327 Mc CARRS CREEK ROAD – TERREY HILLS, NSW

5-Part Test Duffys Forest Community

By Ecological Consultants Australia Pty Ltd TA

Kingfisher Urban Ecology and Wetlands

June 2019

About this document

Copyright Statement©

Statement of Authorship

This study and report was undertaken by Ecological Consultants Australia at Studio 1/33 Avalon Parade, Avalon. The author of the report is Geraldene Dalby-Ball with qualifications BSc. majoring in Ecology and Botany with over 20 years' experience in this field, Lisa Jones and Tina Feodoroff with qualifications BEnvSc. Majoring in Resource Management.

Limitations Statement

Information presented in this report is based on an objective study undertaken in response to the brief provided by the client. Any opinions expressed in this report are the professional, objective opinions of the authors and are not intended to advocate any particular proposal or pre-determined position.

Document Control Sheet	
Title:	Flora and Fauna Assessment for 327 Mc Carrs Creek Rd Terry Hills NSW
Version:	Final
Author:	Tina Feodoroff and Geraldene Dalby-Ball
Date:	June 2019
File location:	ECATina/ 327 Mc Carrs Creek Rd Terry Hills/ Report
Distribution:	David Lloyd david@lloydy.com.au

Signed: Geraldene Dalby-Ball – Director of Ecological Consultants Australia

Executive Summary

Introduction

- The new development proposal consists of constructing a site shed with mezzanine level and balcony within the north western corner of 327 McCarrs Creek Road, Terry Hills. It includes associated infrastructure such as pathways, part retaining wall, drainage (SW) and water retention tank.
- David Lloyd has requested a 5-part test for **Duffys Forest Ecological Community in the Sydney Basin Bioregion** be submitted with this development.
- Recommendations have been provided to reduce the likelihood of impact and mitigate loss on this Endangered Ecological Community.

Methods

- On-ground survey took place on the 22nd of May 2019 by Senior Ecologist Geraldene Dalby-Ball.
- Flora and fauna observations were recorded on-site using binoculars and physical examination. Notes, photos and samples of flora species were taken to assess ecological health and value of the site.
- Bionet searches were performed for flora, fauna and endangered populations to identify if there were previous records of threatened species occurring within the local area using a 10km radius around the site.
- OEH mapping was consulted via SEED Portal particularly Sydney Metro Area v3.1 2016 E - VIS 4489

Results

- The design has taken into account the trees and maximises their retention. The development proposal includes the removal of eleven trees.
- 10 *Allocasuarina littoralis* (Black She-Oak) and one *Eucalyptus umbra (*White Mahogany) are proposed for removal. As per the arborist report no work is to occur in SRZ, it is a development exclusion zone and tree protection fencing is to be installed 0.5m from the line of cut.
- It is not part of Duffys Forest Ecological Community in the Sydney Basin Bioregion EEC
- No threatened flora or fauna species were found on-site during on site searches – though habitat is in the surrounding area for microbats
- Duffys Forest Ecological Community was not identified as being in the proposed development area. Test of significance has been conducted for Duffys Forest Ecological Community in the Sydney Basin Bioregion – while it was not identified as growing on the site a test was conducted. It has resulted in a 'not significant' impact for this community recommendations have been made to assists the long-term sustainability of this community.
- *Grevillea caleyi* was not observed in field.

Mitigation Measures

Before works:

- Tree Protection as per Arborist report by Raintree Consulting 2019.

During works:

- Dead wood including upright dead trees and fallen logs on the ground should be retained and protected during works as they provide high quality habitat for threatened fauna species, refer to Arborist report.
- Bush hygiene protocols should be followed to prevent the spread of pathogens including *Phytophthora*.

After completion of works:

- Revegetation works will be conducted as per Landscaping Plan for flora species. Ensure planting of local native species including canopy trees. Tube stock – not larger is recommended.
- Optional installation of micro-bat nest box.

Legislation: Various pieces of legislation apply to this location and the proposed works are in keeping with the objective of the Acts. Key acts are listed below.

- *Cwlth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).*
- *Environmental Planning and Assessment Act 1979 (EP&A Act).*
- *Biodiversity Conservation Act 2016 (BC Act).*
- *Fisheries Management Act 1994 (FM Act).*
- *National Parks & Wildlife Act 1974 (NP&W Act).*
- *Biosecurity Act (superseding the Noxious Weed Act 1993) (NW Act).*

Conclusions and Recommendations

- Weed removal.
- Landscaping to include Duffys Forest Plant Community species.
- Arborist report recommendations to be applied.
- Microbat nest boxes (x 2) are recommended

Table of Contents

1 Introduction

Ecological Consultants Australia (ECA) has been contracted by the client to provide a "5-part test on Duffys Forest Ecological Community in the Sydney Basin Bioregion EEC to assess potential direct and indirect impacts ECA has also considered impacts on any threatened species, populations and communities as per section 5A of the Environmental Planning & Assessment Act 1979. The 'Assessment of Significance' has been undertaken in accordance with the NSW Department of Environment & Climate Change 'Threatened species assessment guidelines'.

