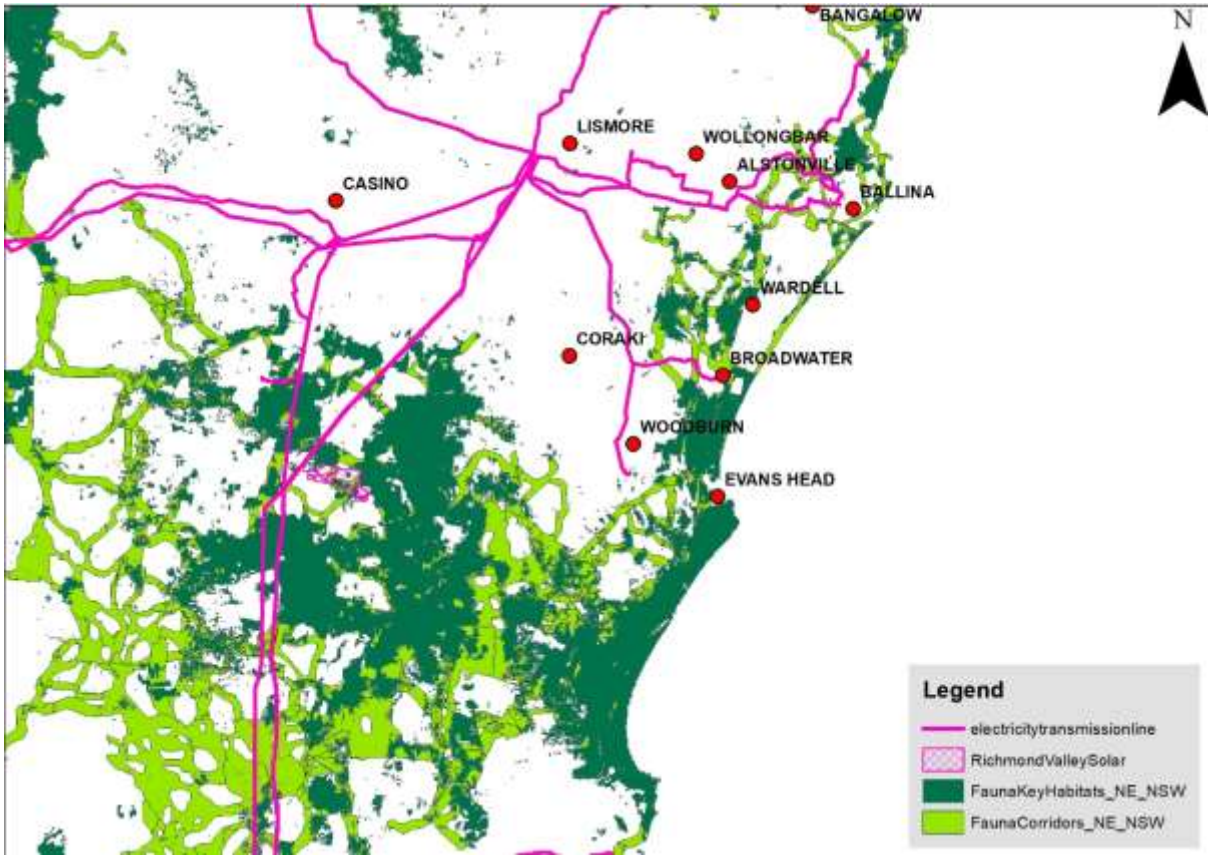
North East Forest Alliance Submission to:

Richmond Valley Solar Farm

Dailan Pugh, North East Forest Alliance Inc, August 2024

NEFA supports the concept of developing solar farms on cleared land near existing electricity transmission lines in the Richmond Valley, as the map below shows there are numerous places where such infrastructure could be constructed that are relatively free of environmental constraints.



