace community. There is a long history of volunteers planting koala food trees along Grahamstown Drain, in Elizabeth Reserve and Boomerang Park. Furthermore, there are plans to grow more koala food trees at the Hunter Water Waste Treatment Works and the Muree Golf Course.

The conservation of these pieces of land can also be used for biobanking of flora species lost in the construction footprint at Heatherbrae. For example, the Biodiversity Assessment Report on page 44 identified several 'plant community types' (PCT) impacted by the project. These plant community types included, Broadleaf paperbark, Swamp Mahogany, Saw Sedge Swamp Forest of the Central Coast and Lower North Coast (PCT 1717) and the Smooth Barked Apple, Blackbutt, Old Man Banksia Woodlands on Coastal Sands of the Central and Lower North Coast (PCT 1646). These plant community types are also present on the two pieces of land proposed for koala conservation.

Some schemes can transform the land to a conservation status which may apply to the above situations. For example, employing the Biodiversity Conservation Trust agreements such as Wildlife Refuge Agreement, Conservations Agreements and Biodiversity Stewardship Agreements.

Other options could be leasing, acquisition or rezoning from rural to environmental. It would be appreciated if these options could be investigated to secure these two properties for koala conservation.

Fauna underpasses for new and existing bridges.

The M1 project includes a 300-metre-wide bridge over Windeyer's Creek, functioning as a wildlife underpass. Given the primary koala habitat under the bridge and along Windeyer's Creek, koalas must have uninterrupted access to this vegetation. Please view Figure 2, of the Koalamap M1, 2021, in the attachment window.

The proposed bridge is to go over a vast expanse of wetland filled with water plants and reeds. It is unclear if there is a margin of dry land under the bridge on both sides that wildlife can safely walk over during high tide and times of flood. It has been noted that koalas prefer to walk on the ground when it is dry. "By removing the risk of mammals getting their paws wet, they will use ...underpasses (Moore, T. 2016)". By fitting a wooden ledge along with the bridge batter (or other structures), koalas will be able to have a dry passage under the bridge (Environment, Energy and Science DPIE, June 2020, p.3).

If the banks of the creek leading to the proposed fauna underpass are wet, then koalas will need elevated structures such as wildlife furniture to access the fauna crossing. The Department of Environment, Energy and Science gives examples of fauna crossings applicable to this underpass (Environment, Energy and Science, 2020).

The next fauna underpass is the bridge going over the Grahamstown Drain for the Pacific Highway by-pass of Raymond Terrace. This is the last crossing for koalas in the Raymond Terrace area. According to the Koalamap M1 2021, there is primary koala habitat on the east and west sides of Grahamstown Drain, and please see Figure 2 in the attachment window. The plan for the M1 is to continue with this as a significant fauna crossing for koalas. Given the valuable vegetation in this area for koalas, it is vital that the fauna crossing remains.

Conclusion:

NSW Scientific Committee is of the 'opinion that the Port Stephens Population faces a very high risk of extinction in the near future' (NSW Threatened Species Scientific Committee, 2018). Therefore, every strategy that has the potential to protect koalas from the impact of this project must be employed.

The strategies recommended in this submission will protect koalas from vehicle strikes and maintain connectivity for koalas to move away from the impacts of the proposed development. In addition, preserving native vegetation on the two parcels of land described above will ensure corridors to reserves, such as Tilligerry State Conservation Area, that have ample access to koala habitat in protective environments. Koalas depend on corridors for their genetic diversity, which then ensures their resilience and ability to reproduce. Therefore, the implementation of these measures may also contribute to the recovery of the declining koala population in the Port Stephens Area.

Thank you for considering this proposal.

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