PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)

Prepared For:
Trustees of the Sisters
Of the Good Samaritan
Prepared By:

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "D"
Appendix 6
Biodiversity Overview and Management Principles
(Travers Ecological)

October 2021

Appendix 6. Guide to Managing the Mater Dei Stage 2 Biobank Site, Cobbitty

DRAFT

Guide to managing the

MATER DEI STAGE 2 BIOBANK SITE, COBBITTY

Part 1: Site Description and Management Actions

OCTOBER 2016

Prepared for the Sisters of the Good Samaritan
by the NSW Office of Environment and Heritage

EXECUTIVE SUMMARY

The Mater Dei Stage 2 biobank site permanently protects 57.7 hectares of native vegetation on the Mater Dei property, Cobbitty. It contains critically endangered Cumberland Plain Woodland, endangered River Flat Eucalypt Forest, vulnerable Camden White Gum trees, and habitat for a range of threatened fauna species including the Little Eagle, Dusky Woodswallow, Eastern Bentwing-bat, East Coast Freetail-bat, and the Cumberland Plain Land Snail.

Much of the native vegetation on the biobank site is currently in poor health. Large areas have been cleared of native trees and shrubs and persist as derived grasslands. Other areas have become heavily infested with woody weeds including African Olive and Honey Locust. Without active management, these areas will continue to degrade and eventually their conservation values will be lost.

Under Biobanking agreement ID number 217 established on 4 June 2014 between the landowner (Sisters of the Good Samaritan) and the NSW Government, the landowner is responsible for implementing a suite of management actions that will restore the health of the native vegetation and fauna habitats on the site. Annual payments will be made to the landowner to fund this management and to monitor and report on the outcomes.

This guide has been prepared to assist the landowner to manage the biobank site in an effective and efficient manner. The guide comprises of two parts:

- Part 1 – Site description and management actions
- Part 2 – Timetable and costs of management (November 2016 – October 2021)

This document forms Part 1 of the implementation guide. It provides an overview of the biodiversity (flora and fauna) values of the site, the management actions that are required to maintain and improve these values, and the monitoring and reporting requirements of the agreement.

Part 2 of the guide covers the first five year period of the agreement only. It contains a timetable for the key management actions that are required to be implemented during this period, and describes the estimated cost of these.

Please note that this document is intended to be used as a guide only. It does not over-ride or replace the Biobanking agreement for the site which contains the legal obligations of the landowner. It remains the responsibility of the landowner to ensure that all of the obligations under the Biobanking agreement are satisfied.

Contents

1. Introduction

This document is the first part of a two part implementation guide that has been prepared to assist the landowner to manage the Mater Dei Stage 2 biobank site ('the site') in accordance with Biobanking agreement ID number 217 ('the agreement').

It provides an overview of the biodiversity values of the site, the management actions that are required to maintain and improve these values, and the monitoring and reporting requirements of the agreement.

2 Site Description

2.1 LOCATION AND REGIONAL CONTEXT

The Mater Dei property ('the property') is located at 229 Macquarie Grove Road, Cobbitty, in the local government area of Camden (Map 1). The 244 hectare property (Lot 100 DP 1159926) is owned by the Sisters of the Good Samaritan ('the Sisters') and contains the Mater Dei Special School and Wivenhoe Historic House. The property is located on the Nepean River and contains extensive areas of bushland and derived grasslands.

The property is located within the 'priority conservation lands' of western Sydney. These lands are identified in the Cumberland Plain Recovery Plan as being priorities for the implementation of actions to recover threatened species, populations and ecological communities in the region (DECCW 2011).

A total of approximately 181 hectares of the property has been protected by the Sisters for the purpose of biodiversity conservation (Map 2). This protected area comprises of:

- a 91 hectare conservation area established in February 2009 under a voluntary planning agreement between SGS and Camden Council,
- a 26 hectare Stage 1 biobank site established in May 2012, and
- a 58 hectare Stage 2 biobank site established in May 2016.