Map showing transmission lines overlaid on NPWS key fauna habitats and corridors, illustrating the numerous options available for solar farms without impinging on fauna habitats. The Richmond Valley Solar Farm is proposed to be created on an environmentally constrained site, most particularly because it is sited in a key habitat linkage for a variety of species, including Koalas, and will significantly interfere with fauna dispersal.

For this project to proceed its footprint needs to be reduced (or include additional cleared lands), vegetation clearance reduced and wide corridors established to both maintain and enhance fauna dispersal. This project needs to be improved so that it can have a positive environmental effect, which can be achieved by establishing regional scale corridors where such linkages are needed.

It is recommended:

1. **The hydrology of the site needs to be reassessed and reconsidered. There needs to be a professional assessment of the likely hydrological impacts from**

the development on the EECs (both onsite and in the adjacent State Forest) and appropriate mitigation measures.

2. **A well designed riparian corridor through the site needs to be identified. Establishing a wetland corridor through the site linking Bungawalbin and Ellangowan State Forests should be a key objective, which will require significant reconfiguration of solar panels and modification of boundary fencing to facilitate dispersal of targeted species. A riparian wetland corridor should be compatible with a solar farm, though needs to be built into the design of the project with accurate hydrological data. Restoring the natural drainage lines into the adjacent EEC would be a worthwhile goal, provided that there will be no contamination of the runoff.**
3. **A northern biodiversity corridor is mentioned as a mitigation measure, though the apparent corridor is extremely narrow and therefore of limited utility, and will be of limited effectiveness in offsetting the significantly reduced dispersal due to the development. It will suffer from edge effects (fenced panels on one side and cleared land on the other) and unknown light and noise impacts from the development. If this is intended to be an effective corridor it needs to be significantly widened. Corridors 350m wide for Koalas have been recommended elsewhere. Given that the proposal is intending to create a barrier over 2 km wide, a wide corridor enhanced with appropriate plantings is the least that can be done to offset impacts. This corridor needs to be clearly delineated, with a planting plan and planned road crossing.**
4. **There is the potential to link the large stand of vegetation in the south of the site with a corridor linking to Bungawalbin SF (south of Physics Creek), though this needs widening, formalizing and a plan. To be effective the corridor needs to be extended to the west to link through to Ellangowan SF.**

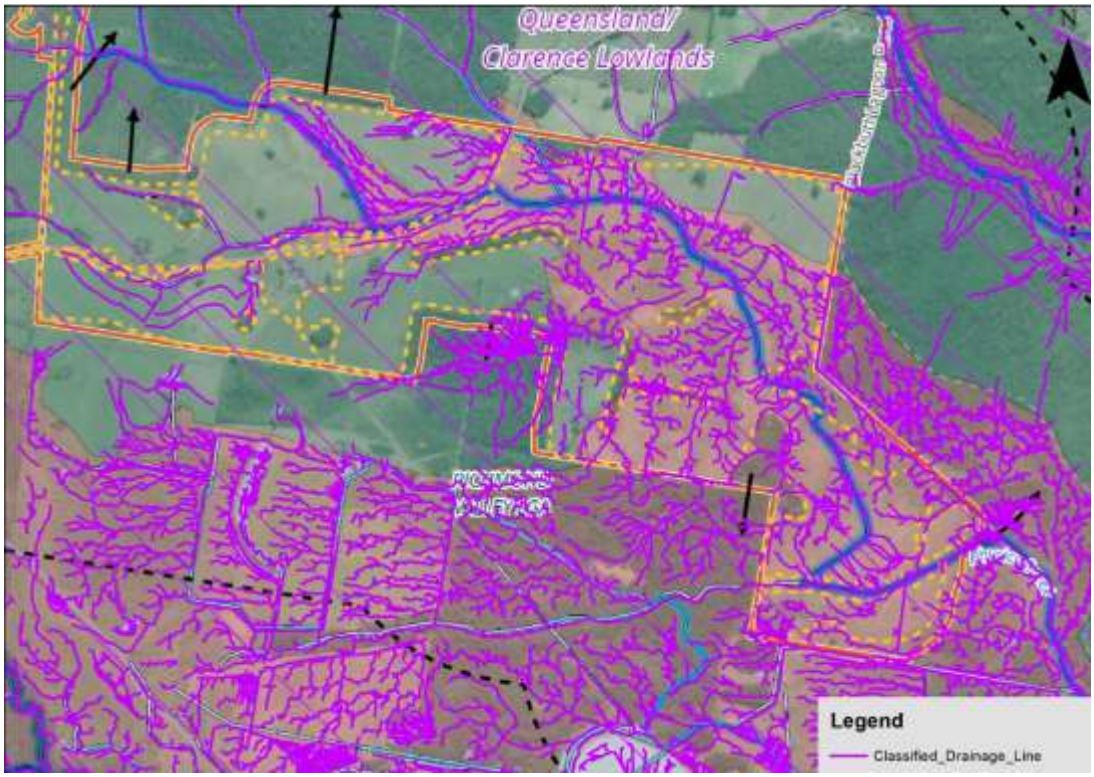
It is proposed to remove 21.27 ha of remnant native vegetation (including 4.33ha of a nationally listed EEC), 1.32 ha of planted native vegetation, 28 scattered paddock trees, and 21 hollow-bearing trees (out of the 42 recorded). Further areas of habitat will be sterilized by fences and the light and noise impacts of the development.

