

Mr Stuart Hill  
Director  
Hills Environmental  
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16 August 2021

Dear Stuart,

## Ecological investigation and assessment – Sutherland to Cronulla Active Transport Link.

### 1. Introduction and project understanding

Lesryk Environmental Pty Ltd (Lesryk) is aware that Transport for New South Wales (Transport) are proposing to build Stage 2 of the Sutherland to Cronulla Active Transport Link (this being a shared cycleway – pedestrian pathway), the overall objective of this being to make walking and bike riding a more convenient, safer and enjoyable transport option between Sutherland and Cronulla. Two options for the shared cycleway – pedestrian pathway (hereafter referred to as ‘the proposal’) were initially considered, these being an alignment within the existing rail corridor and an ‘outer’ corridor option.

As part of the work conducted to date, an ecological report has been prepared by Futurerail (Futurerail 2020). This report considered ecological matters associated with each option and the areas of potential impact between Sutherland and Cronulla.

Lesryk has been engaged to undertake a flora and fauna survey of a section of the outer corridor option, this being from Pollard Park, Kirrawee, to the intersection of Gannons and Denman Avenue, Caringbah (Figure 1).

Key features of the outer corridor option include:

- The construction of a shared pathway, this being about 2.5 metres (m) wide. Generally, the works would require the widening of existing infrastructure
- Construction of a retaining wall to replace grassed embankment along the Kingsway frontage of Sutherland Hospital
- New raised and at-grade crossings of local roads
- New street furniture such as outdoor seating, bike racks, bollards and drinking fountains
- Drainage adjustments (including kerb and gutter works, pipes to accommodate existing overland flow where needed and adjustments to kerb inlets)
- Utility adjustments and or protection
- Temporary facilities including compounds / storage areas, within the south-west portion of Miranda Park and within an area of vacant land on Hunter Street at Kirrawee.
- Temporary safety barriers and fencing
- Landscaping.

When considering the construction of the proposal within this area, the following was assumed:





**Figure 1.** Proposal alignment surveyed

- 1) Based on an inspection of the existing section of shared cycleway – pedestrian pathway that terminates at Kirrawee, a disturbance footprint of 3 metres (m) is required. In addition, to permit the work and enable the movement of personnel, 0.5 m either side of this would be required during the construction stage.
- 2) The alignment surveyed is as indicated within plans provided by Transport, and includes:
  - a. An assessment of both sides of Oak Road at Kirrawee, and both sides of the Kingsway between Sylvania Road and Wandella Road
  - b. The southern side of The Kingsway between Wandella Road and Kiara Road (no longer includes Penprase Lane)
  - c. Both sides of Banksia Road/Denman Avenue at Caringbah.
- 3) At locations such as between Miranda Road and the eastern limit of Carramar Crescent, where an existing road is present, this would be utilised in preference to being in proximity to The Kingsway.

Within the proposal section surveyed, Lesryk was requested to:

- Inspect this route and identify the presence of any flora or fauna species, particularly any that are listed, or currently being considered for listing, under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and NSW *Biodiversity Conservation Act 2016* (BC Act)
- Identify the presence of any native vegetation communities, particularly any Threatened Ecological Communities (TEC) listed, or currently being considered for listing, under the EPBC and BC Acts
- Identify any hollow-bearing trees or other important habitat features
- Identify any ecological constraints to the conducting of the proposal
- If threatened species or ecological communities are recorded, prepare any assessments with reference to EPBC Act's Significant Impact Guidelines and Section 7.3 of the BC Act (these commonly referred to as the 'five-part test').

It is noted that sites beyond the limits of the defined proposal area, as per the plans provided by Transport, were not investigated.

Within the section of the proposal investigated no natural water bodies are present. As such, a consideration of the requirements of the NSW *Fisheries Management Act 1994* (FM Act) is not required.

Though not part of Lesryk's brief, where two options are being considered for the establishment of the proposal (e.g. north or south of The Kingsway), comment is made on an alignment that minimises the clearing of vegetation/fauna habitats.

As part of Lesryk's investigation of the section of the proposal that is present between Kirrawee and Gannons Road, a review of the report prepared by Futurerail was conducted and its relevance to the proposal alignment considered.

## 1.1 Legislative context

A Review of Environmental Factors (REF) is prepared to satisfy Transport obligations under s.5.5 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) to "examine and take into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity" and s.5.5 in making decisions on the likely significance of any environmental impacts. This biodiversity impact assessment forms part of the REF being prepared for the proposed shared cycleway – pedestrian pathway, and assesses the biodiversity impact of the proposal to meet the requirements of the EP&A Act.

Section 7.3 of the BC Act and Part 7A, Division 12, Subdivision 221ZV of the NSW *Fisheries Management Act 1994* requires that the significance of the impact of an activity on threatened species, populations, Endangered Ecological Communities (EECs) and/or their habitats listed under the BC or FM Acts is assessed using a five and seven-part test, respectively.

If the activity is likely to have a significant impact, or would be carried out in a declared Areas of Outstanding Biodiversity Value (AOBV), the proponent must prepare a Species Impact Statement (SIS) must be prepared in accordance with the Environment Agency Head's requirements. Alternatively, under the BC Act only, Transport may opt to produce a Biodiversity Development Assessment Report (BDAR) [this including the Biodiversity Offsets Scheme], this being prepared by an accredited assessor in accordance with the Biodiversity Assessment Method (BAM).

In September 2015, a "strategic assessment" approval was granted by the Federal Minister in accordance with the EPBC Act. The approval applies to Transport road activities being assessed under Division 5.1 (formerly Part 5) of the EP&A Act with respect to potential impacts on nationally listed threatened species, ecological communities and migratory species.

