Biodiversity Development Assessment Report

Ballina Coast High School

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Executive Summary

This Biodiversity Development Assessment Report (BDAR) has been prepared on behalf of EJE Architects to support a modification (MOD 2) to the existing consent for Ballina Coast High School (BCHS) at Lot 392 DP755684, Lot 478 DP729251, Lot 1 DP1083219 and Lot 477 DP729251 Cherry Street Ballina.

Redevelopment of BCHS has been approved as a State Significant Development (SSD; SSD 7742 MOD 1). On behalf of the NSW Department of Education, EJE Architects lodged a Section 4.55 modification (MOD 1) for various matters, including amendments to the layout of the sporting fields (including removal of 15 trees). The modification was supported by an Ecological Assessment (Blackwood Ecological Services Pty Ltd, 2018).

Following lodgement of the modification application, the Office of Environment and Heritage (OEH) issued advice requiring that a BDAR prepared by an accredited person in accordance with the Biodiversity Assessment Method (BAM) is required based on the proposed tree removal.

To ensure the other proposed amendments under MOD 1 were not delayed due to the requirement for preparation of the BDAR, the proposed amendment to the layout of the sporting fields and associated tree removal, was removed from MOD 1 to be submitted as a separate modification. MOD 1 was subsequently approved on 21 December, 2018, and the proposed amendments to the layout of the sporting fields, and associated tree removal, is now proposed under the current modification application (MOD 2).

As part of their correspondence under the MOD 1 referral process, OEH further noted that given the very small extent of clearing associated with the amendments to the layout of the sporting fields, the streamlined assessment module of the BAM could be applied for the BDAR. On this basis, this BDAR has been prepared to address the requirements of the *Biodiversity Conservation Act 2016* (BC Act) and BAM for the proposed modification (MOD 2) based on the streamlined assessment module, (Appendix 2 of the BAM).

Following the completion of flora plots and entry of relevant data into the Bam Calculator, it was determined that the retirement of four (4) credits is required to offset impacts to biodiversity from the Proposal due to the removal of 0.28 ha of PCT 1230 (derived).

1. Introduction

1.1 Overview

This Biodiversity Development Assessment Report (BDAR) has been prepared for Ballina Coast High School to support a modification (MOD 2) to the existing consent whereby the sports fields require relocation. Ballina Coast High School (BCHS) comprises Lot 392 DP755684, Lot 478 DP729251, Lot 1 DP1083219 and Lot 477 DP729251 Cherry Street Ballina.

Redevelopment of BCHS has been approved as a State Significant Development (SSD; SSD 7742 MOD 1). On behalf of the NSW Department of Education, EJE Architects lodged a Section 4.55 modification (MOD 1) for various matters, including amendments to the layout of the sporting fields (including removal of 15 trees). The modification was supported by an Ecological Assessment (Blackwood Ecological Services Pty Ltd, 2018).

Following lodgement of the modification application, the Office of Environment and Heritage (OEH) issued advice requiring that a BDAR prepared by an accredited person in accordance with the Biodiversity Assessment Method (BAM) is required based on the proposed tree removal (letter of 6 December 2018; attached at **Appendix A**). To ensure the other proposed amendments under MOD 1 were not delayed due to the requirement for preparation of the BDAR, the proposed amendment to the layout of the sporting fields and associated tree removal, was removed from MOD 1 to be submitted as a separate modification. MOD 1 was subsequently approved on 21 December, 2018, and the proposed amendments to the layout of the sporting fields, and associated tree removal, is now proposed under the current modification application (MOD 2).

As part of their correspondence under the MOD 1 referral process, OEH further noted that given the very small extent of clearing associated with the amendments to the layout of the sporting fields, the streamlined assessment module of the BAM could be applied for the BDAR. On this basis, this BDAR has been prepared to address the requirements of the *Biodiversity Conservation Act 2016* (BC Act) and BAM for the proposed modification (MOD 2) based on the streamlined assessment module, (Appendix 2 of the BAM).

Details of the project are summarised below:

Site details	Lot 477 DP729251 Cherry Street Ballina
LGA	Ballina
Area	~3.3 ha
Zoning	Ballina Local Environmental Plan 2012 (BLEP): - RE1 Public Recreation
Future development type	Sportsfields (as part of Ballina Coast High School redevelopment)

Illustration 1.1 shows the site location and **Illustration 1.2** shows the site itself.

1.2 Site Description

The subject site is located within the township of Ballina and bound by urban development on all sides. The site comprises maintained playing fields/ parkland with scattered planted landscaping trees. The far western portion of the site has been cleared of trees and turf and is an active construction site. The site is enclosed by 1.8 m high steel palisade security fencing.

1.3 Proposed Modification

The proposed modification is for amendments to the layout of the two sports ovals (one for soccer, one for rugby/ AFL). The proposal requires the removal of several planted trees to enable the works (refer to **Appendix B**).

1.4 Information Sources

Data and resources used or consulted in this assessment include:

- The Biodiversity Assessment Method (OEH 2017), particularly *Appendix 2: Streamlined assessment module – small area development that requires consent*.
- The Biodiversity Assessment Method Operational Manual – Stage 1 (OEH 2018)
- BioNet Vegetation Classification
- BioNet Threatened Biodiversity Data Collection
- Biodiversity Assessment Method Calculator
- BioNet Threatened Species Profiles
- PlantNET NSW
- Biodiversity Offsets and Agreement Management System (BOAMS).

Spatial data used in this report has included data from the following sources:

- NSW Department of Finance and Services (via Six Maps)
- IBRA Regions and Subregions (OEH 2016)
- NSW (Mitchell) Landscapes - Version 3.1 (OEH 2016)
- SEPP (Coastal Management) 2018 (DPE 2018)
- Directory of Important Wetlands in Australia (Department of the Environment and Energy)
- Fauna Corridors for North East NSW (OEH 2010)
- Acid Sulfate Soils Risk map (OEH 2018).
- Nearmap (aerial imagery May 2018).

Other reports and documents reviewed for this BDAR have included:

- Blackwood Ecological Services (2018). *Ecological Assessment Ballina Coast High School Swift Street, Ballina.* Report to EJE Architecture.
- Gray, P. (2018). Arboricultural Impact Assessment report Ballina High School 37 – 49 Swift St. Ballina NSW 2478. Report by Northern Tree Care for Blackwood Ecological Services.

1.5 Personnel

This BDAR was prepared by accredited assessors Ian Colvin (BAAS18055) and David Havilah (BAAS 18129). All content and fieldwork are in accordance with the Biodiversity Assessment Method (BAM).

1.6 Report Scope and Limitations

This BDAR has been prepared based on field assessment and use of the BAM Calculator (BAM-C) and is based on the assumption that tree removal required for the Proposal is based on the concept plans provided. Biodiversity credits were generated by utilising the BAM-C, which is established and managed by OEH. GeoLINK has entered data in the BAM-C in good faith and any errors or deficiencies in the calculator results are attributed to OEH.

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: ILC Date: 14/12/2018
Source of base data: DFS&I and Auricht Projects

LEGEND

- Ballina Coast High School
- Watercourse
- Coastal wetland (SEPP Coastal Management 2018)
- Proximity area for coastal wetland

0 500

Location Map

GeoLINK environmental management and design

Ballina Coast High School - (streamlined)
Biodiversity Development Assessment Report
3272-1004

Illustration 1.1

Drawn by: AB Checked by: RE Reviewed by: ILC Date: 14/12/2018

Information shown is for illustrative purposes only

Source of base data: Nearmap

LEGEND

- Ballina Coast High School
- Assessment area
- Cadastre

0 50

Site Map

2. Landscape Features

2.1 Bioregion and Mitchell Landscape

The site occurs within the Clarence Lowlands subregion of the South Eastern Queensland Bioregion as per the Interim Biogeographic Regionalisation for Australia, Version 7). At a local level, the site forms part of the 'Clarence - Richmond Barriers and Beaches' Mitchell Landscape (DECC 2008a).

The sites position within the IBRA landscape is shown at **Illustration 2.1**

2.2 Native Vegetation Extent

As per the BAM methodology (Section 4.3.2), a buffer of 1500 metres was established around the site and a calculation of native vegetation cover was derived. Approximately 67.6 ha of native vegetation was identified within a buffer area of 820 ha, therefore native vegetation cover of approximately 8.24% occurs.

Percent native vegetation cover is shown at **Illustration 2.2**

2.3 Cleared Areas

As shown by **Illustration 2.2**, the majority of the study area comprises cleared vegetation occupied by urban areas, roads, open space and infrastructure. The entire site (~3.3 ha) has all been historically cleared (and most likely filled) and no remnant native vegetation remains. Planted native landscaping at the site occupies a total of approximately 0.46 ha (approximately 13.9% of the site).

2.4 Water Features

No natural watercourses occur at the site, which occurs in proximity to two prominent local water features: North Creek (~ 480 m distant) and the Richmond River (~ 760 m distant).

