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The University of Sydney
The University of Sydney,
Darlington Campus
Sydney 2008

Our ref: 19SYD – 14066

Attention: Peter Mellows

Dear Peter,

RE: Biodiversity Assessment – Darlington Terraces Mixed Use Development

Eco Logical Australia (ELA) were engaged by The University of Sydney to provide a biodiversity assessment of the proposed development within The University of Sydney's Darlington Campus.

This biodiversity assessment accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD-7539) for the Darlington Terraces Mixed-Use Development located at The University of Sydney, Darlington Campus. The University of Sydney is the proponent.

In accordance with Clause 7.9(2) of the *Biodiversity Conservation Act 2016* (BC Act), an application for State Significant Development is *to be accompanied by a biodiversity development assessment report unless the Planning Agency Head and the Environmental Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values.*

ELA undertook a site inspection to assess biodiversity values present and the potential impacts of development and determined that the development will not have a significant impact on biodiversity values as defined by s7.2 or s7.3 of the BC Act 2016. Additionally, the development is not located on land mapped on the Biodiversity Values Map.

The following attachments describe the biodiversity values of the site in relation to clause 1.4 of the BC Regulation and 1.5 of the BC Act (Table 1).

The proponent may therefore seek a waiver from the Department of Planning for the preparation of a Biodiversity Development Assessment Report. This letter should be submitted in support of that application for a BDAR waiver.

Regards,

Roshan Kalugalage
Environmental Consultant

Requirement	Description
Admin	Proponent: The University of Sydney Contact: peter.mellows@sydney.edu.au Project ID: SSD-7539 – Response to Submissions Completed by: Roshan Kalugalage – Environmental Consultant (Eco Logical Australia) – B.Sc. (Environmental Science)
Site Details	Site address: The University of Sydney, Darlington Campus. Study Area Size: 0.5765 ha Location Map: Refer to Figure 1. Site Map: Refer to Figure 2.
Proposed Development	The proposed development comprises both new development and alterations to the existing Darlington Road Terraces and H66 Darlington House for educational facilities and student accommodation. The works include: • 717.9m^2 of educational establishment facilities including learning hubs, study / tutorial rooms, informal study and reading library. • A total of 337 beds within 306 rooms (of which 17 are accessible rooms) • Residences for visiting academics and their families in Terraces 86 and 87 Darlington Road • Communal self-catering kitchens, common areas, dining halls, laundries and storage for residents • Total gross floor area (GFA) of 7,175m^2 • Ground level bicycle storage and maintenance space in H66 Darlington House • Partial demolition of the rear skillion roofed additions to the Darlington Road Terraces providing an • internal courtyard space connecting the terraces and new buildings • Administration office in Terrace 103 • Modifications to the ground floor of four terraces into common spaces creating entry points into the development • 1,436m^2 of open space, including the proposed upgrade to Codrington Street pocket park 38 exotic and native planted trees will be removed in order to undertake the above works. This will consist of 22 native planted trees and 16 exotics. Analysis of the impacts to biodiversity values as a result of their removal Is provided below.