As a result, Transport road proposals assessed via an REF:

- Must address and consider potential impacts on nationally listed threatened species, populations, ecological communities and migratory species, including application of the "avoid, minimise, mitigate and offset" hierarchy
- Do not require referral to the Department of Agriculture, Water and the Environment (DAWE) for these matters, even if the activity is likely to have a significant impact.
- Must use the Biodiversity Offset Scheme (BOS) to offset project impacts.

To assist with this, assessments are required in accordance with the Matters of National Environmental Significance: Significant impact guidelines 1.1. EPBC Act (DoE 2013).

## 2. Field investigation

The section of the proposal being considered was inspected by Deryk Engel (B.Env.Sc. HONS) [Zoologist] and Paul Burcher (B.App.Sc) [Botanist], between the hours of 9.00 am and midday on 6 July 2021.

To inspect the section of proposal being considered, either foot traverses or traversing the alignment by motor vehicle was conducted. The foot traverses were conducted where stands of native vegetation are present, such as at Pollard Park and in proximity to the township of Gymea, whilst the alignment was driven where no vegetation (or where exotic streetscape plantings) was present.

During the course of the inspection, no limitations due to reduced site access or visibility were encountered.

For reference, the weather conditions experienced at the time of the inspection were cool temperatures (~16 °C), generally clear skies and no wind; whilst a photographic record of the areas inspected has been provided (Attachment 1).

In relation to the identification of any hollow-bearing trees present, all inspections were conducted from the ground. If a vertical dead limb, branch or cavity was observed, a precautionary approach to the presence of a hollow was adopted.

It is acknowledged that, beyond direct observation (or the identification of birds from their calls), no specific survey methods were employed during the field investigation such as spotlighting or echolocation detection. It is acknowledged that the current season would not be conducive to the detection of animals such as microchiropterans (insectivorous bats) and those birds that migrate north for the winter. In addition, some plant species (e.g. various lilies and orchids) are not visible during the winter months. If habitat for these species was observed, a precautionary approach to their presence was adopted.

### 2.1 Background research

Prior to carrying out any fieldwork, previous studies conducted in the region and known databases were consulted to identify the diversity of ecological communities, flora and fauna species known for, or potentially occurring in, the study region<sup>1</sup>. The identification of those known or potentially occurring native species and communities within this portion of the Sutherland Shire LGA, particularly those listed under the Schedules to the EPBC, BC and FM Acts, thereby permits the tailoring of the field survey strategies to the detection of these plants and animals, their vegetation associations and/or necessary habitat requirements. By identifying likely species, particularly any threatened plants and animals, either the most appropriate species-specific survey techniques may be selected [should their associated vegetation communities/habitat requirements be present] or a precautionary approach to their presence adopted.

The carrying out of a literature search also ensures that the results from surveys conducted during different climatic, seasonal and date periods are considered and drawn upon as required. This approach therefore increases the probability of considering the presence of, and possible impact on, all known and likely native species, particularly any plants and animals that are of regional, State and/or national conservation concern. This approach also avoids issues inherent with a one off 'snap-shot' study.

A list of all databases, date these were accessed, and the search area employed is provided in Table 1.

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<sup>1</sup> Is considered to 'include the lands that surround the subject site for a distance of 10 km' (DECC 2007).

**Table 1.** Database searches

Database	Date accessed	Search area
DAWE's Protected Matters Search Tool (PMST) (DAWE 2021)	5 July 2021	10-kilometre buffer
Department of Primary Industries (DPI) WeedWise Database (DPI 2021a)	5 July 2021	Greater Sydney
NSW Environment, Energy and Science (EES) BioNet database (Atlas of NSW Wildlife) (EES 2021)	5 July 2021	10-kilometre buffer
Office of Environment and Heritage (OEH) Threatened Species website (OEH 2021a)	July 2021	N/A
DPI Fisheries Spatial Data Portal (DPI 2021b)	July 2021	Sydney Metro data layer
OEH BioNet Vegetation Classification database (OEH 2021b)	July 2021	N/A
SEED datasets (NSW Government 2021)	July 2021	N/A

All these databases were reviewed and drawn upon where relevant. While reviewing these documents, particular attention was paid to identifying relevant ecological matters listed, or currently being considered for listing, under the Schedules of the EPBC, BC and/or FM Acts, plants, animals and ecological communities that have been recorded in the region and which may occur within, or in the vicinity of, the proposal area.

Nomenclature used within this report follows that presented in the EPBC, BC and FM Acts.

Where applicable, any TECs were classified and named according to the NSW Scientific Committee's Final and Preliminary Determinations [various dates].

The conservation significance of those ecological communities, plants and animals recorded is made with reference to:

- The Rare or Threatened Australian Plant publication (Briggs and Leigh 1996)
- The EPBC, BC and/or FM Acts
- Vegetation mapping of the study region (State Government and DPIE 2015)
- The BioNet Vegetation Classification database (OEH 2021b).

