FULL SITE ACTION PLAN

Lilly Pilly Swamp
Byron Bay

March 2020

Report prepared for Byron Shire Council
by Earthscapes Consulting Pty Ltd
version 3: March 6th, 2020.

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SITE ACTION PLAN SUMMARY

This Site Action plan was prepared by Earthscapes Pty Ltd at the request of Byron Shire Council (the landowner) to aid in the implementation of the Biobanking Agreement (ID BA352) for Lilly Pilly Swamp in Byron Bay. The following credits have been issued and the Total Fund Deposit has been achieved through BSC purchase of the credits. Credits are achieved through permanent protection of the land on the land title and annual payments are made by the Biodiversity Conservation Trust, based on the future gain in biodiversity values on the site. Annual monitoring and reporting are required, and the site and reporting may be subject to audit (with notice only).

Ecosystem credits summary

Plant Community Type	**Area (ha)**	**Credits created**	**Credits created after application of additionality of 20%**
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	7.69	80.00	64.00
Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	0.96	8.00	6.00
Total	8.65	88	70

Species credits summary

Common name	**Scientific name**	**Extent of impact Ha or individuals**	**Number of species credits created**	**Credits created after application of additionality of 20%**
Mitchell's Rainforest Snail	*Thersites mitchellae*	8.65	61	49

Council have received the first year's funding under the Agreement and have commenced restoration work on the site.

The aim of this plan is to ensure that Lilli Pilly Swamp is managed in perpetuity to retain and improve the inherent biodiversity values following the *Biodiversity Banking and Offsets Scheme* Biobanking agreement ID number BA352

The plan summarizes and clarifies all the on-ground tasks required by the terms of the Agreement to be undertaken or required not to be undertaken; as well as advising of the legislative and physical constraints that apply to staff working on the site.

This Summary of the larger plan (first 10 pages) is intended to be printed out for use by the project team leader. It explains in brief the tasks required to be achieved on the ground for each of Years 1 to 6, and then on an ongoing basis, and the extent of funds allocated to each. It explains monitoring and reporting requirements in brief and attaches pro-forma and maps. Any detail not sufficiently understood will have more detail provided on that subject in the Appendix document.

The plan provides specific detail to guide on-ground actions to ensure compliance with the Biobanking Agreement Management Plans including weed control, feral pest management, fire and grazing avoidance and human disturbance. It includes restoration actions, monitoring and reporting methods and pro-forma to complete annually, with templates included in the final Appendix.

Earthscapes provides additional recommendations regarding adaptation of management actions (should monitoring indicate the necessity to do so); considerations for methods to safely introduce small-scale, low intensity ecological burning to avoid the long-term loss of koala habitat and primary Koala food trees and protection of leaf litter and habitat for Mitchells Rainforest Snail.

A summary of tasks timing and budget available for Years 1-6 is provided here.

Year 1 -Tasks, timing and budget

Task	Timing	Budget
Primary weed control, all species	3-4 sessions during year	$12,000
Install Biobank signage – Standard OEH BioBanking signage is to be installed at the four primary biobank site entrances, as shown on Figure 5 Property action plan	Prior to June 30,2020	$250
Install fence along western edge, with gate, as per site action plan -550 m of 4-strand plain wire and star pickets with timber posts at corners.	Prior to June 30, 2020 Intent is to delineate the biobank site from nearby residential properties and to assist in controlling impacts from human access	$5250
Rubbish removal and remove wire from old fence as per Property action plan	Prior to June 30. 2020	$2400
Vertebrate pest control - feral cats and foxes -Baiting and/or active trapping are only methods in current Management Plan	Initiate feral pest survey to determine presence - prior to June 30	$1200
Project management, landowner monitoring and reporting (Earthscapes)	Monitoring - six-monthly Reporting – annually - after completion of Year 1 works	$2900
Annual reporting - to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$24,000**
GST	Paid annually	$2400
TOTAL YEAR 1		$26,400

Year 2 -Tasks, timing and budget

Task	Timing	Budget
Primary weed control, all species	3-4 sessions during year	$12,000
Fire prevention	Annual slashing/mowing edges	$900
Fence and gate maintenance	Annual payment Ongoing from Year 2	$450
Project management, landowner monitoring and reporting	Monitoring - six-monthly Reporting - annually -after completion of Year 2 works	$2900
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$16250**
GST	Paid annually	$1625
TOTAL YEAR 2		$17875

Year 3 -Tasks, timing and budget

Task	Timing	Budget
Primary weed control (all species except Bamboo, which is funded Year 1 and 2 only)	3-4 sessions during year	$7200
Vertebrate pest control – foxes, feral cats – baiting, trapping	Ongoing	$1200
Fence and gate maintenance ongoing		$450
Project management, landowner monitoring and reporting	Monitoring - six-monthly Reporting - annually -after completion of Year 2 works	$2900
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$11750**
GST	Paid annually	$1175
TOTAL YEAR 3		$12,925

Year 4 -Tasks, timing and budget

Task	Timing	Budget
Weed control in perpetuity, all species	3 sessions during year	$2700
Fire prevention	Annual slashing edges	$900
Fence and gate maintenance ongoing	Check and fix every two years	$450
Project management, landowner monitoring and reporting	Monitoring - six-monthly Reporting – annually - after completion of Year 1 works	$2900
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$6950**
GST	Paid annually	$695
TOTAL YEAR 4		$7645

Year 5 -Tasks, timing and budget

Task	Timing	Budget
Weed control in perpetuity, all species	3 sessions during year	$2700
Fence and gate maintenance		$450
Vertebrate pest control – foxes, feral cats – baiting, trapping	Ongoing	$1200
Project management, landowner monitoring and reporting	Monitoring - six-monthly Reporting – annually - after completion of Year 1 works	$2900
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$7250**
GST	Paid annually	$725
TOTAL YEAR 5		$7975

Year 6 and ongoing -Tasks, timing and budget

Task	Timing	Budget
Ongoing weed control, all species	3 sessions during year Ongoing from Year 6 onward	$2700
Weed Management Plan review and vegetation condition assessment	Prior to June 30, 2025	$2600
Fire prevention	Annual slashing edges	$900
Vertebrate pest control plan review	Prior to June 30, 2025	$1600
Fence and gate maintenance in perpetuity	Annual check and fix	$450
Project management, landowner monitoring and reporting (	Monitoring – twice @ 6-months Reporting – annually - after completion of Year 1 works Paid annually from Year 6 onwards	$1800
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site Year 6		**$10050**
GST	Paid annually	$1005
TOTAL YEAR 6		$11055

Monitoring

INTRODUCTION

This Site Action plan was prepared by Earthscapes Pty Ltd at the request of Byron Shire Council (the landowner) to aid in the implementation of the Biobanking Agreement (ID BA352) for Lilly Pilly Swamp. The reserve's locational and physical attributes are described below.

LILLY PILLY SWAMP Location Detail	
Lot Numbers	Lot 66 DP 863772 Lot 7 in DP 809005 Lot 24 in DP 845454 Lot 46 in DP 848543 Lot 46 in DP 860353 Lot 47 in DP 854800
Address	Lilly Pilly Drive Byron Bay NSW 2482
Land use zoning	E2
Ownership	Byron Shire Council
Property size	8.65ha

The landowner has agreed to undertake the management actions and implement the management plans to improve the biodiversity values of the biobank site as set out in the Biobanking Agreement (tabled here within Appendix 1), as well as to monitor, report and keep records as required by the Agreement.

Details for management actions, monitoring and reporting are provided in this Action Plan.

The biobank site is shown in Figure 1: *Biobank site boundary; Lilli Pilli biobank site,* dated 13/06/2017 in Appendix 1.

Aim

- To ensure that Lilli Pilly Swamp is managed in perpetuity to retain and improve the inherent biodiversity values following the *Biodiversity Banking and Offsets Scheme* Biobanking agreement ID number BA352

Objectives

- to provide specific detail to guide on-ground actions to ensure compliance with the Biobanking Agreement Management Plans
- To monitor restoration actions and adapt the management actions as required
- To report on the implementation of the actions and review the success of methodology

SITE DESCRIPTION

Location and context

Lilly Pilly Swamp lies on the edge of the village of Byron Bay on the NSW north coast (see inset Figure 1) and was dedicated to Council as part of a residential subdivision in the 1990's. The reserve is 8.65ha in area with an elevation around 6m AHD.

The site contains low-lying forested land subject to periodical inundation; with one main drainage channel traversing the site from north to south. The reserve is bounded by a low-speed local road to the west; a typical residential road to the south; a now disused railway line to the east and additional Council reserves used for cemetery purposes to the north.

Land Tenure and Zoning

The land is owned in Torrens title by Byron Shire Council.
Land Use Zoning is E2 Environmental Protection.

Physical attributes

Climate is subtropical with rainfall primarily in the hotter months of the year. Soils are classified by Morand (2006) as Tyagarah soil landscape and are often wet with some potential for acidity. The site is largely covered with a forest canopy and has deep leaf litter at all times of year, including palm fronds.

ECOLOGICAL VALUES

The site contains habitat important to koalas (primarily Swamp Mahogany (*Eucalyptus robusta*)) as well as habitat containing several records of the threatened invetebrate species Mitchell's Rainforest Snail (*Thersites mitchellae*).

Vegetation Communities

Plant Community Type	**Area (ha)**
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	7.69
Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	0.96

The site contains two Plant Community Types as recognized by OEH. The swamp community has an open - dense tree layer dominated by Paperbarks (*Melaleuca quinquenervia)*; with palms dominating along the drainage line and Casuarina glauca (swamp oak) present. *Eucalyptus robusta* (Swamp Mahogany) dominates the smaller area of higher ground on the site with *Lophostemon suaveolens* (Swamp Turpentine) nearby.

A layer of small trees is present in parts, including *Macaranga tanarius, Cupaniopsis anarcardioidies* (Tuckeroo), *Elaeocarpus reticulatus* (Blueberry Ash) and *Glochidion ferdinandi* (Cheese Tree). Occasional vines include Parsonsia straminea, and Morinda jasminoides.
The groundcover is composed of abundant sedges, ferns, forbs, and grasses including *Gahnia clarkei, Pteridium esculentum, Hypolepis muelleri, Calochlaena dubia, Dianella caerulea, Viola hederacea, Lomandra longifolia, Entolasia marginata and Imperata cylindrica.*

Endangered Ecological Community

Both Plant Community Types listed above are recognized as being included in the EEC known as:

Swamp Sclerophyll Forest on the Coastal Floodplains
of the NSW North Coast, Sydney Basin and South-east corner Bioregions

Further information on the community characteristics and the reasons for listing as an endangered community are contained in the Appendix.

Because the Biobanking Agreement refers to the two PCT types, that form will be used throughout this Site Action Plan and separate monitoring is required for each PCT.

The EEC listing has no additional relevance to the site or to any proposed on-ground works because these characteristics were examined during the Biobanking Agreement Process and the subsequently approved Management Plans for the site reflect protection and restoration rather than any potential damage to the EEC. Should physical works be required that could cause any adverse effects (such as clearing or change to the drainage line or dewatering), separate approvals would be required.

Threatened Species

Threatened Flora species

Although the entire plant community is regarded as threatened; no threatened flora species listed under the BC or EPBC Act have been detected to date within the site boundaries. BioNet records indicate a number of littoral rainforest and wetland species nearby. Nearby species with potential to occur within the habitat types on site are listed within Appendix.

Should any threatened flora be found and identified within the reserve during restoration work, the GPS location and species should be recorded and submitted with BioNet records, at minimum, annually. Such new records must also be included within Biobank annual monitoring and reporting.

Threatened Fauna species

Mitchells Rainforest Snail (MRS) (*Thersites mitchellae*) and Koala (*Phascolarctus cinereus*) use of Lilli Pilli Swamp is known through recent survey (MRS) and BioNet and community records.
A number of other fauna species are likely to use the reserve opportunistically or as part of larger range areas. A list of additional species to consider is contained in Appendix 4.

Should any additional threatened flora be found and identified within the reserve during restoration work, the GPS location and species should be recorded and submitted with BioNet records, at minimum, annually. Such new records must also be included within Biobank annual monitoring and reporting.

For the purposes of the Biobank Agreement, particular consideration must be given to Mitchell's Rainforest Snail and no other threatened fauna species, since it assumed that ecosystem restoration will improve habitat for all those species as well.

Mitchells Rainforest Snail

Description of MRS and its habitat (NSW SCI Comm 2014)

Mitchell's Rainforest Snail is a large land snail that is restricted to the coastal plains of northern NSW, between the Richmond and Tweed Rivers. It is found only in undisturbed remnant lowland subtropical rainforest and swamp sclerophyll forest with a rainforest understorey. Key habitat components for Mitchell's Rainforest Snail are a well-developed leaf litter layer (providing food, shelter and breeding sites) and an intact forest canopy (maintaining a moist microclimate and providing a source of leaf litter).

Museum collections from last century show the Mitchell's Rainforest Snail was previously common within its range but has since declined in abundance. Since this time, much of the habitat that the species occupied has been cleared. Recent research shows that Mitchell's Rainforest Snail now has a restricted and fragmented geographic distribution, with an area of occupancy estimated to be less than 5km2, and a low number of individuals, with a population of less than 500 mature individuals. Ongoing decline is projected due to continuing degradation of habitat.
The species is eligible for listing as critically endangered.

Lilli Pilli Swamp has been studied by Dr Jonathan Parker of Southern Cross University since 2009. The following is an extract of his report on the suitability of Lilly Pilly Swamp as habitat for MRS.

MRS at Lilli Pilli Drive, Byron Bay

This area adjacent to Lilli Pilli Drive is considered primary T. mitchellae habitat. I have conducted surveys throughout the Lilly Pilli Drive residential area since 2009. The proposed offset area (Lilly Pilly Swamp*) is the major source of snails for the recolonization of the residential housing estate nearby. Within the area, the presence of live adult and juvenile snails is indicative of a persistent, breeding population. As the species is preyed upon by the Noisy Pitta (Pitta versicolor), we surveyed the rail line adjacent to the site and found numerous shells and shell fragments of T. mitchellae . Birds prey upon large juveniles and adults near dusk just prior to snails selecting their daytime shelters. Snails are taken to 'anvils' and the shell apex is repeatedly smashed. … (*site) *indicate(s) a diverse snail fauna indicative of prime snail habitat.*

A number of modified channels run in a north-easterly direction under Lilli Pilli Drive and drain to the proposed offset area. Though intermittent flow is through cleared grassland, some banks consists of mature trees, including Eucalypus spp., Brushbox (Lophostemon confertus), Sally Wattle (Acacia floribunda), and Broad-leaved Paperbark (Melaleuca quinquinervia), and there is some revegetation of Bangalow Palms (Archontophoenix cunninghamiana) forming mid-storey canopy cover, with a ground

cover of Tall Sawsedge (Gahnia clarkei), and ferns (Histiopteris incia) throughout the.. (reserve*). Recent surveys throughout the species historical range indicate that T. mitchellae utilize natural or artificial drainage channels on the coastal plains to move between suitable habitats. Snails will periodically recolonize these habitats, or become locally extinct, as environmental conditions change.*

A Species Profile; the Scientific Committee determination and the expert report referred above are contained in Appendix 4; which includes a detailed description of the species, its' recorded location and habitat, threats to its survival and recovery actions proposed.