Table 1 Criteria to assess biodiversity under the BC Act and BC Regulation

Biodiversity Value	Meaning	Relevant	Discussion of values within subject site
Biodiversity Conservation Regulation (Clause 1.4)			
a) Threatened Species Abundance	The occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site.	Yes	No threatened ecological communities are present within the site. The sparsely distributed vegetation present throughout the site Is not consistent with any listed Plant community Type (PCT). This is primarily due to the lack of connectivity between individuals, which are distributed between buildings, roads and existing fencing. Five (5) individuals of one threatened flora species (*Syzygium paniculatum* (Magenta Lilly Pilly)) are proposed for removal as a part of the development. The site inspection confirmed that these individuals were planted and exist outside of their natural range. Analysis of the removal of these individuals in line with the provisions of both state (BC Act) and commonwealth (*Environment Protection and Biodiversity Conservation 1999* (EPBC Act)) legislation have been provided in Appendix A and Appendix B respectively. In accordance with these assessments, no significant impact will occur through the removal of these 5 individuals. Provisions of the National Recovery Strategy (2012) for the species were also considered within these analyses. Limited foraging habitat is available for the Grey-Headed Flying Fox (GHFF) within the subject site. The proposed development will remove a number of flowering plants that may provide a source of food for the species, However, given the abundance of landscaped gardens with similar vegetation in the locality, this loss of vegetation is unlikely to adversely affect GHFF such that its population will be placed at risk of extinction. The removal of this potential foraging habitat was considered in both the Test of Significance (BC Act) in Appendix A and the Significant Impact Criteria (EPBC Act) in Appendix B. In accordance with these assessments, no significant impact will occur through the removal of these feed trees. Provisions of the National Recovery Strategy (2012) for the species were also considered within these analyses. No roosting habitat is available within the subject site for hollow-dependent threatened fauna species due to the absence of hollow-bearing trees.
b) Vegetation Abundance	The occurrence and abundance of vegetation at a particular site.	N/A	Vegetation within the subject site is of relatively low abundance and biodiversity quality. The majority of the subject site has been cleared for existing infrastructure within the Darlington Campus. Vegetation within the subject site is comprised of both native and exotic plantings, which lack connectivity and natural resilience. Vegetation within the site is not consistent with any remnant native vegetation communities and did not conform to any listed PCTs.

Biodiversity Value	Meaning	Relevant	Discussion of values within subject site
c) Habitat Connectivity	The degree to which a particular site connects different areas of habitat of threatened species to facilitate movement of those species across their range.	N/A	Vegetation within the subject site is highly fragmented and does not contribute to habitat connectivity across the local landscape. There is a lack of connectivity between individual plantings, as they are separated by fences and existing infrastructure such as buildings and roads. The site does not provide any significant level of connectivity to facilitate movement of threatened species across their range.
d) Threatened Species Movement	The degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle;	Yes	The site contains limited vegetation, which lacks connectivity and has predominantly been cleared for the existing campus. Movement for less mobile threatened fauna such as mammals across the site is highly unlikely due to the lack of foraging or roosting habitat. Potential foraging habitat exists for the GHFF; however, the removal of the trees will not significantly impact this species as extensive similar foraging habitat exists within the vicinity of the works. The nearest GHFF camp exists approximately 4 km from the subject site. As GHFF may forage up to 50 km from their camps, the removal of the small number of potential feed trees is not anticipated to infer a significant impact on this species. Further assessment of the impacts of tree removal on this species is provided in Appendix A and Appendix B. Due to the small amount of disconnected vegetation, the site is not considered to be significant for the movement of any threatened species to maintain their lifecycle.
e) Flight Path Integrity	The degree to which the flight paths of protected animals over a particular site are free from interference.	N/A	The landscape within and surrounding the site is predominantly cleared of vegetation. The flight paths of protected animals over the site is unlikely to be impacted by the proposed development, and no facilities which may significantly inhibit flight over the development site are proposed.
f) Water Sustainability	The degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	N/A	No natural water courses are present within the site. In its current state, the site does not contain water bodies or contribute to hydrological processes that sustain threatened species or ecological communities within or adjacent to the site.
Biodiversity Conservation Act (Clause 1.5 (2))			
a) Vegetation Integrity	The degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state.	N/A	Due to previous and current land management, vegetation and soils within the subject site have been highly modified or disturbed and lack natural resilience. Vegetation within the site is comprised of both native and exotic plantings. Due to the fact that these individuals show a lack of connectivity as a result of the existing infrastructure and fencing and are comprised of both native and exotic plantings these trees are not representative of any remnant PCTs that would have been present within the development site. Therefore, the development will not compromise the vegetation integrity of the site.