### 3. Results

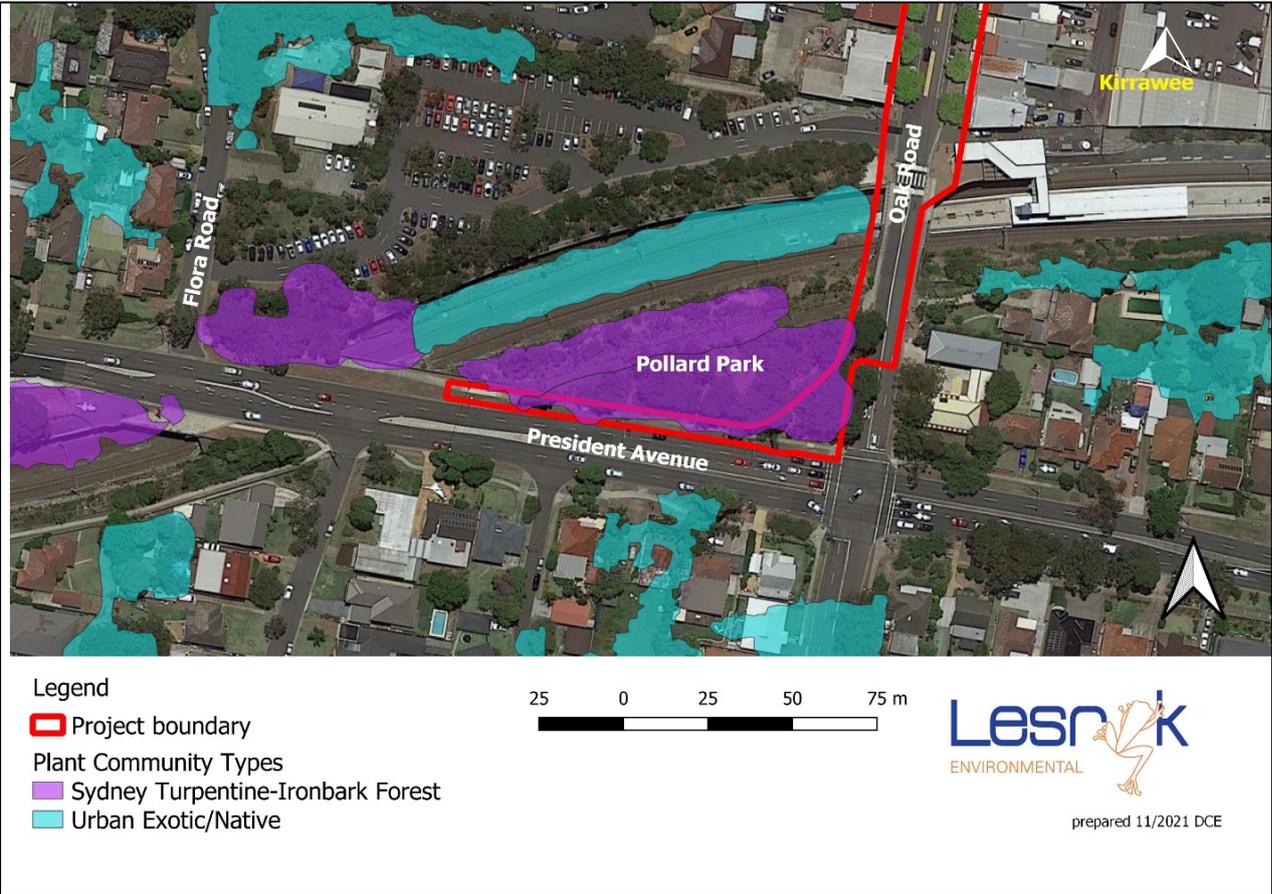
By completion of the field survey a number of native and several exotic species were recorded within the proposal area (Attachment 2). It is noted that Attachment 2 is not intended to be a comprehensive list of all species present within the area investigated, and only represents those plants that were recorded whilst conducting searches for:

- those native species and ecological communities of State and/or national conservation concern that are known, or expected to occur, in the locality
- weeds of significance that would require treatment.

Of those native species recorded, none are listed, or currently being considered for listing, as threatened on the EPBC Act or the BC Act.

At Pollard Park there is small patch of remnant open forest dominated by Red Mahogany (*Eucalyptus resinifera*), White Stringybark (*E.globoidea*) and Grey Ironbark (*E.paniculata*). There is a moderately dense shrub layer that includes Hickory Wattle (*Acacia implexa*), Straight Wattle (*A.stricta*), Blackthorn (*Bursaria spinosa*) and Hop Bush (*Dodonaea triquetra*) and a groundcover of the natives Weeping Grass (*Microlaena stipoides*), *Paspalidium distans*, Blue Flax-lily (*Dianella caerulea*), Kidney Weed (*Dichondra repens*) and the twiner *Glycine tabacina*, along with weeds such as Parramatta Grass (*Sporobolus africanus*), Panic Veldt Grass (*Ehrharta erecta*) and Fireweed (*Senecio madagascariensis*).

As illustrated on Figure 2, this vegetation is mapped by the Office of Environment and Heritage (OEH) (now known as Department of Planning, Industry and Environment) as Plant Community Type 1281: Sydney Turpentine - Ironbark Forest (STIF) (OEH 2016). The vegetation present at Pollard Park corresponds to the descriptions of STIF in both OEH (2016) and the NSW Vegetation Classification database (OEH 2021). It also meets the definition of the BC Act listed Critically Endangered Ecological Community (CEEC) of the same name as per the final determination provided by the NSW Scientific Committee. However, at around 0.4 hectares (ha), including the area mapped in the railway land, this patch of STIF does not reach the 0.5 ha threshold required for it to be considered as the equivalent EPBC Act CEEC Turpentine-Ironbark Forest in Sydney Basin Bioregion.



**Figure 2.** Vegetation mapping by OEH (2016) in the vicinity of Pollard Park

A ‘five-part test’ (Section 7.3 of the BC Act) was conducted on the likely impact of the proposal on STIF (Attachment 3). It found that the proposal was unlikely to significantly affect the CEEC, or its habitat; therefore, a Species Impact Statement (SIS) [or Biodiversity Development Assessment Report (BDAR) if elected] need not be prepared.

As an aside, reference to aerial photography that encompasses Pollard Park indicates that this site has supported vegetation since 1930 (Plate 1).

Elsewhere, the proposal area is dominated by a highly modified urban streetscape environment. Within this, roadside plantings of varying ages are present, these including both exotic and native species such as Brush Box (*Lophostemon confertus*), Tallowood (*Eucalyptus microcrys*), Blackbutt (*E.pilularis*) and other non-local eucalypts, Bottlebrush (*Callistemon* spp) and Banksias (*Banksia* spp).

Remnant native trees also occur in various locations including the south side of Denman Avenue where there are numerous Red Bloodwood (*Corymbia gummiifera*), Smooth-barked Apple (*Angophora costata*) and Scribbly Gum (*Eucalyptus haemastoma*).