Illustration 2.3 shows the location of water features in proximity to the site.

2.5 Connectivity

The site has no connectivity to any areas of native vegetation/ habitat which are not landscaping trees in an urban context. The site does not occur any regional or sub-regional wildlife corridors as per Scotts (2003), although several modelled corridors occur in proximity to the site (refer to **Illustration 2.4**).

2.6 Geology and Soils

Soil mapping (eSPADE v2.0) indicates the site occurs on the disturbed terrain landscape, which comprises formed land which has been disturbed by human activity to a depth of at least 100 cm. The original soil has been removed, greatly disturbed or buried, where landfill may include soil, rock, building and waste material. The original vegetation has been completely cleared.

Acid sulphate soil (ASS) risk mapping (eSPADE v2.0) does not depict the site as having a probability of ASS.

Soil and geological mapping for the site and surrounds is shown at **Illustration 2.3**.

2.7 Site Components

The site comprises recreational fields which support a small building (and adjacent rainforest garden), three fenced cricket practice nets, football goals, a construction area (along the western boundary) along with scattered landscaping trees planted mostly around the site boundary. As noted, the site is enclosed by 1.8 m high steel palisade security fencing, with the western portion and adjacent southern areas of the High School being an active construction site.

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: ILC Date: 14/12/2018
Source of base data: DFS&I and Auricht Projects

LEGEND

- Ballina Coast High School
- Assessment area
- Clarence Lowlands IBRA subregion
- Cadastre

0 200

IBRA Landscapes

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: ILC Date: 14/12/2018
Source of base data: DFS&I and Auricht Projects

LEGEND

- Ballina Coast High School
- Assessment area
- Assessment area 1500 m buffer
- Native vegetation extent
- Watercourse

0 500

Native Vegetation Extent

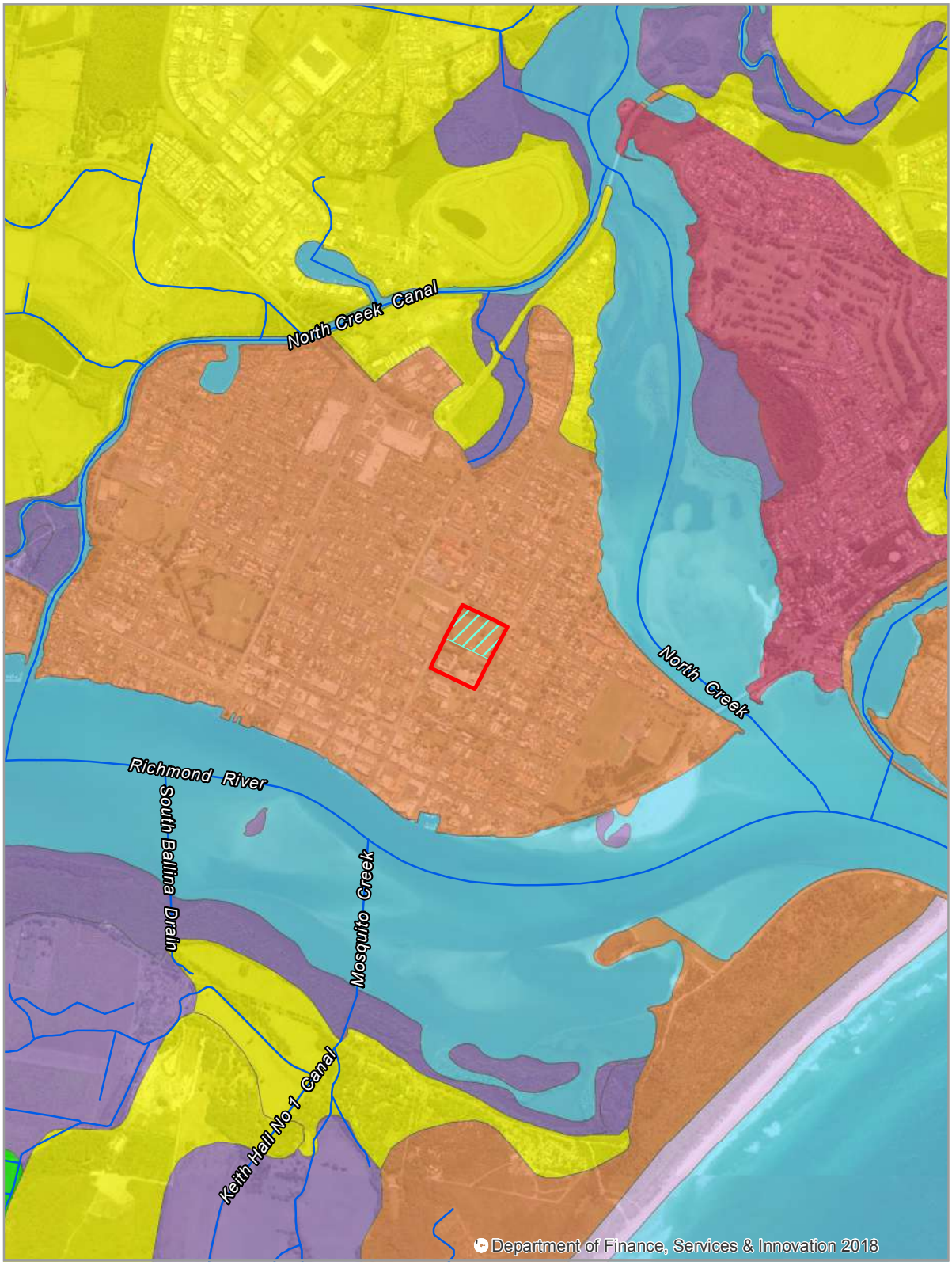
GeoLINK environmental management and design

Ballina Coast High School - (streamlined)
Biodiversity Development Assessment Report
3272-1007

Illustration 2.2

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: ILC Date: 14/12/2018
Source of base data: DFS&I and Auricht Projects



LEGEND

- Ballina Coast High School
- Assessment area
- Watercourse

Soil Landscape Processes

- Aeolian
- Alluvial
- Beach
- Disturbed terrain
- Estuarine
- Residual
- Water

Water and Soil Landscapes

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: ILC Date: 14/12/2018
Source of base data: DFS&I

LEGEND

- Ballina Coast High School
- Assessment area
- Watercourse

Fauna corridors

- Ballina
- North Ballina
- Richmond River
- South Ballina

0 500

Connectivity

3. Native Vegetation

3.1 Vegetation in the Locality

Vegetation in the immediate locality would originally have comprised littoral rainforest (Tuckeroo, Coast Banksia) and swamp sclerophyll forest (Broad-leaved Paperbark, Swamp Oak) flanking estuarine communities (mangroves, saltmarsh).

3.2 Vegetation at the Site

3.2.1 Methodology

Vegetation assessment was completed on 19/12/2018, with two vegetation integrity plots completed. One plot utilised the BAM methodology (20 x 50 m plot) in full. The second plot was within a fenced rainforest 'garden' of approximately 180 m² total area. For this plot all vegetation within the fenced boundary was assessed as the entire plot.

3.2.2 Plant Community Types

As noted, no remnant naturally occurring native vegetation occurs at the site, with all vegetation having been planted. Four distinct planted/ established communities occur (refer to **Table 3.1**). Photographs of vegetation communities are provided at **Plates 3.1 – 3.4**. Plot data sheets are provided at **Appendix C**.

Plant community types (PCTs) as per the BioNet Vegetation Classification have been nominated for native vegetation communities where relevant. PCTs were assigned on a 'best fit' basis based on floristics and landscape occurrence. The eucalypt community at the site comprises a range of species which would not naturally occur together as a contiguous forest community and which also includes species not native to NSW or the bioregion (eg. Cadaghi *Corymbia torrelliana*, Lemon-scented Gum *C. citriodora*, Carbeen *C. tessallaris*).

The PCT assigned to planted eucalypts/ bloodwoods (PCT 1230 Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion) was the only applicable choice of PCTS in the Clarence lowlands subregion which included dominant species at the site, which represent a derived form of PCT1230 both floristically and in terms of landscape position. While there is potential that original pre-European vegetation may have comprised PCT1230 at the site prior to clearing and filling, the existing vegetation at the site is not representative of PCT1230 in terms of floristics (with the exception of several planted Swamp Mahogany), structure or landform. Essentially, assigning PCT1230 to the subject vegetation is on the basis of the 'least worse choice', but one which assigns biodiversity values which are not present at the site.

A total of approximately 0.46 ha of native vegetation occurs at the site. Native vegetation communities at the site are mapped at **Illustration 3.1**. Note that scattered planted trees in the western portion of the site have been cleared under the SSD approval.