Biodiversity Value	Meaning	Relevant	Discussion of values within subject site
b) Habitat Suitability	The degree to which the habitat needs of threatened species are present at the particular site.	N/A	Suitable habitat for threatened species is highly limited within the site. Five individual *Syzygium paniculatum* (Magenta Lilly Pilly) are proposed for removal. However, these individuals consist of native plantings, and are outside the known range and distribution of the species. The national recovery plan for the species states that due to the widespread horticultural use of the species in landscape and garden plantings, planted individuals "should be excluded from all actions related to the conservation of the species in the wild." Assessments of the impacts to this species in line with the BC and EPBC Act are provided in Appendix A and Appendix B. Potential foraging habitat for the GHFF exists on site in the form of flowering trees. As there is abundant similar foraging habitat within the vicinity of the subject site, the removal of these trees is not deemed likely to have a significant impact on this species. Further analysis of the impacts to this species in line with the BC and EPBC Act are provided in Appendix A and Appendix B. No roosting habitat is available within the subject site for hollow-dependent threatened fauna species due to the absence of hollow-bearing trees. The proposed development will not significantly compromise habitat suitability for threatened species. The proposed development will not impact on any habitat features specified under Clause 6.1 (1) (a) of the Biodiversity Conservation Regulation. The removal of 16 non-native trees will be required to undertake the works. However, the site inspection determined that due to a lack of connectivity and roosting habitat features, these trees would not provide sufficient habitat for threatened species within the site. As the human-made structures which are proposed for redevelopment have been recently maintained and used as residences, they provide no habitat for threatened species within the subject site.