**Plate 1.** Pollard Park. Aerial dated 1930 (source Sutherland Shire Council 2021).

There is also a significant group of remnant Grey Ironbark to the north-east of the corner of The Kingsway and Sylvania Road (these trees are evident in association with a house in aerial photography dated 1930 [Sutherland Shire Council 2021]); and a large Red Mahogany at the south-western corner of Bath Road and Flora Street, Kirrawee.

Some of the trees listed as significant in Table 4 of Futurerail (2020) were misidentified, namely Tree No.1 which is a planted Sugar Gum (*Corymbia cladocalyx*) rather than a remnant Grey Gum (*Eucalyptus punctata*) and Tree No.2, which was identified as a remnant Woollybutt (*Eucalyptus longifolia*) but is a planted Maiden's Gum (*E.maidenii*) or a hybrid thereof.

None of the threatened plant species flagged by Futurerail (2020) as having a moderate to high probability of occurrence in their study area were detected during the Lesryk survey. Similarly, none are considered likely to occur given the highly modified nature of the vast majority of the study area and their absence from Pollard Park.

The plants present vary in height from 2 m to 25 m, 27 of the trees being hollow-bearing (or predicted to be based on the adoption of the precautionary principal) (Table 2).

For reference, the location where these trees were observed are provided in Figures 3 to 6.

**Table 2.** Details on those hollow-bearing trees recorded

Number	Easting	Northing	Number of hollows observed	Diameter		Orientation h- horizontal v – vertical	Status of tree
				50 mm	100 mm		
<b>Pollard Park</b>							
1	321824	6232228	2	2		h	alive
2	321860	6232238	>5	✓	✓	h & v	dead
<b>Gynea</b>							
3	326968	6231625	2		2	v	alive
4	326971	6231624	2		2	v	alive
5	327003	6231609	3	1	2	v	alive
6	327399	6231458	2	1	1	h & v	alive
7	327553	6231395	1	1		v	alive
8	327551	6231395	5	5		v	alive
9	325013	6232392	1		1	v	alive
10	325011	6232388	1	1		v	alive
11	323500	6232535	2	1	1	v	alive
12	323500	6232536	1	1		v	alive
13	323496	6232537	1	1		v	alive
14	323456	6232539	1	1		v	alive
15	323455	6232539	5	5		v	alive
16	323439	6232543	4	2	2	v	alive
17	323438	6232545	5	3	2	v	alive
18	323432	6232544	2	2		v	alive
19	323414	6232545	5	5		v	alive
<b>Miranda</b>							
20	323398	6232550	2		2	v	alive
21	323339	6232553	1	1		v	alive
<b>Denman Avenue</b>							
22	323447	6232528	1		1	v	alive
23	323033	6232591	3		3	h & v	alive
24	323056	6232589	2		2	v	alive
25	323083	6232595	2		2	h & v	alive
26	323119	6232588	1		1	v	alive
27	323151	6232580	1		1	v	alive

Based on a review of the plans provided, combined with the outcomes of the field investigation, Tree No.1 is likely to be removed to permit the conducting of the proposal.

Whilst occurring in proximity to the likely alignment of the proposal, Trees 3 to 21 are unlikely to be directly disturbed. Some minor damage to the lateral roots of one or more of these plants may occur, though the expected depth (and distance from the proposal alignment) of their tap and secondary roots is considered to ensure that none of these plants are significantly impacted by the works.

Each of these trees are within an area where sufficient space is present, such as a cleared verge or existing road, thereby ensuring the construction of the proposal can proceed as planned without requiring any significant disturbance to these plants. In the long-term, the scope of works proposed would not affect the viability of these individuals.

Trees 22 to 27 would all be cleared if an alignment for the proposal that is located to the south of Denman Avenue is adopted. An alignment for the proposal that is constructed on the northern side of Denman Avenue would ensure that none of these trees are directly or indirectly disturbed.

Fauna species recorded during the course of the site inspection are listed in Table 3, all of these considered to be urban tolerant and common to abundant throughout their distribution ranges.

