Biodiversity Development Assessment 2nd Addendum

Allambie Heights Village

3 Martin Luther Place, Allambie Heights 2100

Total Earth Care Pty Ltd

June 19

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Quality Control	© Total Earth Care Pty Ltd 2019		
Revision/Version No.	Rev 1	**Date of revision**	7 June 2019
Prepared by:	G.Goldin		
Prepared for:	Allambie Heights Village		
TEC Job No.	C10826		

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Introduction

This document addresses Northern Beaches Response to the Original BDAR and BDAR Addendum. The primary change includes the addition of 2 new native vegetation zones for assessment of potential offset requirements.

Referral letter from Council

DA2018/1667

Responsible Officer Lashta Haidari

Land to be developed (Address): Lot 2615 DP 752038

181 Allambie Road ALLAMBIE

HEIGHTS NSW 2100

Comments to be addressed

• The BDAR must include information on the accreditation of the author, date and version of BAM, and date and version of credit report.

• Revise and update list of species, or confirm inputs such as patch size, integrity score and native veg extent in the buffer, did not alter original list

• Map 2 – additional waterways that are mapped occur within 1500m buffer area

• PCTs - a PCT must be included for both the area of trees, and impacts to these include within offset calculation

- A single vegetation zone cannot have different PCTs
- Need to assign a vegetation integrity score

• Provide separate map of vegetation management zones

• Chanilolobus dwyeri – was this species recorded or not

• SAII – not addressed but none predicted for the potential SAII species – microbats breeding habitat only.

• As per previous comments, Prescribed Impacts (s6.7 of the BAM) has not be considered or addressed within the BDAR

1 BDAR Author

Initial BDAR Manager: Kelly Askew: Accredited BAM Assessor: BAAS18094. No longer with Total Earth Care, now at Northern Beaches Councils.

BDAR Addendum, Gregg Goldin: BAAS18170. All data used for addendum was carried over from the initial BDAR. Additional survey effort on the derived plant communities performed by Gregg.

The most recent calculation was performed on

App last updated: 21/02/2019 (Version: 1.2.6.00)

BAM data last updated *: 3/06/2019 (Version: 9) *

2 Revise and update list of species, or confirm inputs such as patch size, integrity score and native veg extent in the buffer, did not alter original list.

A revised list of species was generated through the BAM calculator on the 3/06/2019 including the two additional vegetation zones consisting of the planted communities detailed in section 4.

Most of the new species identified by the calculator primarily were the result of the inclusion of new plant community types, rather than any significant increases in patch size (Which remains inclusive of the connected 300 Ha of the Manly Warringah Memorial Park). New species generated by the BAM calculator are shown in Table 1-1 and Table 2-2.

Table 1. New ecosystem credit species returned from the BAM Calculator.

Species	Common Name	PCT associations
Ptilinopus regina	Rose-crowned Fruit – Dove.	661, 1841
Ptilinopus superbus	Superb Fruit-Dove	661, 1841

Table 2. New Species Credit Species Identified by BAM calculator

Species	Common Name	Requirement for survey	Habit Criteria
Epacris purpurascens var. purpurascens	Epacris purpurascens	Yes	Yes
Melaleuca biconvexa	Melaleuca biconvexa	No	No – Swaps not present
Rhodamnia rubescens	Scrub Turpentine	Yes	Yes
Syzygium paniculatum	Magenta Lilly Pilly	Yes	Yes

The small size of the additional vegetation zone were almost entirely covered by BAM survey plots. The degrees of visibility offered by the mown lawn gives high degree of confidence that these species were adequately surveyed for and not found to be present.

3 Map 2 – additional waterways that are mapped occur within 1500m buffer area

Only creek lines included in the proposals catchment had been included on the previous map. For completeness this Locality map has been corrected and attached.

4 PCTs - a PCT must be included for both the area of trees, and impacts to these include within offset calculation

The areas of exotic lawn contains exotic trees and zones of planted native trees. The dominant species in one patch are three Sydney Blue Gums (*Eucalyptus saligna*.) In the other zone Bangalay and Swamp Mahogany (Eucalyptus *robusta* and *botryoide)* are planted in a row along the access road. Geographic constraints suggest these trees are not part of a vegetation community that ever existed on the site, however a PCT has been assigned.