There are 12 threatened fauna species identified as recorded on the site: Barking Owl, Square-tailed Kite, Grey-crowned Babbler, Squirrel Glider, Brush-tailed Phascogale, Southern Myotis, Large Bent-winged Bat, Little Bent-winged Bat, Eastern Coastal Freetailed Bat, Greater Broad-nosed Bat, Hoary wattled Bat, and Green-thighed Frog. There are a variety of other species that may occur on the site, or at least pass through, with the Koala being of particular importance.

Biosis identify that 72.22 ha of the Endangered Ecological Community (EEC) Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion occurs on the subject land, with 5.6 ha within the development footprint. Further to this 1.1 ha of the EEC Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions is identified on the subject land. It is important to recognise that 4.33 hectares of this comprises the EPBC Act listed Endangered Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions.

The project should be referred to the Commonwealth due to impacts on EPBC Act listed species and ecosystems.

Biosis fail to recognize that the adjoining vegetation in Bungawalbin State Forest has been mapped by the EPA as the EEC Subtropical Coastal Floodplain Forest of the New South Wales North Coast Bioregion. This mapping was undertaken in a detailed process involving expert Aerial Photographic Interpretation and ground truthing, though it was limited to State Forests. The mapping and reports are publicly available on the SEED site.



Overlay of LiDAR derived drainage lines (purple) showing significant miss-match with Biosis drainage line mapping.

Detailed mapping of drainage lines by LiDAR has been undertaken by the NSW Government (as shown on the above maps), which shows a very different hydrological scenario than claimed by Biosis. It is apparent that Biosis has the drainage system completely wrong in a number of areas. It is recognized that most of the vegetation on the site has been cleared and that there has been significant alteration to natural drainage, particularly by the construction of a drain along the boundary with Bungawalbin State Forest which has diverted streams that would naturally have flowed into the mapped EEC. From the LiDAR and aerial photos it is apparent that a large proportion of the site would have once been the EEC Subtropical Coastal Floodplain Forest. It is also apparent that subsurface flows would comprise a significant proportion of the hydrological system, and that therefore alteration of subsurface flows would have a direct impact on the remaining EEC.