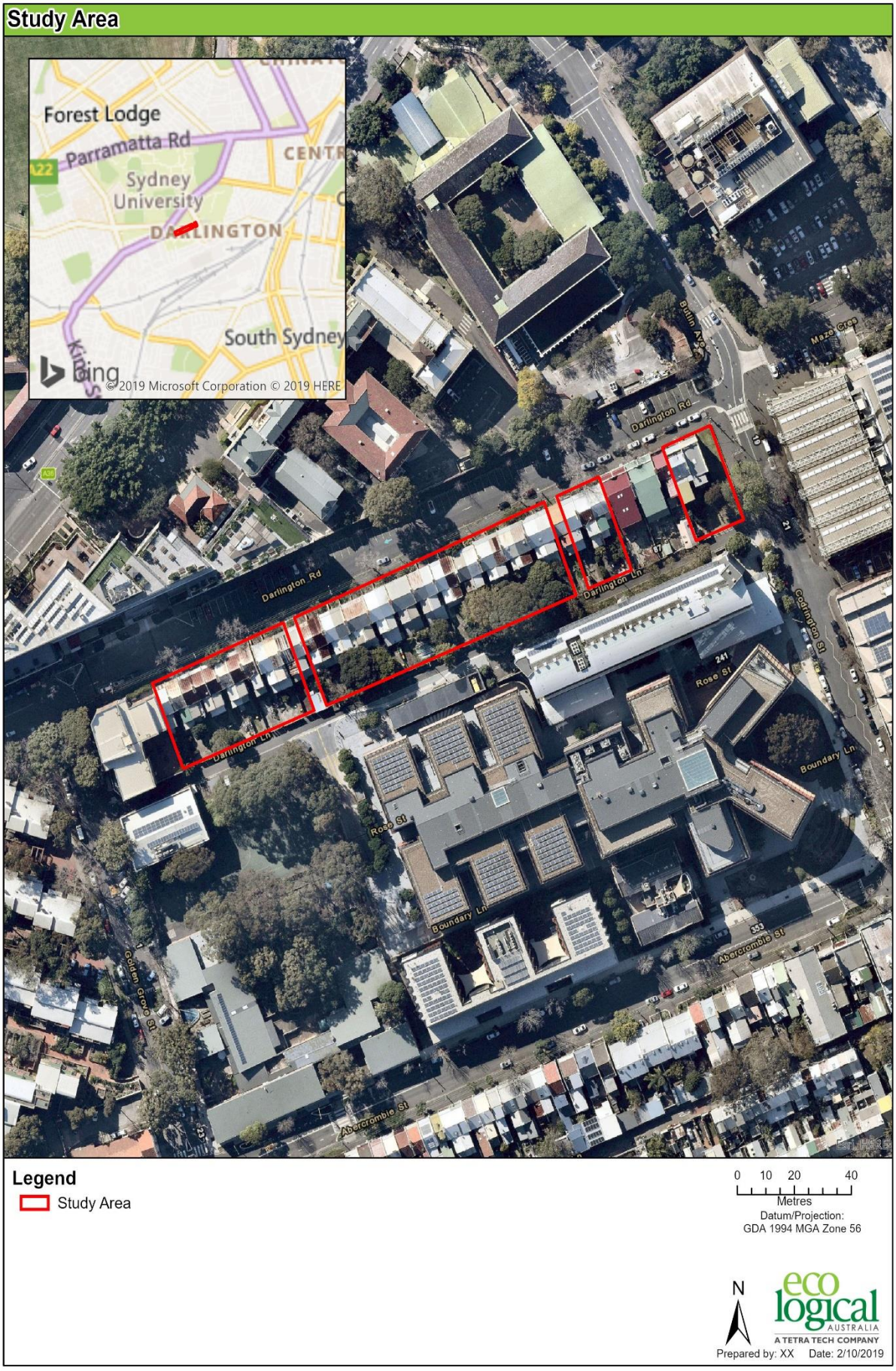

Figure 1: Study area location

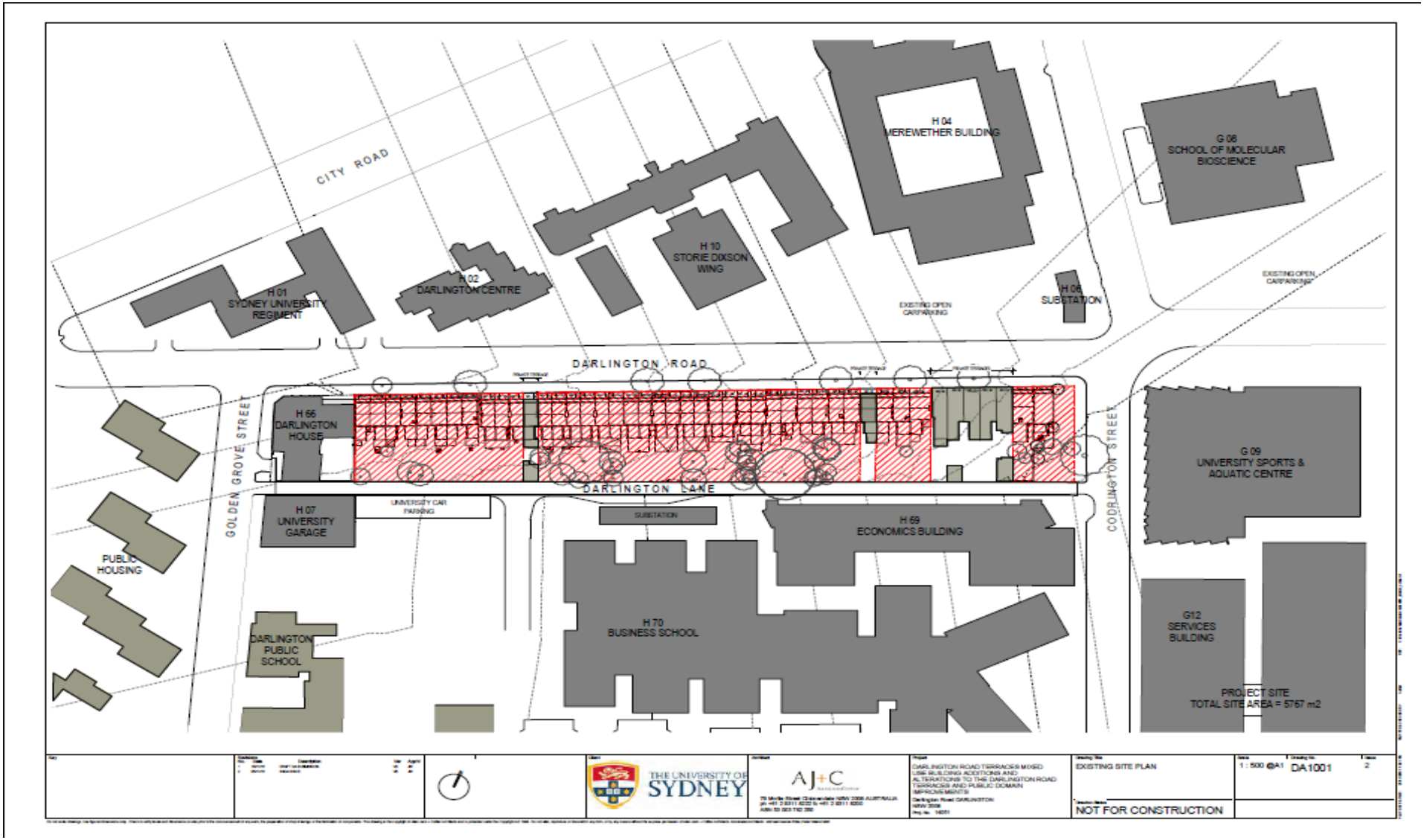

Figure 2: Proposed Site Layout

Appendix A - *Biodiversity Conservation Act 2016* Test of Significance

Section 7.3 of the *Biodiversity Conservation Act 2016* (BC Act) requires a number of factors to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. These factors are addressed below for the species likely to be impacted by the proposed development.

A1 *Syzygium paniculatum* (Magenta Lilly Pilly)

Syzygium paniculatum (Magenta Lilly Pilly), listed as endangered under the BC Act, is a small to medium sized rainforest tree with flaky bark and shiny leaves, coloured dark-green above and paler underneath. This species is found only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. This species is restricted to grey soils over sandstone in remnant stands of littoral rainforest in the south coast; and gravels, sands, silts and clays in riverside gallery rainforests and remnant littoral rainforests on the central coast.

The proposed development will remove five (5) *Syzygium paniculatum* trees. It should be noted that, although this species is listed as a threatened flora species, this species is also a popular horticultural species. The *Syzygium paniculatum* located within the study area are located in a highly modified environment and landscaped gardens. There is no potential habitat for this species within the locality of the study area. Therefore, it is assumed that these species are planted horticultural varieties.

BC Act	Question	Response
7.3.1 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	The proposed development will remove five individuals of the endangered *Syzygium paniculatum*. The trees to be removed were identified outside of the known distribution and habitat for the species and are therefore unlikely to form part of a viable local population. Consequently, it is considered unlikely that the proposed development will have an adverse effect on the life cycle of the species such that it is likely to be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	Not applicable.
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.

BC Act	Question	Response
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The subject site is outside of the known distribution and habitat for *Syzygium paniculatum.* The study area comprised highly modified and landscaped residential gardens with planted native and exotic flora. No potential habitat for the species was identified within the study area, therefore the proposed development will not remove or modify any potential habitat for *Syzygium paniculatum.*