Table 3.1 Vegetation Communities

	Description	*Native vegetation*	*Condition*	*PCT*
1	Typical native tree species planted at the sports fields include Flooded Gum (*Eucalyptus grandis*), Sydney Blue Gum (*E. saligna*), Spotted Gum (*Corymbia maculata*), Tallowwood (*E. microcorys*), Swamp Mahogany (*E. robusta*). Tree species not native to NSW include Lemon-scented Gum* (*C. citriodora*) and Cadaghi* (*C. torrelliana*). There is no midstorey and the grass layer is largely dominated by Couch (*Cynodon dactylon*), Kikuyu* (*Cenchrus clandestinum*) and Buffalo* (*Stenotaphram secundatum*), with Flatweed* (*Hypochaeris radicata*) commonly occurring. Area: ~ 0.43 ha.	Yes (planted) 1 plot assessed	Low	PCT 1230 Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion **[derived]**
2	A small planted rainforest garden occurs adjacent to the facilities building. A range of species is present and includes Tuckeroo (*Cupaniopsis anacardioides),* Yellow Kamala (*Mallotus discolor*), Coast Banksia (*Banksia integrifolia* subsp. *integrifolia*), Lilly Pilly (*Syzygium* spp.) and Broad-leaved Palm Lilly (*Cordyline petiolaris*). The midstorey is generally absent, the ground layer is bare except for a consolidated planting of Spiny-headed Mat-rush (*Lomandra longifolia*). Several non-endemic species occur (*Backhousia myrtifolia, Anetholea anisata*). Area: ~ 0.03 ha.	Yes (planted) 1 plot assessed	Moderate	PCT 1275 Tuckeroo - Riberry - Yellow Tulipwood littoral rainforest of the NSW North Coast Bioregion **[derived]**
3	Planted row of six planted Camphor Laurel* (*Cinnamomum camphora*). Area: ~ 0.095 ha.	No	Low	n/a
4	Mown grassland of Couch, Kikuyu* and Buffalo*; occurs over the majority of the site.	No	Low	n/a

* Introduced species

Plate 3.1 Community 1
Planted eucalypt woodland

Plate 3.2 Community 2
Planted rainforest garden

Plate 3.3 Community 3
Planted Camphor Laurel

Plate 3.4 Community 4
Mown grassland

3.2.3 Threatened Ecological Communities

Native vegetation at the site is characteristic of one threatened ecological community (TEC) listed in the BC Act: *Littoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (analogous with Community 2 [PCT 1275]). As noted, this community has been planted at the site.

PCT 1230 is not representative of the TEC *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* as it is not subject to overland flow and does not occur on an alluvial landscape.

3.2.4 Vegetation Integrity

A summary of plot data is provided at **Tables 3.2** - **3.4**.

Table 3.2 Plot Data Summary – Native Species Richness

Plot	*PCT*	*Trees*	*Shrubs*	*Grasses etc*	*Forbs*	*Ferns*	*Other*
1	1230	3	0	1	3	0	1
2	1275	18	5	1	3	0	4

Table 3.3 Plot Data Summary – Native Species Cover

Plot	*PCT*	*Trees*	*Shrubs*	*Grasses etc*	*Forbs*	*Ferns*	*Other*	*THE**
1	1230	16	0	30	5.2	0	0.1	15.1
2	1275	43	2.6	5	0.4	0	3.2	1.7

*HTE = High Threat Exotic

Table 3.4 Plot Data Summary – Structural Attributes

Plot	*PCT*	*No. large trees*	*Hollow-bearing trees*	*Litter cover*	*Total log length*
1	1230	6	0	10	0
2	1275	0	0	55	0

Data from plot 1 (PCT1230) was entered into the BAM-C on the basis that this community was the only one affected by the Proposal. A Vegetation Integrity Scores of 30.4 was assigned to this community. It is unclear why PCT 1230 resulted in what seems an unusually high VI score given the poor structure and limited floristics; the score is suspected on the basis of several large trees and a high proportion of native grassland (sown *Cynodon dactylon*).

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: ILC Date: 11/01/2018
Source of base data: NearMap

LEGEND

- Ballina Coast High School
- Assessment area
- Vegetation removed
- Camphor Laurel (Non-native vegetation)
- PCT 1230 Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion (derived)
- PCT 1536 Tuckeroo - Lilly Pilly - Coast Banksia littoral rainforest (derived)
- Vegetation Plot 2
- Vegetation Plot 1

0 50

Vegetation Plan

4. Threatened Species

4.1 Introduction

Following input of plot data for PCT 1230 into the BAM Calculator (BAM-C), a list of threatened species with potential to occur at the site was generated. It should be noted that during the field assessment all native trees at the site were assessed and this effort is considered as an appropriate survey effort for threatened flora. As an artificially turfed recreational area which is subject to regular mowing and weed control, the potential for threatened flora species occurring naturally is highly remote. Three threatened flora species were recorded, all of which are planted at the site (*Davidsonia jerseyana, Macadamia tetraphylla, Syzygium moorei*) and which are associated with the planted rainforest garden (PCT 1275 [derived]) and adjacent gardens (retained habitat).

Predicted and candidate threatened species are further discussed in **Section 4.2**.

4.2 Predicted and Candidate Threatened Species

Based on the BAM-C results, a number of threatened species are predicted to occur at the site ('candidate threatened species'); refer to **Table 4.1**. Due to the highly modified nature of the site and management by regular mowing, no threatened fauna species are likely to be resident at the site, with the site utilised on an opportunistic or seasonal basis only.

The Candidate Species Report from the BAM-C is provided at **Appendix D**.

Table 4.1 Candidate Threatened Species

Scientific name	*Common name*	*Comments*	*Potential*
FLORA			
Acronychia littoralis	Scented Acronychia	No suitable habitat	Nil
Allocasuarina defungens	Dwarf Heath Casuarina	No suitable habitat	Nil
Archidendron hendersonii	White Lace Flower	No suitable habitat	Nil
Arthraxon hispidus	Hairy Jointgrass	No suitable habitat	Nil
Centranthera cochinchinensis	Swamp Foxglove	No suitable habitat	Nil
Cyperus aquatilis	Water Nutgrass	No suitable habitat	Nil
Dendrobium melaleucaphilum	Spider Orchid	No suitable habitat	Nil
Drynaria rigidula	Basket Fern	No suitable habitat	Nil
Geodorum densiflorum	Pink Nodding Orchid	No suitable habitat	Nil
Gossia fragrantissima	Sweet Myrtle	No suitable habitat	Nil
Lindernia alsinoides	Noah's False Chickweed	No suitable habitat	Nil
Lindsaea incisa	Slender Screw Fern	No suitable habitat	Nil
Maundia triglochinoides	Maundia	No suitable habitat	Nil
Melaleuca irbyana	Weeping Paperbark	No suitable habitat	Nil
Myrsine richmondensis	Ripple-leaf Muttonwood	No suitable habitat	Nil

Scientific name	Common name	Comments	Potential
Oberonia titania	Red-flowered King of the Fairies	No suitable habitat	Nil
Ochrosia moorei	Southern Ochrosia	No suitable habitat	Nil
Oldenlandia galioides	Oldenlandia	No suitable habitat	Nil
Persicaria elatior	Tall Knotweed	No suitable habitat	Nil
Phaius australis	Southern Swamp Orchid	No suitable habitat	Nil
Rotala tripartita	Rotala	No suitable habitat	Nil
FAUNA			
Anthochaera phrygia	Regent Honeyeater (Breeding)	No suitable habitat	Nil
Argynnis hyperbius	Laced Fritillary	No suitable habitat	Nil
Cacophis harriettae	White-crowned Snake	No suitable habitat	Nil
Calyptorhynchus lathami	Glossy Black-Cockatoo	No suitable habitat	Nil
Dromaius novaehollandiae	Emu population in the NSW North Coast Bioregion	No suitable habitat	Nil
Haliaeetus leucogaster	White-bellied Sea-Eagle	No suitable habitat	**Nil**
Lathamus discolor	Swift Parrot (Breeding)	No suitable habitat	Nil
Litoria aurea	Green and Golden Bell Frog	No suitable habitat	Nil
Litoria brevipalmata	Green-thighed Frog	No suitable habitat	Nil
Miniopterus australis	Little Bentwing-bat (Breeding)	No suitable habitat	Nil
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat (Breeding)	No suitable habitat	Nil
Mixophyes iteratus	Giant Barred Frog	No suitable habitat	Nil
Myotis macropus	Southern Myotis	No suitable habitat	Nil
Pandion cristatus	Eastern Osprey	No suitable habitat	Nil
Petaurus norfolcensis	Squirrel Glider	No suitable habitat	Nil
Phascogale tapoatafa	Brush-tailed Phascogale	No suitable habitat	Nil
Phascolarctos cinereus	Koala	No suitable habitat	Nil
Pteropus poliocephalus	Grey-headed Flying-fox	Poor quality habitat	Low – opportunistic foraging habitat
Thersites mitchellae	Mitchell's Rainforest Snail	No suitable habitat	Nil

4.3 Assessment of Habitat Suitability

Resources at the site which are of benefit to threatened fauna species include:

- Flowering trees in the Myrtaceae family (eucalypts and bloodwoods)
- Fruiting rainforest trees.