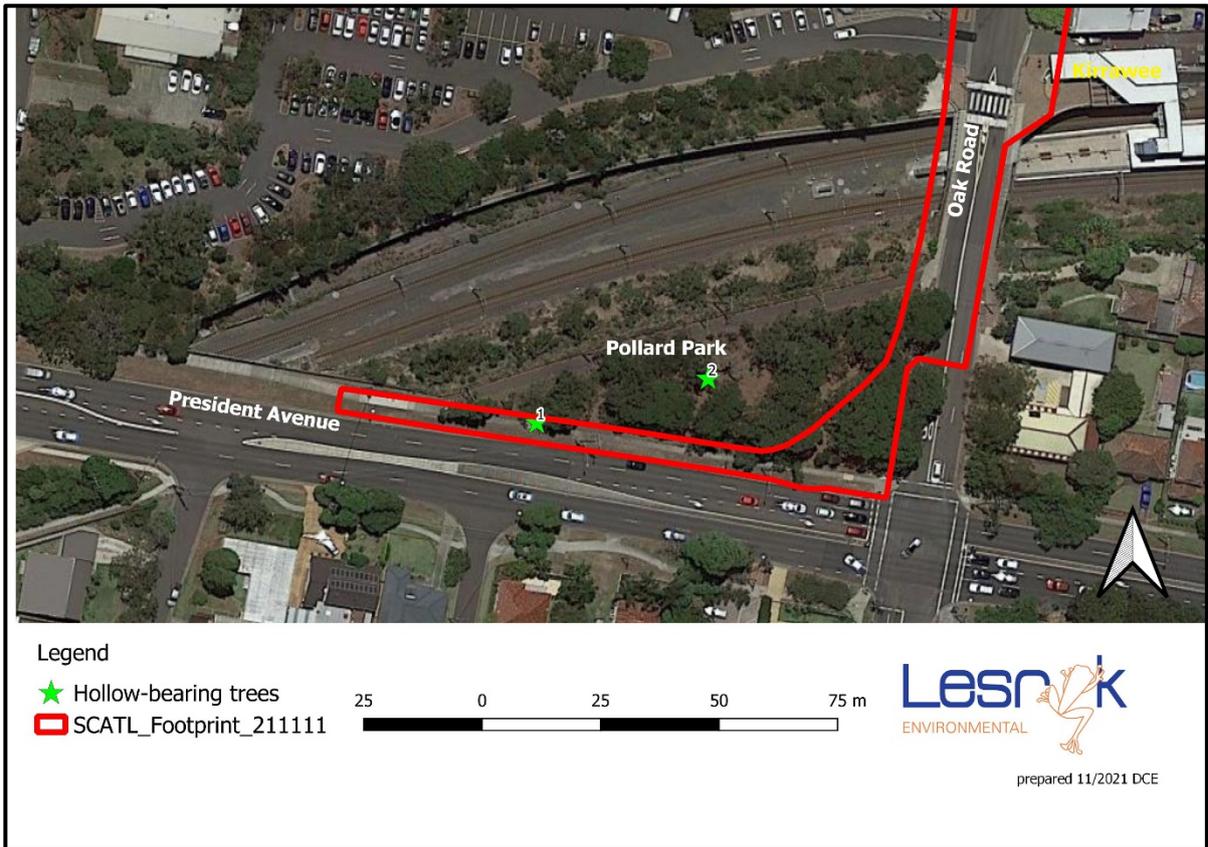


Figure 3. Location of trees recorded at Pollard Park

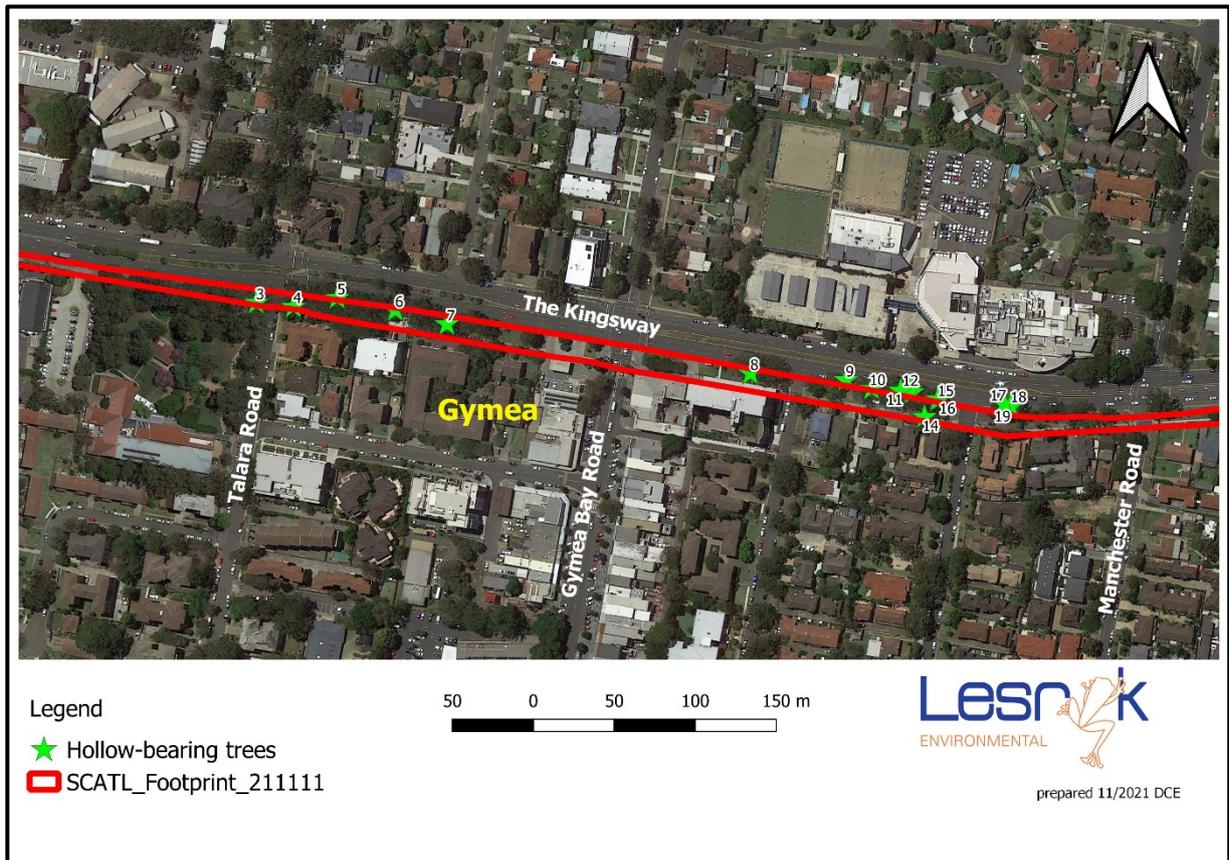


Figure 4. Location of trees recorded at near Gymea



Figure 5. Location of trees recorded at near Miranda



Figure 6. Location of trees recorded Denman Avenue

**Table 3.** Fauna species recorded

**Key**

\* - introduced species

Common Name	Family and Scientific Name	Detection Method
* Rock Dove	<i>Columba livia</i>	Observed
* Spotted Dove	<i>Streptopelia chinensis</i>	Observed
Galah	<i>Eolophus roseicapillus</i>	Observed
Little Corella	<i>Cacatua sanguinea</i>	Observed
Sulphur-crested Cockatoo	<i>Cacatua galerita</i>	Observed
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	Observed
Musk Lorikeet	<i>Glossopsitta concinna</i>	Observed
Red Wattlebird	<i>Anthochaera carunculata</i>	Heard calling
Noisy Miner	<i>Manorina melanocephala</i>	Observed
Yellow-faced Honeyeater	<i>Lichenostomus chrysops</i>	Heard calling
Grey Butcherbird	<i>Cracticus torquatus</i>	Observed
Australian Magpie	<i>Cracticus tibicen</i>	Observed
Pied Currawong	<i>Strepera graculina</i>	Heard calling
Willie Wagtail	<i>Rhipidura leucophrys</i>	Observed
Australian Raven	<i>Corvus coronoides</i>	Observed
* Common Myna	<i>Sturnus tristis</i>	Observed

During the site investigation, no species listed under the Schedules to the EPBC and/or BC Acts were recorded.