4.1.1 Row of Trees adjacent to access rd.

Zone Name: Zone 661_Planted

Zone size: *0.13ha*

PCT: 661. Bangalay - Smooth-barked Apple - Swamp Mahogany low open forest of southern Sydney, Sydney Basin Bioregion

This row of trees contains a mix of Eucalyptus botryoides and Eucalyptus robusta. No mid story is present other than several juvenile *Acacia longifolia.* The ground stratum is a lawn dominated by exotic buffalo grass (*Stenotaphrum secundum*). One *Eucalyptus saligna* south of the access Rd has been included in the total area of zone.

Figure 4.1. Plot 6 Start. Planted row of Eucalyptus.

Figure 4.2. Plot 6 End.

4.1.1.1 Determining PCT

Community 661 has been chosen as the assigned PCT site from the range of potential communities shown in Table 3-1, mainly because the subject site less like a coastal lowland swamp. The PCT is derived and not representative of the associated Endangered Ecological Community.

Table 3-1. **Vegetation communities found in the Pittwater IBRA subregion that contain both Eucalyptus robusta and Eucalyptus botryoides in the canopy.**

PCT ID	PCTName
661	Bangalay - Smooth-barked Apple - Swamp Mahogany low open forest of southern Sydney, Sydney Basin Bioregion
1231	Swamp Mahogany swamp sclerophyll forest on coastal lowlands of the Sydney Basin Bioregion and South East Corner Bioregion

The offset calculator cannot assign an offset obligation to this plant community as the vegetation integrity score is well below the threshold of 20. (12.3). Inputs for this calculation are shown in Table 4.1.

4.2 Trees behind Existing Village: (Zone 1841_Planted)

Zone Name: Zone 1841_Planted

Zone size: 0.07 Ha

PCT: 1841. Smooth-barked Apple - Turpentine - Blackbutt tall open forest on enriched sandstone slopes and gullies of the Sydney region

Dominant native tree canopy in the zone is *Eucalyptus saligna*. Mid story includes *Pittosporum undulatum*, *Acacia parramettensis and Lophostomon confertus*. The rest of the shrub and ground strata is largely exotic mown lawn, exotic garden plants, mature broad-leafed privet and some scattered native grasses and forbs.

Figure 4.3 Start of Plot 7. Group of Sydney blue-gums (Eucalyptus saligna)

Figure 3.2 End of Plot 7.

Table 4.4. PCTs found in the Pittwater IBRA subregion that contain Eucalyptus saligna.

PCTID	PCTName
1237	Sydney Blue Gum - Blackbutt - Smooth-barked Apple moist shrubby open forest on shale ridges of the Hornsby Plateau, Sydney Basin Bioregion
1528	Jackwood - Lilly Pilly - Sassafras riparian warm temperate rainforest of the Central Coast.
1568	Blackbutt - Turpentine - Sydney Blue Gum mesic tall open forest on ranges of the Central Coast
1573	Sydney Blue Gum - Lilly Pilly mesic tall open forest of coastal ranges and tablelands escarpment
1723	Melaleuca biconvexa - Swamp Mahogany - Cabbage Palm swamp forest of the Central Coast
1841	Smooth-barked Apple - Turpentine - Blackbutt tall open forest on enriched sandstone slopes and gullies of the Sydney region
1915	Blue Gum-Bangalay - Turpentine / Cheese Tree - Lilly Pilly tall moist forest on coastal flats of the northern Sydney basin

PCT 1841 is seen as the best fit for the local geography, includes both tree *Eucalyptus saligna* and *Pittosporum undulatum* species and the PCT is known to have an association with Sandstone Gully Forest found on the subject site.

An offset obligation of single credit was produced for this area by the calculator. The inputs used to calculate the change in future vegetation integrity are shown below.