MRS requirements under the Biobank Agreement

Lilli Pilli Biobanking Agreement is based (in most part) on retaining and improving habitat for this species; which is listed as *Endangered* in NSW and *Critically Endangered* as a national level.

On the Lilli Pilli site this means the actions listed under Point 1 in the table below must be undertaken as stated and at the frequency stated.

Some specific recommendations have been added by Earthscapes under Point 2 in the table below to clarify some matters not specifically covered by the agreement.

MITCHELLS RAINFOREST SNAIL **1. Actions required by Biobank Agreement**	
Required Action	**Reason**
Control miscellaneous feral pests	To retain best habitat conditions for the species in the reserve by controlling non-native pest predators or competitors

Consultant recommendations for additional voluntary actions

MITCHELLS RAINFOREST SNAIL **2. Voluntary additional Actions recommended by Earthscapes**	
Consultant Recommended Action	**Reason**
Consider the proportion of mature palms remining along drainage line before removing further Alexander Palms	Snails depend on moist leaf litter for survival. When times are dry, palm fronds, particularly Bangalow and Alexander Palms drop large fronds that have ridges that hold water. Snails have often been found in gallery rainforest and other areas sheltering in dry times with the use of these fronds. If there are plenty of Bangalow Palms along the drainage channel and few Alexander then remove; otherwise wait for more canopy and leaf drop before removal. Retain fallen palm fronds. Most important habitat is moist leaf litter of any kind. Snails will climb when flooding occurs, but this is unusual.
Bamboo	Similarly, MRS was first found on-site under the bamboo

MITCHELLS RAINFOREST SNAIL 2. Voluntary additional Actions recommended by Earthscapes	
Consultant Recommended Action	**Reason**
Consider herbicide use carefully - Careful targeted spot-spraying ok, Blanket sprays should not be undertaken. Frog-friendly herbicide should be used throughout the reserve. Hand-pulling is preferred along drainage line wherever feasible for weed control	Whether the herbicide would directly affect or kill snails is unknown, however, snails move through moist mucus-like substance they excrete which allows some liquid transfer into bodies. They would have some similarities to frogs who absorb through their skins. Additionally, snails are herbivores so they may be munching on the weeds you just killed.
Review availability of connections during a high water or flood event. Does it drain north-south through culverts or are they blocked, is there low moist cover available in the vicinity of culverts? Carry out minor improvements such as clearing branches or weeds in vicinity	It is important to allow movement and spread into and out of the reserve as additional refuges for a rare species with a very restricted distribution.

Plates 1 & 2: Examples of numerous shells and shell fragments of T. mitchellae

found in June 2016 along the rail line adjacent to proposed Lilly Pilli offset area – likely to have been consumed by a Noisy Pitta or similar ground-dwelling birds.

Plate 3: This local drainage culvert is likely to act as snail movement corridor

Koala

Koalas (*Phascolartus cinereus*) feed preferentially on four local Eucalyptus species;

- Swamp Mahogany (*Eucalyptus robusta*),
- Forest Red Gum (*Eucalyptus tereticornis*),
- Tallowwood (*Eucalyptus microcorys*) and
- Small-fruited Grey Gum ((Eucalyptus .

Within Lilly Pilly Swamp, the only preferred koala food tree species present is Swamp Mahogany.
Koalas tend to also prefer trees within moist areas, as they seldom drink water directly. Thus, the location of favoured trees within a favoured environment should make conditions conducive to use.

Koala records exist within the reserve since the adjacent residential subdivision proceeded in the 1990's. However, recent sightings are uncommon

Koala requirements under the Biobank Agreement

There are no requirements within the Biobank Agreement that apply specifically to the Koala species. Protection and rehabilitation of Swamp Mahogany habitat is the primary aim for the species within the Biobank Agreement.

Consultant recommendations -voluntary actions to assist the species

Due to the presence of the critically endangered Mitchells Rainforest Snail and the primary intent to manage the reserve of the benefit of that species (including retaining deep, moist leaf litter), the Biobank Agreement currently states that no ecological burning should be undertaken within any part of the reserve.

However, the understorey species (comprised of smaller rainforest trees and palms) as well as the adjacent dense Melaleuca canopy, are now ensuring low light levels at the forest floor (at least in most areas of sufficient elevation for Swamp Mahogany to thrive). As canopy closure occurs the chance of Eucalypt and associated species regenerating becomes scarcer, yet the Biobanking Agreement clearly states that the community be retained as improved as PCT Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin
Bioregion

OVERVIEW OF RELEVANT LEGISLATION

Matters of NATIONAL Environmental Significance and their relevancy to the site

Under the Environmental Planning and Biodiversity Conservation Act (EPBC Act)

Matter of National Environmental Significance	Relevancy to the proposed activity
World Heritage Properties	No
National Heritage Places	No
Wetlands of International Significance (Ramsar Sites)	No
Great Barrier Reef Marine Park	No
Commonwealth Marine Areas	No
Threatened Ecological Communities	None listed at federal level
Threatened Species	One – **Mitchells Rainforest Snail** (*Thersites mitchellae*) **Critically Endangered**
Migratory Species	13 identified, comprised of 2 marine bird species, 7 terrestrial birds and 4 wetland specialists. All other species identified are marine species (birds, whales, sharks and turtles) or terrestrial birds. These species are highly mobile and the disturbance footprint and type of development proposed represents a small area relative to their home ranges. Accordingly, these species are not expected to be significantly impacted upon by the vegetation management works.

Matters of STATE Environmental Significance and their relevancy to the site

Under legislation as listed

NSW legislation	Environmental Significance/ Relevancy to the proposed activity
Biodiversity Conservation Act 2016	• The site is mapped as **High Biodiversity Value** on the Biodiversity Values Map. • The entire site is subject to a **Biobanking Agreement**
	Listed Endangered Ecological Communities (EEC) known on site - One recorded • **Swamp Sclerophyll Forest on Coastal Floodplains** Listed Plant Community Types (PCTs) classed as EEC - Two recorded • **Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion** • **Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion**
	Threatened Species - Two recorded on site: • **Mitchells Rainforest Snail – Endangered**

NSW legislation	Environmental Significance/ Relevancy to the proposed activity	
	• **Koala – Vulnerable**	
Relevant Environmental Planning Instruments	**Relevant?**	
State Environmental Planning Policy Coastal Management	Yes	The subject site is located within the coastal zone and is mapped as Coastal Wetland. Any development within areas so mapped must conform to Clauses
State Environmental Planning Policy No 44—Koala Habitat Protection (SEPP 44)	Yes	Vegetation within the site dominated by Swamp Mahogany 'potential and core koala habitat' due to historical site records. No additional relevance unless action proposed that could lead to loss or harm.

BIODIVERSITY CONSERVATION ACT - BIOBANKING AND BIODIVERSITY OFFSETS SCHEME - BIOBANK AGREEMENT SUMMARY

Under the terms of Biobank Agreement ID number BA352, Byron Shire Council is required to undertake the Management Plan Actions in the manner and at the frequency detailed in the approved Management Plans. All actions are subject to annual reporting and audit. Actions which must not be undertaken are prohibited.

The biobank site covered by BA352 consists of approximately 8.65 hectares. The landowner (Byron Shire Council) has agreed to undertake the management actions and implement the management plans to improve the biodiversity values of the biobank site as set out in Annexure C of the Biobanking Agreement and tabled here within Appendix 1. The landowner has agreed to undertake monitoring, reporting and record keeping as set out in Annexure D of the agreement and tabled here within Appendix 1.

Ecosystem credits summary

Plant Community Type	Area (ha)	Credits created	Credits created after application of additionality of 20%
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	7.69	80.00	64.00
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Common name	Scientific name	Extent of impact Ha or individuals	Number of species credits created	Credits created after application of additionality of 20%

Mitchell's Rainforest Snail	*Thersites mitchellae*	8.65	61	49

BIOBANK AGREEMENT MANAGEMENT ACTIONS

OVERVIEW OF MANAGEMENT ACTIONS

Permissible Human Activities

Permissible human activities on the biobank site	
Description of human activities	**Management zone/s**
Any activity or any development permitted or required as part of a management action under Annexure C, including but not limited to mustering stock or feral herbivores including with mechanised vehicles, spraying or mechanically removing weeds, planting tubestock or sowing seeds of native vegetation, using drip torches, thinning native vegetation, disturbing soil temporarily to control erosion, encouraging regeneration, controlling nutrients or restoring natural flow regimes, laying baits, trapping or otherwise controlling vertebrate pests and feral herbivores and overabundant native herbivores.	All zones
Any human activity reasonably considered necessary to remove or reduce an imminent risk of serious personal injury or damage to property.	All zones
Traditional Aboriginal cultural activities, except commercial activities.	All zones
Any activity required to undertake permissible development.	All zones
Other - Bushwalking and passive environmental activities such as bird watching	All zones

General Terms of Agreement

By the terms of Biobank Agreement ID number BA352, Byron Shire Council is required to undertake the following actions at the following frequency. All actions are subject to annual reporting and audit. Actions which must not be undertaken are prohibited.
This table is a summary only. All contractors or staff working within the reserve should be aware of the full provisions of the Agreement. These are provided in the following section.

Action	Task	Timing/ Frequency
Avoid harm Undertake actions in timely manner as specified Permit OEH officers entry for audit or research	Below tasks are to commence on the first payment date; and must be carried out in perpetuity unless otherwise indicated. Management actions must be carried out within the specified timeframe.	Ongoing

BIOBANK AGREEMENT-REQUIRED PRIORITY MANAGEMENT ACTIONS

Theme	Action	Timing / frequency
Management of grazing for conservation	Do: -Repair fence or other action necessary to avoid stock entry to reserve. Do not: -Allow stock to graze or be present on the biobank site.	Ongoing
Weed Control	Do: -Follow detailed schedule and methodology within the Weed Management Plan. -Ensure daily and annual monitoring reports are completed. -Review the weed management plan at intervals of no less than 4 years and no more than 6 years. -Detail on monitoring record sheets any Adaptive Management measures used. -Seek Biobank permission for any alteration or update to the weed management plan and methods. Review date must be notified. -Update weed management plan if requested by Biobank staff following any review of annual reporting submitted.	Ongoing
Management of Fire for conservation	Do: -Comply with the Fire Management Plan. -Monitor and record any actions under the plan - Use minor adaptations where necessary, if recorded and reported. -Notify any updated plan (if undertaken by BSC) or can be requested by OEH staff. -Exclude fire - Fires must not be lit on the biobank site other than for the purpose of ecological burning in accordance with the fire management plan Do Not: -Undertake Ecological burning or light or permit any fires on the site- These areas should not be subjected to targeted ecological burn regime since the site includes Mitchell's Rainforest Snail, not adapted to habitats which are conducive to active burning.	Ongoing
Management of Human Disturbance	Do: - Regularly remove any waste dumped on site -Install 550 m of new 'simple' rural fencing on the western boundary of the site (Figure 5) and maintain it to deter human disturbance. Fencing	Ongoing

	to be 4-strand plain wire and star pickets with timber posts at corners or as necessary. -Remove wire from old internal fence. - Install Standard OEH BioBanking signage (available from OEH) at the four primary biobank site entrances, as shown on Figure 5. Do Not -Undertake or permit any human activities that adversely affect biodiversity values, unless such action is in accordance with the Biobanking Agreement (such as weed removal). -Dump waste or permit waste to be dumped	
Retention of Dead Timber	Do -Introduce additional suitable timber to improve biodiversity values (e.g nest boxes, hollow logs) *but such actions are optional on this site*. -Record all details of any timber introduced to reserve from an external source. Do Not: -Remove any dead timber (whether standing or fallen and including branches and leaf litter) from or move dead timber within the biobank site.	Ongoing
Retention of regrowth and remnant native vegetation	Do -native vegetation may be burnt in accordance with an approved Fire Management Plan (*note this Agreement does not currently permit ecological burning in any part of the reserve*. Do Not: -Native vegetation (whether remnant native vegetation or regrowth) on the biobank site must not be cut down, felled, thinned, logged, killed, destroyed, poisoned, ringbarked, uprooted, burnt or otherwise removed.	Ongoing
Erosion Control	Do -Take all reasonable steps and use best practice to prevent, control and remedy erosion on the biobank site.	Ongoing
Retention of Rocks	Do -Place rocks on the biobank site to improve habitat for threatened species (*optional*) -Rocks, once placed on the biobank site, must be retained with records of the source, location and date placed. Do Not: -Remove or allow rocks to be moved from the biobank site or within the biobank site.	Ongoing
Control of feral and overabundant native herbivores	Do: Comply with the management plan to control feral and overabundant native herbivores (*no plan in Agreement)*	In accordance with management plan schedule

	Review the plan at intervals of no less than 4 years and no more than 6 years. Record all actions taken and any additional controls undertaken	
Vertebrate pest management	Do: -Comply with the management plan to control vertebrate pests - *feral cats and foxes are only species considered in Agreement* -Baiting and/or active trapping are only methods in current Management Plan -Review the plan at intervals of no less than 4 years and no more than 6 years -Record all actions taken and any additional controls undertaken	In accordance with management plan schedule
Nutrient control	Do Not: -Fertilisers, pesticides and herbicides must not be applied on the biobank site, except where required to undertake the management actions.	Never
Control of exotic fish species	Not applicable – no actions required	N/A
Maintenance or reintroduction of natural flow regimes	Artificial structures such as dams or levee banks that impede the natural flow regimes on the biobank site must not be constructed	Never

BIOBANK REQUIRED ADDITIONAL MANAGEMENT ACTIONS

Additional management actions are required for:

Vegetation type or threatened species	Management action details
Mitchell's Rainforest Snail	Exclude miscellaneous feral species
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Control of feral pigs
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Exclude commercial apiaries
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Exclude miscellaneous feral species
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Feral and/or over-abundant native herbivore control
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Fox control
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Maintain or re-introduce natural flow regimes
Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion	Slashing
Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Control of feral pigs
Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Exclude commercial apiaries
Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Exclude miscellaneous feral species
Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Feral and/or over-abundant native herbivore control
Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Fox control
Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion	Slashing

NOT REQUIRED - RECOMMENDED SUPPLEMENTARY ACTIONS

The following actions are not required by the terms of the Biobank Agreement Priority or Additional Actions; nor by any of the Management Plans. They are suggestions that attempt to improve habitat for the listed species only.

Target Species	Recommended action	Reason
Mitchells Rainforest Snail	Review rate of Alexander Palm removal	Retain high levels of leaf litter at all times
	Review herbicide use throughout reserve	Consider potential ingestion or loss of plant food sources
	Check local culvert conditions	Can act as movement corridor; species has very limited range
Koala **PCT**	Consider a review of ecological burn regime if can be limited to Swamp Mahogany PCT only and longer time frames	Rainforest species causing dense canopy, low light and lack of fire means new germination of primary Koala food trees unlikely.
Feral Pests	-Install Camera traps throughout reserve and surrounds; -Undertake Scat and track identification -Compile knowledge of pest presence from the site -Review Pest Management Plan with site knowledge gained by above on additional issues, such as presence of roaming domestic dogs and cats, presence of cane toads, rats and mice, all of which could be problematic for snails. -Consider fencing types and purpose	Need to understand which Feral pests (if any) are a problem in the reserve now; in particular for threatened fauna, so that funds and effort can be effectively targeted. -Research project could be undertaken through MRS study extension at SCU with Jonathyn Parkyn overseeing – Noisy Pitta use of the reserve and proportion of its food source comprised of MRS through scat analysis; could/ should habitat be skewed to favour MRS rather than not Noisy Pitta at this site (because MRS so scarce), Noisy Pitta is a native predator on MRS and the railway line adjacent is perfect anvil to smash open snail shells. Possibly buffer or fence? so as to make it more difficult to move between reserve and railway line.