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The study area is outside of the known distribution and habitat for *Syzygium paniculatum.* The study area comprised highly modified and landscaped residential gardens with planted native and exotic flora. No potential habitat for the species was identified within the study area and it is considered unlikely that habitat for *Syzygium paniculatum* be present in the site locality, therefore the proposed development will not fragment or isolate other areas of habitat.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: 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 study area is outside of the known distribution and habitat for *Syzygium paniculatum.* No potential habitat for the species was identified within the study area. The landscaped gardens in which the species was identified are not considered important for the long-term survival of the species.
7.3.1 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).	The proposed development will not directly or indirectly impact any declared area of outstanding biodiversity value.
7.3.1 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.	One key threatening process is relevant to the proposed development: • Clearing of native vegetation. However, with respect to *Syzygium paniculatum*, the proposed development involves a minimal impact to the species through the removal of 5 planted individuals.
Conclusion	Is there likely to be a significant impact?	No.

A2 *Pteropus poliocephalus* (Grey-headed Flying-fox)

The GHFF, listed as vulnerable under the BC Act, utilises a wide variety of habitats (including disturbed areas) for foraging and are recorded as travelling long distances on feeding forays. Fruits and flowering plants of a wide variety of species are the main food source. The species roosts in large 'camps' of up to 200,000 individuals. Camps are usually formed close to water and along gullies however the species has been known to form camps in urban areas.

This species was not recorded on site during the survey but has been recorded within 10 km of the site. The Nationally Important Flying-fox Camp located closest to the subject site is approximately 4 km to the southeast, in Centennial Park.