Table 4.1 BAM Calculator inputs to calculate Vegetation Integrity of the derived PCTs

Vegetation zone name	Patch Size*	Area (ha)*	Location	Composition condition score	Structure condition score	Function condition score	Current vegetation integrity score
1824_Poor	300	0.51		56	68.6	83.6	68.5
661_Planted	300	0.13		2.8	49.2	13.8	12.3
1841_Planted	300	0.07		9.9	44.8	25.3	22.4

Table 4.2 BAM Calculator showing future vegetation integrity estimates

Vegetation zone name	Patch Size	Management zone	Area (ha)	Composition condition score	Structure condition score	Function condition score	Vegetation integrity (VI) score	Change in VI score	Total Change in VI score
1250_Mod	300	VMP	0.8	80.7	86.9	44.1	67.7	0	-4.6
		APZ	0.09	48.6	29.1	13.8	26.9	-40.8	
1824_Mod	300	APZ	0.01	64.6	9.8	21.6	23.9	-22.7	-0.5
		VMP	0.43	81.3	20.9	59.5	46.6	0	
1824_Poor	300	Clear	0.25	0	0	0	0	-68.5	-36.2
		APZ	0.05	56	29.4	43.5	41.5	-26.9	
		VMP	0.21	56	68.6	83.6	68.5	0	
661_Planted	300	Cleared	0.12	0	0	0	0	-12.3	-11.9
		Retained	0.01	0.3	46.9	8.9	5.2	-7.2	
1841_Planted	300	Cleared	0.03	0	0	0	0	-22.4	-14.6
		Retained	0.04	3.3	41.2	18.5	13.6	-8.8	

5 Provide separate map of vegetation management zones

Map 10 Attached shows the Management Zones used to calculate Biodiversity offset obligations. The portion of the vegetation zones left untouched have been assigned to “VMP” management zones. The future vegetation integrity score of these zones has not been altered. With bush regeneration undertaken on the remnant bushland under the VMP condition is to be improved.

6 Chanilolobus dwyeri – was this species recorded or not

Anabat recordings in two locations did not detect this species however Chalinolobus gouldii and Chalinolobus morio were detected on site.

7 SAII – not addressed but none predicted for the potential SAII species – microbats breeding habitat only.

There is brief mention in the original BDAR that assessment under SAII is not required. No entities identified as potential SAII species are present or likely to be impacted. Two vulnerable microbat species identified on the site, the little Bentwing-bat and the Eastern Bentwing-bat do not have suitable breeding habitat on the site and as such are unlikely to be subject to a Severe and Irreversible Impact.

Even species that are not listed as potential SAII species should be considered under the principles. The other threatened species identified on the site including the Grey-headed flying fox, Eastern pygmy possum and Square-tailed kite which utilise the site as foraging habitat but are unlikely to be significantly impacted or require further assessment under SAII principles.

8 As per previous comments, Prescribed Impacts (s6.7 of the BAM) has not be considered or addressed within the BDAR.

Assessment requirement from 6.7 are copied here and addressed.

BAM Section 6.7.1.1 Identify occurrences of karst, caves, crevices and cliffs including:

(a) locations on the Site Map

(b) a candidate list of threatened species and ecological communities using or

dependent on these habitat features1

(c) any biological processes that sustain these habitat features

(d) known threats operating on the biological processes that sustain these habitat features

There are no karsts, caves, crevices and cliffs on the subject site. Some exposed sandstone is present and has been addressed below as an occurrence of rock. Analysis of the topography of the surrounding locality did not identify significant cliff lines. Some small sandstone cliffs and benches are present in the Manly Warringah War Memorial Park that are likely to contain overhangs and crevices. The weathering and formation of these sandstone features are unlikely to be impacted by the proposal. The Hawkesbury Sandstone of the area is not conducive to the formation of Karst formation.

6.7.1.2 Identify occurrences of rock including:

(a) locations of outcrops on the Site Map

(b) a description of the characteristics of any scattered rock

(c) a candidate list of threatened species dependent on these habitat features.

The shallow soils over much of the site expose patches of sandstone bedrock in places, in particularly in the bushland north of the access road. Areas containing larger exposed boulders and benches have been identified in the updated survey Map 12 attached.