Year 1 -Tasks, timing and budget

Task	Timing	Budget
Primary weed control, all species	3-4 sessions during year	$12,000
Install Biobank signage – Standard OEH BioBanking signage is to be installed at the four primary biobank site entrances, as shown on Figure 5 Property action plan	Prior to June 30,2020	$250
Install fence along western edge, with gate, as per site action plan -550 m of 4-strand plain wire and star pickets with timber posts at corners.	Prior to June 30, 2020 Intent is to delineate the biobank site from nearby residential properties and to assist in controlling impacts from human access	$5250
Rubbish removal and remove wire from old fence as per Property action plan	Prior to June 30. 2020	$2400
Vertebrate pest control - feral cats and foxes -Baiting and/or active trapping are only methods in current Management Plan	Initiate feral pest survey to determine presence - prior to June 30	$1200
Project management, landowner monitoring and reporting (Earthscapes)	Monitoring - six-monthly Reporting – annually - after completion of Year 1 works	$2900
Annual reporting - to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$24,000**
GST	Paid annually	$2400
TOTAL YEAR 1		$26,400

Year 2 -Tasks, timing and budget

Task	Timing	Budget
Primary weed control, all species	3-4 sessions during year	$12,000
Fire prevention	Annual slashing/mowing edges	$900
Fence and gate maintenance	Annual payment Ongoing from Year 2	$450
Project management, landowner monitoring and reporting	Monitoring - six-monthly Reporting - annually -after completion of Year 2 works	$2900
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$16250**
GST	Paid annually	$1625
TOTAL YEAR 2		$17875

Year 3 -Tasks, timing and budget

Task	Timing	Budget
Primary weed control (all species except Bamboo, which is funded Year 1 and 2 only)	3-4 sessions during year	$7200
Vertebrate pest control – foxes, feral cats – baiting, trapping	Ongoing	$1200
Fence and gate maintenance ongoing		$450
Project management, landowner monitoring and reporting	Monitoring - six-monthly Reporting - annually -after completion of Year 2 works	$2900
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$11750**
GST	Paid annually	$1175
TOTAL YEAR 3		$12,925

Year 4 -Tasks, timing and budget

Task	Timing	Budget
Weed control in perpetuity, all species	3 sessions during year	$2700
Fire prevention	Annual slashing edges	$900
Fence and gate maintenance ongoing	Check and fix every two years	$450
Project management, landowner monitoring and reporting	Monitoring - six-monthly Reporting – annually - after completion of Year 1 works	$2900
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$6950**
GST	Paid annually	$695
TOTAL YEAR 4		$7645

Year 5 -Tasks, timing and budget

Task	Timing	Budget
Weed control in perpetuity, all species	3 sessions during year	$2700
Fence and gate maintenance		$450
Vertebrate pest control – foxes, feral cats – baiting, trapping	Ongoing	$1200
Project management, landowner monitoring and reporting	Monitoring - six-monthly Reporting – annually - after completion of Year 1 works	$2900
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site		**$7250**
GST	Paid annually	$725
TOTAL YEAR 5		$7975

Year 6 and ongoing -Tasks, timing and budget

Task	Timing	Budget
Ongoing weed control, all species	3 sessions during year Ongoing from Year 6 onward	$2700
Weed Management Plan review and vegetation condition assessment	Prior to June 30, 2025	$2600
Fire prevention	Annual slashing edges	$900
Vertebrate pest control plan review	Prior to June 30, 2025	$1600
Fence and gate maintenance in perpetuity	Annual check and fix	$450
Project management, landowner monitoring and reporting (	Monitoring – twice @ 6-months Reporting – annually - after completion of Year 1 works Paid annually from Year 6 onwards	$1800
Annual reporting fee to landowner		$1500
OEH costs – annual reporting assessment fee		-$1500
Total funds available for site Year 6		**$10050**
GST	Paid annually	$1005
TOTAL YEAR 6		$11055

MONITORING

This section has been approved as a property management plan prepared by the landowner under the section 113B of the *Threatened Species Conservation Act 1995 (now Biodiversity Conservation Act 2016).*

Monitoring requirements

1.1 The landowner must ensure that photographs are taken at photo-points at each of the locations and in the direction identified in the table below titled 'Locations of photo points' within 12 months of the commencement date and then at least every 12 months thereafter.

1.2 The photo points are identified on the map entitled Figure 5 Photo points; Lilli Pilli biobank site dated 05/07/2017 in Annexure A of this agreement. The purpose of the photographs is to show changes over time. Photographs should be taken at approximately the same direction, location, height and time of day (during daylight hours) in each reporting period (as defined in item 2.2 of this Annexure D) and retained for the life of this agreement. All photographs must be dated, stating the direction in which they were taken and identified with their locations.

Locations of photo points			
Projected coordinate system: GDA94			
Photo point reference	**Easting**	**Northing**	**Direction of photo (magnetic degrees)**
A	559711	6829647	90
B	559814	6829307	90
C	559735	6829376	180

1.3 An inspection of the biobank site must be undertaken by, or on behalf of, the landowner in accordance with the table 'Site inspection and monitoring schedule' below, for the purposes specified in column A and at the relevant interval specified in column B. The inspections are to occur at the intervals indicated starting from the commencement date. The inspections are additional to any inspections and monitoring required by Annexure C.

Site inspection and monitoring schedule	
A. Purpose	**B. Interval**
The percentage of ground cover present on the biobank site for the purposes of item 1.1 of Section 1 of Annexure C.	Every 12 months
Number of stock and date/s when stock have entered the management zones on the biobank site.	Every 3 months

Physical condition of fencing and gates to determine whether they are maintained to a standard that can: • control the movement of stock if required under item 1 in Section 1of Annexure C	Every 12 months
• control human disturbance if required under item 4 in Section 1 of Annexure C • control the movement of feral and overabundant native herbivores if required under item 10 of Section 2 • control vertebrate pests if required under item 11 of Section 2	
Records of any human disturbance on the biobank site. Note: items 4.1 and 4.2 in Section 1 of Annexure C and clause 2 of this agreement place restrictions on human activities on the biobank site.	Every 6 months
Evidence of erosion. Note: item 8 in Section 1 of Annexure C contains requirements for erosion control.	Every 6 months
Evidence of waste. Note: item 4.4 in Section 1 of Annexure C contains requirements for storing and disposing of waste on the biobank site.	Every 6 months

Template for reporting of monitoring activities –

Management zone/s	**Date**	**Current level of impact on vegetation or threatened fauna species** This column must record impact as Negligible, Minimal, Moderate or High	**Observations and assessment of monitoring**

Diary template for vertebrate pest management			
Date of activity	**Management zone/s**	**Description and type of activity undertaken** This column must include details of the vertebrate pests targeted, control techniques applied and numbers controlled.	**Minor variations** (details and reasons)

REPORTING:

Reporting requirements – annual report

1.4 The landowner must complete and submit to the Chief Executive for approval an annual report using the annual reporting template provided in this Annexure or, if the Chief Executive has approved an amended version of the annual reporting template after the date of this agreement, such an amended version of the annual reporting template as has been approved by the Chief Executive from time to time and supplied to the landowner.

1.5 An annual report must be prepared for each reporting period. A reporting period means:

1.5.1 prior to the first payment date, the period of 12 months after the commencement date, and each subsequent period of 12 months

1.5.2 after the first payment date, the period of 12 months after that date, and each subsequent period of 12 months.

The annual report submitted after the first anniversary of the first payment date must also include the period between the last anniversary of commencement date and the first payment date.

1.6 The annual report for the report period must be supplied to the Chief Executive by registered post not later than 30 days after the end of each reporting period.

1.7 If there is a change in land ownership during a reporting period, each landowner must submit the annual report required under items 1.2, 1.3 and 1.4 of this Annexure D for the period for which they were the landowner.

1.8 The annual report must:

1.8.1 contain the results of any monitoring, inspections or surveys required in Annexure C

1.8.2 contain the results of the inspections required to be conducted by item 1.2 of this annexure D, including details of the date, time, location and nature of the inspection, the name of the person conducting the inspection and observations from the inspection

1.8.3 include the photographs taken at the photo points listed in Annexure D

1.8.4 include any other information required in the annual reporting template.

Record keeping requirements

1.9 The following written records and photographs must be created and retained by the landowner:

1.9.1 for a management action required by this agreement (other than a management action requiring the landowner to refrain from an activity), the date and location/s the management action was carried out and a description of the actions that were undertaken

1.9.2 for a management action which is permitted to be carried out only in accordance with the Chief Executive's consent or approval, a copy of that consent or approval

1.9.3 a copy of any management plan (or updated management plan) required by Annexure C of this agreement that has been approved by the Chief Executive, a copy of the Chief Executive's approval of the management plan (or updated management plan) and a copy of any review of a management plan required by Annexure C

1.9.4 the diaries for recording actions undertaken in accordance with the management plans required by this agreement including the details (management zone/s, date, alternative action) of any minor alterations made to the implementation of those management plans and the reasons for the minor alterations

1.9.5 all photographs required by item 1 of this Annexure D and the information that item requires to be recorded on the photographs

1.9.6 for an inspection required by this agreement, the date, time, location and nature of the inspection, the name of the person conducting the inspection and observations from the inspection

1.9.7 the results of monitoring, inspections or surveys required to be conducted by this agreement or any management plan that is required to be implemented under this agreement

1.9.8 a brief description of any climatic, weather, ecological/environmental or unplanned events that have a significant adverse effect on the biodiversity values of the biobank site.

1.10 The landowner must retain a copy of each annual report.

1.11 All records required to be kept by this agreement must be:

1.11.1 in a legible form, or in a form that can readily be reduced to a legible form (this includes photographs taken as part of this agreement);

1.11.2 kept for at least 10 years after the event to which they relate took place, unless specified otherwise; and

Note: item 1.1 of this Annexure D requires the photographs required to be taken under that item to be retained for the life of this agreement.

1.11.3 produced to any authorised officer on request by an authorised officer.

Payment schedule

Payment schedule (including GST)	
Payment timing	**Amount**
At the beginning of the first year	$ 26,400
At the beginning of the second year	$ 17875
At the beginning of the third year	$ 12,925
At the beginning of the fourth year	$ 7,645
At the beginning of the fifth year	$ 7,975
At the beginning of the sixth year	$ 11,055
At the beginning of the seventh year	$ 6,765
At the beginning of the eighth year	$ 6,435
At the beginning of the ninth year	$ 6,765
At the beginning of the tenth year	$ 6,600
At the beginning of the eleventh year	$ 6,435
At the beginning of the twelfth year	$ 11,055
At the beginning of the thirteenth year	$ 6,435
At the beginning of the fourteenth year	$ 6,435
At the beginning of the fifteenth year	$ 6,435
At the beginning of the sixteenth year	$ 6,435
At the beginning of the seventeenth year	$ 6,435
At the beginning of the eighteenth year	$ 6,435
At the beginning of the nineteenth year	$ 7,755
At the beginning of the twentieth year	$ 6,600
At the beginning of each following year	Amount equal to the sum of the in-perpetuity management cost that apply for each following year as determined by the table of in perpetuity costs below.

Payment Allocation Years 1 to 5

Management action costs	Timing			Estimated annual cost ($)	1	2	3	4	5
	Start year	End year	Frequency						
Signage installation	1	1	1	250	250	0	0	0	0
New fence (simple) 550 m @ $9 p/m + 1 gate ($300 each)	1	1	1	5,250	5,250	0	0	0	0
Primary weed control (4 sessions per yr @ $1,200) (Weed A)	1	2	1	4,800	4,800	4,800	0	0	0
Primary weed control (3 sessions per yr @ $1,200) (Weed B)	1	3	1	3,600	3,600	3,600	3,600	0	0
Primary weed control (4 sessions @ $900) (Weeds C, D, E, F & G)	1	3	1	3,600	3,600	3,600	3,600	0	0
					0	0	0	0	0
Weed control in perpetuity (3 sessions per year)	4		1	2,700	0	0	0	2,700	2,700
Weed management plan review and vegetation condition assessment	6	17	6	2,600	0	0	0	0	0
Removal rubbish removal and removal of wire from old fence	1	1	1	2,400	2,400	0	0	0	0
263	2		2	900	0	900	0	900	0
Vertebrate pest control	1	9	2	1,200	1,200	0	1,200	0	1,200
Vertebrate pest control plan review - qualified professional	6	17	6	1,600	0	0	0	0	0
					0	0	0	0	0
					0	0	0	0	0
Project management/landowner reporting and monitoring	1	5	1	2,900	2,900	2,900	2,900	2,900	2,900
					0	0	0	0	0
					0	0	0	0	0

Other recurring costs									
Annual reporting fee	1		1	1,500	1,500	1,500	1,500	1,500	1,500
Project management/landowner reporting and monitoring	6		1	1,800	0	0	0	0	0
Access track maintenance (N/A)	1				0	0	0	0	0
Fence maintenance and gate in perpetuity	2		1	450	0	450	450	450	450
Biobank sign replacement	10		10	150	0	0	0	0	0
Weed management plan review (in perpetuity)	19		6	1,200	0	0	0	0	0
Vertebrate pest control (in perpetuity)	11		2	900	0	0	0	0	0
					0	0	0	0	0
Biobank site management cost in today's value					25,500	17,750	13,250	8,450	8,750
Present Value (PV) of the biobank site management cost					25,500	17,150	12,369	7,621	7,625
Discount factors					100%	97%	93%	90%	87%

	1	2	3	4	5
Annual biobank site management costs in today's values	$25,500	$17,750	$13,250	$8,450	$8,750
Annual reporting fee	$1,500	$1,500	$1,500	$1,500	$1,500
Total amount payable to landowner (excluding GST)	$24,000	$16,250	$11,750	$6,950	$7,250
GST payable to landowner	$2,400	$1,625	$1,175	$695	$725
Total amount payable to landowner (including GST)	$26,400	$17,875	$12,925	$7,645	$7,975

In-perpetuity Management Costs

In perpetuity management costs (on and from the twenty-first year) (excluding GST and subject to rate of return)		
Description of ongoing management action	**Frequency**	**Amount ($)**
Fence/gate maintenance	The twenty second year and every year thereafter	450
Weed control	The twenty fourth year and every year thereafter	2,700
Removal of rubbish and human disturbance	The twenty first year and every two years thereafter	900
Weed management plan review	The twenty first year and every six years thereafter	1,200
Vertebrate pest control	The twenty first year and every two years thereafter	900
Project management/landowner reporting and monitoring	The twenty sixth year and every year thereafter	1,800
Biobank sign replacement	The thirtieth year and every ten years thereafter	150
Annual reporting fee	The twenty first year and every year thereafter	1,500
Total present value of payments after 20 years (incl. GST)	$98,943	
Total present value of payments after 20 years (excl. GST)	$89,948	

Agreement to issue recipient created tax invoices

The parties acknowledge that, if the landowner is registered for GST, recipient created tax invoices will be issued from the BioBanking Trust Fund (Australian Business Number 83 639 386 285) to the landowner (Australian Business Number 14 472 131 473).

Payment timing and amount

1.1 Subject to clause 12 of the agreement, the Minister is to direct the Fund Manager to make the management payments to the landowner in accordance with the payment schedules above.