Biosis note:

> *Wetland areas and associated vegetation may provide movement and dispersal areas for waterbirds and semi-terrestrial species, such as frogs. In addition, although highly ephemeral, tributaries of Physics Creek may provide transient terrestrial and aquatic habitat corridors across the Subject Land during more optimal environmental conditions, such as significant rainfall and flooding events.*

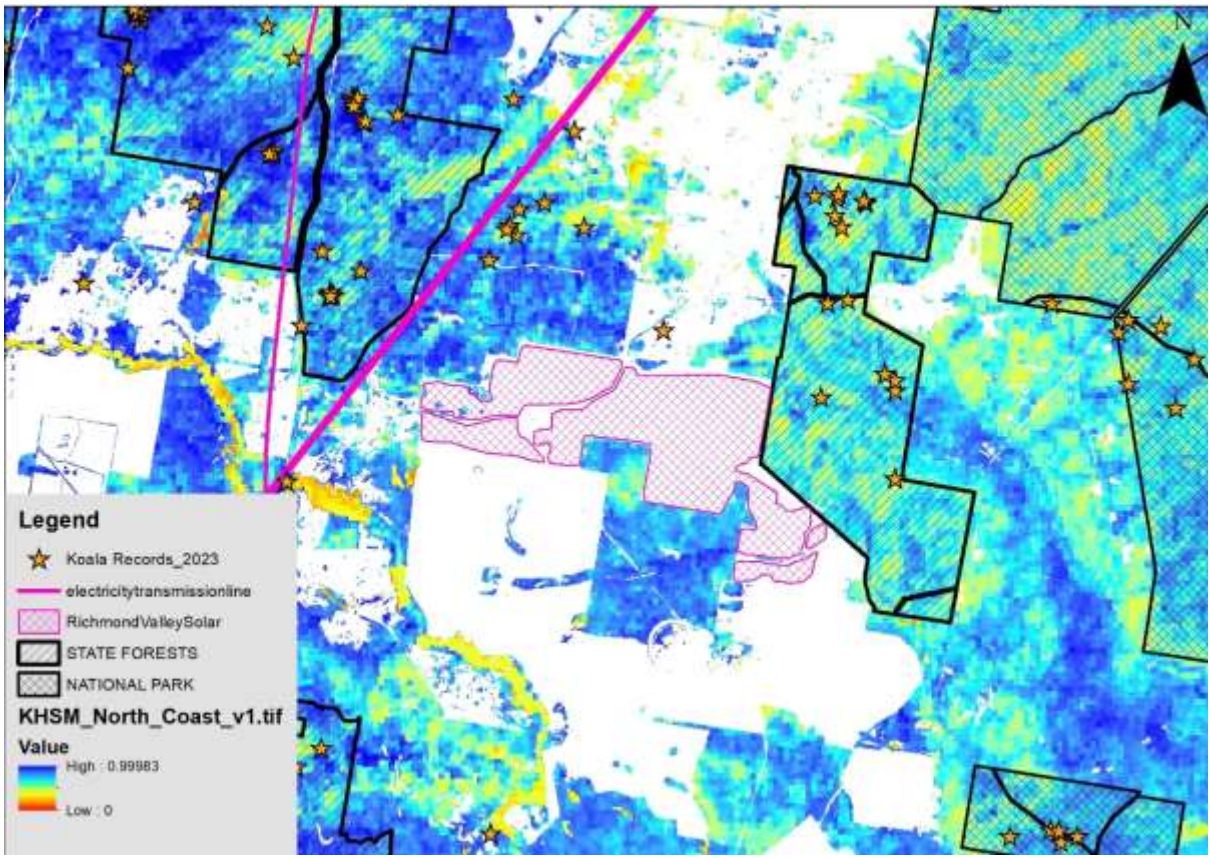
and

> *works proposed within the mapped riparian corridor will be assessed as part of the EIS.*

The hydrology of the site needs to be reassessed and reconsidered. There needs to be a professional assessment of the likely hydrological impacts from the development on the EEC (both onsite and in the adjacent State Forest) and appropriate mitigation measures.

A well designed riparian corridor through the site needs to be identified. Establishing a wetland corridor through the site linking Bungawalbin and Ellangowan State Forests should be a key objective, which will require significant reconfiguration of solar panels and modification of boundary fencing to facilitate dispersal of targeted species. A riparian wetland corridor should be compatible with a solar farm, though needs to be built into the design of the project with accurate hydrological data. Restoring the natural drainage lines into the adjacent EEC would be a worthwhile goal, provided that there will be no contamination of the runoff.