BC Act	Question	Response
7.3.1 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	The GHFF is considered to be one population that intermixes up and down the east coast of Australia, therefore any bat population is a meta-population of this one population. Impacts to GHFF that are likely to place this population at risk of extinction would include widespread loss of foraging habitat or disturbance of roosting sites. The proposed development is located more than 4 km from a known bat-camp (i.e. Centennial Park). As such the works will not result in direct disturbance (i.e. noise and vibration) to important breeding habitat for this species. The proposed development will remove a number of flowering plants which may provide a foraging opportunity for the species. Given the abundance of landscaped gardens and street trees in similar condition in the locality, the loss of vegetation is unlikely to adversely affect GHFF such that its population will be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity: 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	Not applicable.
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity 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.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The vegetation being removed as part of the proposed development represents potential foraging habitat for the GHFF. However, given that potential foraging habitat is available in the area surrounding the proposed development, this impact is likely minor. Additionally, this

BC Act	Question	Response
		species is highly mobile and is likely to utilise foraging resources within the locality.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: 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	The area of potential foraging habitat to be removed forms part of highly modified and landscaped urban gardens which contains a mix of planted native and exotic vegetation. There are large amounts of similar vegetation available immediately adjacent to the subject site. The proposed development are unlikely to have an adverse impact on habitat connectivity. GHFF is a highly mobile species and will continue to use the study area and surrounds for foraging.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: 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 habitat to be removed is considered minor amount compared with adjacent foraging habitat recorded in the locality for GHFF. The vegetation within the study area is not considered important for the long-term survival of the GHFF population.
7.3.1 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).	The proposed development will not directly or indirectly impact any declared area of outstanding biodiversity value.
7.3.1 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.	One key threatening process is relevant to the proposed development: • Clearing of native vegetation. However, with respect to the GHFF, the proposed development involves a minimal impact to potential foraging habitat.
Conclusion	Is there likely to be a significant impact?	No.

Appendix B - *Environment Protection and Biodiversity Conservation Act 1999* Significant Impact Criteria

The following assessments were prepared in accordance with the *EPBC Act Matters of National Environmental Significance: Significant Impact Guidelines 1.1*. These guidelines have been established to assist proponents to determine whether a proposed action is likely to result in a significant impact on a matter of national environmental significance.

B1 *Syzygium paniculatum* (Magenta Lilly Pilly)

Criterion	Question	Response
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
1)	lead to a long-term decrease in the size of an important population of a species	An important population is defined as a population that is necessary for a species' long-term survival and recovery. The *Syzygium paniculatum* proposed to be removed were identified outside of the known distribution and habitat for the species and are therefore unlikely to form part of an important population. Consequently, it is considered unlikely that the proposed development will lead to a long-term decrease in the size of an important population of *Syzygium paniculatum.*
2)	reduce the area of occupancy of an important population	The distribution of the species consists of a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. The species is found in riverside gallery rainforests and remnant littoral rainforests which does not include the vegetation located within the study area. The trees to be removed are outside the typical area of occupancy for the species. Furthermore, the *Syzygium paniculatum* proposed to be removed are unlikely to form part of an important population. Consequently, it is considered that the proposed development will not reduce the area of occupancy of an important population of *Syzygium paniculatum.*
3)	fragment an existing important population into two or more populations	The *Syzygium paniculatum* proposed to be removed were identified outside of the known distribution and habitat for the species and are therefore unlikely to form part of an important population. Consequently, it is considered unlikely that the proposed development will lead to a long-term decrease in the size of an important population of *Syzygium paniculatum.*
4)	adversely affect habitat critical to the survival of a species	The study area does not contain suitable habitat for this species. Additionally, according to the National Recovery Plan 2012 the study area is not located within a a confirmed naturally occurring population for this species. Therefore, the study area is unlikely to be considered important or critical to the survival of the species. Consequently, it is considered that the proposed development will not adversely affect habitat critical to the survival of *Syzygium paniculatum.*