1.2 The first year of the payment timing, as set out in the payment schedules, commences from the first payment date. Received August 2019.

Nominated bank account

1.3 The management payments will be paid into a bank account as nominated by the landowner

Annual contribution

1.4 The landowner authorises the Minister to retain the annual contribution from each management payment made to the landowner.

1.5 The Minister will, following each management payment, issue the landowner with an invoice confirming that the annual contribution has been deducted from the relevant management payment.

REFERENCES

Bailey, D (2009) - Site Action Plan for South Byron incl Cemetery

Biobanking agreement
Expert Snail report Dr Jonathan Parkyn

NSW National Parks and Wildlife Service (2001) Mitchell's Rainforest Snail *Thersites mitchellae* (Cox, 1864) Recovery Plan. NPWS, Sydney

NSW Scientific Committee (1997) Mitchell's rainforest snail - Endangered species determination - final. DEC (NSW), Sydney.

APPENDIX 1: MAPS

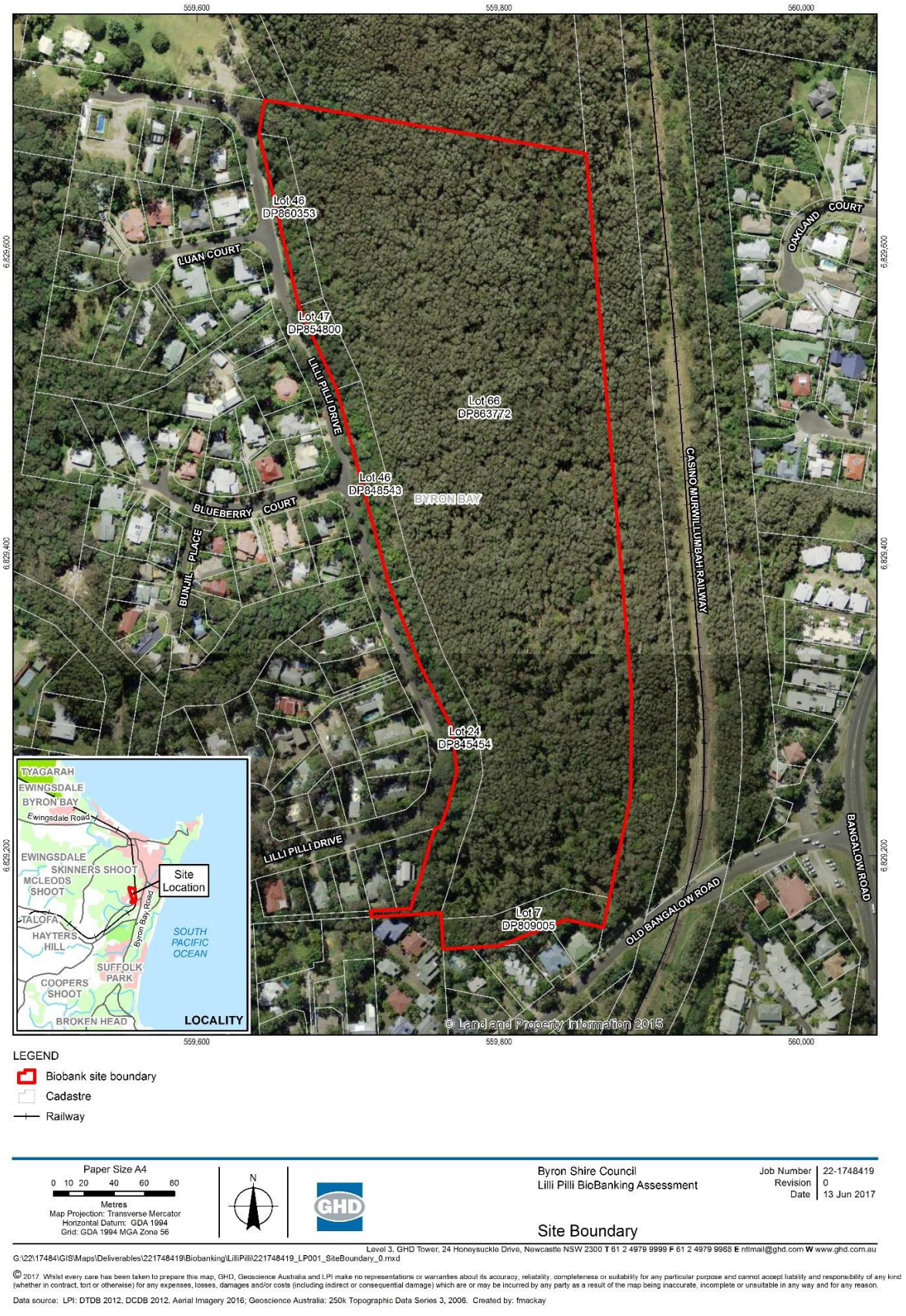

Figure 1 Biobank site boundary Lilli Pilli biobank site (13/06/2017)

Figure 2: Vegetation zones

Figure 3 Management zones; Lilli Pilli biobank site (10/05/2018)

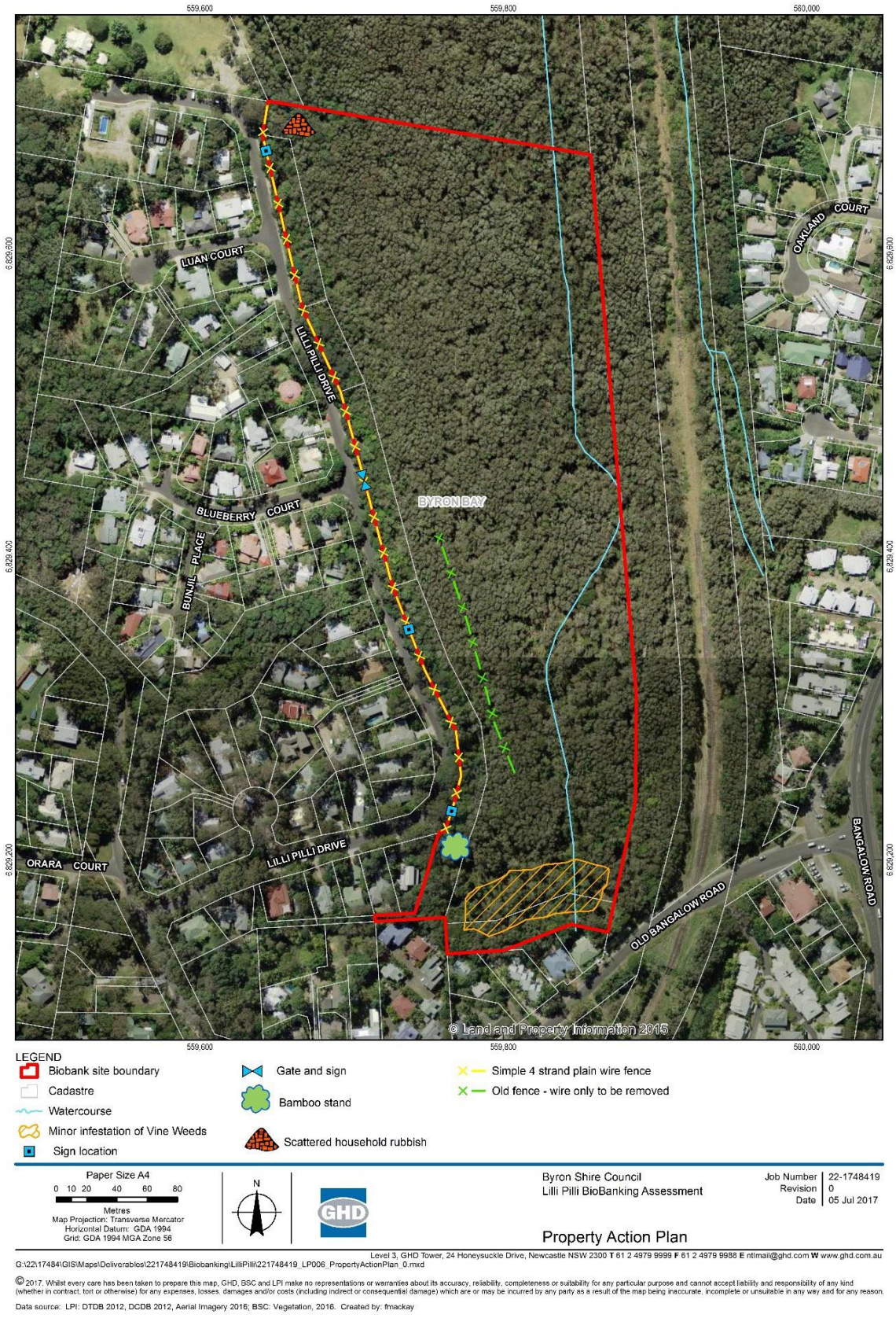

Figure 4 Property action plan; Lilli Pilli biobank site (05/07/2017)

Figure 5 Biobank Photo points; Lilli Pilli biobank site (05/07/2017)

Figure 6: Biobank plus additional selected Photo points; Lilli Pilli biobank site (05/09/2019)

Locations of photo points

Projected coordinate system: GDA94

Photo point reference	Easting	Northing	Latitude	Longitude	Direction of photo (magnetic degrees)
A	559711	6829647	-28° 39’ 32”	153° 36’ 40”	East (90)
B	559814	6829307	-28° 39’ 43”	153° 36’ 44”	East (90)
C	559735	6829376	-28° 39’ 41”	153° 36’ 41”	South (180)
D	559851	6829221	-28° 39’ 46”	153° 36’ 45”	North (360)
E	559824	6829221	-28° 39’ 46”	153° 36’ 44”	South (180)
F	559825	6829468	-28° 39’ 38”	153° 36’ 44”	South (180)

Figure 7: MRS Snail records by Dr Jonathan Parkyn (2016)

Scale: 1: 1000

- **Mitchells Rainforest Snail**
- **MRS snail shells (Prior rfflrds)**
- **Biobank Habitat**
- **Blackbutt**
- **Swamp Mahogany/Paperbark**

APPENDIX 2: FLORA LIST

Comprehensive Native Flora Species List for Lilly Pilly Swamp *# Includes planted non-local native species*	
Botanical Name	**Common Name**
TREES AND SHRUBS	
Acacia floribunda	White Sally
Acacia melanoxylon	Blackwood
Acmena smithii	Common Lilly Pilly
Archontophoenix cunninghamiana	Bangalow Palm
Astrotricha longifolia	Astrotricha
Austromyrtus dulcis	Midyim
#Brachychiton acerifolius	Flame Tree
Breynia oblongifolia	Breynia
Buckinghamia celissima	Ivory Curl
Callicoma serratifolia	Callicoma
Callistemon salignus	Willow Bottlebrush
Casuarina glauca	Swamp Oak
Commersonia bartramia	Brown Kurrajong
Cryptocarya microneura	Murrogun
Cupaniopsis anacardioides	Tuckeroo
#Davidsonia jerseyana	Davidson's plum
Dodonaea triquetra	Large-leaf Hop-bush
Duboisia myoporoides	Corkwood
Elaeocarpus obovatus	Hard Quandong
Elaeocarpus reticulatus	Blueberry Ash
Eucalyptus microcorys	Tallowood
Eucalyptus pilularis	Blackbutt
Eucalyptus resinifera	Red Mahogany
Eucalyptus robusta	Swamp Mahogany
Eucalyptus siderophloia	Northern Grey Ironbark
Eupomatia laurina	Bolwarra
Ficus coronata	Creek Sandpaper Fig
Ficus obliqua	Small-leaved Fig
#Ficus rubiginosa	Rock Fig
Ficus virens	White Fig
Glochidion ferdinandi	Cheese Tree
Glochidion sumatranum	Umbrella Cheese Tree

#Grevillea baileyana	White Oak
**Harpullia pendula*	Tulipwood
Hibiscus diversifolius	Swamp Hibiscus
Hovea acutifolia	Purple Pea Bush
Lophostemon confertus	Brush Box
Lophostemon suaveolens	Swamp Box
Macaranga tanarius	Macaranga
#Melaleuca leucadendron	Weeping Paperbark
Melaleuca quinquinervia	Broad-leaved Paperbark
Melastoma affine	Blue Tongue
Melicope elleryana	Pink Euodia
Myrsine variabilis	Muttonwood
Nematolepis squamea	Satinwood
Persoonia adenantha	Geebung
#Podocarpus elatus	Plum Pine
**Psidium cattleianum*	Cherry Guava
Psychotria loniceroides	Hairy Psychotria
Symplocos thwaitesii	Buff Hazelwood
Synoum glandulosum	Scentless Rosewood
Trema tomentosa	Native Peach
Trochocarpa laurina	Tree Heath
Zieria smithii	Sandfly Zieria
#Araucaria bidwillii	Bunya Pine
VINES AND CLIMBERS	
Botanical Name	**Common Name**
Geitonoplesium cymosum	Scrambling Lily
Hibbertia scandens	Twining Guinea Flower
Marsdenia rostrata	Common Milk Vine
Morinda jasminoides	Veiny Morinda
Parsonsia straminea	Common Silkpod
Rubus moluccanus	Molucca Bramble
Smilax australis	Austral Sarsaparilla
Stephania japonica var. discolor	Snake Vine
HERBS AND GROUNDCOVERS	
Botanical Name	**Common Name**
Alocasia brisbanensis	Cunjevoi
Alpinia caerulea	Native Ginger
Dianella caerulea	Blue Flax Lily
Enydra fluctuans	Enydra
Hydrocotyle peduncularis	A Pennywort

Persicaria strigosa	Prickly Knotweed
Pratia purpurascens	Whiteroot
Typha domingensis	Cumbungi
Villarsia exaltata	Villarsia
Viola banksii	Ivy-leaf Violet
FERNS	
Botanical Name	**Common Name**
Adiantum hispidulum	Rough Maidenhair
Blechnum cartilagineum	Gristle Fern
Blechnum indicum	Swamp Water Fern
Blechnum wattsii	Hard Water Fern
Cyathea australis	Straw Tree Fern
Cyathea cooperi	Scaly Tree Fern
Cyclosorus interruptus	Cyclosorus
Gleichenia dicarpa	Pouched Coral Fern
Histiopteris incisa	Bats Wing fern
Hypolepis muelleri	Harsh Ground Fern
Lygodium microphyllum	Climbing Maidenhair Fern
Psilotum nudum	Skeleton Fork Fern
Pteridium esculentum	Bracken
Sticherus lobatus	Spreading Fan fern
GRASSES	
Baloskion tetraphyllum	Swamp Foxtails
Baumea rubiginosa	A Twigrush
Carex appressa	Tall Sedge
Carex maculata	Carex
Entolasia stricta	Wiry Panic
Gahnia clarkei	Tall Saw Sedge
Gahnia sieberiana	Red-fruited Saw Sedge
Leersia hexandra	Swamp Rice Grass
Lepironia articulata	Grey Rush
Lomandra hystrix	Creek Mat-rush
Lomandra longifolia	Spiny-headed Mat-rush
Microlaena stipoides	Awn Grass
Phragmites australis	Common Reed
Rhyncospora corymbosa	Rhyncospora
Schoenus apogon	Common Bog-rush

APPENDIX 3:

A3.1 WEED LIST – March 2020

TREES AND SHRUBS		
Botanical Name	**Common Name**	**Comments**
**Ardisia crenata*	Coral Berry	
**Cestrum parqui*	Green Cestrum	New weed introduced since bushland plan Possible misidentification as C. nocturnum?
Cestrum nocturnum	Night-flowering Jasmine	
**Cinnamomum camphora*	Camphor Laurel	
*#*Corymbia torelliana*	Cadaghi	
Eugenia uniflora	Brazillian Cherry	
*#*Jacaranda mimosifolia*	Jacaranda	
**Lantana camara*	Lantana	
Ligustrum lucidum	Large-leaved Privet	New weed introduced since bushland plan Possible misidentification as L. sinense?
**Ligustrum sinense*	Small-leaved Privet	
**Mangifera indica*	Mango	
**Morus nigra*	Mulberry	
Ochna serrulata	Mickey-mouse Bush	New weed introduced since bushland plan
**Psidium cattleianum*	Cherry Guava	
**Schefflera actinophylla*	Umbrella Tree	
**Schinus terebinthifolia*	Broad-leaved Pepper Tree	
**Senna pendula var. glabrata*	Winter Senna	
**Solanum mauritianum*	Tobacco Bush	
Strelitzia nicolai	Giant white bird of paradise	New weed introduced since bushland plan
**Syagrus romanzoffianum*	Cocos Palm	
Viburnum odoratissimum	Sweet Viburnum	New weed introduced since bushland plan Possible previous mid-identification as Gardenia?
VINES AND CLIMBERS		
Botanical Name	**Common Name**	
**Desmodium uncinatum*	Silver-leaved Desmodium	
Lonicera japonica	Japanese Honeysuckle	New weed introduced since bushland plan
**Passiflora edulis*	Common Passionfruit	
**Passiflora suberosa*	Corky Passionfruit	
**Syngonium podophyllum*	Syngonium	
HERBS AND GROUNDCOVERS		
Botanical Name	**Common Name**	
**Ageratina adenophora*	Crofton Weed	
**Ageratina riparia*	Mistflower	

**Ageratum houstonianum*	Blue Billy Goat Weed	
**Bidens pilosa*	Cobbler's Pegs	
**Canna indica*	Canna Lily	
**Commelina benghalensis*	Hairy Commelina	
**Cuphea carthagenensis*	Cuphea	
GRASSES		
Botanical Name	**Common Name**	
Andropogon virginicus	Whiskey Grass	
Chloris gayana	Rhodes grass	
Melinis minutiflora	Molasses Grass	
Paspalum mandiocanum	Broad-leaved paspalum	
**Phyllostachys aurea*	Creeping Bamboo	
**Setaria sphacelata*	Setaria	
**Urochloa mutica*	Para Grass	
AQUATIC PLANTS		
Botanical Name	**Common Name**	
Sagittaria platyphylla	Sagittaria	
Salvinia molesta	Salvinia	
*Denotes exotic species/ environmental weeds		
# Planted natives introduced to site		

A3.2 Weeds no longer present_March 2020

Comparison of previous with current weed list– species in red no longer present in reserve (previous list from Comprehensive Flora List for the South Byron Urban Bushland Remnants)		
TREES AND SHRUBS		
Botanical Name	**Common Name**	**Eradicated prior to BBA start date**
#Agathis robusta	Kauri Pine	*#Agathis robusta*
#Araucaria bidwillii	Bunya Pine	*#Araucaria bidwillii*
**Ardisia crenata*	Coral Berry	
#Brachychiton acerifolius	Flame Tree	*#Brachychiton acerifolius*
**Cestrum parqui*	Green Cestrum	
**Cinnamomum camphora*	Camphor Laurel	
*#*Corymbia torelliana*	Cadaghi	
#Davidsonia jerseyana	Davidson's plum	*#Davidsonia jerseyana – listed as weed but threatened species – still present?*
**Eugenia uniflora*	Brazilian Cherry	**Eugenia uniflora*
#Ficus rubiginosa	Rock Fig	*#Ficus rubiginosa*
*#*Gardenia jasminoides*	Common Gardenia	*#*Gardenia jasminoides*
#Grevillea baileyana	White Oak	*#Grevillea baileyana*
*#*Jacaranda mimosifolia*	Jacaranda	
**Lantana camara*	Lantana	
**Ligustrum sinense*	Small-leaved Privet	
**Mangifera indica*	Mango	
#Melaleuca leucadendron	Weeping Paperbark	*#Melaleuca leucadendron*
**Morus nigra*	Mulberry	
**Psidium cattleianum*	Cherry Guava	
**Schefflera actinophylla*	Umbrella Tree	
**Schinus terebinthifolia*	Broad-leaved Pepper Tree	
**Senna pendula var. glabrata*	Winter Senna	
**Solanum mauritianum*	Tobacco Bush	
**Syagrus romanzoffianum*	Cocos Palm	
VINES AND CLIMBERS		
Botanical Name	**Common Name**	**Previously present_eradicated**
**Desmodium uncinatum*	Silver-leaved Desmodium	
**Dioscorea bulbifera*	Aerial Yam	**Dioscorea bulbifera*
**Epipremnum aureum*	Devil's Ivy	**Epipremnum aureum*
**Monstera deliciosa*	Fruit Salad Plant	**Monstera deliciosa*
**Neonotonia wightii*	White Glycine	**Neonotonia wightii*
**Passiflora edulis*	Common Passionfruit	
**Passiflora suberosa*	Corky Passionfruit	

**Passiflora subpeltata*	White Passionflower	**Passiflora subpeltata*
**Philodendron spp.*	Philodendron	**Philodendron spp.*
**Syngonium podophyllum*	Syngonium	
HERBS AND GROUNDCOVERS		
Botanical Name	**Common Name**	**Previously present_eradicated**
**Ageratina adenophora*	Crofton Weed	
**Ageratina riparia*	Mistflower	
**Ageratum houstonianum*	Blue Billy Goat Weed	*
**Bidens pilosa*	Cobbler's Pegs	
**Canna indica*	Canna Lily	
**Cirsium vulgare*	Spear Thistle	**Cirsium vulgare*
**Commelina benghalensis*	Hairy Commelina	
**Ctenanthe lubbersiana*	Bamburanta	**Ctenanthe lubbersiana*
**Cuphea carthagenensis*	Cuphea	
**Eclipta prostrata*	White Eclipta	**Eclipta prostrata*
**Hedychium gardnerianum*	Kahili Ginger	*Hedychium gardnerianum*
Pratia purpurascens	Whiteroot	*Pratia purpurascens*
**Protasparagus aethiopicus*	Ground Asparagus	**Protasparagus aethiopicus*
**Salvia coccinea*	Salvia	**Salvia coccinea*
**Sphagneticola trilobata*	Singapore Daisy	
GRASSES		
Botanical Name	**Common Name**	
**Andropogon virginicus*	Whiskey Grass	
**Melinis minutiflora*	Molasses Grass	
**Panicum maximum*	Guinea Grass	
**Pennisetum purpureum*	Bana Grass	
**Phyllostachys aurea*	Creeping Bamboo	
**Setaria sphacelata*	Setaria	
**Urochloa mutica*	Para Grass	

*Denotes exotic species/ environmental weeds

Planted natives introduced to site

APPENDIX 4: Threatened Fauna and their Habitat

(recorded on site or with potential to occur in Lilly Pilly Swamp)

Potential Fauna using habitats on site

Scientific Name	Common Name	Status TSC Act	Status EPBC Act	Known/ Potential	Important Habitat Features
Amauronis olivaceaus	Bush Hen	V		P	Dense vegetation/ Breeds in summer
Miniopteris australis	Little Bentwing-bat	V		P	Caves, hollow bearing trees
Miniopteris schreibersii	Common Bentwing-bat	V		P	Caves, hollow bearing trees
Phascolarctos cinereus	Koala	V	V	KNOWN	Feed trees include Swamp Mahogany, Tallowood, Flooded Gum
Planigale maculata	Common Planigale	V		P	Nests in crevices, hollow logs and beneath bark
Pteropus poliocaphalus	Grey-headed Flying-fox	V	V	P	Nectar, pollen and fruits. Dense vegetation for roosting
Ptilinopus regina	Rose-crowned Fruit- dove	V		P	Fruit bearing trees
Ptilinopus superbus	Superb Fruit-dove	V		P	Fruit bearing trees
Scoteanax rueppellii	Greater Broad-nosed Bat	V		P	Caves, hollow bearing trees Nectar from heat and Paperbark swamps
Syconycteris australis	Common Blossum-bat	V		P	
Thersites mitchellae	Mitchell's Rainforest Snail	E	CE	KNOWN	Leaf Litter, palm fronds, moist microclimate
Tyto tenebricosa	Sooty Owl	V		P	Tall trees with hollows

CE: Critically Endangered, E: Endangered, V: Vulnerable

Mitchells Rainforest Snail -biology and ecology

Mitchell's Rainforest Snail - profile

Scientific name: *Thersites mitchellae*
Conservation status in NSW: **Endangered**
Commonwealth status: **Critically Endangered**
Gazetted date: 14 Mar 1997
Profile last updated: 21 Jun 2019

Description

Mitchell's Rainforest Snail is a large native land snail with a shell up to 55 mm wide and 50 mm high, triangular in profile, and with a thickened lip. The shell is deep reddish chestnut to black in colour with two prominent yellow bands. The body colour is black with a thin lighter line along the back.

Distribution

Found in remnant vegetation on the coastal plain between the Richmond River and Tweed River on the NSW north coast. It has also been recorded from some adjacent mid-elevation areas including Wilsons River and Mount Jerusalem.

Habitat and ecology

- Remnant areas of lowland subtropical rainforest and swamp forest on alluvial soils. Slightly higher ground around the edges of wetlands with palms and fig trees are particularly favoured habitat.
- Typically found amongst leaf litter on the forest floor, and occasionally under bark in trees.
- Active at night and feeds on leaf litter, fungi and lichen.

Regional distribution and habitat

Click on a region below to view detailed distribution, habitat and vegetation information.

- South Eastern Queensland

Threats

- Clearing of lowland rainforest, swamp forest and wetland margins for agriculture.
- Clearing of lowland rainforest, swamp forest and wetland margins for urban development.
- Damage to remnant areas of habitat from grazing by domestic stock.
- Damage to remnant areas of habitat by fire.
- Damage to remnant areas of habitat by weed invasion.
- Predation of snails by introduced rats.
- Habitat fragmentation increasing edge effects including increasing the severity of disturbance from fire, weeds and predation by introduced rats .
- Use of herbicides and pesticides in and near areas of habitat.
- Impacts on habitat as a result of dieback caused by root rot fungus (*Phytophthora cinnamomi*).
- Loss of coastal populations from sea level rise and climate change

- Damage to habitat from changes in hydrology
- Poor knowledge of species distribution
- Lack of awareness of the species within the community

Recovery strategies

A targeted strategy for managing this species has been developed under the Saving Our Species program; click **here** for details. For more information on the Saving Our Species program click **here**
Hide section details

Activities to assist this species

- Support a local Landcare groups or bush regeneration teams to rehabilitate habitat.
- Control introduced rats in urban areas adjoining areas of potential habitat.
- Protect rainforest and wetland margins from fire.
- Retain and protect areas of rainforest, swamp forest and forest on wetland margins. Even small areas of habitat can be valuable.
- Avoid the use of snail baits, pesticides and herbicides in or near known and potential habitat.
- Fence rainforest remnants and wetland margins to exclude grazing by stock.
- Undertake weed control in known and potential habitat ensuring minimal disturbance of leaf litter and fallen logs.
- Monitor status of known populations.
- Prevent ornamental plants and weeds from escaping into native forest and wetland areas.
- Report any sightings of Mitchell's Rainforest Snail to the OEH. Empty shells or photographs of live snails can be sent to confirm identification, but leave live snails.
- Research into ecology and genetics of species to provide information to assist in its conservation.
- Model and map the predicted habitat for Mitchell's Rainforest Snail.
- Survey of areas of potential habitat to identify any additional populations.
Hide section details

Information sources

- Murphy, M.J. (2002) Mollusc conservation and the New South Wales Threatened Species Conservation Act 1995: the recovery program for Mitchell's Rainforest Snail *Thersites mitchellae*. Australian Zoologist 32(1): 1-11.
- Murphy, M.J. and Nally, S. (2004) Case studies in implementing the NSW Threatened Species Conservation Act 1995 for invertebrate conservation. Australian Zoologist.
- NSW National Parks and Wildlife Service (2001) Mitchell's Rainforest Snail *Thersites mitchellae* (Cox, 1864) Recovery Plan. NPWS, Sydney.
- NSW National Parks and Wildlife Service (2002) Threatened Species of the Upper North Coast of NSW: Fauna. (NSW NPWS, Coffs Harbour)
- NSW Scientific Committee (1997) Mitchell's rainforest snail - Endangered species determination - final. DEC (NSW), Sydney.

Advice to the Federal Minister for threatened species

Thersites mitchellae (Mitchell's Rainforest Snail)

Advice to the Minister for the Environment and Heritage from the Threatened Species Scientific Committee (TSSC) on Amendments to the list of Threatened Species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

1. Scientific name, common name (where appropriate), major taxon group

Thersites mitchellae (Mitchell's Rainforest Snail)

2. National Context

Mitchell's Rainforest Snail is a large land snail that is restricted to the coastal plains of northern NSW, between the Richmond and Tweed Rivers. Within this range, however, land clearing has been extensive and Mitchell's Rainforest Snail is now restricted to remaining areas of suitable habitat. The largest known population and largest remaining single area of suitable habitat is in Stotts Island Nature Reserve on the Tweed River, in northern NSW.

Mitchell's Rainforest Snail is found only in undisturbed remnant lowland subtropical rainforest and swamp sclerophyll forest with a rainforest understorey. Key habitat components for Mitchell's Rainforest Snail are a well developed leaf litter layer (providing food, shelter and breeding sites) and an intact forest canopy (maintaining a moist microclimate and providing a source of leaf litter).

Under the *Threatened Species Conservation Act 1995* (NSW), Mitchell's Rainforest Snail is listed as endangered, and Stotts Island Nature Reserve has been declared critical habitat for the species under the NSW Act.

3. How judged by TSSC in relation to the EPBC Act criteria.

TSSC judges the species to be eligible for listing as critically endangered under the EPBC Act. The justification against the criteria is as follows:

Criterion 1 - Decline in numbers

Museum collections from last century show the Mitchell's Rainforest Snail was previously common within its range but has since declined in abundance. However, there is no quantitative data available against this criterion. Therefore, the species **is not eligible** for listing under this criterion.

Criterion 2 - Geographic distribution

Mitchell's Rainforest Snail is a large land snail that is restricted to the coastal plains of northern NSW, between the Richmond and Tweed Rivers The number of specimens from last century in museum collections indicate the Mitchell's Rainforest Snail was previously common within its range**.**
Within this range and habitat, however, land clearing for agriculture and urban development has been extensive. Over 90% of suitable habitat for the Mitchell's Rainforest Snail has been cleared. Suitable habitat for the species now occurs only in small, fragmented areas or remnants, which form part of the endangered ecological community - Lowland Rainforest on Floodplain in the NSW North Coast Bioregion, which was listed under the *Threatened Species Conservation Act* 1995 (NSW) in 1999.
Between 1955 and 1995, Mitchell's Rainforest Snail was recorded at only 2-3 sites, despite the Queensland Museum extensively collecting for species of snails in the littoral rainforests of the area. Since 1995, NSW National Parks and Wildlife has conducted surveys for Mitchell's Rainforest Snail, that targeted suitable habitat, and undertaken public awareness campaigns for the species. This research has found the species at a number of sites at five locations- Stotts Island, Banora Point, Byron Bay, Suffolk Park and Lennox Head. It is considered that specimens that were collected at a site at Wilsons Creek, west of Mullumbimby, in 1979-1980, outside the normal range for the species, may have been translocated specimens. This site is more elevated than other sites, and a targeted search of the area in 1999 did not find the species. Other snail species present at the site were indicative of an upland snail fauna assemblage rather than the lowland snail assemblage usually associated with Mitchell's Rainforest Snail.