Koalas should have been counted as one of those species likely to be impacted by the proposal, even though none were recorded on site, because the native vegetation on and adjacent to the site includes modelled high quality habitat and there are Koala records nearby (see map below).



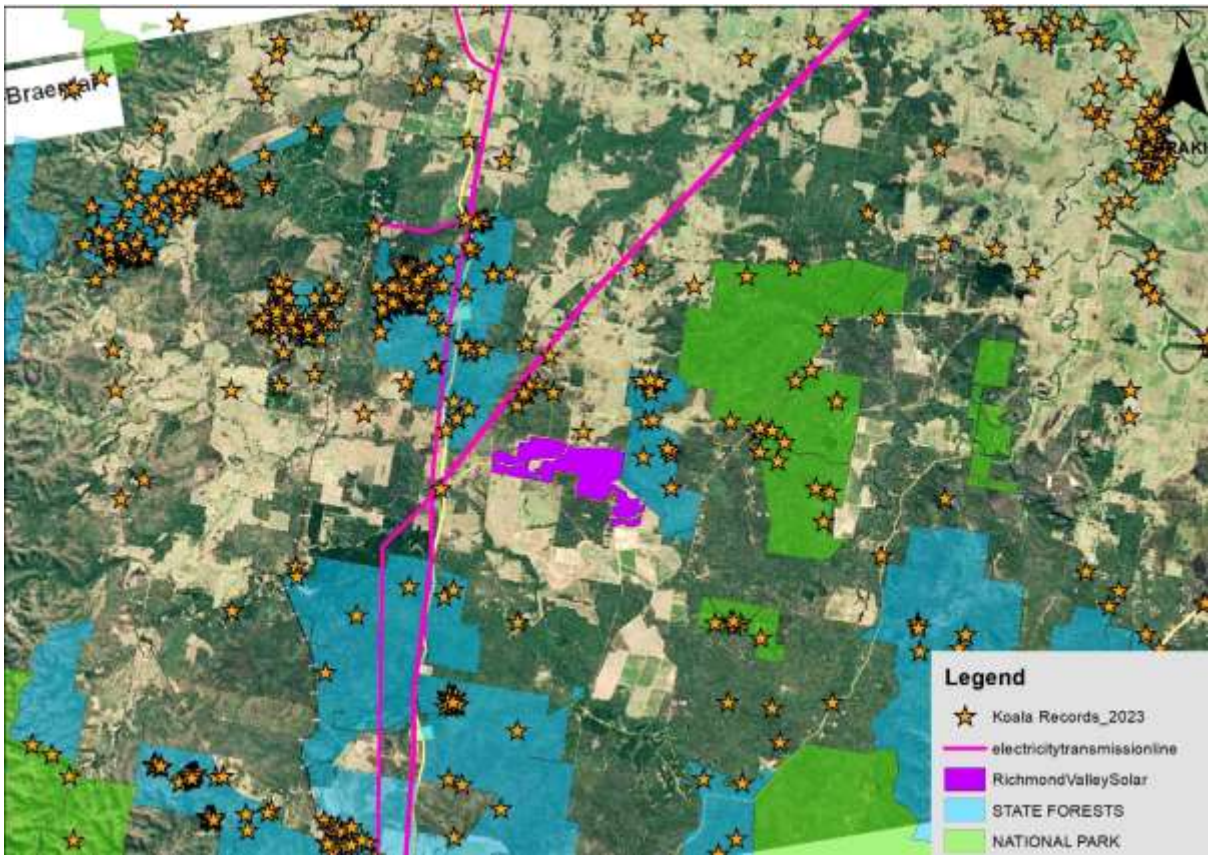
Map showing koala habitat as identified by the NSW Government North Coast Koala Habitat Suitability Model, overlaid with Koala records. This shows the project area to include high quality Koala habitat. It also shows the proposed fenced area occupies a key position between patches of Koala habitat, and thus is likely to significantly impact Koala dispersal.