Due to the highly modified nature of the site (mown ground layer, absence of litter and shrub layer, no fallen logs or coarse woody debris) and the absence of hollow-bearing trees there are no other resources of value for threatened fauna species.

4.4 Habitat Surveys

4.4.1 Methodology

4.4.1.1 Targeted Threatened Flora

Threatened flora were assessed during the plot surveys, with all trees at the site assessed individually and the rainforest garden and surrounds subject to detailed survey.

4.4.1.2 Targeted Threatened Fauna

No targeted threatened fauna survey was completed; no candidate threatened fauna species determined by the BAM-C are likely to be resident at the site given the lack of habitat present, negligible resources (in a local context) and enclosure of the site by permanent security fencing.

The limited resources at the site may be used opportunistically by the following threatened fauna species only, and these were acknowledged in the BAM-C (ie. assumed present) as ecosystem credit species:

- Little Lorikeet, Regent Honeyeater, Swift Parrot, Grey-headed Flying-fox (foraging on flowering Swamp Mahogany or other eucalypts/bloodwoods)
- Little and Eastern Bentwing-bat, Eastern Freetail-bat (foraging habitat).

4.4.2 Survey Results

4.4.2.1 Threatened Flora

Traverses for threatened flora by two ecologists were completed 19/12/2018 over a total of approximately two person hours. Three threatened flora species were detected (refer to **Illustration 4.1**):

- Coolamon (*Syzygium moorei*): small planted tree in rainforest garden.
- Rough-shelled Bush Nut (*Macadamia tetraphylla*): seedling of 0.5 m height in garden bed.
- Davidson's Plum (*Davidsonia jerseyana*): two small planted trees in rainforest garden.

All threatened flora will be retained in-situ.

4.4.2.2 Threatened fauna

No targeted threatened fauna survey was completed.

Information shown is for illustrative purposes only

Drawn by: AB Checked by: RE Reviewed by: ILC Date: 14/12/2018
Source of base data: NearMap

LEGEND

Ballina Coast High School

Assessment area

Threatened Flora:

- Coolamon (Syzygium moorei)
- Davidson's Plum (Davidsonia jerseyana)
- Rough-shelled Bush Nut (Macadamia tetraphylla)

0 50

Threatened Flora

5. Impact Assessment

5.1 Avoiding and Minimising Impacts

The proposal seeks only to remove the trees which are a constraint to the proposal design which cannot be achieved without native vegetation loss. All other vegetation at the site (including planted threatened flora species) will be retained in-situ and the relatively low biodiversity values associated with this vegetation will remain unaffected. No change in use or intensity to the sports fields are anticipated which would be substantially different from that which currently occurs. On this basis, impacts to biodiversity have been minimised.

Impacts of the proposal on native vegetation and threatened flora are depicted at **Illustration 5.1**.

5.2 Impact Summary

5.2.1 Permanent Impacts

On the basis of the Proposal, direct and permanent impacts to biodiversity include:

- Total loss of 0.28 ha of planted native vegetation (PCT 1230 [derived]), via the removal of 13 trees native to NSW (refer to **Table 5.1**) and four non-native trees (Cadaghi *Corymbia torelliana* x 2, Lemon-scented Gum *Corymbia citriodora* x 2).
- Minor loss of nectar resources for nectivorous birds and flying-foxes.

Table 5.1 Trees Native to NSW Requiring Removal for the Development

Scientific name	*Common name*	*Number*
*Corymbia maculata**	Spotted Gum	1
*Corymbia tessallaris**	Carbeen	1
Eucalyptus grandis	Flooded Gum	2
*Eucalyptus melanophloia**	Silver-leaved Ironbark	1
Eucalyptus microcorys	Tallowwood	2
Eucalyptus robusta	Swamp Mahogany	3
Eucalyptus saligna	Sydney Blue Gum	2
Eucalyptus signata	Scribbly Gum	1
	TOTAL	**13**

*not endemic to Clarence lowlands subregion

5.2.2 Construction Impacts

The Proposal will also have the following impacts on biodiversity during the construction phase of the project:

- Minor disturbance (noise, human activity, machine operations) to locally occurring urban-adapted fauna species.

5.2.3 Operational Impacts

Disturbance to locally occurring urban-adapted fauna species during operation of the sports fields is unlikely to any different from the existing situation (ie. no change or intensification in use is likely to occur). No other operational impacts are anticipated.

5.2.4 SAII Species

None of the threatened species or communities considered are listed as SAII species.

5.3 Credit Requirements

Following the input of field data into the BAM-C, four (4) credits are required to offset biodiversity impacts associated with the Proposal (refer to **Table 5.2**); BAM-C outputs are provided at **Appendix E**. No credits are required for any threatened fauna species.

Further discussion regarding use of the BAM-C are provided at **Section 5.4**.

Table 5.2 Credit Requirements

PCT	*Credit requirements*
1230 (derived)	4
TOTAL	**4**

5.4 BAM Calculator Notes

Notes regarding use of the BAM-C for this assessment are as follows:

1. Planted threatened flora which will not be impacted by the proposal each generated a credit when entered into the BAM-C when entered as being recorded by survey. The only way to avoid the BAM-C generating a credit for these species was to mark them as 'absent' in the calculator – this was completed for the assessment.

2. Following advice from OEH (email of 15/01/2019; refer to **Appendix F**), PCT 1275 [derived]) was not entered into the calculator, as vegetation that will be retained post- development does not require assessment in calculations in the BAM-C.

3. On this same basis the portion of PCT 1230 (derived) which does not require clearing was not entered into the BAM-C. An earlier assessment entered this data which required a single credit for vegetation which will be retained. As such, this data was removed.

LEGEND

- Ballina Coast High School
- Camphor Laurel (Non-native vegetation)
- PCT 1230 Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion (derived)
- PCT 1536 Tuckeroo - Lilly Pilly - Coast Banksia littoral rainforest (derived)
- Vegetation to be removed
- Vegetation to be retained

Threatened Flora:

- Coolamon (Syzygium moorei)
- Davidson's Plum (Davidsonia jerseyana)
- Rough-shelled Bush Nut (Macadamia tetraphylla)

0 50

Impact Assessment

Glossary of Terms and Acronyms

Term or acronym	*Meaning*
AOBV	Area of Outstanding Biodiversity Value
BAM	Biodiversity Assessment Method
BC Act	*Biodiversity Conservation Act 2016*
BC Regulation	Biodiversity Conservation Regulation 2017
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offsets Scheme
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	(Cth) *Environment Protection and Biodiversity Conservation Act 1999*
IBRA	Interim Biogeographic Regionalisation for Australia
LGA	Local Government Area
OEH	Office of Environment and Heritage
PCT	Plant Community Type
SAII	Serious and Irreversible Impact
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community listed in the BC Act and/or EPBC Act
VI	Vegetation Integrity

References

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OEH (2018). *Biodiversity Assessment Method Operational Manual – Stage 1.* Office of Environment and Heritage.

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Appendix A

OEH Advice (MOD 1)

NSW GOVERNMENT | Office of Environment & Heritage

Our Ref: CM9 number
Your Ref:

Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Attention: Mr Fadi Shakir

Dear Mr Shakir

Re: Ballina High School SSD – Mod 1 - Biodiversity Impacts

Thank you for your email dated 23 November 2018 seeking advice from the Office of Environment and Heritage (OEH) to assist the Department of Planning and Environment (DPE) to determine the need for the preparation of a Biodiversity Development Assessment Report (BDAR) to accompany the proposed modification of the State Significant Development (SSD) consent application for Ballina High School. I appreciate the opportunity to provide input.

We understand the modification proposes to remove 15 trees to allow for the construction of playing fields. We have reviewed the relevant information you have provided in relation to this proposed vegetation loss, along with the DPEs Draft Practice Note for SSI and SSD modifications, the relevant parts of the *Biodiversity (Savings and Transitional) Regulation 2017* (S&T Reg) and the *Biodiversity Conservation Regulation 2017* (BC Reg) to determine if a BDAR is required to accompany the modification application.

We agree with the DPEs interpretation included in the Draft Practice Note that the S&T Reg requires a BDAR to be submitted for SSD and SSI modification applications. This is due to the effect of Clause 30A of the S&T Reg.

Furthermore, as discussed in the Draft Practice Note, we also agree that in accordance with Clause 30A(2)(c) of the S&T Reg, a BDAR is not required for a modification if the authority or person determining the application is satisfied that the modification will not increase the impact on biodiversity values. We understand you have approached us to provide advice to the DPE to assist in its determination of whether the clearing of the 15 trees will or will not increase the impact on biodiversity values.