1.1 Site Location

The study area is 327 Mc Carrs Creek Rd Terry Hills (see Figure 1).

Figure 1-1. Location of the site. Source: Google Maps, 2018.

1.2 Ecology of the site

The site contains Red Bloodwood - Scribbly Gum / Old-man Banksia open forest on sandstone ridges of northern Sydney and the Central CoastRed Bloodwood and acts as a corridor providing connectivity to plant communities to the west of the site. Continues to be potential habitat for Microbats as well as locally common species. Figure 1-3 Shows the vegetation mapping.

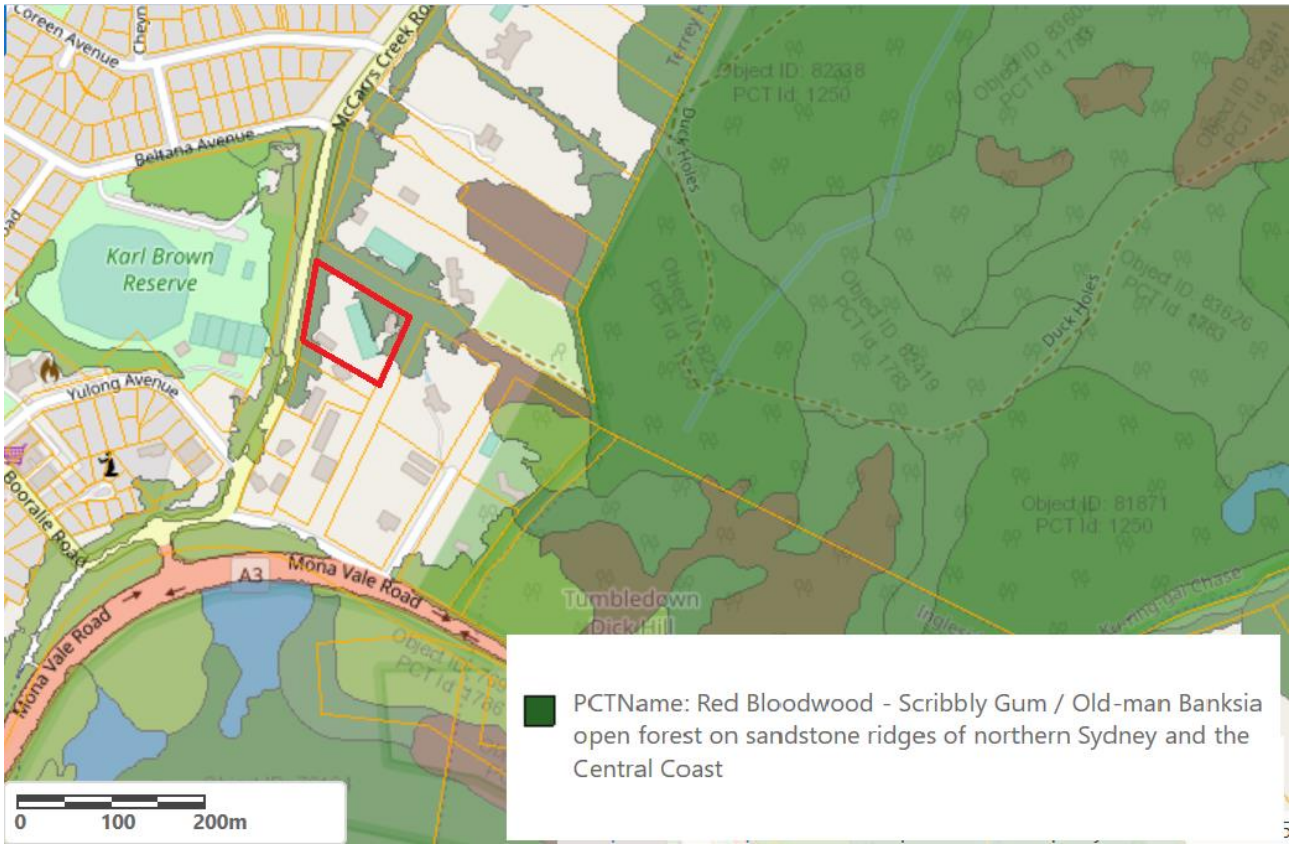


Figure 2. Vegetation Mapping. Source OEH Syd Metro Red Bloodwood Scribbly Gum Old-man Banksia open forest on sandstone ridges

2 Proposed Actions

The development proposal consists of constructing a large site shed with associated infrastructure such as pathways, part retaining wall, drainage (SW) and water retention tank. Sandstone embankment excavation cut is required to achieve proposed levels and site access requirements. See tree plan Figure 1-2.