Biosis's claim that it will have no impact is without foundation:

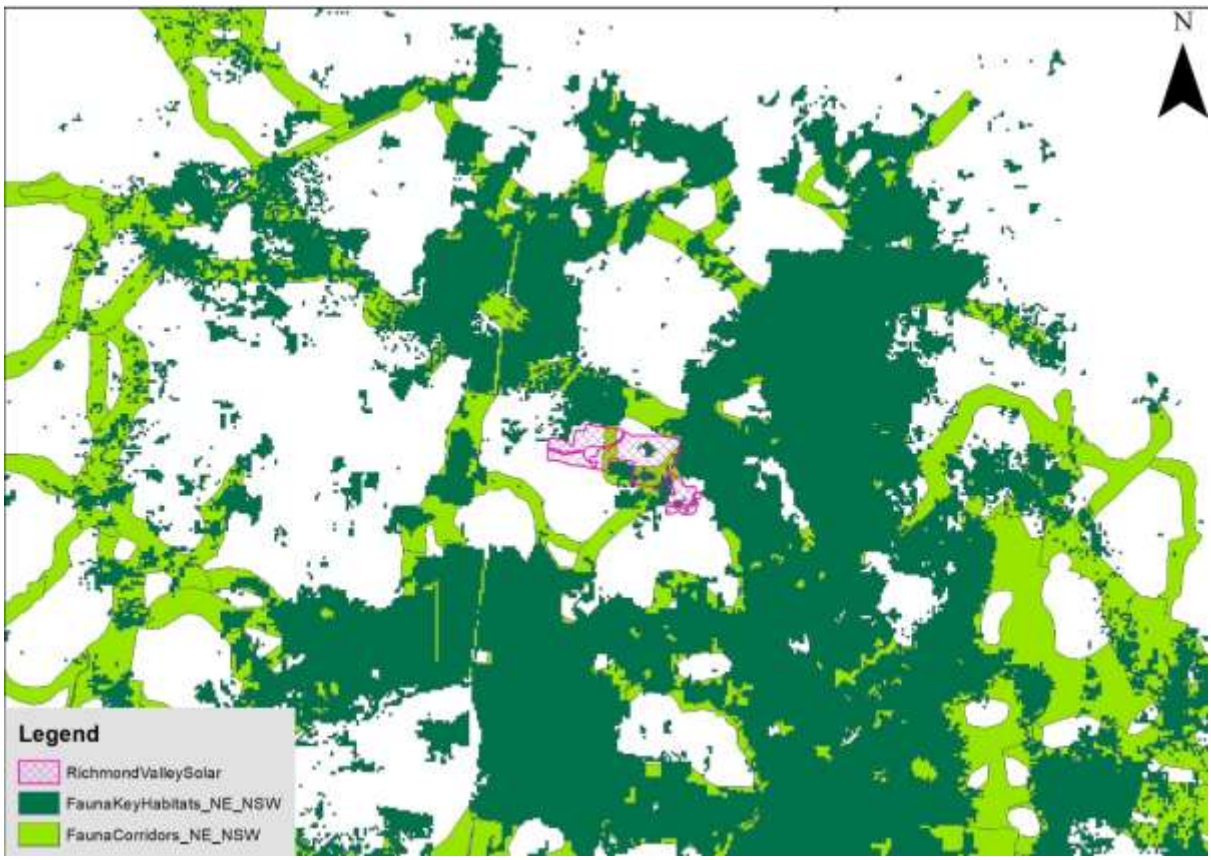
> *Impacts to 21.27 ha of Koala habitat including known Koala feed trees will reduce the availability of resources within the immediate locality. However, given the contiguous nature of adjacent native vegetation with a large tract of good quality bushland containing Koala feed and use trees , the impact is not considered significant. The Project is not likely to isolate populations as the development will not substantially impact on the movement corridor and thus is not likely to constitute a barrier to movement and unlikely to result in the decline of the species as a whole.*

The site is bordered by Ellangowan/Braemar State Forest to the west and Bungawalbin State Forest to the east, which in turn adjoins Bungawalbin National Park and Bungawalbin State Conservation Area. It is apparently a regionally significant linkage for fauna dispersal, providing the shortest cleared distances between large patches of habitat.