The largest known subpopulation and largest remaining single area of suitable habitat (120 ha) is in Stotts Island Nature Reserve in the Tweed River near Murwillumbah. The other known subpopulations are much smaller in number and occur in smaller areas of remnant habitat, most of which are found outside conservation reserves. Theextent of occurrence of Mitchell's Rainforest Snail is estimated to be less than 400 km^2, which appears the same as it was in the past. However, its current area of occupancy is estimated to be less than 5 km^2 , which indicates a severely restricted distribution.
The greatest threat to Mitchell's Rainforest Snail is loss of habitat, through continuing agriculture and urban development. Within the species' range, the main local government areas, Tweed, Byron and Ballina are experiencing sustained and rapid development, particularly on the coastal plain, and many of the small pockets of surviving habitat for this species remain at risk from clearing and development. Recent information indicates that a number of sites providing known or high potential habitat for the species have been cleared for development or are currently subject to development proposals. If agricultural and urban development continues in areas of suitable habitat for the snail, it will result in further habitat loss for the species and an ongoing decline in numbers.

Additional threats to Mitchell's Rainforest Snail are predation and fire. The species appears to be vulnerable to predation from introduced mammals, such as rats. It is also known that the Noisy Pitta *Pitta versicolor* preys on these snails, and although the bird is a natural predator, it may have a considerable impact on the low numbers of Mitchell's Rainforest Snail that now remain. Fire will also impact adversely on the key habitat requirements for the Mitchell's Rainforest Snail, which are a well-developed leaf litter layer and an intact forest canopy.
The majority of known remaining populations of Mitchell's Rainforest Snail occur in small areas of remnant rainforest, including narrow strips of rainforest bordering coastal wetlands. Though breeding populations of the snail can persist in narrow strips of remnant rainforest, the long-term viability of populations at such sites is uncertain. These small remnant areas have a high perimeter to area ratio, and, thus, are at risk from edge-effects. Edge-effects on a particular habitat is the way adjoining habitats impact on that particular habitat along their adjoining edges. Edge-effects can result in increased loss of moisture from rainforest remnants, habitat disturbance, frequent fires, and invasion by exotic weeds and feral animals. There is little data available on the impact of these factors associated with remnants on land snails, but they are likely to be adverse.

In summary, Mitchell's Rainforest Snail, a species that was common last century, is now rare and has a very restricted geographic distribution, with its current area of occupancy estimated to be less than 5 km^2. The species' distribution and habitat is now extremely limited and severely fragmented. On-going agriculture and urban development and other threatening processes could lead to a continuing decline in the area of occupancy, extent and quality of habitat, number of locations where the species is found and number of mature individuals. Therefore, the species is **eligible** for listing **as critically endangered** under this criterion.

Criterion 3 - Population size and decline in numbers or distribution

The number of specimens from last century in museum collections indicate the Mitchell's Rainforest Snail was previously common within its range in suitable habitat. Within this range and habitat, land clearing for agriculture and urban development has been extensive. Over 90% of its original habitat has been cleared.Recent surveys for the species, that targeted suitable habitat, and public awareness campaigns conducted by NSW National Parks and Wildlife Service have shown Mitchell's Rainforest Snail is now extremely rare. One estimate is that total population now numbers less than 500 mature individuals.

Recent research has found Mitchell's Rainforest Snail occurs at a number of sites at five locations(Stotts Island, Banora Point, Byron Bay, Suffolk Park and Lennox Head) distributed along the coastal plain of northern NSW. The largest known population, and largest remaining area of habitat, is in Stotts Island Nature Reserve. The status and occurrence of Mitchell's Rainforest Snail and its habitat on Stotts Island was investigated by the NSW NPWS and Queensland Museum in 1999. The total subpopulation on Stotts Island is estimated to be several hundred, and its long-term viability is considered good. It is claimed that the number of mature individuals within this population is less than 250. Other subpopulations are considerably smaller - most occur in very small habitat remnants and are known from between one and three specimens.

Mitchell's Rainforest Snail's greatest threat is loss of habitat, through continuing agriculture and urban development. Additional potential threats include predation by birds and introduced mammals, fire, and those threats associated with subpopulations that occur in small remnants (e.g. invasion of weeds and predators). For details of these threats, see Criterion 2.

Mitchell's Rainforest Snail has a very restricted geographic distribution, with its current area of occupancy estimated to be less than 5 km^2. The species' distribution and habitat is now extremely limited and severely fragmented. On-going threats could lead to a continuing decline in the area of occupancy, extent and quality of habitat, and the number of locations where the species is found. Mitchell's Rainforest Snail is eligible to be listed under this criterion because: its estimated population size of less than 500 mature individuals is low, with no subpopulation considered to contain more than 250 mature individuals; a continuing decline is projected because of ongoing threats; and its geographic distribution is precarious for its survival.

Therefore, the species is **eligible** for listing as **endangered** under this criterion.

Criterion 4 - Population size

Recent surveys for the Mitchell's Rainforest Snail, that targeted suitable habitat, and public awareness campaigns conducted by NSW National Parks and Wildlife Service have shown the species to be extremely rare. The estimated number of mature individuals is low, with an estimated total population of less than 500 mature individuals.

Therefore, the species is **eligible** for listing as **vulnerable** under this criterion.

Criterion 5 - Probability of extinction in the wild

There is no quantitative data available against this criterion.

4. Conclusion

Museum collections from last century show the Mitchell's Rainforest Snail was previously common within its range, but has since declined in abundance. Since this time, much of the habitat that the species occupied, remnant lowland subtropical rainforest and swamp sclerophyll forest, has been cleared. Recent research shows that Mitchell's Rainforest Snail now has a restricted and fragmented geographic distribution, with an area of occupancy estimated to be less than 5km^2, and a low number of individuals, with a population of less than 500 mature individuals. Ongoing decline is projected due to continuing degradation of habitat.
The species is eligible for listing as critically endangered under criterion 2.

5. Recommendation

TSSC recommends that the list referred to in section 178 of the EPBC Act be amended by **including** in the list in the **critically endangered** category:
*Thersites mitchellae (*Mitchell's Rainforest Snail

Koala -biology and ecology

BioNet threatened Species profile

Scientific name:*Phascolarctos cinereus*
Conservation status in NSW: Vulnerable
Commonwealth status: Vulnerable
Profile last updated: 10 Apr 2019

Description

The Koala is an arboreal marsupial with fur ranging from grey to brown above, and is white below. It has large furry ears, a prominent black nose and no tail. It spends most of its time in trees and has long, sharp claws, adapted for climbing. Adult males weigh 6 - 12 kg and adult females weigh 5 - 8 kg. During breeding, males advertise with loud snarling coughs and bellows.

Distribution

The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range.

Habitat and ecology

- Inhabit eucalypt woodlands and forests.
- Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.
- Inactive for most of the day, feeding and moving mostly at night.
- Spend most of their time in trees, but will descend and traverse open ground to move between trees.
- Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.
- Generally solitary, but have complex social hierarchies based on a dominant male with a territory overlapping several females and sub-ordinate males on the periphery.
- Females breed at two years of age and produce one young per year.

Threats

- Loss, modification and fragmentation of habitat
- Vehicle strike
- Predation by roaming or domestic dogs
- Intense prescribed burns or wildfires that scorch or burn the tree canopy
- Koala disease
- Heat stress through drought and heatwaves
- Human-induced climate change
- Inadequate support for fauna rehabilitation

- Poor understanding of sources of trauma and mortality
- Poor understanding of population distribution and trend
- Poor understanding of animal movements and use of habitat

Recovery strategies

A targeted strategy for managing this species has been developed under the Saving Our Species program

Activities to assist this species

- Undertake planting to restore and increase the area of koala habitat
- Negotiate agreements with landholders, particularly in-perpetuity covenants or stewardship agreements that promote the protection and retention of high-quality koala habitat
- Undertake koala habitat studies and mapping using standardised methods
- Identify blackspots where koala road mortalities are greatest and target proven mitigation techniques
- Liaise with government agencies in the development of new/existing roads to plan koala barrier fencing and crossings
- Conduct local community awareness campaigns in areas where attacks by domestic dogs on koalas are prevalent
- Liaise with relevant authorities or land managers to ensure that identified koala habitat areas are defined as assets for protection in fire planning tools
- Liaise with authorities or land managers to ensure that any unavoidable prescribed burns within koala habitat are conducted in a way that minimises impacts on koala habitat and individual koalas
- Improve understanding of the role of chlamydia in koala population dynamics and mortality
- Support carer and vet networks in their response to the management of koala health and welfare during extreme weather conditions
- Research and trial adaptation management actions such as installation of artificial water sources and the establishment of refuge habitat and promote connectivity through habitat restoration
- Use predicted climate change data and modelling techniques to predict the possible impacts on koalas from climate change.
- Support koala rehabilitation groups and vets to rehabilitate sick and injured koalas through training, provision of materials, and promotion of state-wide protocols
- Engage with koala rehabilitation groups and other information sources to better understand the causes of koala trauma and mortality
- Develop standardised method and reporting for monitoring change in koala populations and distribution through time
- Support the collation of koala survey records and monitoring information through a centralised database for state-wide reporting and analysis
- Improve understanding of koala movements and use of their habitat in the landscape by conducting targeted research on individuals using GPS collars and mark-recapture techniques

APPENDIX 5: BIOBANK AGREEMENT
-DETAIL OF MANAGEMENT ACTIONS

Management of grazing for conservation

Item 1	Management of grazing for conservation	Timing
1.1	Stock must not be permitted to graze in any area of the biobank site.	Ongoing from commencement date.
1.2	This item is not applicable.	N/A
1.3	Stock must not be permitted to be present on the biobank site in areas where replanting has been undertaken in accordance with item 6 of this Section, except as specified in items 6.2 and 6.3.	Ongoing from first payment date.
1.4	If, at any time, the landowner observes stock in any area of the biobank site, other than an area on the biobank site where grazing is permitted, the landowner must take necessary measures to remove the stock from the area immediately.	Ongoing from first payment date.

Weed control

Item 2	Weed control	Timing
2.1	The landowner must implement and, at all relevant times, comply with, the integrated weed management plan included in the following Section (‘**the weed management plan’**) (or such updated integrated weed management plan as has been approved by the Chief Executive under item 2.2 below). To allow for adaptive management, minor alterations can be made to the implementation of the weed management plan. Any alterations must be recorded in writing in accordance with Biobanking Agreement.	Ongoing from first payment date.
2.2	The weed management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Chief Executive in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Chief Executive within 3 months of commencing the review. Where the Chief Executive determines from the review that an update of the plan is required, the Chief Executive will notify the landowner in writing that an update of the plan is required. The landowner must update the plan and submit it to the Chief Executive for approval within 3 months of receiving written notification from the Chief Executive that an update of the plan is required. The revised plan must be prepared by an appropriately qualified person and must cover the matters outlined below and any additional matters specified by the Chief Executive in writing: • a description of the target weed/s at the biobank site and their location/s, linked to each management zone where weeds are present • the method/s of weed control in each zone • the frequency of weed control activities at the site, taking into account management practices where weeds are providing habitat for native species	Ongoing from first payment date.

	• the timing of any planting of native plant species required in each management zone to provide alternative habitat for native species affected by weed control activities • methods for monitoring the success of weed control activities • a timetable/measures for inspections to identify new weed species or exotic plant species (including noxious weeds under the *Noxious Weeds Act 1993*) • additional weed control activities to destroy or remove any new weed species that are found on the site • measures for assessing and reporting monitoring results • a diary for recording actions taken in accordance with the weed management plan and minor alterations to this plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	

Management of Fire for conservation

Item 3	**Management of fire for conservation**	**Timing**
3.1	The landowner must implement, and at all relevant times, comply with the fire management plan included in the following Section (or such updated fire management plan as has been approved by the Chief Executive under item 3.2 below) (‘**the fire management plan”)**. To allow for adaptive management and weather conditions, minor alterations can be made to the implementation of the fire management plan, and must be recorded in writing in accordance with Section 3 of this Annexure.	Ongoing from first payment date.

3.2	The fire management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Chief Executive in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Chief Executive within 3 months of commencing the review. Where the Chief Executive determines from the review that an update of the fire management plan is required, the Chief Executive will notify the landowner in writing that an update of the plan is required. The landowner must update the plan and submit it to the Chief Executive for approval within 3 months of receiving written notification from the Chief Executive that an update of the plan is required. The revised plan must be prepared by an appropriately qualified person and cover the matters outlined below and any additional matters specified by the Chief Executive in writing: • the year the last fire went through, the type of fire and the extent of the fire and location, where known • frequency of natural fires in the area of the biobank site, where known • a description of locations and management zones where ecological burns will be conducted and areas that will not be burnt • the methods that will be used for ecological burns • the fire frequency intervals recommended for the vegetation types and threatened species present, including any required adjustment to the schedule in the event of a wildfire or activities undertaken under the *Rural Fires Act 1997* to ensure minimum frequency between ecological burns • the fire intensity for the recommended vegetation types • the time of year suitable for ecological burns • the diary for recording actions taken in accordance with the fire management plan and minor alterations to fire management plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	Ongoing from first payment date.
3.3	Fires must not be lit on the biobank site other than for the purpose of ecological burning in accordance with the fire management plan or as permitted as a permissible human activity on the biobank site under item 4 of this Annexure or clause 3.6 of this agreement.	Ongoing from commencement date.

Management of Human Disturbance

Item 4	Management of human disturbance	Timing
4.1	Except as permitted under clause 3 of this agreement or item 4.2 (below), human activities that adversely affect biodiversity values on the biobank site, including repeated disturbance of native animals, must not be carried out, or caused or permitted to be carried out, on the biobank site.	Ongoing from commencement date.
4.2	Human activities that may have a negative impact on biodiversity values on the biobank site are permitted if they are listed as permissible activities under clause 3.6 of this agreement or if they are undertaken as part of the management actions or management plans.	Ongoing from commencement date.
4.3	All waste shown on *Figure 5 Property action plan; Lilli Pilli biobank site*, dated 05/07/2017 must be removed from the biobank site in an appropriate manner. Waste was limited to scattered household waste items only. A line item has been included in the TFD to remove waste and manage human disturbance in perpetuity as well.	Commencing from first payment date.
4.4	The landowner must not store, dispose of, or cause or permit to be disposed of, any waste on the biobank site. Note: The storage or disposal of waste on the biobank site may require an approval under the *Protection of the Environment Operations Act* 1997.	Ongoing from commencement date.
4.5	The landowner must take all reasonable steps to remove waste deposited by others on the biobank site, or which is otherwise present on the biobank site.	Ongoing from first payment date.
4.6	Fencing and/or signage must be installed and maintained to deter human disturbance including waste dumping. Signage must be the BioBanking signs available from the OEH. Specific requirements: **Proposed Fencing** Approximately 550 m of new 'simple' rural fencing is proposed to be installed. Fencing will consist of 4-strand plain wire and star pickets with timber posts at corners or as necessary. This fencing will be installed on the western boundary of the biobank only as shown on the Figure 5 Property action plan; Lilli Pilli biobank site, dated 05/07/2017 to delineate the biobank site from nearby residential properties and to assist in controlling impacts from human access. There is also a small section of old fence in the southern portion of the site as shown on the Figure 5 Property action plan; Lilli Pilli biobank site, dated 05/07/2017 which will have the wire removed. **Signage** Standard OEH BioBanking signage is to be installed at the four primary biobank site entrances, as shown on Figure 5 Property action plan; Lilli Pilli biobank site, dated 05/07/2017.	Ongoing from first payment date.