2.2 SITE CONTEXT

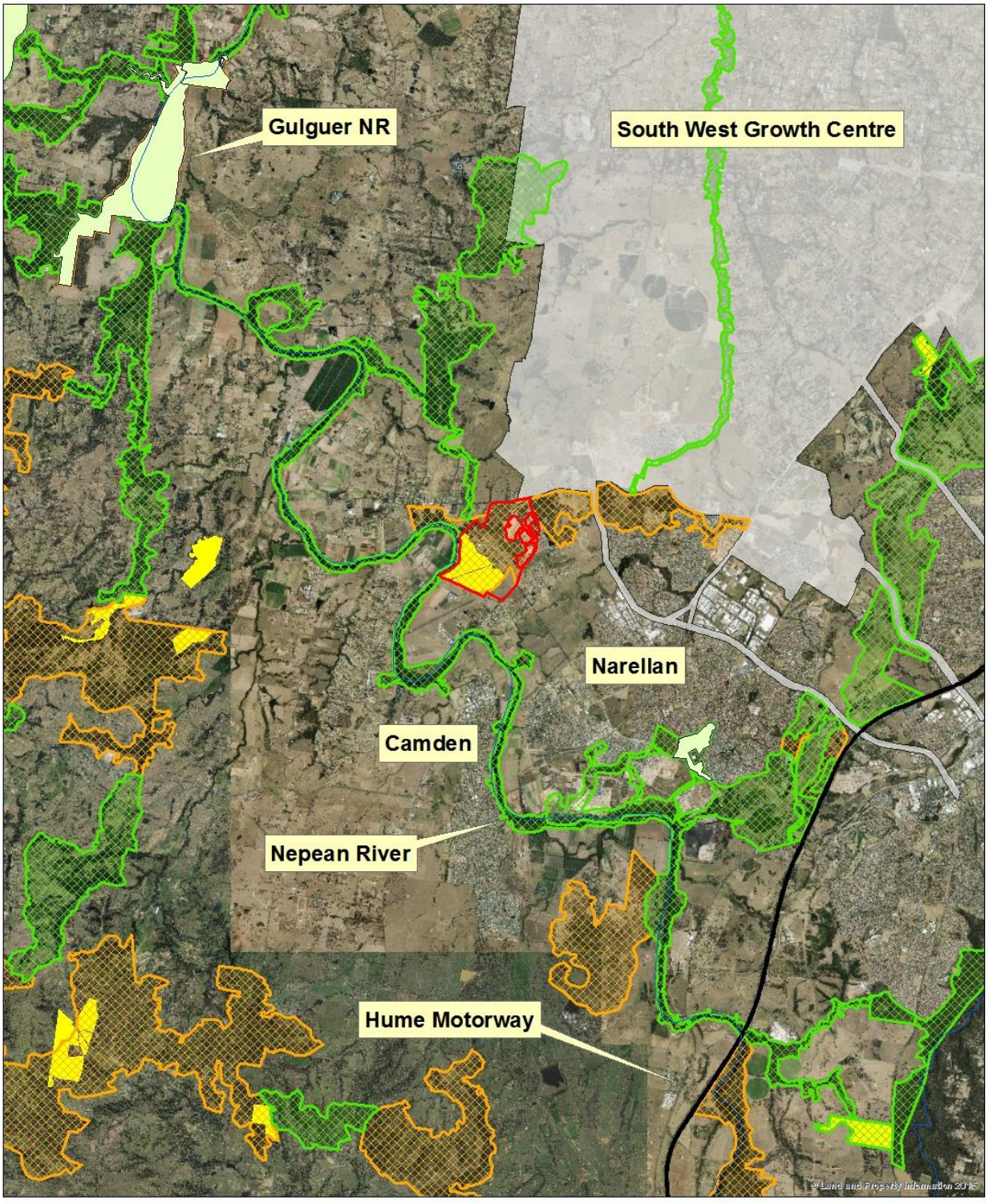
The Stage 2 biobank site is located in the southern part of the Mater Dei property and directly adjoins both the Nepean River and the Stage 1 biobank site (Map 2). It contains remnant woodland and derived grasslands that are currently grazed by cattle. Highly degraded riparian forest is present on the banks of the Nepean River and adjacent levees.

Under the agreement, most of the Stage 2 biobank site will be managed for the primary purpose of maintaining and/or improving its biodiversity values. However, the following areas will not be managed primarily for their biodiversity values:

- water treatment pond enclosure (Management Zone 7),
- picnic area (Management Zone 8),
- farm dams (Management Zone 9), and
- access road (Management Zone 10).

These areas were included in the biobank site so that the highly invasive woody weeds (including African Olive, Blackberry and Honey Locust) that are present can be actively managed as part of the agreement. Without active management, these areas would be a constant source of weed propagules for adjacent parts of the biobank site.

Map 1: Locality Map



Mater Dei property
Biobank sites
NPWS Estate
Priority conservation lands (PCLs)
Biomap corridors (outside PCLs)