The proposal involves clearing 22.6 ha of vegetation, 28 scattered paddock trees and 21 hollow-bearing trees which would currently help facilitate the dispersal of a variety of species across this predominately cleared habitat link, most notably threatened Koalas, Squirrel Gliders, and Brush-tailed Phascogales. It will also be quarantining additional trees and areas of vegetation with fencing to stop their utilization by some terrestrial species. Most significantly, extensive fencing will be erected to stop species dispersing between habitat patches. The barrier effect of this fencing is intended to be enhanced with "*flashing on perimeter fencing to restrict climbing Koalas*" and "*Frog exclusion fencing*". Lighting will compound this effect and increase avoidance by many species.



Map showing regional context of site in relation to forest cover, national parks, state forests, and koala records. This shows that the subject property is at a pivotal link between areas of native vegetation and of significant importance in maintaining regional habitat links.



The NPWS map of key habitats and corridors demonstrates the regional importance of this site as a key habitat linkage.

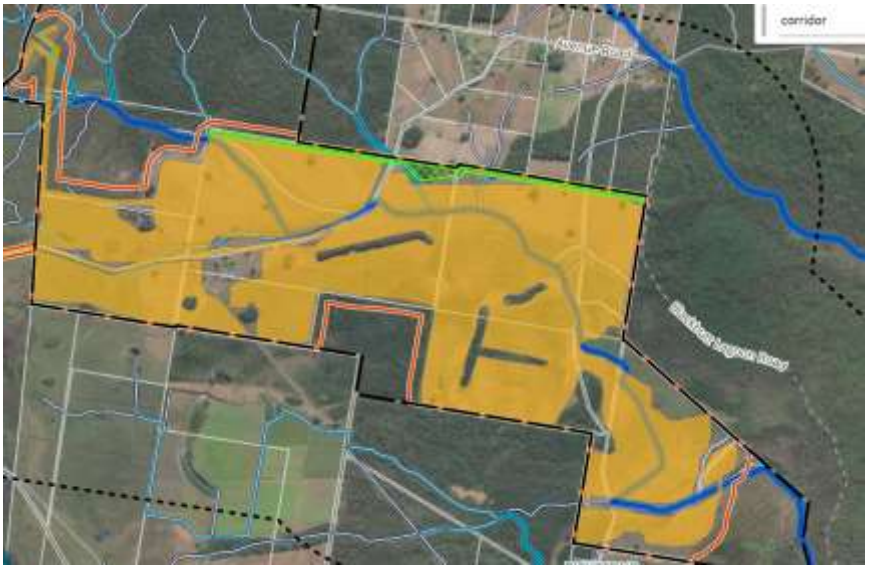
Biosis state:

> *A biodiversity corridor will be implemented at the northern end of the Subject Land to connect areas of vegetation, but also act as a visual amenity screen. Perimeter fencing may disturb the movement of larger ground dwelling fauna such as Kangaroos and Emus as well movement of Koalas, however patches of vegetation will be retained to allow movement, and the creation of a new biodiversity corridor will occur within the northern portion of the site.*
>
> *Fauna escape structures will be implemented as part of the BMP to allow species such as Koala to escape in the unlikely event they become contained within the perimeter fencing.*

And:

> *Habitat connectivity is critical for maintaining healthy populations, as it promotes biological diversity through the exchange of genes. While the Project will diminish local connectivity, this is unlikely to prevent genetic exchange of the threatened entities known, or assumed to be, inhabiting the Subject Land and broader Project Area. A biodiversity corridor will be implemented at the northern end of the Subject Land to connect areas of vegetation, but also act as a visual amenity screen.*

Because of its siting at a critical juncture, it is expected that the project will significantly diminish local and regional connectivity.