Criterion	Question	Response
5)	disrupt the breeding cycle of an important population	Not applicable.
6)	modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The study area is outside of the known distribution and habitat for *Syzygium paniculatum.* The study area comprised highly modified and landscaped residential gardens with planted native and exotic flora. No potential habitat for the species was identified within the study area and it is considered unlikely that habitat for *Syzygium paniculatum* be present in the site locality, therefore the proposed development will not modify, destroy, remove or isolate or decease the availability or quality of habitat to the extent that the species is likely to decline.
7)	result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The study area is currently in a disturbed and modified condition and does not represent known habitat for this threatened species. Consequently, the proposed development is unlikely to result in the establishment of an invasive species that is harmful to *Syzygium paniculatum*.
8)	introduce disease that may cause the species to decline, or	*Syzygium paniculatum* are subject to *Austropuccinia psidii* (Myrtle Rust), a disease caused by an exotic fungus that threatens trees and shrubs in the Myrtaceae family resulting in deformed leaves, heavy defoliation of branches, reduced fertility, dieback, stunted growth, and plant death. It is considered unlikely that the proposed action would increase the incidence of this disease.
9)	interfere substantially with the recovery of the species.	A National Recovery Plan for *Syzygium paniculatum* was developed in 2012. The Plan states that landscape and garden plantings of *Syzygium paniculatum "*should be excluded from all actions related to the conservation of the species in the wild." Given the horticultural popularity of the species, and the location of the study area in relation to the species distribution and its habitat, it is considered that the trees to be removed were planted. Therefore, the proposed removal of the five *Syzygium paniculatum* specimens would not interfere substantially with the recovery of this species.
Conclusion	Is there likely to be a significant impact?	No.

B2 *Pteropus poliocephalus* (Grey-headed Flying-fox)

Criterion	Question	Response
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
1)	lead to a long-term decrease in the size of an important population of a species	The Matters of National Environmental Significance Impact Guidelines (Commonwealth of Australia 2013) defines an important population as a population that is necessary for a species' long-term survival and recovery. The GHFF is considered to be one population that intermixes up and down the east coast, therefore any bat population is part of this one "important population". The proposed development will remove several trees which represent potential foraging habitat for the GHFF. Given the proximity of similar habitat to the site, the removal of this potential foraging habitat would not lead to the long-term decrease in the size of an important population of GHFF.
2)	reduce the area of occupancy of an important population	The distribution of the GHFF extends from Bundaberg in Queensland to Melbourne, Victoria and from the coast inland to the western slopes of New South Wales. The removal of potential foraging habitat from the study area would not reduce the area of occupancy of an important population of GHFF. The GHFF is not known to occupy the study area but may occasionally forage within the study area.
3)	fragment an existing important population into two or more populations	The GHFF is a highly mobile species and forms one large mega-population along the east Australian coast. No roosting habitat will be impacted, and large areas of foraging habitat will be retained in the locality. The proposed action will not fragment an existing important population into two or more populations.
4)	adversely affect habitat critical to the survival of a species	A Nationally Important Flying-fox Camp has been identified approximately 4 km from the study area, in Centennial Park. The vegetation impacted by the proposed development does not meet the definition for habitat critical for the survival, or essential habitat, for GHFF as described in the Draft Recovery Plan for the GHFF 2009. As the proposed works are located outside areas which would be considered critical habitat for this species it is unlikely the works will result in adverse impacts to the GHFF. . .
5)	disrupt the breeding cycle of an important population	The proposed action will not disrupt the breeding cycle of the GHFF given that the impacted vegetation is considered to be potential foraging habitat and not breeding habitat. Additionally, similar foraging habitat will be retained in the locality.
6)	modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	GHFF camps would not be directly or indirectly removed or disturbed, and extensive foraging habitat exists in the locality within nearby urban residential areas. The proposed works will not modify, destroy, remove, isolate

Criterion	Question	Response
		or decrease the availability or quality of habitat to the extent that the species is likely to decline.
7)	result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The site is already disturbed and modified, and the proposed works will not result in the establishment of an invasive species that is harmful to the GHFF.
8)	introduce disease that may cause the species to decline, or	GHFF are reservoirs for the Australian bat lyssavirus and can cause clinical disease and mortality in GHFF. The proposed action would not increase the incidence of this disease.
9)	interfere substantially with the recovery of the species.	A Draft National Recovery Plan for the GHFF was developed in 2009. The relatively small amount of foraging habitat to be removed is unlikely to substantially interfere with the recovery of this species.
Conclusion	Is there likely to be a significant impact?	No.