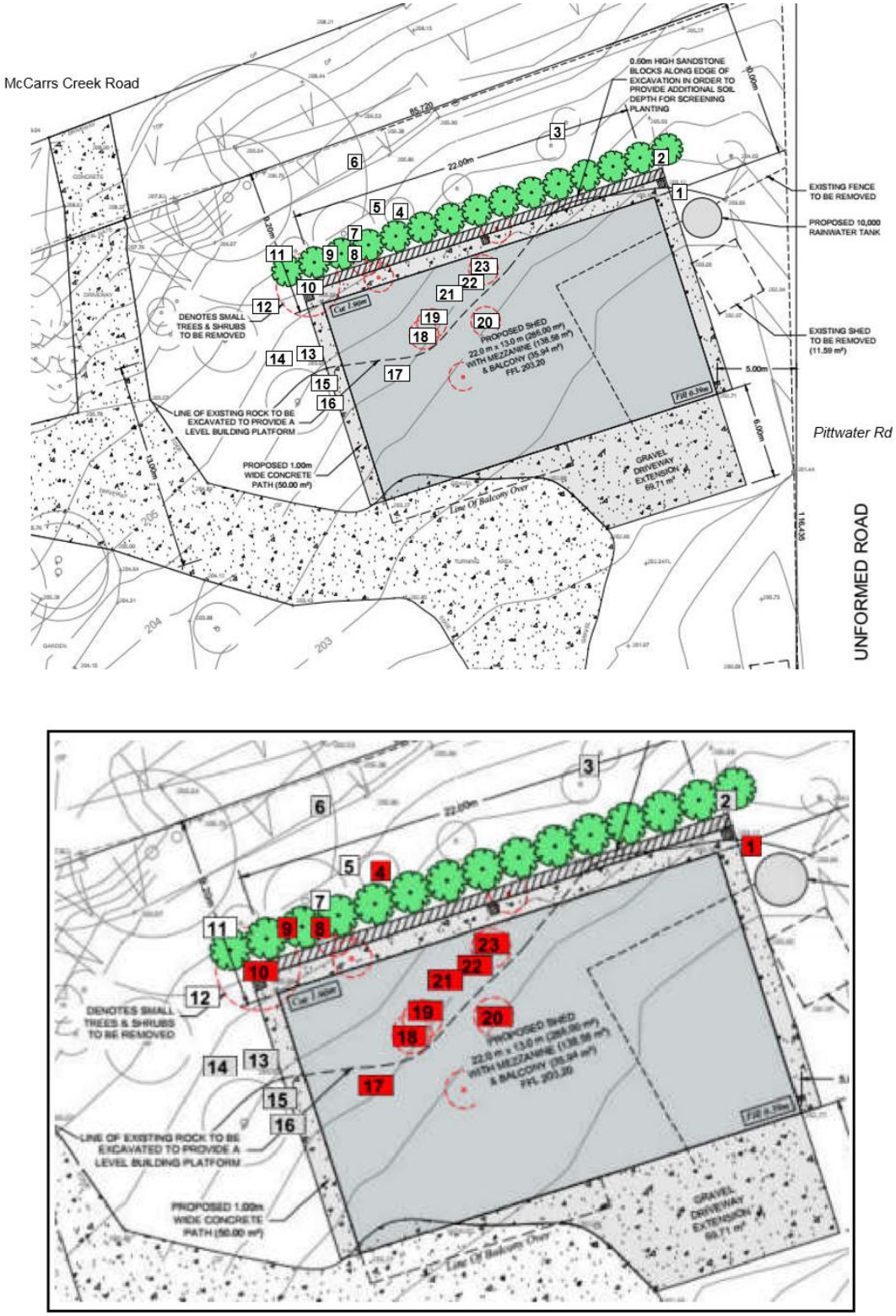


Figure 1-2 Trees proposed for retention (white) and removal (red). Source

See Arborist report for further details.

Photos from the site

The location is residential with an existing dwelling and landscaped gardens set in mature Red Bloodwood Scribbly Gum Old-man Banksia open forest on sandstone ridges. The following images show the site including the landscaped gardens (and weeds), the mature canopy including within the deck and very sparse native under and mid-story (small area of native grape). Most of the site is turf (planned additional plantings of local native vegetation). Native plants in the area of the proposed development are: *Hakea dactlyoides Banksia ericifolia,* Blueberry Ash and Dianella.