Biosis Figure 1 showing the intended sliver of a biodiversity corridor (green hatching). Given that the proposed corridor will need to be of trees that can grow to >30m to be of benefit to Koalas, the shading effect of this corridor on the panels needs consideration.

The 2020 Chief Scientist's Advice on 'the protection of the Campbelltown Koala population Koala, Independent Expert Panel' discusses the design of Koala corridors, noting:

> *A number of different reports have been produced over time that aim to provide measurements for the scale or width of corridors – these are summarised and discussed in Chapter 2. These analyses tend to calculate the average width of a corridor over an area, and range from 300 m to 425 m. Every opportunity to maintain*

or increase the width of corridors should be taken and work to understand whether there is a minimum width to make a viable corridor,

While the discussion is primarily related to Koalas in an urban environment, the same basic principles apply. Further noting:

A wildlife corridor is a stretch of habitat that joins two or more areas of similar habitats. They can be in the form of a sequence of stepping stones across the landscape or as a continual lineal strip of vegetation and habitat (DIPNR, 2004). As habitats are increasingly cut off from each other due to various contributing factors including urban development, corridors play an important role in partially compensating for habitat loss and fragmentation by linking habitats and helping to maintain ecosystem health

It is critical to ensure connectivity between important patches of koala habitat. Large connected areas linking various koala habitats sustain populations by facilitating dispersal of populations, supporting breeding, providing resources for feeding and protecting against localised extinctions (NSW Government, 2020c). Ensuring as far as possible that the habitat has multiple connections can help to prevent the formation of dead ends and population sinks and ensure that koalas (and other species) have routes to escape threats such as bushfires.

…

Biolink calculated the optimal average corridor width for koalas in Campbelltown to be 425 m. This is based on the home range size requirements for female koalas and the region's low carrying capacity (Phillips, 2018).

Eco Logical notes that studies indicate that the 425 m width is an overestimate of the width required for female koalas, and that Biolink has undertaken its calculations based on female koalas having a home range that is circular in shape. Eco Logical notes a study by (Lunney et al., 2010) that identified various home range shapes of koalas in the region including long narrow home ranges. Additionally, with regards to the 425 m corridor width, Eco Logical also notes the Biolink statement that it is "evident from available studies in CCC LGA that koalas will use areas with a narrower width than this" (Biolink, 2018).

…

Edge effects can include both direct (i.e. vehicle strike and dog attacks) and indirect (i.e. light and noise pollution, urban storm runoff) impacts on fauna and flora, and can result in altered behaviour (for example, changes in home ranges or in how species disperse throughout a landscape) that can have longer term repercussions. The magnitude of edge effects and how it impacts fauna residing within the habitat is primarily a factor of the remaining habitat area, and includes factors such as the smoothness of the border (i.e. jagged habitat borders can result in an increased edge:area ratio), the length of the 'edge' and the narrowness of the remaining habitat.

A northern biodiversity corridor is mentioned as a mitigation measure, though the apparent corridor is extremely narrow and therefore of limited utility, and will be of limited use in offsetting the significantly reduced dispersal due to the development. It will suffer from edge effects (fenced panels on one side and cleared land on the other) and unknown light and noise impacts from the development. If this is intended to be an effective corridor it needs to be significantly widened. Corridors 350m wide for

Koalas have been recommended elsewhere. Given that the proposal is intending to create a barrier over 2 km wide, a wide corridor enhanced with appropriate plantings is the least that can be done to offset impacts. This corridor needs to be clearly delineated, with a planting plan and planned road crossing.

There is some area excluded along Physics Creek, though this appears to be cut at a number of crossings.

There appears to be the potential to link the large stand of vegetation in the south of the site with a corridor linking to Bungawalbin SF (south of Physics Creek), though this needs widening, formalizing and a plan. To be effective the corridor needs to be extended to the west to link through to Ellangowan SF.