In combination, there are eight biodiversity values listed at Section 1.5 of the *Biodiversity Conservation Act 2016* (BC Act) and Clause 1.4 of the BC Reg. These include vegetation abundance, habitat suitability, habitat connectivity, flight path integrity, vegetation integrity, threatened species abundance, threatened species movement and water sustainability.

Locked Bag 914 Coffs Harbour NSW 2450
Federation House, Level 8, 24 Moonee Street
Coffs Harbour NSW 2450
Tel: (02) 6659 8200 Fax: (02) 6659 8281
ABN 30 841 387 271
www.environment.nsw.gov.au

Upon review of the relevant information, we consider that the proposed modification will increase the impact several biodiversity values, as it will reduce:

- abundance of vegetation occurring within the site/locality;
- suitability of habitat available for use by threatened species (for example, grey-headed flying-fox feeding resources, and little bent-wing bat roosting opportunities).
- integrity of the vegetation, including the number and types of native species present.

Consequently, because we are of the view that the proposed tree removal will increase the impact on biodiversity values, we recommend that DPE require a BDAR to be prepared by an accredited person in accordance with the Biodiversity Assessment Method (BAM) and submitted for consideration with the Ballina High School modification application.

Given the very small extent of clearing, the accredited person engaged to prepare the BDAR will be permitted to use the streamlined assessment module of the BAM. This significantly reduces the assessment and reporting requirements.

Furthermore, the assessment requirements of the BAM may be further reduced if the assessor finds that the vegetation on site is in a low condition state. In determining the condition of the existing vegetation (referred to as 'vegetation integrity' in the BAM), the accredited assessor must compare the vegetation attributes present on site with those of the vegetation that would have originally occurred on the site prior to development (refer to Paragraph 5.3.1.6 of the BAM). If the vegetation integrity score falls below 20, then the assessment of the vegetation will be further limited.

However, please be aware the vegetation integrity score will need to be determined by the accredited person, and this information used to determine if further assessment is required, as per Paragraph 3.1.1.3 of the BAM.

If you have any further questions about this issue, Ms Nicky Owner, Senior Conservation Planning Officer, Conservation and Regional Delivery, OEH, can be contacted on 6659 8254 or at nicky.owner@environment.nsw.gov.au.

Yours sincerely

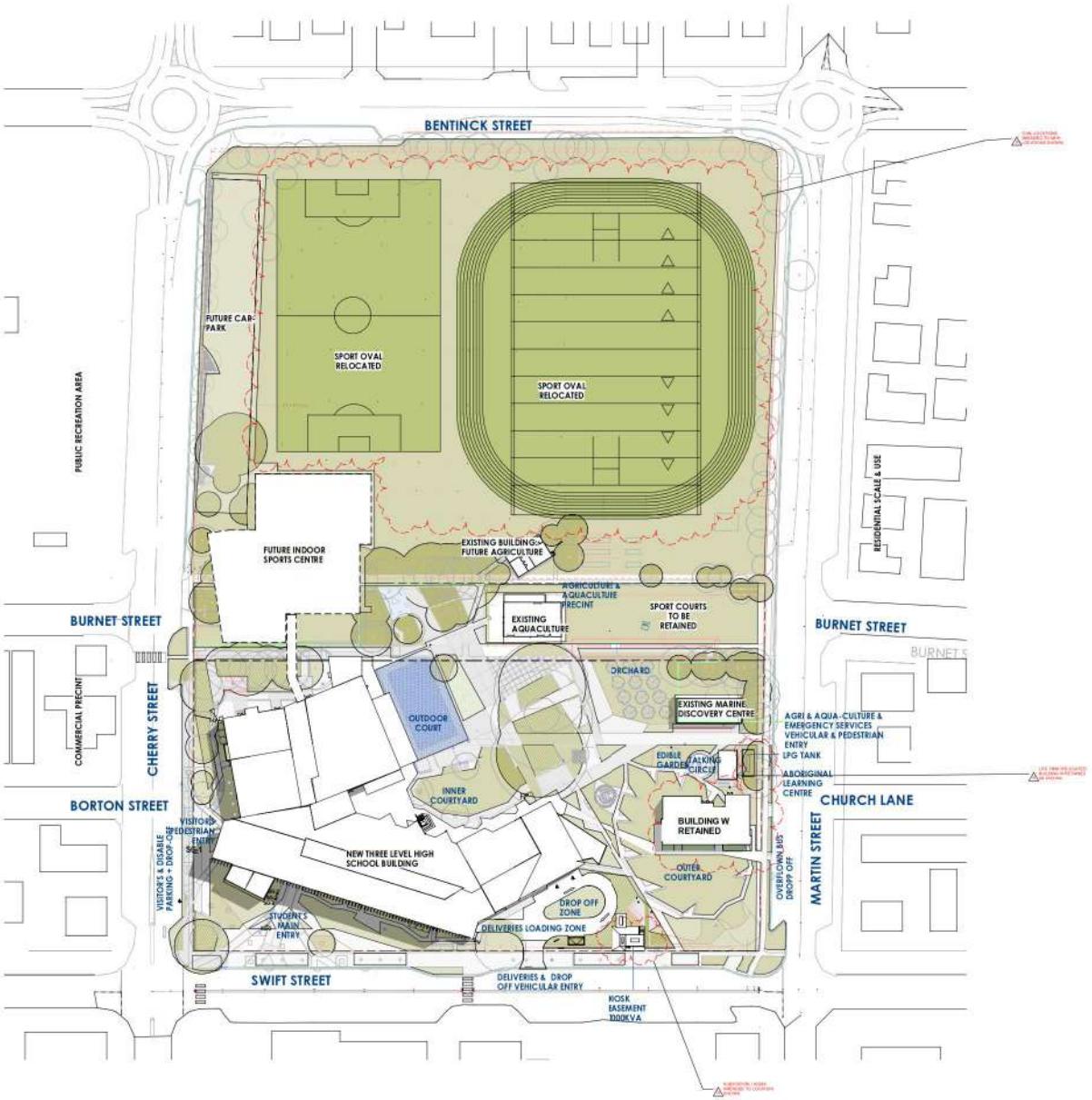
Dimitri Young 6 December 2018

DIMITRI YOUNG
Senior Team Leader Planning, North East Branch
Conservation and Regional Delivery

Contact officer: NICKY OWNER
6659 8254

Appendix B

The Proposal



EJE ARCHITECTURE
ACN 002 612 043 | ABN 32 644 640 049
Nominated Architect : Peter Campbell | NSW Architects Registration No. 5299
P +61 2 4929 2223 | F +61 2 4926 3699 | E mail@eje.com.au | W www.eje.com.au
A 412 KING STREET, NEWCASTLE, NSW 2300

NSW GOVERNMENT Education Public Schools

GHD

REV	DATE	COMMENTS	DRN	CHKD	WRFD
A	15/07/2015	CONSULTANT COORDINATION MEETING	JK	K	
B	12/08/2015	TECHNICAL STAKEHOLDER REVIEW	JK	KG	
C	19/08/2015	DRAFT DA	JK	KG	
D	26/08/2015	DRAFT 01A			
E	03/09/2015	DA			
F	15/10/2015	SCHEMATIC DESIGN	JK	KG	
G	15/05/2017	ISSUE FOR DA	MM	KG	
H	23/08/2018	ISSUE FOR DA	MM	KG	

PROJECT: **BALLINA COAST HIGH SCHOOL**
CONTRACT NAME: **CONSTRUCTION OF BALLINA HIGH SCHOOL - MAIN WORKS**
CONTRACT NUMBER: **DoEAMD-17-196**

CLIENT: **NSW DEPARTMENT OF EDUCATION**
SITE: **37-49 SWIFT ST, BALLINA NSW 2478**
DRAWING: **SITE CONTEXT PLAN**

WORK TO FIGURED DIMENSIONS IN PREFERENCE TO SCALE. CHECK DIMENSIONS AND LEVELS ON SITE PRIOR TO THE ORDERING OF MATERIALS OR THE COMPLETION OF WORKSHOP DRAWINGS. IF IN DOUBT ASK. REPORT ALL ERRORS AND OMISSIONS.