At the time of the inspection, in regards to the occupation of the 27 hollow-bearing trees identified by native animals, a pair of Galahs (*Eolophus roseicapillus*) were observed at the entrance of the cavity that was seen in Tree No.22. This was the only fauna species observed accessing any of the identified hollow-bearing trees. Observing the behaviour of these birds, it is expected that they would be utilising the cavity present in Tree No.22 as a nesting site.

Though considered and targeted, no distinctive scratching's that would suggest the use of several of the identified hollow trees by the Common Brushtail Possum (*Trichosurus vulpecula*) were noted on any of the smooth barked eucalypts. Similarly, no distinctive droppings indicative of this urban tolerant arboreal mammal was seen at the base of these plants. As an aside, no roadkill individuals of this, or any other species, was noted at the time of the field survey.

One large stick nest was observed during the course of the field investigation, this seen within an Ironbark that is present north-east of the intersection of the Kingsway and Sylvania Road (at Easting 323924; Northing 6232544). During the site inspection, an Australian Raven, a common to abundant native species, was observed entering and exiting this nest. This nest is present within a cluster of trees that occurs near one of the proposed compound sites.

No other obvious bird nests, particularly large stick nests, or possum dreys, were seen during the course of the field investigation.

Considering the diameters of the tree hollows observed or predicted to be present (as per Table 1), animals that are likely to utilise the plants recorded include hollow-dependent microchiropterans and a variety of small to medium sized birds.

In consultation with the NSW Government's BioNet database, the OEH's threatened biodiversity profile search, with reference to the Futurerail report (Futurerail 2020) and considering the urban and highly modified context of the environment in which the proposal would be constructed, those urban tolerant threatened fauna that could occupy the hollow-bearing trees recorded are the:

- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*)
- Southern Myotis (*Myotis Macropus*)
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

Depending on the alignment adopted, the establishment of the proposal may only require the removal of Tree No. 1 or, based on a worst-case scenario, the removal of seven of the 27 detected (being Trees 1 and 22 to 27).

A 'five-part test' (Section 7.3 of the BC Act) was conducted on the likely impact of the removal of seven hollow-bearing trees on hollow-dependent microchiropterans (Attachment 3). This assessment concluded that the proposal was unlikely to significantly affect any of the hollow-dependent microchiropterans previously recorded in the study region or their habitat. Therefore, a SIS [or BDAR if elected] need not be prepared. Nevertheless, it is recommended that the option of constructing the proposal that negates, or minimises, the removal of hollow-bearing trees be adopted.

Considering the open and highly disturbed/developed/modified nature of the area investigated and the limited quality of the habitats present, additional species flagged as having a moderate to high likelihood of occurrence within the study area by FutureRail would not occur. A number of these species are expected to fly over the proposal area on occasion, some even occasionally foraging within/above the stands of vegetation, such as the Grey-headed Flying-fox (*Pteropus poliocephalus*), Square-tailed Kite (*Lophoictinia isura*), Dusky Woodswallow (*Artamus cyanopterus cyanopterus*) and White-throated Needletail (*Hirundapus caudacutus*). That acknowledged, the conducting of the proposal would not have a direct or indirect impact on the lifecycle requirements of these animals. The establishment of the proposal would not fragment or isolate any of these species' habitats, would not present a barrier to their movement patterns and would not result in the limiting of their habitat areas.

The remainder of the species identified by FutureRail (2020) as having a moderate to high likelihood of occurrence have specific habitat requirements, such as wetlands, incised sandstone ephemeral drainage lines, developed woodlands, estuaries and mudflats, no components of which are present within, or in proximity to, the area investigated.

## 4. Conclusions

The proposal area is present within an urban environment that is highly disturbed and modified. Within this area, a range of commercial, light industrial and residential land use practices are present. Due to the urban development of the area, and its long-occupation history, few occurrences of remnant vegetation/fauna habitats are present.

One BC Act listed CEEC was recorded along the proposal route at Pollard Park, namely Sydney Turpentine Ironbark Forest. With reference to the assessment criteria provided under Section 7.3 of the BC Act, it is considered unlikely that the conducting of the proposal would significantly affect this community, or its habitat. No flora species listed on the BC Act or the EPBC Act were detected or considered likely to occur.

During the course of the field survey, no threatened fauna were recorded and, excluding the presence of hollow-bearing trees, no unique fauna habitats were observed.

Twenty-seven hollow-bearing trees were recorded within the section of the Sutherland to Cronulla Active Transport Link surveyed. Given their tolerance to occupying urban environments, these trees could be occupied by one or more species of those State listed hollow-dependent microchiropteran that have been previously recorded in the study region. Of the trees recorded, depending on the alignment selected, seven may require clearing. Should these seven trees be cleared, it is considered unlikely that the conducting of the proposal would significantly affect the presence of hollow-dependent microchiropterans, or their habitat.

Within the area surveyed, as no species, communities or their habitats are expected to be significantly affected by the conducting of the proposal, the preparation of a SIS is not required.

No significant ecological constraints to the undertaking of the proposal were recorded during the field survey. Minimising disturbance on the Sydney Turpentine Ironbark Forest and the hollow-bearing trees would reduce the overall ecological impact of the work.

## 5. Recommendations

The following recommendations are made to ensure that the proposal does not affect any of the native species or communities recorded.