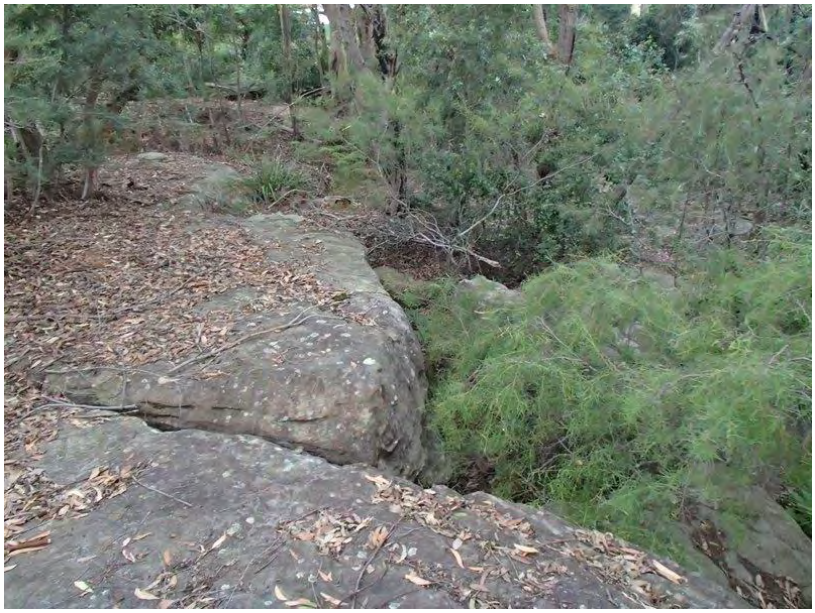


Figure 4. Sandstone outcrops in bushland below access road.

Figure 5. Small Sandstone benches above the access road cutting.

These sandstone outcrops do not contains sufficiently large cracks or caves to host micro bats. Small cracks and underground spaces below can provide shelter habitat for a range of reptiles or small mammals. No additional candidate threatened species were identified for survey other than those specific to the IBRA subregion and plant communities present.

6.7.1.3 Identify occurrences of human made structures and non-native vegetation including:

(a) locations on the Site Map

(b) a candidate list of threatened species using these habitat features.

The artificial drainage line forming the western boundary is the primary human made structure with habitat potential. Its location is well documented in planning documents and its involvement in a landscaping plan to be improved and the channel naturalised. The access road running through the centre of the site is not a potential habitat feature in itself but the drainage ditch on its northern side contains some moisture near the western cul-de-sac. The potential for these habitat features host Red-Crowned Toadlets has been discussed in the BDAR addendum 1. Non-native vegetation is mapped on the vegetation communities. Non-native vegetation on the site includes the zones of high weed density mapped within the bushland areas. Their removal is only

Other non-native vegetation include the large lawn area and the exotic trees consisting mainly of pine trees (*Pinus canriensis* and *Pinus radiata*) and Coral Trees (*Erythrina sykesii*).

All of these types of vegetation can support foraging activity from a variety of species, including bandicoots on lawns, nectar feeders in coral trees and some Cockatoos will forage on pine seeds. The extent of non-native vegetation on the site does not suggest any additional candidate threatened species be included for assessment other than those already identified. The value of Non-native vegetation to be removed is primarily as opportunistic feeding habitat for potential threatened species and there is low potential for threatened species breeding habitat in the open areas of lawn and trees.

6.7.1.4 Identify hydrological processes that sustain and interact with the rivers, streams and wetlands mapped in Paragraph 4.2.1.3. including:

(a) volumes and seasonal patterns

(b) flow paths and seasonal patterns

(c) baseline water quality data.

The subject forms an upper part of the catchment for Curl Curl creek. Flow through drainage lines on the site is intermittent and subject to Sydney's rainfall pattern which lacks a strong seasonal influence, and can be subject to intermittent storm events.

The increase in hard surfaces by the proposal would increase the rate of watershed, and cause a potential increase in sediment and nutrient run-off. A retention basis is part of the proposal to mitigate these impacts. Further discussion is found in the Waterway Impact Statement.

6.7.1.5 Where the proposed development is for a wind farm, identify a candidate list of species that may use the development site as a flyway or migration route, including:

(a) resident threatened aerial species

(b) resident raptor species

(c) nomadic and migratory species that are likely to fly over the project area.

Not relevant to the proposal.