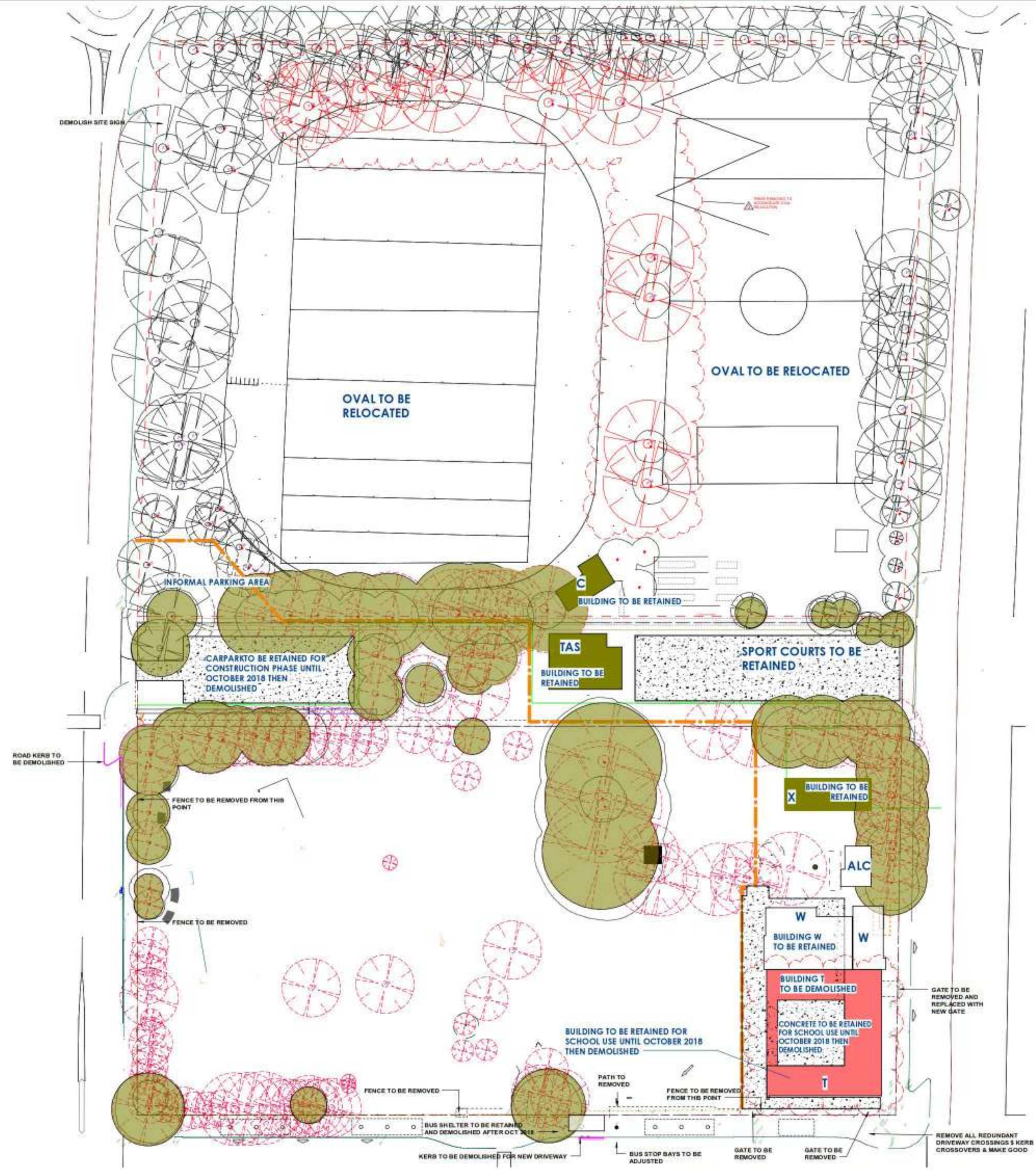
C:\Users\mm\ead Documents\10806 - Ballina - Central_MMM.rvt

DRAWN: MM | DATE: 05/18/17 | SCALES: 1 : 750 @B1, @A3

PROJECT No: 10806 | PHASE: WD | DRAWING No: DA-001 | REV: H

EJE architecture

0 25mm 100mm 200mm ON ORIGINAL B1



LEGEND:

- RETAINED
- DEMOLISHED AFTER OCTOBER 2018
- ALC: TO BE REFURBISHED AFTER OCTOBER 2018
- HARDSTAND AREA DEMOLISHED AFTER OCTOBER 2018
- CONSTRUCTION FENCE
- TREE RETAINED & PROTECTED (IN CONSTRUCTION ZONE)
- TREE RETAINED (OUTSIDE CONSTRUCTION ZONE)
- TREE DEMOLISHED
- TREE RELOCATED
- TO BE REMOVED

DEMOLITION / CONSTRUCTION SITE NOTES:

1. Builder to provide 1800mm high security mesh Fencing (or reuse existing fences where possible) To perimeter of construction site for duration of construction contract.

2. Assess all structures for hazardous materials including asbestos. All hazardous materials to be removed and disposed of in accordance with workcover and statutory regulations.

3. Remove nominated existing structures from the building site.

4. After removal of trees/ structures etc any voids are to be filled with compacted material

5. Contractor to coordinate with authorities prior to any changes to the existing on site services.

6. Remove all redundant service items from the building construction site and all unnecessary items from parking site. Seek approval from authorities prior to relocation or removal of service.

7. Remove all existing kerbs of existing parking and road which do not match with the new design

EJE ARCHITECTURE

REV	DATE	COMMENTS	DRN	CHKD	WFD
A	[illegible]	DA			
B	[illegible]	SCHEMATIC DESIGN	JK	XG	
C	[illegible]	REF APPLICTION	JK	XG	
D	[illegible]	REF APPLICATION UPDATE	JK	XG	
D	[illegible]	EARLY WORKS TENDER	JK	XG	
E	[illegible]	ISSUE FOR DA	MM	XG	
F	[illegible]	ISSUE FOR DA (REVISED)	MM	XG	
G	[illegible]	ISSUE FOR DA	MM	XG	

PROJECT: **BALLINA COAST HIGH SCHOOL**

CONTRACT NAME: **CONSTRUCTION OF BALLINA HIGH SCHOOL - MAIN WORKS**

CONTRACT NUMBER: **DoEAMD-17-196**

CLIENT: **NSW DEPARTMENT OF EDUCATION**

SITE: **37-49 SWIFT ST, BALLINA NSW 2478**

DRAWING: **DEMOLITION PLAN**

DRAWN: **MM** | DATE: **MAY 2017** | SCALES: 1 : 500 @B1 @A3

PROJECT No: **10806** | PHASE: **WD** | DRAWING No: **DA-006** | REV: **G**

EJE architecture

0 25mm 100mm 200mm ON ORIGINAL B1

Appendix C

Plot Data

Plot 1

Date						
19/12/2018						
Zone	Datum	Survey Name	Zone ID			
56	GDA94	Ballina HS	1			
Easting	Northing	Recorders	IBRA region (	Plot dimensions	Photo #	Midline bearing from 0 m (magnetic ^{0})
555014	6806680	ILC & HJG	SEQ	20 x 50	1 & 2	107

		Confidence		
Vegetation Class	Forested Wetlands	Low		
Plant Community Type	1230	Low	**EEC?**	No
Plant Community Name	Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Low		

BAM Attribute (400 m^2 plot)		Sum values
Count of **Native Richness**	**Trees**	3
	Shrubs	0
	Grasses etc.	1
	Forbs	3
	Ferns	0
	Other	1
Sum of **Cover** of native vascular plants by growth form group	**Trees**	16
	Shrubs	0
	Grasses etc.	30
	Forbs	5.2
	Ferns	0
	Other	0.1
High Threat Exotic cover		15.1

Codes for formulas
Tree (TG)
Shrub (SG)
Grass & grasslike (GG)
Forb (FG)
Fern (EG)
Other (OG)
N
E
HTE

BAM Attribute (1000 m^2 plot)		
DBH	# Tree Stems Count	# Stems with Hollows
80 + cm	1	0
50 - 79 cm	5	0
30 - 49 cm	N	n/a
20 - 29 cm	N	n/a
10 - 19 cm	Y	n/a
5 - 9 cm	N	n/a
< 5 cm	N	n/a
Length of logs (m) (≥ 10 cm in diameter, >50cm in length)		0

BAM Attribute (1 x 1 m plots)	**Litter cover (%)**					Bare ground cover (%)					Cryptogram cover (%)					Rock cover (%)				
Subplot score (% in each)	1	10	12	12	15															
Average of the 5 subplots	10					#DIV/0!					#DIV/0!					#DIV/0!				