- In proximity to the trees recorded, pavement types which avoid or minimise the impact to tree roots should be used where possible.
- At Pollard Park, as mitigation for impacts on Sydney Turpentine Ironbark Forest, Transport should consider providing funding to enable the undertaking of replanting/bush regeneration in this reserve.
- To reduce tree removal including both remnant native and hollow-bearing trees, it is recommended that the proposal route be situated along the southern side of the Kingsway between Sylvania Road and Wandella Road and on the northern side of Denman Avenue.
- Should an alignment be selected that requires the removal of hollow-bearing trees (being Trees 1 and 22 to 27) a management plan should be developed that addresses the clearing of these. This plan should include aspects like the on-site presence of an ecologist during their clearing, inspection of the tree hollows from an elevated work platform, collection and relocation of any sheltering fauna and so forth.
- To off-set the loss of Tree No. 1, in consultation with Council, species specific habitat boxes (at a rate of 1:3) should be erected within Pollard Park. The placement and monitoring of these (bi-annually for a period of two years) should form a component of the management plan prepared.

If you require any further information on this matter, please do not hesitate to contact the undersigned on either (02) 9523 2016 or 0408 258 129.

Yours sincerely,



Deryk Engel  
Director

## 6. References

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**Attachment 1. Photographic record of the areas inspected**

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Tree No.1 within Pollard Park that would be removed if work conducted adjacent to President Avenue.



Character of the environment in which Trees 3 to 19 (GyMEA) occur.



Character of the environment in which Trees 20 and 21 (Miranda) occur.



Nature of roadside vegetation along the southern side of Denman Avenue.

**Attachment 2. Locally native plant species recorded.**

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<b>SCIENTIFIC NAME</b>	<b>COMMON NAME</b>
<i>Acacia decurrens</i>	Green Wattle
<i>Acacia falcata</i>	Sickle Wattle
<i>Acacia implexa</i>	Hickory Wattle
<i>Acacia stricta</i>	Erect Wattle
<i>Angophora costata</i>	Smooth-barked Apple
<i>Banksia ericifolia</i>	Heath-leaved banksia
<i>Banksia integrifolia</i>	Coast Banksia
<i>Banksia serrata</i>	Old Man Banksia
<i>Bothriochloa macra</i>	Redleg Grass
<i>Bursaria spinosa</i>	Blackthorn
<i>Centella asiatica</i>	Indian Pennywort
<i>Corymbia gummifera</i>	Red Bloodwood
<i>Dianella caerulea</i>	Blue Flax Lily
<i>Dichondra repens</i>	Kidney Weed
<i>Dodonaea triquetra</i>	Hop Bush
<i>Doryanthes excelsa</i>	Gynea Lily
<i>Echinopogon caespitosus</i>	Hedgehog Grass
<i>Eucalyptus globoidea</i>	White Stringybark
<i>Eucalyptus haemastoma</i>	Scribbly Gum
<i>Eucalyptus paniculata</i>	Grey Ironbark
<i>Eucalyptus resinifera</i>	Red Mahogany
<i>Eucalyptus punctata</i>	Grey Gum
<i>Exocarpos cupressiformis</i>	Cherry Ballart
<i>Geitonoplesium cymosum</i>	Scrambling Lily
<i>Glycine clandestina</i>	
<i>Glycine tabacina</i>	
<i>Hakea sericea</i>	Bushy Needlebush
<i>Hardenbergia violacea</i>	False Sarsaparilla
<i>Imperata cylindrica</i>	Bladey Grass
<i>Kunzea ambigua</i>	Native Indigo
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush
<i>Microlaena stipoides</i>	Weeping Grass
<i>Oxalis exilis</i>	
<i>Paspalidium distans</i>	
<i>Plectranthus parviflorus</i>	Cockspur Flower
<i>Syncarpia glomulifera</i>	Turpentine
<i>Themeda triandra</i>	Kangaroo Grass

### Attachment 3. Ecological Assessments

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By the completion of the field investigations, one TEC was recorded within the area investigated, this being Sydney Turpentine - Ironbark Forest (STIF). This community was recorded at Pollard Park, north-west of the intersection of President Avenue and Oak Road.

In addition, as targeted surveys were not conducted and given there is the potential for seven of the 27 hollow-bearing trees recorded to be removed, a precautionary approach has been adopted in regards to the presence of the:

- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*)
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*)
- Southern Myotis (*Myotis Macropus*)
- Greater Broad-nosed Bat (*Scoteanax rueppellii*).

The potential impact associated with the proposal on STIF and the four threatened microbats listed above is considered with reference to the assessment criteria provided under Section 7.3 of the BC Act and the assessment guidelines published by OEH (2018). These criteria consider factors that trigger the likelihood of a development to have a significant effect on threatened species or their habitats, and consequently whether a SIS [or BDAR should Transport elect that option] is required. Due to the similarity of their habitat requirements, a single assessment has been conducted on the four hollow-dependent bat species as opposed to individual assessments.

#### 1. (a). Sydney Turpentine - Ironbark Forest (STIF) – 5-part test

*(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,*

Not relevant. STIF is a CEEC, not a threatened species.

*(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*

*(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*

Vegetation at Pollard Park is mapped as STIF by OEH (2016) and conforms to the NSW Scientific Committee's final determination of STIF as a CEEC.

Undertaking of the proposal at Pollard Park would traverse an approximately 100 m length of this community. Adjacent to Oak Road, this would require the removal of at least two White Stringybark, three Grey Ironbark and one Hickory Wattle. Along President Avenue the root zones of a Grey Ironbark and a Red Mahogany would be adversely affected. Groundcover is mostly introduced grasses, though there is some Kangaroo Grass, Blue Falx Lily and Spiny-headed Mat-rush at the western end of the President Avenue section of the park.