Title: Location Map

Map No: 2
Site: 181 Allambie Rd
Client: Allambie Heights Village Ltd.
Date: June 2018
Project No: C10826
Author: K Askew

Legend

- hydroline
- Subject_site
- 1500m_buffer
- Lot
- Native PCTs (OEH 2016)

Non-native PCTs

- Art_WL: Artificial Wetland
- Cleared
- Urban_E/N: Urban Exotic/Native
- Weed_Ex: Weeds and Exotics

IBRA Bioregion: Sydney Basin Bioregion (SYB)
IBRA Sub-region: Pittwater Sub-region (SYB07)

0 162.5 325 650 Meters

N

Data Source:
Total Earth Care
Nearmap

Tel: 02 9913 1432 Fax: 02 9913 1434

total earth care

Title: BDAR Management Zones

Map No: -
Site: 181 Allambie Rd
Client: Allambie Heights Village Ltd.
Date: 05/06/2019
Project No: C10826
Author: G Goldin

Legend

Management Zone Name

- 1250 Mod APZ
- 1250 Poor APZ
- 1250 Poor Cleared
- 1824 Mod APZ
- 1824 Mod Cleared
- 1824 Poor APZ
- 1824 Poor Cleared
- 1841 Planted Cleared
- 1841 Planted Retained
- 661 Planted Cleared
- 661 Planted Retained

0 5 10 20 Meters

N

Data Source:
Total Earth Care
Nearmap

Tel: 02 9913 1432 Fax: 02 9913 1434

total earth care

Title: Plots 6 and 7

Map No: 11
Site: 181 Allambie Rd
Client: Allambie Heights Village Ltd.
Date: June 2018
Project No: C10826
Author: G Goldin

Legend

- Lot
- Rocks
- Subject_site
- BAM_plots_actual

TEC Survey and Remote Equipment 2018

- BAM
- Remote Equipment

IBRA Bioregion: Sydney Basin Bioregion (SYB)
IBRA Sub-region: Pittwater Sub-region (SYB07)