GF Code	Species name	N,E or HTE	Cover	Abund	stratum	voucher
Natives below this line (see row 89 for exotics). *NB search for species in "Native Species by Growth Form" sheet and copy/paste exact spelling of species name.*						
Forb (FG)	Centella asiatica	N	5	200	G	
Grass & grasslike (GG)	Cynodon dactylon	N	30	200	G	
Tree (TG)	Eucalyptus saligna	N	10	2	U	
Forb (FG)	Dichondra repens	N	0.1	50	G	
Tree (TG)	Corymbia maculata	N	5	1	U	
Tree (TG)	Eucalyptus microcorys	N	1	1	U	
Forb (FG)	Commelina cyanea	N	0.1	10	G	
Other (OG)	Parsonsia straminea	N	0.1	1	M	
Exotics (both E and HTE) below this line. *NB search for species in "High Threat Weeds" sheet and if a match, copy/paste exact spelling of species name.*						
	Hypochaeris radicata	E	5	200	G	
	Stenotaphrum secundatum	HTE	5	100	G	
	Cenchrus clandestinum	HTE	10	100	G	
	Axonopus compressus	E	5	100	G	
	Trifolium repens	E	0.1	10	G	
	Bromus catharticus	E	0.1	20	G	
	Bidens spp.	HTE	0.1	5	G	
	Sida rhombifolia	E	0.1	3	G	
	Conyza bonariensis	E	0.1	1	G	
	Cestrum nocturnum	E	0.1	1	M	
	Richardia brasiliensis	E	0.3	50	G	
	Stellaria media	E	0.1	2	G	

Plot 2

Date						
19/12/2018						
Zone	Datum	Survey Name	Zone ID			
56	GDA94					
Easting	Northing	Recorders	IBRA region (in m)	Plot dimensions	Photo #	Midline bearing from 0 m (magnetic ^{0})
555134	6806662	ILC & DGH	SEQ	15 x 15 m	3 & 4	180

		Confidence	
Vegetation Class	Rainforest	Medium	
Plant Community Type	1536	Medium	**EEC?** Yes
Plant Community Name	Tuckeroo - Lilly Pilly - Coast Banksia littoral rainforest	Medium	

BAM Attribute (400 m^2 plot)		Sum values
Count of **Native Richness**	**Trees**	18
	Shrubs	5
	Grasses etc.	1
	Forbs	3
	Ferns	0
	Other	4
Sum of **Cover** of native vascular plants by growth form group	**Trees**	43
	Shrubs	2.6
	Grasses etc.	5
	Forbs	0.4
	Ferns	0
	Other	3.2
High Threat Exotic cover		1.7

Codes for formulas
Tree (TG)
Shrub (SG)
Grass & grasslike (GG)
Forb (FG)
Fern (EG)
Other (OG)
N
E
HTE

BAM Attribute (1000 m^2 plot)		
DBH	**# Tree Stems Count**	**# Stems with Hollows**
80 + cm	0	0
50 - 79 cm	0	0
30 - 49 cm	Y	n/a
20 - 29 cm	Y	n/a
10 - 19 cm	Y	n/a
5 - 9 cm	Y	n/a
< 5 cm	Y	n/a
Length of logs (m) (≥ 10 cm in diameter, >50cm in length)		0

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)	Cryptogram cover (%)	Rock cover (%)
Subplot score (% in each)	80	70	60	25	40			
Average of the 5 subplots	55					#DIV/0!	#DIV/0!	#DIV/0!

GF Code	Species name	N,E or HTE	Cover	Abund	stratum	voucher
Natives below this line (see row 89 for exotics). *NB search for species in "Native Species by Growth Form" sheet and copy/paste exact spelling of species name.*						
Grass & grasslike (GG)	Lomandra longifolia	N	5	20	G	
Tree (TG)	Melaleuca quinquenervia	N	0.6	1	U	
Other (OG)	Parsonsia straminea	N	0.1	1	M	
Tree (TG)	Banksia integrifolia	N	4	1	U	
Tree (TG)	Mallotus discolor	N	0.4	1	M	
Shrub (SG)	Austromyrtus dulcis	N	0.1	1	M	
Other (OG)	Cordyline petiolaris	N	2	6	M	
Shrub (SG)	Backhousia myrtifolia	N	1	1	M	
Tree (TG)	Jagera pseudorhus var. pseudorhus	N	7	1	U	
Other (OG)	Hibbertia scandens	N	1	5	M	
Tree (TG)	Corymbia tessellaris	N	6	2	U	
Tree (TG)	Davidsonia jerseyana	N	1	2	M	
Forb (FG)	Commelina cyanea	N	0.1	5	G	
Tree (TG)	Commersonia bartramia	N	4	1	U	
Tree (TG)	Cupaniopsis anacardioides	N	0.1	1	M	
Forb (FG)	Alpinia caerulea	N	0.2	5	G	
Other (OG)	Pararistolochia praevenosa	N	0.1	1	G	
Tree (TG)	Melicope elleryana	N	5	1	U	
Tree (TG)	Acmena smithii	N	0.1	1	M	
Forb (FG)	Dichondra repens	N	0.1	5	G	
Shrub (SG)	Backhousia spp.	N	0.3	1	M	
Tree (TG)	Sterculia quadrifida	N	3	1	U	
Tree (TG)	Syzygium crebrinerve	N	3	1	M	
Tree (TG)	Syzygium luehmannii	N	0.5	1	U	
Tree (TG)	Polyscias elegans	N	5	1	U	
Tree (TG)	Anetholea anisata	N	0.2	1	M	
Tree (TG)	Syzygium moorei	N	1	1	U	
Tree (TG)	Harpullia pendula	N	2	1	U	
Shrub (SG)	Alectryon coriaceus	N	1	1	M	
Shrub (SG)	Eupomatia laurina	N	0.2	2	M	
Tree (TG)	Podocarpus elatus	N	0.1	1	M	
Exotics (both E and HTE) below this line. *NB search for species in "HighThreatWeeds" sheet and if a match, copy/paste exact spelling*						
	Passiflora suberosa	HTE	0.5	5	M	
	Schefflera actinophylla	HTE	0.5	1	U	
	Ficus benjamina	E	0.1	1	M	
	Cinnamomum camphora	HTE	0.5	5	M	
	Phyllanthus tenellus	E	0.1	2	G	
	Cenchrus clandestinum	HTE	0.1	5	G	
	Stenotaphrum secundatum	HTE	0.1	5	G	
	Cestrum nocturnum	E	0.1	1	M	
	Cucurbita sp.	E	0.1	3	G	
	Syagrus romanzoffiana	E	0.1	1	M	

Appendix D

Candidate Species Report

BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00013671/BAAS18055/19/00013672	Ballina Coast High School	04/01/2019
Assessor Name	**Report Created**	**BAM Data version ***
Ian Colvin	15/01/2019	6
Assessor Number	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
BAAS18055		

List of Species Requiring Survey

Name	Presence	Survey Months

List of Species Not On Site

Name
Acronychia littoralis Scented Acronychia
Allocasuarina defungens Dwarf Heath Casuarina
Archidendron hendersonii White Lace Flower
Argynnis hyperbius Laced Fritillary
Arthraxon hispidus Hairy Jointgrass
Gossia fragrantissima Sweet Myrtle
Cacophis harriettae White-crowned Snake
Cyperus aquatilis Water Nutgrass
Calyptorhynchus lathami Glossy Black-Cockatoo
Centranthera cochinchinensis Swamp Foxglove
Drynaria rigidula Basket Fern
Crinia tinnula Wallum Froglet
Dendrobium melaleucaphilum Spider orchid
Geodorum densiflorum Pink Nodding Orchid
Oldenlandia galioides Oldenlandia galioides
Lathamus discolor Swift Parrot
Lindsaea incisa Slender Screw Fern

Litoria aurea Green and Golden Bell Frog
Litoria brevipalmata Green-thighed Frog
Maundia triglochinoides Maundia triglochinoides
Melaleuca irbyana Weeping Paperbark
Miniopterus australis Little Bentwing-bat
Miniopterus schreibersii oceanensis Eastern Bentwing-bat
Mixophyes iteratus Giant Barred Frog
Myrsine richmondensis Ripple-leaf Muttonwood
Thersites mitchellae Mitchell's Rainforest Snail
Anthochaera phrygia Regent Honeyeater
Lindernia alsinoides Noah's False Chickweed
Rotala tripartita Rotala tripartita
Myotis macropus Southern Myotis
Oberonia titania Red-flowered King of the Fairies
Ochrosia moorei Southern Ochrosia
Pandion cristatus Eastern Osprey
Persicaria elatior Tall Knotweed
Petaurus norfolcensis Squirrel Glider
Phaius australis Southern Swamp Orchid
Phascogale tapoatafa Brush-tailed Phascogale
Phascolarctos cinereus Koala
Pteropus poliocephalus Grey-headed Flying-fox
Haliaeetus leucogaster White-bellied Sea-Eagle
Dromaius novaehollandiae - endangered population Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area

Appendix E

BAM Calculator Results

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00013671/BAAS18055/19/00013672

Proposal Name
Ballina Coast High School

BAM data last updated *
04/01/2019

Assessor Name
Ian Colvin

Assessor Number
BAAS18055

BAM Data version *
6

Proponent Names

Report Created
15/01/2019

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Candidate Serious and Irreversible Impacts

Nil

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Predicted Threatened Species Not On Site

BAM Biodiversity Credit Report (Like for like)

Name
Botaurus poiciloptilus / Australasian Bittern
Calyptorhynchus lathami / Glossy Black-Cockatoo
Ephippiorhynchus asiaticus / Black-necked Stork
Climacteris picumnus victoriae / Brown Treecreeper (eastern subspecies)
Dasyurus maculatus / Spotted-tailed Quoll
Ptilinopus superbus / Superb Fruit-Dove
Pandion cristatus / Eastern Osprey
Phascolarctos cinereus / Koala
Haliaeetus leucogaster / White-bellied Sea-Eagle