Given the small area affected, there is unlikely to be an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

*(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,*

It is likely that edges of the path post-construction would be colonised by introduced grass and forb species, some of which are already present in the remnant. This is unlikely to extend more than 0.5 m beyond the path edge and could readily be suppressed through weed control and planting of STIF groundcover species along the disturbed edge. Therefore, construction of the path is unlikely to substantially and adversely affect the composition of the local occurrence of STIF such that it is placed at risk of extinction.

*(c) in relation to the habitat of a threatened species or ecological community:*

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

Undertaking of the proposal along President Avenue and Oak Road would require the removal or modification of about 225 square metres (m<sup>2</sup>) of the community (based on a 150 m length with a 1.5 m clearing/disturbance width).

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

STIF is already heavily fragmented locally through the diminution of its distribution and modification of the composition of the few small patches remaining. The removal of 225 m<sup>2</sup> of STIF is unlikely to contribute to isolation or fragmentation.

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

Whilst the remnant may assist in the long-term survival of STIF locally, the area affected (225 m<sup>2</sup>) represents a small proportion (~ 5%) of that.

*(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),*

No declared areas of outstanding biodiversity value (AOBV) would be directly or indirectly affected by the proposal. The subject site is not listed as a declared AOBV under Part 3 of the *Biodiversity Conservation Regulation 2017*.

*(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.*

Currently 36 Key Threatening Processes (KTP) for mainland NSW are listed under Schedule 4 of the BC Act. Of these, the 'clearing of native vegetation' is applicable to the proposed construction of the path as it would involve the removal of native vegetation. While this is the case, the removal of a small area of native vegetation is unlikely to adversely affect the presence or long-term survival of STIF.

#### Expected impact on STIF

It is considered that the proposal would not have a significant impact on STIF, or its habitat. Therefore, the preparation of a SIS [or a BDAR] that quantifies the impact of the proposal on this CEEC using the Biodiversity Assessment Method is not required.

### **1. (b). Hollow-dependent microchiropterans – 5-part test**

*(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,*

Twenty-seven hollow-bearing trees were located within and close to the proposal alignment, seven of which may require clearing depending on which option is adopted. If an option that follows President Avenue and the southern side of Denman Avenue is selected, each of the seven trees will be cleared. If the alignment is present on the northern side of Denman Avenue, only Tree No. 1 would be cleared.

Beyond the limits of the area investigated, similar hollow-bearing trees are present (including with the proximate conservation area of Royal National Park, this being present about 2.5 km south of the area investigated).

Urban tolerant threatened hollow-dependent microchiropteran have the potential to occupy those hollow-bearing plants that will be cleared, but the loss of these will not limit or significantly reduced the overall extent of roosting opportunities available in this portion of the Sutherland Shire Local Government Area. The loss of seven of the 27 trees recorded would not adversely affect the lifecycle of any of those hollow-dependent microchiropterans potentially present near the proposal footprint such that the viability of their local populations will be placed at risk of extinction.

*(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:*

- (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*

Not applicable to threatened species.

*(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 proposed development or activity,*

Depending on the alignment selected, a maximum of seven of the 27 hollow-bearing trees recorded will be cleared.

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

Hollow-dependent microchiropteran can easily negotiate open areas and have been recorded flying over open spaces (author's field notes); as such, the loss of some native vegetation, this including seven hollow-bearing trees and a number of insect attracting plants, is not expected to result in the disturbance to the Eastern Coastal Free-tailed Bat, Yellow-bellied Sheath-tail-bat, Southern Myotis or Greater Broad-nosed Bat's dispersal or movement patterns; these species being able to easily negotiate/traverse the study area post disturbance. Suitable habitat for these species would be retained within the study area and surrounding region (including proximate conservation reserve); as such, the proposal would not cause any further fragmentation of, or isolation to, any areas of habitat used by hollow-dependent microchiropterans.

- (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,*

The proposal is not considered to remove, modify, fragment or isolate a significant amount of vegetation such that the long-term survival of hollow-dependent microchiropterans would be jeopardised. Whilst a maximum of seven hollow-bearing trees may be removed (depending on which alignment is selected), the habitats within the study area extend well beyond the limits of the proposal; including within the surrounding conservation reserve, where similar resources are present. Given that no major components of these species' habitat are to be further isolated or fragmented, it is not considered that the proposal would have an impact on the Eastern Coastal Free-tailed Bat, Yellow-bellied Sheath-tail-bat, Southern Myotis or Greater Broad-nosed Bat such that the long-term survival of these species in the locality would be adversely affected.

*(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),*

No declared AOBV would be directly or indirectly affected by the proposal. The study area is not listed as a declared AOBV under Part 3 of the BC Regulation 2017.

*(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process*

Currently 35 KTP for mainland NSW are listed under Schedule 4 of the BC Act. Of these, the 'clearing of native vegetation', 'loss of hollow-bearing trees' and 'removal of dead wood and dead trees' would be applicable to the proposal. While it is acknowledged that the proposal may result in the removal of some native vegetation, this including insect attracting plants and seven hollow-bearing trees, it is not considered that this clearance would significantly contribute to any of these KTP such that the lifecycle requirements of the Eastern Coastal Free-tailed Bat, Yellow-bellied Sheath-tail-bat, Southern Myotis or Greater Broad-nosed Bat would be compromised.

#### Expected impact on hollow-dependent microchiropterans

The conducting of the proposal would not disturb, remove, modify or fragment any habitats critical to the lifecycle requirements of the Eastern Coastal Free-tailed Bat, Yellow-bellied Sheath-tail-bat, Southern Myotis or Greater Broad-nosed Bat. Given the extent of suitable habitat being retained within both the study area and the surrounding bushland, the removal of some vegetation, this including insect attracting plants and a maximum of seven hollow-bearing trees depending on the alignment selected, is not considered to have a significant impact on these microchiropterans or their habitat. As such, the preparation of a SIS [or BDAR is elected] that further considers the impact of the proposal on hollow-dependent microchiropterans is not required.