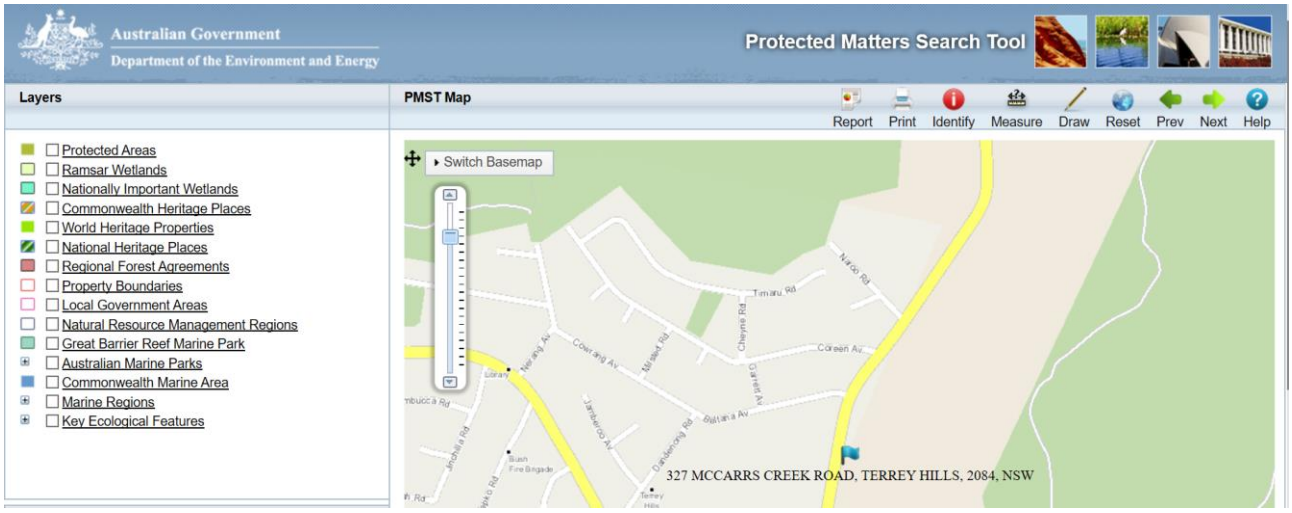
2.1 Legislation and policy

The implications for the proposal were assessed in relation to key biodiversity legislation and policy including:

- *Cwlth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).*

A Protected Matters Search was conducted.

Report Generation ID: Q62K55 Coordinates: -33.68087 151.23152



Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	1
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	44
Listed Migratory Species:	17

Coastal Upland Swamps in the Sydney Basin EEC occurs within 1km of the activity site and the activity site is within the general vicinity of Duffys Forest Ecological Community in the Sydney Basin Bioregion however it is not in this location on-site. The doninant trees , shrub and ground soils do don't match the Dugffys Forest dertermination.

- *Environmental Planning and Assessment Act 1979 (EP&A Act).*

The EPA Act requires that the assessing body, in this case local government, consider the impact of the development on the surroundings – with respect to this ecology report the impacts on the environment

are assessed. The proposal indicate no significant impact on threatened species, populations or communities.

- *Biodiversity Conservation Act 2016 (BC Act).*

Recently replacing the Threatened Species Conservation Act this includes the test of significance for impacts on threated species, communities. The tests of significance have been conducted and the proposal was found to not have a significant impact on the current ecology of the site, providing Black Sheoak (*Allocasuarina littoralis*) are planted at a ratio of 1:3 for no- net-loss, in total 30 trees. The proposed development is complaint with the BC Act.

- *Fisheries Management Act 1994 (FM Act).*

The proposed development is compliant with the objective of the FMA. Stormwater from on-site will be managed such that there is to be a positive or neutral impact on receiving waters. See Stormwater Plan for details.

- *National Parks & Wildlife Act 1974 (NP&W Act).*

The proposed development is complaint with the NP&W Act.

- *Biosecurity Act (superseding the Noxious Weed Act 1993) (NW Act).*

The Biosecurity Act replaced the Noxious Weeds Act and the objectives of this Act is to manage and eradicate and Weeds that cause a high level of environmental, economic or social harm. With the management of weeds the sites works with be complaint with the objectives of this Act.

2.2 Scope of works

To provide a 5-part test for assessing the potential direct and indirect impacts of any threatened species, populations and communities on the site. The assessment will also include assessing other ecological impacts and providing recommendations for mitigating these. Including the following:

- Plant species that will assist habitat production of the surrounding species and maintain a healthy corridor for species movement.
- Provide a buffer for the ecological communities adjacent to the property.

2.1 Limitations of the Study

Limitations of the study may arise where certain cryptic species of plants may occur as soil-stored seed or as subterranean vegetative structures. Some species are identifiable above-ground only after particular environmental circumstances related to factors such as periodic fire frequency, intensity or seasonality, soil moisture regime, biological life-cycle patterns as in the case of small plants such as species of orchids etc. No specific invertebrate surveys were conducted.