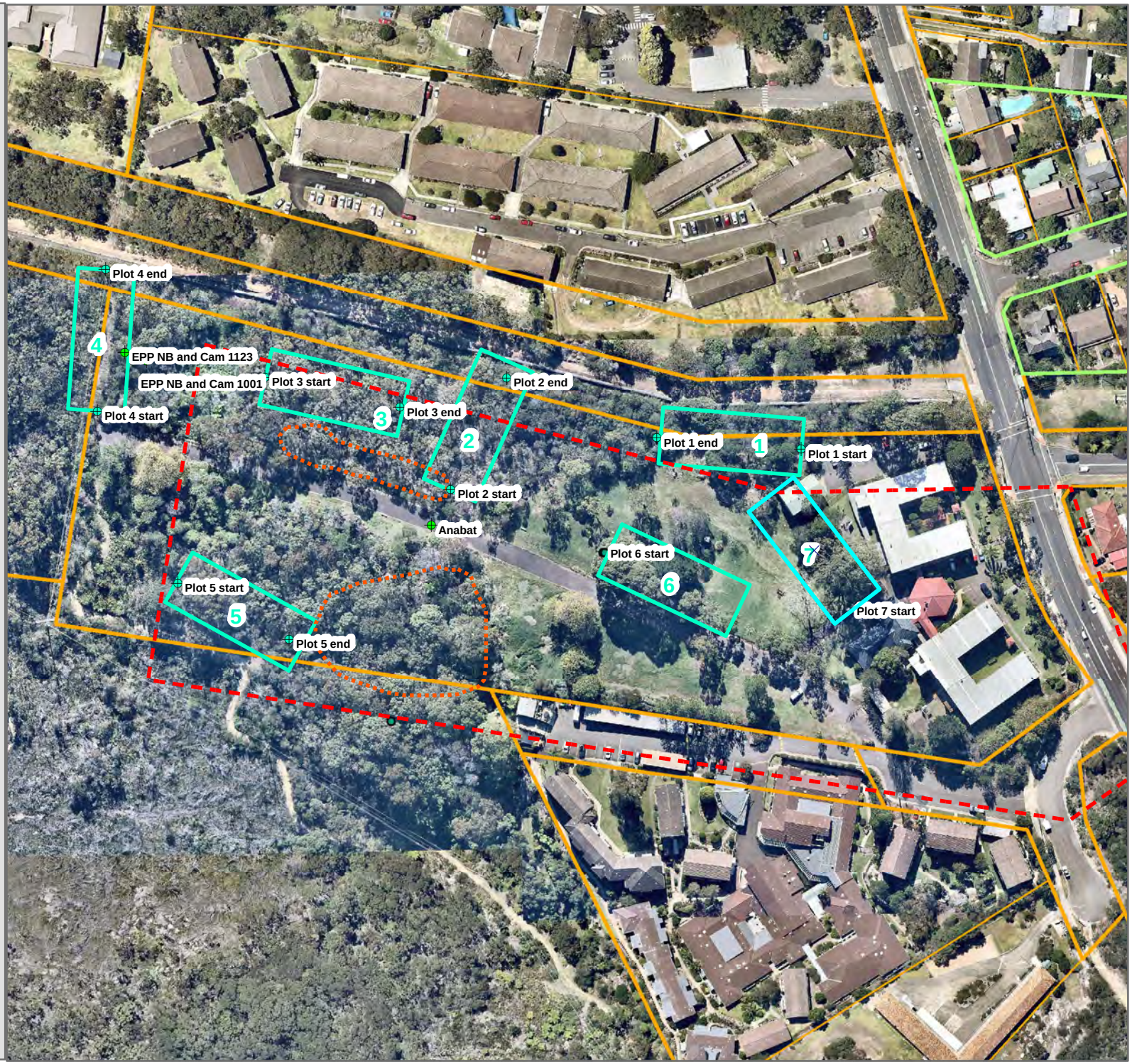
0 15 30 60 Meters

N

Data Source:
Total Earth Care
Nearmap

Tel: 02 9913 1432 Fax: 02 9913 1434

total earth care



BAM Site – Field Survey Form

Site Sheet no: 1 of

Date	3/06/19	Survey Name	ALLAMBIE	Zone ID	661_Planted	Recorders	GREGG GOLDIN,
Zone	Datum	Plot ID	6			Plot dimensions	20x50
56	GDA 94						Photo #
Easting	Northing	IBRA region	In m			Midline bearing from 0 m	Magnetic °
337369	6263002						
Vegetation Class	Derived 661 on Lawn						Confidence: H M L
Plant Community Type						EEC: X	Confidence: H M L

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	1
	Shrubs	1
	Grasses etc.	2
	Forbs	3
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	60
	Shrubs	0.1
	Grasses etc.	0.2
	Forbs	0.3
	Ferns	0
	Other	0
High Threat Weed cover		10|0.3

BAM Attribute (1000 m² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	1	—
50 – 79 cm	1	—
30 – 49 cm	1	—
20 – 29 cm	X	—
10 – 19 cm	1	—
5 – 9 cm	X	—
< 5 cm	X	n/a
Length of logs (m) (≥10 cm diameter, >50 cm in length)	4	

Counts apply when the **number of tree stems** within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30.... 100, 200, 300...). For a **multi-stemmed tree**, only the largest living stem is included in the count/estimate **Tree stems must be living.**

For **hollows**, count only the presence of a stem containing hollows. For a **multi-stemmed tree**, only the largest stem is included in the count/estimate. **Stems may be dead and may be shrubs.**

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	0 0 0 0 0	— — — — —	— — — — —	— — — — —
Average of the 5 subplots	0.1	—	—	—

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter) Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern		Microrelief	
Lithology		Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code	Observational evidence:
Clearing (inc. logging)			
Cultivation (inc pasture)			
Soil erosion			
Firewood / CWD removal			
Grazing (identify native/stock)			
Fire damage			
Storm damage			
Weediness			
Other			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 03 / 06 / 19	ALLAMBIE V.Wage	017 WP-6	GREGG

GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
	1 ~~E. Robusta~~		~~60~~	x		
	2 E. Botryoides		60	1		
	3 Buffalo stenotaphrum secundum		98	1000+		
	4 Kikuyu Penn clandestinum		1			
	5 Acacia long		0.1	2		
	6 Microlaena stipoides		0.1	1000		
	7 Paspalum urvelli		0.2	50		
	8 Dandelion		0.1	5		
	9 Musa sp		0.2	5		
	10 Hydrocotyl bonariensis		0.1	20		
	11 Cynodon dact		0.1	1000		
	12 Lobelia alata (anceps)		0.1	10		
	13 Centella asiatica		0.1	5		
	14 Paspalum quad		0.1	2		
	15 Dichondra repens		0.1	2		
	16 Pinus sp		2	0		
	17 Stenotaphrum secundum		50	1000+		
	18					
	19					
	20					
	21					
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	24					
	25					
	26					
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	39					
	40					

GF Code: see Growth Form definitions in Appendix 1 **N:** native, **E:** exotic, **HTE:** high threat exotic **GF – circle code** if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

BAM Site – Field Survey Form

Site Sheet no: 1 of

Date	03/06/19	Survey Name	Zone ID	Recorders			
Zone 56	Datum GDA 94	Allambie	7	GREGG			
Easting 337466	Northing 6262983	Plot ID	7	Plot dimensions	20x50	Photo #	
		IBRA region	In m	Midline bearing from 0 m		Magnetic °	
Vegetation Class							Confidence: H M L
Plant Community Type					EEC: X		Confidence: H M L

Record easting and northing at 0 m on midline. Dimensions (Shape) of 0.04 ha base plot.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	1
	Shrubs	1
	Grasses etc.	2
	Forbs	2
	Ferns	0
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	65
	Shrubs	4
	Grasses etc.	4.1
	Forbs	0.2
	Ferns	0
	Other	0
High Threat Weed cover		

BAM Attribute (1000 m² plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	2	
50 – 79 cm	—	
30 – 49 cm	—	
20 – 29 cm	1	
10 – 19 cm	3	
5 – 9 cm	—	
< 5 cm	—	n/a
Length of logs (m) (≥10 cm diameter, >50 cm in length)	Tally sheet	

Counts apply when the **number of tree stems** within a size class is ≤ 10. Estimates can be used when > 10 (eg. 10, 20, 30.... 100, 200, 300...). For a **multi-stemmed tree**, only the largest living stem is included in the count/estimate **Tree stems must be living.**

For **hollows**, count only the presence of a stem containing hollows. For a **multi-stemmed tree**, only the largest stem is included in the count/estimate. **Stems may be dead and may be shrubs.**

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	50	0	40	0	0	0	b	c	d	e	0	b	c	d	e	0	b	c	d	e
Average of the 5 subplots	18																			

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots centred at 5, 15, 25, 35, 45 m along the plot midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Assessors may also record the cover of rock, bare ground and cryptogams.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern		Microrelief	
Lithology		Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code	Observational evidence.
Clearing (inc. logging)			
Cultivation (inc. pasture)			
Soil erosion			
Firewood / CWD removal			
Grazing (identify native/stock)			
Fire damage			
Storm damage			
Weediness			
Other			

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe

Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 03/06/19	Allambie Village	PLOT 7	Gregg

GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
	1 E Salugna		65	2	TREE	
	2 Crepe myrtle		3	1		
	3 Furcrae foetida		2	13		
	4 Pittosporum undulatum		~~4~~	~~3~~	SHRUB	
	5 Murraya sp		1	10		
	6 Chlorophystum cym		0.5	30		
	7 Agapanthus pecox		0.2	20		
	8 Hibiscus		0.1	1		
	9 Strelitzia		0.5	2		
	10 Microlaelna stip		4	1000	G	
	11 Ehrharta erecta		0.5	1000		
	12 Solanum nigrum		0.1	2		
	13 Wysteria		4	1		
	14 Ligustrum lucidum		2	—		
	15 Asparagus aeth		0.1	2		
	16 Axonopus ~~sic~~ fissifolius		0.5	1000		
	17 Centella & Dichondra rep		0.1	10	F	
	18 Oplismenus aemulus		0.1	3	G	
	19 Dichondra rep		0.1	2	F	
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GF Code: see Growth Form definitions in Appendix 1 **N:** native, **E:** exotic, **HTE:** high threat exotic **GF – circle code** if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...