Retention of Dead Timber

Item 7	Retention of dead timber	Timing
7.1	Dead timber (whether standing or fallen and including branches and leaf litter) must not be removed from or moved within the biobank site except for the personal (non-commercial) use by the landowner for firewood for one dwelling only or for repair of fencing (not for construction of fencing). Dead timber used for fencing repair must be documented by the landowner in writing and records must be kept in accordance with the record keeping requirements. The landowner must record the approximate amount of dead timber collected from the biobank site for use in fencing, the location that that dead timber was collected from and the date it was collected (month, year). Specific requirements: N/A	Ongoing from commencement date.
7.2	Timber from outside the biobank site may be introduced to and placed on the biobank site to improve biodiversity values. Once the timber has been brought onto the site, it is subject to the requirements of item 7.1 above. Timber brought from outside the biobank site must be documented by the landowner in writing and records must be kept in accordance with the record keeping requirements. The landowner must record the approximate amount of timber brought from outside the biobank site, the location where the timber was placed on the biobank site and the date on which it was placed (month, year). Specific requirements: N/A	When required but not required before the first payment date.

Retention of regrowth and remnant native vegetation

Item 5	Retention of regrowth and remnant native vegetation Note: An approval under the *biodiversity Conservation Act 2003* may be required to carry out thinning or any other removal or damage to native vegetation under this item.	Timing
5.1	Native vegetation (whether remnant native vegetation or regrowth) on the biobank site must not be cut down, felled, thinned, logged, killed, destroyed, poisoned, ringbarked, uprooted, burnt or otherwise removed, except in accordance with item 5.2 below, or if it is required as part of the management actions or it is essential for the carrying out of permissible development under clause 3.5 of this agreement. Note: Native vegetation on the biobank site may be managed to improve biodiversity values by thinning to benchmark stem densities over no more than 80% of each management zone. Benchmark stem densities has the same meaning as defined in the Vegetation Benchmark Database as published by OEH and updated from time to time. An approval under the *Native Vegetation Act 2003* may be required to carry out thinning or any other removal or damage to native vegetation under this item.	Ongoing from commencement date.
5.2	Native vegetation on the biobank site must not be burnt except in accordance with the fire management plan prepared pursuant to item 3 above.	Ongoing from commencement date.

6.6 Planting schedule at the biobank site					
Species' common name	**Species' scientific name**	**Management zone/s of planting**	**Number of plants per area**	**Planting method**	**Timing**
No planting					

Erosion Control

Item 8	**Erosion control**	**Timing**
8.1	All reasonable steps must be undertaken to prevent, control and remedy erosion on the biobank site. Soil management for preventing and controlling erosion is to be undertaken using best practice management, such as that developed by the Soil Conservation Service, applied as relevant for the biobank site.	Commencing from first payment date.

Retention of Rocks

Item 9	**Retention of rocks**	**Timing**
9.1	The landowner must not remove, or cause or permit to be removed, rocks from the biobank site or move, or cause or permit to be moved, rocks within the biobank site.	Ongoing from commencement date.
9.2	Rocks from outside the site may be placed on the biobank site to improve habitat for threatened species. Rocks, once placed on the biobank site, are subject to item 9.1 above. The landowner must make and retain records of the location of the rocks placed on the site and the date the rocks were brought onto the site in accordance with the record keeping requirements.	When required but not required before the first payment date.

Item 11	Vertebrate pest management – feral cats and foxes	Timing
11.1	The landowner must implement, and at all relevant times, comply with the vertebrate pest management plan included in Section 4 (or such updated vertebrate pest management plan as has been approved by the Chief Executive under item 11.2 below) ('**the vertebrate pest management plan**'). To allow for adaptive management, minor alterations can be made to the implementation of the vertebrate pest management plan, but these must be recorded in writing in accordance with Section 3 of this Annexure.	Ongoing from first payment date.
11.2	The vertebrate pest management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the review commencement must be provided to the Chief Executive in writing within 14 days of the commencement. The findings of the review must be submitted to the Chief Executive within 3 months of commencing the review. Where the Chief Executive determines from the review that an update of the plan is required, the Chief Executive will notify the landowner in writing that an update of the plan is required. The landowner must update the plan and submit it to the Chief Executive for approval within 3 months of receiving written notification from the Chief Executive that an update of the plan is required. The revised plan must cover the matters outlined below and any additional matters specified by the Chief Executive in writing: • a description of the target fauna species e.g. pigs, foxes or other species such as feral dogs or goats • consideration of relevant current OEH and other pest management programs • the method/s of vertebrate pest control in each management zone determined in accordance with best management practice • the frequency and timing of vertebrate pest control actions in each management zone • methods for monitoring the success of vertebrate pest control actions • a timetable and measures for inspections to identify new vertebrate pest species that may negatively impact on threatened species on the biobank site	Ongoing from first payment date.

	• additional vertebrate pest control actions to destroy or remove any new vertebrate pest species that occur on-site • measures for assessing and reporting monitoring results • a diary for recording actions taken in accordance with the vertebrate pest management plan and minor alterations to this plan permitted for adaptive management. The details (management zone/s, date, alternative actions) and reasons for the minor alterations must be recorded in the diary.	

Item 12	Nutrient control	**Timing**
12.1	Fertilisers, pesticides and herbicides must not be applied on the biobank site, except where required to undertake the management actions. Use of fertilisers for establishing native vegetation through planting or seeding, use of herbicides for controlling weeds or use of pesticides for controlling vertebrate pests or feral herbivores can be undertaken in accordance with best practice management when required to undertake the management actions.	Ongoing from commencement date.
Item 13	Control of exotic fish species	**Timing**
13.1	This item is not applicable.	N/A
Item 14	Maintenance or reintroduction of natural flow regimes	**Timing**
14.1	This item is not applicable.	N/A
14.2	This item is not applicable.	N/A
14.3	Artificial structures such as dams or levee banks that impede the natural flow regimes on the biobank site must not be constructed unless approved by the Chief Executive in writing for the purpose of restoring natural flows.	Ongoing from commencement date.

BIOBANK AGREEMENT MANAGEMENT PLANS

Weed Management Plan

Weed management plan

The weed types, description and location (management zone/s) of weed infestations existing at the commencement date are listed in the weed management plan. The methods of weed control (management actions), monitoring and inspections are also listed.

The landowner must perform the methods of weed control and other weed management activities and monitoring in the weed management plan by the methods described (and in accordance with item 2 of this Annexure) for all weeds. The methods of control will apply to the weeds listed in the table below as well as any other weeds that may be present on the site from time to time.

The template for reporting of monitoring activities and the diary template for weed control management must be filled in to record observations during the implementation of the weed management plan, including any minor variations.

Weed types

Weed	Common name of target weed	Scientific name of target weed	Description of infestation (eg intensity (% cover) & location within zone)	Management zone/s
A	Bamboo	*Bambusa spp*	One small clump in MZ2 (see located shown on Property Action Plan dated 05/07/2017)	MZ2
B	Broadleaf Paspalum	*Paspalum mandiocanum*	Minor infestations in small patches.	All Zones
C	Other introduced grasses (e.g. Whisky Grass, Vasey Grass)	*Andropogon virginicus, Paspalum urvillei*	Minor infestations in small patches.	All Zones
D	Sagittaria	*Sagittaria platyphylla*	Minor infestations in small patches.	MZ1
E	Alexander Palms	*Archontophoenix* sp	Scattered individuals only.	All Zones

F	Small woody and Herbaceous weeds (Coral Berry & Winter Senna)	*Ardisia crenata, Senna pendula* var. *glabrata*	Scattered individuals only.	All Zones
G	White passionflower	*Passiflora subpeltata*	Minor infestation	MZ1

Methods of weed control

Management zone/s	**Weed/s**	**Method of weed control**	**Frequency**
MZ2	A	All weed control activities to be completed by suitably qualified and experienced contractors and staff. **Control methods for Bamboo will include:** • Cut and paint stems with undiluted glyphosate. • Foliage spray on smaller individuals and during follow-up control • Hand removal. **Performance measures:** Weed control work will aim to achieve the following outcomes: 1. Small stand of Bamboo treated by the end of year 2. 2. Biobank site managed so that no mature individuals establish in perpetuity.	4 sessions per year in year 1 and year 2.
All Zones	B	**Control methods will include**: • spot spraying • Use of 'wick wiper' • pulling/crowning of weeds **Performance Measures** Weed control work will aim to achieve the following outcomes: 1. Reduce Paspalum to less than 10% of its original distribution by the end of year 3 2. Maintain Paspalum at less than 10% of original distribution in perpetuity.	3 sessions per year from year 1 to year 3.

All Zones	C	**Control methods will include:** • Ute mounted spray unit (or equivalent) • Spot spraying using 'back packs' throughout all zones. • Wick wiper application. • Back-pack spraying associated with edge of roadside or small patches within existing intact vegetation. **Performance Measures** Weed control work will aim to achieve the following outcomes:	4 sessions from year 1 to year 3
		1. Reduce other introduced grasses to less than 10% of its original distribution by the end of year 3. 2. Maintain other introduced grasses at less than 10% of original distribution in perpetuity.	
MZ1	D	**Controls methods will include:** • Cut and paint crown/lignotuber with undiluted glyphosate for isolated plants or smaller areas of infestation. • Hand pulling/crowning of weeds. **Performance measures:** Weed control work will aim to achieve the following outcomes: 1. Individuals of mature Sagittaria removed by the end of year 3. 2. Biobank site managed so that no mature individuals establish in perpetuity.	Included in Weed C allocation
All Zones	E	**Control methods will include:** • Cut and paint crown/lignotuber with undiluted glyphosate for isolated plants or smaller areas of infestation. • Hand pulling/crowning of weeds. **Performance measures:** Weed control work will aim to achieve the following outcomes: 1. Individuals of *Archontophoenix* sp. removed by the end of year 3. 2. Biobank site managed so that no mature individuals establish in perpetuity.	Included in Weed C allocation

All Zones	F	**Control methods will include:** • Cut and paint crown/lignotuber with undiluted glyphosate for isolated plants or smaller areas of infestation. • Hand pulling/crowning of weeds. **Performance measures:** Weed control work will aim to achieve the following outcomes: . Individuals of Coral Berry & Winter Senna removed by the end of year 3. . Biobank site managed so that no mature individuals establish in perpetuity.	Included in Weed C allocation
MZ1	G	**Control methods will include:** • Cut/scrap and paint crown/lignotuber with undiluted glyphosate for isolated plants or smaller areas of infestation. • Spot spraying • Hand removal (follow-up). **Performance measures:** Weed control work will aim to achieve the following outcomes: 1. Individual White passionflower removed by the end of year 3. 2. Biobank site managed so that no mature vines establish in perpetuity.	Included in Weed C allocation
All Zones	All	Weed control in perpetuity activities program to be carried out by qualified person/s. Methods will include: • Spot spraying • Use of 'wick wiper' • Pulling/crowning of weeds	3 sessions per year in perpetuity

Native planting required to provide habitat for native species affected by weed control activities

Management zone	**Description of planting required** (reference planting schedule at item 6.6)	**Timing**
	N/A	

Monitoring and inspections of existing and new weeds			
Management zone/s	**Weed/s**	**Method of monitoring**	**Date/s required**
All Zones	All weeds	A monitoring and evaluation program to address weed regrowth and control measures will be undertaken annually by the landholder through the set-up of fixed photo-points across all restoration zones. Photos should be taken by digital camera and recorded in the project file by date and discrete photo-point number. Photo-point locations should be clearly marked on site and/or recorded using a GPS. The photo-point monitoring will be augmented by a completion of a weed management log (included below) describing actions and observations.	Annually
		The photographic records and observations log will completed by the landholder and provided to OEH. For each management zone, the following information will be reported: • A summary of weed control activities works undertaken for the previous 12 months in the zone and a review of their success or otherwise. • A description of the current condition of the zone. This may include presence/absence of canopy, shrub and/or ground-layer regeneration and any evidence of dieback etc. • Brief descriptions of the type and locations of any significant new or remaining weed infestations. Successful suppression of weeds should also be documented. Refer back to the performance targets in methods of weed control. • Recommendations, if required, of any adaptations to the weed control techniques previously applied	
All Zones	All weeds	Condition mapping (floristic and habitat field survey assessment) to determine vegetation quality and ecological condition. This will be provided to OEH.	Every six years

Notes:

The following specifications are to be applied to all native vegetation management and restoration works. They apply to all weed species and all management zones.

Herbicide usage

- Herbicide spraying is not to be utilised within bushland areas of diverse / resilient remnant native groundcover.
- Off-label usage of any herbicide is only to be undertaken in accordance with a permit issued by the Australian Pesticide and Veterinary Medicine Authority (APVMA).
- Herbicide usage to only be undertaken where there is no risk to any waterway or the immediate environment. Accumulation of translocated residual herbicides into waterways during wet periods is to be considered in this context.
- All herbicide usage, including storage and transport, to be in accordance with WorkCover NSW (2006) and all relevant legislation, including NSW *Pesticides Act 1999*.
- Any bush regenerator undertaking herbicide spray applications must hold a current chemicals application training certification to AQF Level 3.
- Any bush regenerator undertaking herbicide spray applications must be highly competent in native and exotic plant identification.
- All herbicide applications to weed species are to avoid off-target damage to emerging or mature native plants.

Should a herbicide spill occur, incident and spill management procedures shall be immediately implemented. All incidents shall be immediately reported to the Farm Manager.

All ecological management and restoration works are to be implemented by an appropriately qualified and experienced bush regeneration contractor. The bush regeneration contractor must:

- Comply with provisions of the National Gardening & Landscape Services Award 2010.
- Provide established Workplace Health & Safety and Environmental Management Systems. Preferably the company has third-party accredited systems in place.
- Demonstrate implementation of safe workplace and appropriate environmental management practices and procedures (e.g. appropriate transport and management of herbicides).
- Provide site supervisor(s) with minimum qualifications and experience of Certificate III Conservation & Land Management and one year full-time equivalent experience as a trained bush regenerator.
- All herbicide usage, including storage and transport, to be in accordance with the NSW Pesticides Act 1999, WorkCover NSW (2006) and all other relevant legislation.

Other contractors required may include fencing contractors etc.

One session of weed control refers to a team of 2 or 3 staff per day depending on weed control activity being completed.

Each session of weed control in perpetuity consists of a team of 2 staff for one day.

Weed control refers to the follow-up treatment of weeds listed in this MAP whereas weed control in perpetuity refers to the ongoing treatment, through time, of any weed that may inhabit the site now and in the future.

Template for reporting of monitoring activities		
Management zone/s	**Date**	**Observations and assessment of monitoring** This table must include the information for each zone (or groups of zones) which is described in the table titled 'monitoring and inspections of existing and new weeds'.