Surveys at one time of the year cannot be expected to detect the presence of all species occurring, or likely to occur, in the study area. This is because some species may (a) occur seasonally, (b) utilise different areas periodically (as a component of a more extensive home range), or (c) become dormant during specific periods of the year. Rather, the survey provides the opportunity to sample the area, search specifically for species likely to be encountered within the available time frame and assess the suitability of habitat for particular species.

Considering the site and habitat availability Kingfisher are confident that this survey is representative of the likely species and vegetation community and that future studies at other times would not change the conclusions in this report.

3 Methods

3.1 Site Inspections

- On-ground survey took place on the 22nd of May Senior Ecologist Geraldene Dalby-Ball.
- Flora and fauna observations were recorded on-site using binoculars and physical examination. Notes, photos and samples of flora species were taken to assess ecological health and value of the site.
- Bionet searches were performed for flora, fauna and endangered populations to identify if there were previous records of threatened species occurring within the local area using a 10km radius around the site.
- OEH mapping was consulted via SEED Portal particularly Sydney Metro Area v3.1 2016 E - VIS 4489

3.2 Consultation

Bionet, previous studies and the author's knowledge of the local area, were used to determine the possible occurrence of endangered ecological communities and threatened plant species on-site. The Bionet records accessed cover a $10km^2$ area extending from the site and include recordings from 1993 to the present day.

Records from the following databases were collated and reviewed:

- Atlas of NSW Wildlife (Bionet). New South Wales, Office of Environment and Heritage (OEH).
- NSW Threatened Species Information (OEH).
- VIS – Vegetation Mapping information NSW.
- PlantNET (The Royal Botanic Gardens and Domain Trust 2014).
- Protected Matters Search Tool of the Australian Government Department of the Environment (DoE) for matters protected by the Cwlth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Other sources of biodiversity information:

- Relevant vegetation mapping, including:
    - Vegetation Information System, VIS Mapping (OEH).
    - Office of Environment and Heritage and National Parks & Wildlife Service documents and mapping were also consulted

The following reports were also reviewed:

- RainTree consulting Arboricultural Management - 327 Mc Carrs Creek Road, Terrey Hills, NSW New Shed and Infrastructure Arboricultural Assessment and Development Impact Report (2019)

3.2.1 Arborist report findings

Twenty tree (23) trees have been assessed under this development proposal which consist of seven (7) non-prescribed trees. The non-prescribed exempt trees are permitted to be managed (pruned, removed or relocated) without Council consent. Within the existing environment low retention value trees and remaining trees of good vitality are considered retainable without change in site conditions in support of the local Plant Community.

The development proposal requires the likely removal of twelve (12) prescribed trees. Of those 1, 8, 9 and 10 will experience a high 4 level of impact by design encroachment (pavement pathway, design footprint and SW) within the SRZ, thus reason for removal and tree 4 recommended for removal due to poor vitality and likely to be a bushfire hazard due to decline and proximity to the proposed building. Trees 17, 18, 19, 20, 21, 22 & 23 fall directly within the building footprint requiring removal.

.

In summary (as per Arborist report)

- *10 Allocasuarina littoralis (Black She-Oak) and one Eucalyptus umbra (White Mahonony) are proposed for removal.*
- *Outside of that specified no works are to occur within the SRZ, the area required for tree stability*
- *Given that the excavation methodology is un-known, and the line of excavation cut and potential batter towards trees is somewhat unclear tree protection fencing is to be installed 0.5m from the line of cut as shown within construction drawings.*

3.3 Assessment of Significance (5-part tests) Summary

Duffys Forest
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 a threatened species. Conservation status in NSW: Endangered Ecological Community

Commonwealth status: Not listed

(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

The following was also used to determine if the vegetation on-site is: Duffys Forest:
https://www.environment.nsw.gov.au/resources/nature/DFVCEia0104.pdf

Given the following: *Duffys Forest Ecological Community is represented on the southern edge of the Ku-ring-gai Chase National Park vegetation map (Thomas & Benson 1985) and the northern edge of the Garigal National Park vegetation map (Sheringham & Sanders 1993). These two maps do not directly abut as there is a gap in the middle comprising cleared land within which small*

remnant patches of the Duffys Forest Ecological Community exist. Some disturbed or degraded remnants of Duffys Forest Ecological Community may not be mapped as the community in Smith and Smith (2000). The on-site and references were consulted.