Ecosystem Credit Summary

PCT	TEC	Area	Credits
1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Not a TEC	0.3	4.00

Credit classes for 1230	**Like-for-like options**			
	Any PCT in the below Class	And in any of below trading groups	Containing HBT	In the below IBRA subregions

	Coastal Swamp Forests (including PCT's 839, 1064, 1227, 1230, 1232, 1718, 1723)	Coastal Swamp Forests - ≥ 70% - <90% cleared group (including Tier 4 or higher).	Yes	Clarence Lowlands,Clarence Sandstones, Scenic Rim, Woodenbong and Yuraygir. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

BAM Biodiversity Credit Report (Variations)

Proposal Details

Assessment Id
00013671/BAAS18055/19/00013672

Proposal Name
Ballina Coast High School

BAM data last updated *
04/01/2019

Assessor Name
Ian Colvin

Assessor Number
BAAS18055

BAM Data version *
6

Proponent Name(s)

Report Created
15/01/2019

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Candidate Serious and Irreversible Impacts

Nil

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Predicted Threatened Species Not On Site

BAM Biodiversity Credit Report (Variations)

Name
Botaurus poiciloptilus / Australasian Bittern
Calyptorhynchus lathami / Glossy Black-Cockatoo
Ephippiorhynchus asiaticus / Black-necked Stork
Climacteris picumnus victoriae / Brown Treecreeper (eastern subspecies)
Dasyurus maculatus / Spotted-tailed Quoll
Ptilinopus superbus / Superb Fruit-Dove
Pandion cristatus / Eastern Osprey
Phascolarctos cinereus / Koala
Haliaeetus leucogaster / White-bellied Sea-Eagle

Ecosystem Credit Summary

PCT	TEC	Area	Credits
1230-Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Not a TEC	0.3	4.00

Credit classes for 1230	**Like-for-like options**			
	Any PCT in the below Class	And in any of below trading groups	Containing HBT	In the below IBRA subregions

	Coastal Swamp Forests (including PCT's 839, 1064, 1227, 1230, 1232, 1718, 1723)	Coastal Swamp Forests - ≥ 70% - <90% cleared group (including Tier 4 or higher).	Yes	Clarence Lowlands,Clarence Sandstones, Scenic Rim, Woodenbong and Yuraygir. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Variation options			
	Any PCT in the below Formation	And in any of below trading groups	Containing HBT	In the below IBRA regions/subregions
	Forested Wetlands	Tier 4 or higher	Yes (including artificial)	IBRA Region: South Eastern Queensland, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

No Species Credit Data

Biodiversity payment summary report

Assessment Id	Payment data version	Revision number	Report created
00013671/BAAS18055/19/00013672	41	0	15/01/2019

PCT list

Include	PCT common name	Credits
Yes	**1230 -** Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	4

Species list

Include	Species	Credits

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

IBRA sub region	PCT common name	Baseline price	Dynamic coefficient	Market coefficient	Risk premium	Administrative cost	Methodology adjustment factor	Price per credit	No. of ecosystem credits	Final credits price
Clarence Lowlands	**1230 -** Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion **Warning: This PCT has NO trades recorded in Clarence Lowlands**	$2,497.14	0.61590710	3.05858000	24.87%	$20.00	1.0000	$3,310.73	4	$13,242.90

Subtotal (excl. GST) **$13,242.90**

Biodiversity payment summary report

	GST	**$1,324.29**
	Total ecosystem credits (incl. GST)	**$14,567.19**

Species credits for threatened species

Species profile ID	Species	Threat status	Price per credit	Risk premium	Administrative cost	No. of species credits	Final credits price

No species available

	Grand total	**$14,567.19**

Appendix F

OEH Correspondence

Ian Colvin

From: OEH ROD LMBC Support Mailbox <lmbc.support@environment.nsw.gov.au>
Sent: Tuesday, 15 January 2019 9:26 AM
To: Ian Colvin
Subject: RE: LMBC-3837 enquiry - Ballina Coast High School

Hi Ian,

You should not include vegetation that will be retained post- development in your calculations in the BAM-C. You should discuss retained vegetation in the BDAR to provide context for patch size, percent native cover and threatened species habitat in the subject site, but if it's not going to be impacted don't include it in the calculator. You may include it if you or the consent authority considers that the development is likely to have an indirect impact on it (i.e. edge effects, runoff, nutrification). In this case you may generate a credit obligation for these impacts by estimating the indirect impacts on the retained vegetation and reducing the VI accordingly (ie a buffer of X metres in to the retained veg will lose X veg condition).

For the planted threatened species you should either include them in the calculations, but untick them as being impacted, or omit them from the calculations and justify in the BDAR why they've not been included (because they won't be impacted).

Unfortunately I don't have a suggestion for why the VI for your PCT is high – it is likely a result of the benchmarks for that PCT. For some veg types an overstorey, no mid-storey and high PFC groundcover (similar to what your situation may be with a mown understorey) may be considered within benchmark, depending on what the benchmark structure of the PCT is.

A single plot for the development site should be sufficient if the vegetation zone is of homogeneous condition. You may require more plots to determine PCT ID if there is doubt about the veg typing, but if you've met the required number for the development site further plots should not be required to determine VI.
Cheers,
Phil

Contact Service Centre
Land Management and Biodiversity Conservation
Conservation Program
Office of Environment and Heritage
T: 1800 931 717
E:lmbc.support@environment.nsw.gov.au
Please ensure you keep all cc'ed parties included in any replies to this email.

Centre Hours 9am – 4pm Monday to Friday (excluding public holidays)

From: Ian Colvin <icolvin@geolink.net.au>
Sent: Friday, 21 December 2018 4:01 PM
To: OEH ROD LMBC Support Mailbox <lmbc.support@environment.nsw.gov.au>
Subject: LMBC-3837 enquiry - Ballina Coast High School

Hi there,

I'm in the process of completing a streamlined assessment for Ballina Coast High School as directed by OEH (refer attached letter).

1. The site compromises Lot 477 DP729251 Cherry Street Ballina within the existing High school and is a sportsfield with scattered planted eucalypts and a small planted rainforest 'bush garden'. No native naturally occurring or remnant vegetation occurs.

2. For the redevelopment of the sportsfields 13 planted native trees require removal within an area of ~ 0.28 ha – refer to attached impact plan. All other vegetation at the site will be retained (as indicated).

3. I have completed vegetation plots as per the BAM and entered all data into the BAM Calculator (case 13672).

4. I have made allowance for retention of the small rainforest area (derived PCT 1275) in the Vegetation tab by reducing the future vegetation integrity score for this community to be the same as I entered into the VI score (therefore indicating that by retention of the community the VI score would be unchanged). Despite this, the Calculator still allocates a single credit requirement to this community even when it will be retained. How can I change this?

5. Three planted threatened trees occur at the site and will be retained in the planted rainforest (derived PCT 1275). Assuming these as being present also generates credit requirements. The only way to eliminate this is to select 'no' for the threatened species survey. How do I fix this?

6. The eucalypt community at the site comprises a range of species which would not naturally occur together as a contiguous forest community and which also includes species not native to NSW or the bioregion (eg. Carbeen *Corymbia tessallaris*). Tree species not native to NSW include Lemon-scented Gum* (*C. citriodora*) and Cadaghi* (*C. torrelliana*). The PCT assigned to planted eucalypts/bloodwoods (PCT 1230 Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion) was the only applicable choice of PCTS in the Clarence lowlands subregion which included dominant species at the site, which represent a derived form of PCT1230 both floristically and in terms of landscape position. Sampling of this community generated a VI score of 30 – which seems very high for planted trees with no midstorey within a mown sportsfield. Removal of part of this community also generates credits and substantial costs which in no way reflect the loss of 13 native trees which are essentially landscaping (refer attached payment report). I would appreciate your view on this.

7. Lastly, when assessing the eucalypt community in the Calculator, I divided PCT 1230 into two zones with different areas – one being removed, one being retained. I used the single plot completed to apply to both communities, as all areas of this community at the site are homogenous (scattered planted trees within mown grassland). Do I need to complete a separate plot for the separate 'retained' form of this community so it is accurately reflected in the calculator? If so, this seems to go against requirements in the BAM where for vegetation zones <2 ha only a single plot is required.

I look forward to your advice, so I can move this project forward.

The need for this information is <u>urgent</u> so the BDAR can be submitted and approved so construction can commence asap, as the School is scheduled to open in early 2019.

Regards,

Ian

Ian Colvin
Senior Ecologist

Accredited Biodiversity Assessor (BAAS18055)

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GeoLINK is closed for a well-earned break from 22 December 2018 to 6 January 2019 (inclusive). The GeoLINK team wish you a very Merry Christmas and a New Year filled with peace and prosperity.