Diary template for weed control management			
Date	**Management zone/s**	**Description and type of activity undertaken** (e.g. weed control, observation)	**Minor variations** (details and reasons)

Fire for Conservation Management Plan

Fire for conservation management plan
The plan includes information on all known previous fire events in the 'Fire history' table to demonstrate local fire conditions including intensity and frequency. The ecological fire requirements for each vegetation type or threatened species on the biobank site are listed in the 'Fire requirements for vegetation types and threatened species' table. These are the fire frequency intervals recommended for the vegetation types and threatened species present on the biobank site. They include any requirement adjustments to the schedule in the event of a wildfire or activities undertaken under the *Rural Fires Act (RFA) 1997* to ensure the minimum frequencies between ecological burns. The landowner must carry out ecological burns for each management zone according to the method and frequency described (as informed by the history and requirements sections and in accordance with Section 3 of this annexure). These actions are set out in the 'Ecological burning actions table'. Monitoring and inspections (set out in the 'Fire management monitoring' table) as described must also be implemented. The landowner must also carry out the actions listed in the 'Other fire management activities' table. The table titled 'Template of monitoring activities' must be completed to record observations during the implementation of the plan and assessment of monitoring activities. The landowner must also complete the table titled 'Diary template for fire management activities' to record the management actions undertaken or observations made, including any minor variations.

Fire history for previous 20 years (or longer if known)

Year of fire	Hazard reduction, wildfire or ecological burn and extent of fire	Management zone/s
	Fire history unknown	

Fire requirements for vegetation types and threatened species

Vegetation type and/or threatened species	Fire frequency required	Time of year for burning	Fire intensity required	Adjustment required due to wildfires or RFA activities
NR217 Paperbark swamp forest of the coastal lowlands of the North Coast	Contains vegetation which is not recommended to be subjected to active burns.	N/A	Fire should be avoided where possible	N/A

NR254 Swamp Mahogany swamp forest of the coastal lowlands of the North Coast	Contains vegetation which is not recommended to be subjected to active burns.	N/A	Fire should be avoided where possible	N/A

Ecological burning actions				
Management zone/s	**Actions**	**Supervision & extinguishing techniques**	**Time of year for burning**	**Frequency**
All Zones	All Zones contain vegetation which does not traditionally have the same burning regimes (i.e. it is a moist vegetation types). These areas should not be subjected to targeted ecological burn regime. The site also includes the threatened species Mitchell's Rainforest Snail. This species is not adapted to habitats which are conducive to active burning. Burns in the biobank site would be restricted to potential access of wild fire only should conditions be conducive to such an event. Even then, it is anticipated efforts would be undertaken to restrict fire accessing the site by response authorities including RFS and NPWS.	N/A	No active lighting	N/A

Methods for monitoring the outcomes of ecological burns		
Management zone/s	**Method of monitoring**	**Date/s required**

Other fire management activities (where required)

Template for reporting of monitoring activities		
Management zone/s	**Date**	**Observations and assessment of monitoring**

Diary template for fire management activities			
Date	**Management zone/s**	**Description of activity undertaken or observation made**	**Minor variations** (details and reasons)

Vertebrate Pest Management Plan

Vertebrate pest management plan
The management plan for vertebrate pests includes information on the vertebrate pests and their extent existing at the time of the agreement as listed in the 'Vertebrate pests' table. The possible methods of control for each species, used by OEH and other pest management programs are listed and the suitability of each method to the biobank site is described in the 'Methods considered' table. The landowner must carry out the methods for vertebrate pest control for each management zone according to the method and frequency described in the 'Methods of control' table, The methods of control will apply to the vertebrate pests listed in the 'Vertebrate pests' table as well as any other vertebrate pests that may be present on the site from time to time. Monitoring and inspections of existing and new vertebrate pests on the biobank site, as described in the 'Monitoring and inspections' table, must be implemented. The table titled 'Template for reporting of monitoring activities' must be completed to record observations during the implementation of the plan and assessment of monitoring activities. The landowner must also complete the 'Diary template for vertebrate pest management' to record the management actions undertaken, including any minor variations, and observations made.

Vertebrate pests

Pest	Name of vertebrate pest (e.g. pig, fox, goat, dog)	Description of extent	Management zone/s
A	Fox	Not observed during field assessments, however, may occur on occasion on a transient basis only. Results of desktop analysis (NPWS Wildlife Atlas) indicate the species is likely to be present in the locality.	Possibility throughout the site on occasion, although specific locations unknown.
B	Feral Cat	Not observed during field assessments, however, is possible to occur on occasion. Results of desktop analysis (NPWS Wildlife Atlas) indicate the species is likely to be present in the locality.	Possibility throughout the site on occasion, although specific locations unknown.

Methods considered			
Pest type	**Name and description of program or method**		**Describe suitability**
A	Monitored and controlled in accordance with strategies outlined in best- practice guidelines for fox control contained within the *Predation by the red fox - threat abatement plan* (OEH, 2010). The methods considered include: • baiting • shooting		Baiting considered most suitable if Foxes are observed. Active shooting not deemed appropriate due to proximity to nearby residencies, roads and other amenities
B	Monitored and controlled in accordance with strategies outlined in best- practice guidelines for feral cat control contained within the *Predation by the feral cats - threat abatement plan* (DWHA, 2008). The methods considered include: • baiting • trapping • shooting		Baiting and active trapping considered most suitable if Feral Cats are observed. Active shooting not deemed appropriate due to proximity to nearby residencies, roads and other amenities.
Methods of control			
Management zone/s	**Pest type**	**Method of control**	**Frequency and timing**
All	A	Baiting will be used as the preferred method of fox control. The correct type and method of baiting will need to consider the presence of native fauna and their feeding habits.	As required.
All	B	Baiting and/or active trapping will be used as the preferred method of feral cat control should they be identified to be using the site. The correct type and method of baiting will need to consider the presence of native fauna and their feeding habits.	As required.
Monitoring and inspections of existing and new vertebrate pests			
Management zone/s	**Pest type/s**	**Method of monitoring**	**Date/s required**
All	All	All observations or evidence of feral animals observed by the landholder are to be recorded in the monitoring log, including the date, location and number of animals sighted and any	Annually

		damage noted. Monitoring of damage is essential and can include information on the size of the affected area and feral animal induced impacts.	
		Monitoring is to comprise a nocturnal walk over of the site annually and a visual estimate of the level of grazing, browsing and/or burrowing impacts. The level of impact is to be recorded as negligible, minimal, moderate or high. The monitoring is to also include recording the date, number and location of any tracks, traces scats or sightings. This information is to be used in the feral herbivores pest management plan to inform the methods of control listed in that plan.	
Other management activities (where required)			
Records will be kept of opportunistic pest animal observations by the landholder in the “Diary template for vertebrate pest management” included below. These records will be submitted to OEH annually for review and discussion of suitable control methods to be employed.			

APPENDIX 6: Checklists, Monitoring and Reporting Proforma

Site Record Sheet

Site record sheet -												
Site Address -												
Emergency Meeting Point -												
Land Tenure - BSC				**Area M2 -**			**Parcel No -**					
Veg Type/Status												
Rare/Endangered Plants												
Chemical Sensitive Register												
Volunteer Contacts												
Other Info												
Date	**Hours**	**Hours**	**Hours**	**Hours Total**	**Glyphosate Used Millilitres**	**Gly Total Millilitres**	**Metsulfuron Used Grams**	**Metsul Total Grams**	**Site/ Zone Complete**	**Hrs To Complete**	**Gly To Complete**	**Metsul To Complete**
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					

	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
Date	**Observations and Notes**											

Site record sheet – Lilly Pilly Swamp

Date	Hours	Hours	Hours	Hours Total	Glyphosate Used Millilitres	Gly Total Millilitres	Metsulfuron Used Grams	Metsul Total Grams	Site/ Zone Complete	Hrs To Complete	Gly To Complete	Metsul To Complete
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					

	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					
	Dave	Mali	David		Hand		Hand					
	Todd	Eli			Spray		Spray					
	John	Alex			Drill		Drill					

Date	**Observations and Notes**

Weed Reduction Table - Lilli Pilli Swamp (number of individuals present on site as at date) M=mature; J=juvenile; S=seedling																		
Date	**Aug 19**			**June 2020**														
Weed Species	**M**	**J**	**S**	**M**	**J**	**S**	**M**	**J**	**S**	**M**	**J**	**S**	**M**	**J**	**S**	**M**	**J**	**S**
Ageratina adenophora (Crofton weed)	50	100	200															
Lonicera japonica (Japanese honeysuckle)	0	10	20															
Passiflora suberosa (Corky passionfruit)	5	10	30															
Sphagneticola trilobata (Singapore daisy)	500	500	500															
Archrontophoenix alexandrae (Alexandra palm)	30	300	300															
Cestrum nocturnum (Night flowering jasmine)	3	50	100															
Cinnamomum camphora (Camphor laurel)	5	20	100															
Corymbia torelliana (Cadaghi)	0	5	10															
Eugenia uniflora (Brazilian cherry)	0	5	10															
Lantana camara (Lantana)	5	10	10															
Ligustrum lucidum (Broad-leaf privet)	0	5	10															
Ochna serrulata (Ochna)	0	5	10															
Senna pendula (Senna)	20	1000	1000															
Schefflera actinophylla (Umbrella tree)	0	5	10															

Schinus terebinthifolius (Broad-leaved Pepper tree)	0	5	10															
Solanum mauritianum (Wild tobacco)	20	20	20															
Strelitzia nicolai (Giant bird-of-paradise)	5	10	20															
Syagrus romanzoffianum (Cocos palm)	0	5	10															
Viburnum odoratissimum (Sweet viburnum)	3	50	70															
Chloris gayana (Rhodes grass)	100	100	100															
Paspalum mandiocanum (Broad-leaved paspalum)	5000	5000	5000															
Setaria sphacelata (Setaria)	200	200	200															
Sagittaria platyphylla (Sagittaria)	3000	3000	3000															
Salvinia molesta (Salvinia)	10000	10K	10K															

Weed Monitoring

Template for reporting of monitoring activities		
Management zone/s	**Date**	**Observations and assessment of monitoring** This table must include the information for each zone (or groups of zones) which is described in the table titled 'monitoring and inspections of existing and new weeds'.

Diary template for weed control management			
Date	**Management zone/s**	**Description and type of activity undertaken** (e.g. weed control, observation)	**Minor variations** (details and reasons)

Fire for Conservation monitoring

Template for reporting of monitoring activities		
Management zone/s	**Date**	**Observations and assessment of monitoring**

Diary template for fire management activities			
Date	**Management zone/s**	**Description of activity undertaken or observation made**	**Minor variations** (details and reasons)

Vertebrate Pest Monitoring

Template for reporting of monitoring activities –			
Management zone/s	**Date**	**Current level of impact on vegetation or threatened fauna species** This column must record impact as Negligible, Minimal, Moderate or High	**Observations and assessment of monitoring**

Diary template for vertebrate pest management			
Date of activity	**Management zone/s**	**Description and type of activity undertaken** This column must include details of the vertebrate pests targeted, control techniques applied and numbers controlled.	**Minor variations** (details and reasons)

Annual reporting template

Biobank site annual report					
Location details					
Biobanking agreement ID: Reporting date:			Name of landowner/s: Property address:		
Records of management actions undertaken					
Management action	**Required completion time and frequency**	**Action completed (Yes/No)**	**Actual completion date/s**	**Description of actions undertaken** (including where undertaken (including reference to management zones), any variations and the reasons for variation)	**Visual observations and other comments** (including reasons for non- completion)
1 Management of Grazing for conservation					
2 Weed control					
3 Management of fire for conservation					
4 Management of human disturbance					
5 Retention of native vegetation					
6 Planting or seeding					
7 Retention of dead timber					
8 Erosion control					
9 Retention of rocks					

10 Control of feral and overabundant native herbivores					
11 Vertebrate pest management					
12 Nutrient control					
13 Control of exotic fish species	N/A				
14 Maintenance or Reintroduction of natural flow regimes	N/A				

Incident or event that has adverse effect on biodiversity values on biobank site	
Incident or event including adverse impacts (e.g. natural events)	**Action taken and proposed recommended actions**

Records submitted with this report
□ Photographs taken at the photo points set in the biobanking agreement.
□ Results of the inspections required to be conducted in item 1.3 of Annexure D to the biobanking agreement.
□ Results of any monitoring, inspections or surveys required in Annexures C and D to the biobanking agreement.

Signature and certification	
I hereby declare that the information supplied in this report is accurate and complies with the reporting requirements under item 2 of the Annexure D to the biobanking agreement. Note: If the land that forms the biobank site is owned by multiple persons, each landowner must sign this annual report.	
Signed	Signed
Date	Date

Figure 1: The site, with the six monitoring points identified.

Locations of photo points

Projected coordinate system: GDA94

Photo point reference	Easting	Northing	Latitude	Longitude	Direction of photo (magnetic degrees)
A	559711	6829647	-28° 39’ 32”	153° 36’ 40”	East (90)
B	559814	6829307	-28° 39’ 43”	153° 36’ 44”	East (90)
C	559735	6829376	-28° 39’ 41”	153° 36’ 41”	South (180)
D	559851	6829221	-28° 39’ 46”	153° 36’ 45”	North (360)
E	559824	6829221	-28° 39’ 46”	153° 36’ 44”	South (180)
F	559825	6829468	-28° 39’ 38”	153° 36’ 44”	South (180)

26-09-2019

Point A

Time	Conditions	Ground cover (%)	Notes
1.38pm	Light cloud	60 – 80%	*Melaleuca quinquenervia* dominant canopy, minimal weed infestations, sodden ground, even after prolonged dry period.

Figure 2: Point A 260919

Point B

Time	Conditions	Ground cover (%)	Notes
1.01pm	Light cloud	80%	Adjacent a watercourse, with vine growth and sunlight penetration. Water colour is very opaque orange, possibly due to acid sulphate. Recommend water testing. Two scats near point B, most likely from a cat. Additional photos can be provided.

Figure 3: Point B 260919

Point C

Time	Conditions	Ground cover (%)	Notes
1.17pm	Light cloud	20%	This monitoring point is nearest road verge. There was rubbish present, with some weed infestations. Both rubbish and weeds should be able to be removed by hand.

Figure 4: Point C 260919

Point D

Time	Conditions	Ground cover (%)	Notes
1.54pm	Light cloud	60 - 70%	Many weed species present, including Cassia (*Senna pendula var. glabrata*) and night scented jasmine (*Cestrum nocturnum*), with a more open canopy than the other monitoring points. Large amounts of litter present.

Figure 5: Point D 260919

Point E

Time	Conditions	Ground cover (%)	Notes
9.41am	Light cloud	70 - 80%	The photo point E captures one of a number of open water sections toward the southern end of the site dominated by Sagittaria (*Sagittaria platyphylla*), an aquatic weed in NSW with aggressive growth and rapid spread - https://weeds.dpi.nsw.gov.au/Weeds/Sagittaria.

Figure 6: Point E 221019

Point F

Time	Conditions	Ground cover (%)	Notes
9.12am	Light cloud	60 -70%	The photo point F represents many of the permanent water sections through the middle of the site, with Salvinia (*Salvinia molesta*) becoming established. Salvinia is classed as a weed of National Significance in Australia, and is regarded as a "serious threat to waterways…" https://weeds.dpi.nsw.gov.au/Weeds/Details/118.

Figure 7: Point F 221019