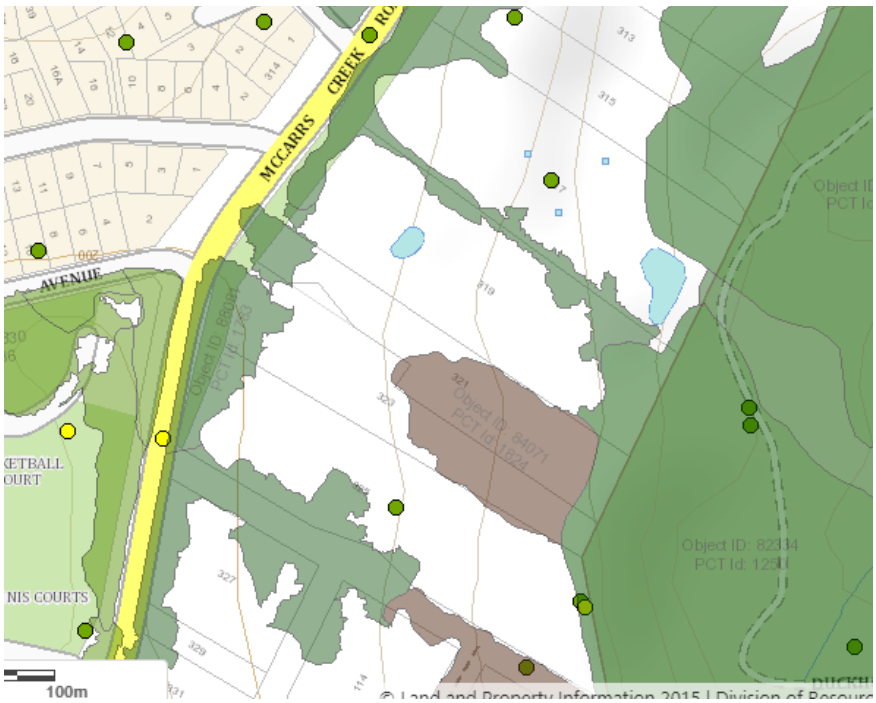
The activity of building the shed will remove native vegetation (~20m x 8m). This vegetation and soil is not considered to be Duffys Forest community.

Duffys Forest is typically open-forest or woodland community dominated by Red Bloodwood *Corymbia gummifera*, Black Ash *Eucalyptus sieberi*, Smooth-barked Apple *Angophora costata*, and frequently a stringybark *E. capitellata* or *E. oblonga*. Other understorey species include Myrtle Wattle *Acacia myrtifolia*, Hairpin Banksia *Banksia spinulosa*, Rusty Velet-bush *Lasiopetalum ferrugineum*, Crinkle Bush *Lomatia silaifolia*, Broad-leaf *Geebung Persoonia* levis, Apple–berry *Billardiera scandens*, Wiry Panic *Entolasia stricta*, Twisted Mat-rush *Lomandra obliqua*, *Micrantheum ericoides* and *Xanthorrhoea media*. Plus other species as can be asee at: https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2000-2003/duffys-forest-sydney-basin-bioregion-endangered-ecological-community-listing

Of these species Red Bloodwood *Corymbia gummifera* and *Banksia spinulosa* are present. Other vegetation appears to be a mix of native plantings and remnant trees. Pittosporum and Blueberry ask are more indicative of this location and the adjoining wet seep (weed filled) on the neighbouring property to the north.

Soil is typical of sandstone transition. Sandstone soils are also indicted by canopy on other parts of the site, and along the road, being Scribbly gum. Soil appeared sandy loam and no iron-stone was observed.

Based on the Mitchell Landscapes v3.1 - Ecosystem Meso Grouping is: SB Hornsby Landscape Code: Hpl Landscape Name: Hornsby Plateau



https://geo.seed.nsw.gov.au/Public_Viewer/index.html?viewer=Public_Viewer&locale=en-AU

(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,

The area of activity is highly modified and 90% existing cleared. The remaining area to be cleared is not DF.

Any direct removal of DF or fragmentation by removing other vegetation can have an impact because *less than 8% (117ha) of the original extent of DFEC is recorded within NPWS reserves. A further 2.7% (39ha) is afforded some protection in reserves managed by Council or Trusts. Much of the reserved habitat is narrow and fragmented and adjacent to major roads. All reserved habitat is subject to ongoing threats, therefore DFEC is not adequately represented in the conservation reserve system.* https://www.environment.nsw.gov.au/resources/nature/DFVCEia0104.pdf

(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

Clearing is a key threatening process however no DF will be cleared. An area of ~20m x 8m will be modified including partial vegetation removal and replanting with locally native species. This area could be a buffer area for EECs in general as it would permit the movement of pollinators between the large patch of national park (Ku-ring-gai) with that in Garigal.

(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

This area (being modified) could be part of a corridor area for EECs pollinators and corridor in general as it would permit the movement of pollinators between the large patch of national park (Ku-ring-gai) with that in Garigal.

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,

The planting of nectar producing, locally native, trees adjacent to the new shed will add to the corridor. Trees and shrubs being planted back are from the DF EEC and include Red Bloodwood, Hairpin Banksia *Banksia spinulosa,* and *Acacia myrtifolia.* Appendix 1 shows a more detailed list of potential species to consider.

Existing vegetation mapping and locations of threatened species. Vegetation in the proposed development area is PCT 1763.

(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 site is highly modified (over 90% of the area for the shed is already cleared. The remaining area is not DF EEC.

(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.

Whilst habitat loss is a KTP the area is not DF EEC.

4. 5-Part Test

Regent Honey eater

5 Part Test

The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. When nectar is scarce lerp and honeydew can comprise a large proportion of the diet. Insects make up about 15% of the total diet and are important components of the diet of nestlings. An open cup-shaped nest is constructed of bark, grass, twigs and wool by the female. Two or three eggs are laid and incubated by the female for 14 days.

The following is 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:

(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 site is highly modified, and the trees planned for removal are not foraging species. Because of this a local viable population would not 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,

As the area of activity is highly modified and does not hold the species foraging habitat and no nests have been sighted on the property there is no chance of it placing this species 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

Habitat loss is a key threatening process however the trees proposed to be removed are not nectar trees and no nests have been sighted on the property the species habitat will not be modified as a result of the activity.

(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

No fragmentation of the species habitat will occur

(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,

The trees proposed for removal do not produce nectar and as such not important for the survival of the species or ecological community in the locality. The planting of nectar producing trees adjacent to the new shed may add foraging habitat for this nectarivorous species.

(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 site is highly modified and as such will have no adverse effect.

(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.

Whilst habitat loss is a KTP the trees are no foraging habitat for this species.

Swift Parrot

5 Part Test

The Swift Parrot is small parrot about 25 cm long. One of most distinctive features from a distance is its long (12 cm), thin tail, which is dark red. This distinguishes it from the similar lorikeets, with which it often flies and feeds. Can also be recognised by its flute-like chirruping or metallic "kik-kik-kik" call.

The following is 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:

(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 site is highly modified, and the trees planned for removal are not foraging species. Because of this a local viable population would not 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,

As the area of activity is highly modified and does not hold the species foraging habitat and no nests have been sighted on the property there is no chance of it placing this species 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

Habitat loss is a key threatening process however the trees proposed to be removed are not nectar trees or lerp infested trees and no nests have been sighted on the property the species habitat will not be modified as a result of the activity.

(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

No fragmentation of the species habitat will occur as the property is already highly modified and not large enough an area to cause such a disturbance.

(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,

The trees proposed for removal do not produce nectar nor are they lerp infested and as such not important for the survival of the species or ecological community in the locality. The planting of nectar producing trees adjacent to the new shed may add foraging habitat for this nectarivorous

species. The White Mahogany planned for removal is not a prolific flowering species preferred by the species.

(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 site is highly modified and as such will have no adverse effect.

(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.

Whilst habitat loss is a KTP the trees are no foraging habitat for this species.

Glossy Black Cockatoo

5 Part Test

and a short crest. Males have a prominent red tail panel, while that of females is yellow to orange-red. They are usually seen in pairs or small groups feeding quietly in sheoaks. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites. A single egg is laid between March and May.

The following is 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:

(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,

10 of the eleven trees planned for removal are the preferred Black Sheoak (*Allocasuarina littoralis*). Whilst one is being removed due to low vitality the remaining prescribed trees for removal are in good health. To mitigate loss of foraging habitat which is a KTP for the glossy black cockatoo. Sheoak tree planting is required at a 3 to 1 ratio that is 3 planted for 1 removed. Species can be A. littoralis or the more favored Forest Oaks.

(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 an EEC

(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

The proposed development is unlikely to have an adverse effect on the life cycle of this threatened species' viable population or bring it at risk of extinction. The species large territorial area and no hollow bearing trees indicates it is not nesting on-site and may use the sight for foraging.

(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

No fragmentation of the species habitat will occur as the property is already highly modified and the trees proposed to be removed are not hollow bearing.

(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,

Habitat loss is a KTP for the Glossy black cockatoo and the proposed trees to be removed are key foraging species. To mitigate food tree loss Black Sheoak tree planting of is required at a 3 to 1 ratio.

(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 site is highly modified and as such will have no adverse effect.

(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.

Habitat loss is a KTP however Black Sheoak tree planting at a 3 to 1 ratio will mitigate this process.

Grey headed flying fox

5 Part Test

Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. They feed on the nectar and pollen of native trees, in particular *Eucalyptus, Melaleuca* and *Banksia*, and fruits of rainforest trees and vines.

The following is 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:

(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 site is highly modified, and the trees planned for removal are not foraging species. Because of this a local viable population would not 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 an EEC

(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

The proposed development is unlikely to have an adverse effect on the life cycle of this threatened species' viable population or bring it at risk of extinction. The species large territorial area and only one nectar bearing tree is being removed.

(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

No fragmentation of the species habitat will occur.

(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,

The trees proposed to be removed are not foraging nor have they been used for roosting thus not important habitat.

(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 site is highly modified and as such will have no adverse effect.

(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.

The removal of Sheoaks is not a KTP for this species.

Greater Glider

5 Part Test

The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers. During the day it shelters in tree hollows, with a particular selection for large hollows in large, old trees.

The following is 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:

(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 site is highly modified, and the trees planned for removal are not foraging species nor are they hollow bearing. Because of this a local viable population would not 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 an EEC

(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

The proposed development is unlikely to have an adverse effect on the life cycle of this threatened species' viable population or bring it at risk of extinction due to the tree species proposed for removal.

(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

No fragmentation of the species habitat will occur.

(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,

The trees proposed to be removed are not foraging nor are they hollow bearing.

(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 site is highly modified and as such will have no adverse effect.

(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.

Removal of Sheoaks is not a KTP for this species.

Appendix

1. Species that can be considered for planting as a screen around the shed that are part of the Duffys Forest Ecological Community that are shrub size:

- *Acacia linifolia* (White Wattle)
- *Acacia myrtifolia* (Myrtle Wattle)
- *Acacia suaveolens* (Sweet Wattle)
- *Acacia ulicifolia* (Prickly Moses)
- *Grevillea buxifolia* (Grey Spider Flower)
- *Grevillea linearifolia* (White Spider Flower)
- *Bossiaea heterophylla* (Variable Bossiaea)
- *Bossiaea obcordate* (Spiny Bossiaea)
- *Hakea sericea* (Silky Hakea)
- *Hakea teretifolia* (Dagger Hakea)
- *Lambertia Formosa* (Mountain Devil)
- *Elaeocarpus reticulatus* (Blueberry Ash)
- *Corymbia gummifera* (Red Bloodwood)
- *Ceratopetalum gummiferum* (N.S.W. Christmas Bush)

5 Expertise of authors

Geraldene Dalby-Ball
DIRECTOR

With over 20 years wetland and urban ecology experience, a great passion for what she does, and extensive technical and on-ground knowledge make Geraldene a valuable contribution to any project.

Geraldene has over 8 years local government experience as manager of environment and education for Pittwater Council. Geraldene presented papers on the topic at the NSW Coastal Conference, Sydney CMA and Hawkesbury Nepean forums. Geraldene is a Technical Advisor Sydney Olympic Park Wetland Education and Training (WET) panel.

Geraldene has up to date knowledge of environmental policies and frequently provides input to such works. Geraldene was a key contributor to the recent set of Guidelines commissioned by South East Queensland Healthy Waterways Water Sensitive Urban Design Guidelines. Geraldene's role included significant contributions and review of the Guideline for Maintaining WSUD Assets and the Guideline for Rectifying WSUD Assets.

Geraldene is a frequent contributor to many community and professional workshops on ecological matters particularly relating to environmental management. She is an excellent Project Manager.

Geraldene is a joint author on the popular book Burnum Burnum's Wildthings published by Sainty and Associates. Author of the Saltmarsh Restoration Chapter Estuary Plants of East Coast Australia published by Sainty and Associates (2013). Geraldene's early work included 5 years with Wetland Expert Geoff Sainty of Sainty and Associates. Geraldene is an expert in creating and enhancing urban biodiversity habitat and linking People with Place.

SPECIALISATIONS

- Urban Ecology – and habitat rehabilitation and re-creation.
- Urban waterway management – assessing, designing and supervising rehabilitation works
- Saltmarsh and Wetland re-creation and restoration – assessment, design and monitoring
- Engaging others in the area of environmental care and connection
- Technical Advisor – environmental design, guidelines and policies
- Sound knowledge and practical application of experimental design and statistics
- Project management and supervision
- Grant writing and grant assessment
- Budget estimates and tender selection
- Expert witness in the Land and Environment Court

CAREER SUMMARY

- **Director and Ecologist**, Ecological Consultants Australia. 2014-*present*
- **Director and Ecologist**, Dragonfly Environmental. 1998-*present*
- **Manager** Natural Resources and Education, Pittwater Council 2002-2010
- **Wetland Ecologist** Sainty and Associates 1995-2002

QUALIFICATIONS AND MEMBERSHIPS

- **Bachelor of Science with 1st Class Honors**, Sydney University
- WorkCover WHS General Induction of Construction Industry NSW White Card.
- Senior First Aid Certificate.
- **Practicing member and vice president** Ecological Consultants Association of NSW