Locality Map

Mater Dei property, Cobbitty

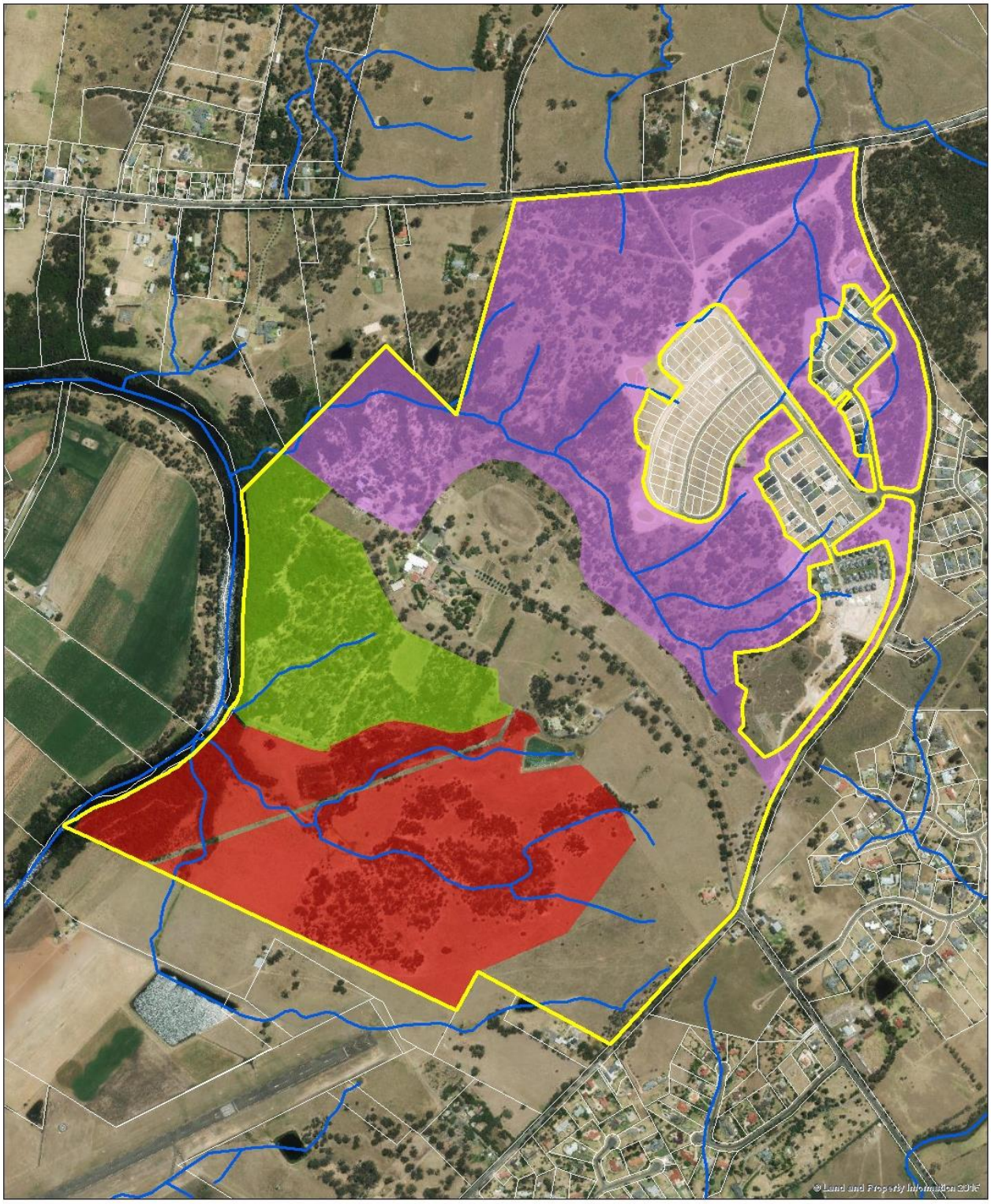
N

0 1 2 3 4 Kms

Datum/Projection: GCS GDA 1994
Prepared 19 August 2016

NSW GOVERNMENT Office of Environment & Heritage

Map 2: Property Map



Legend

- Mater Dei property
- Stage 1 biobank site
- Stage 2 biobank site
- Other conservation area

Property Map

Mater Dei property, Cobbitty

N

0 100 200 300 400 Metres

Datum/Projection: GCS GDA 1994
Prepared 19 August 2016

NSW GOVERNMENT Office of Environment & Heritage

A 13 metre wide power-line easement runs through the site. Although this easement was excluded from the biobank site at the request of Endeavour Energy, sufficient funding will be provided in the annual management payments to the landowner to enable the spot-spraying of highly invasive weeds within this easement. This will ensure that the easement isn't an ongoing source of weeds entering the biobank site

2.3 NATIVE VEGETATION

2.3.1 Vegetation types

The following vegetation types, as described in Tozer et al (2010), are present on the biobank site:

- Cumberland Shale Hills Woodland,
- Cumberland Shale Plains Woodland, and
- Cumberland River Flat Forest.

Table 1 provides details of these vegetation types including the corresponding Biometric Vegetation Types[1] (BVTs) and their status under the *Threatened Species Conservation Act 1995* (TSC Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The distribution of these vegetation types on the site is shown in Map 3. A total of 0.76 hectares of the biobank site contains dams and the access road and is not mapped as native vegetation.

Table 1: Vegetation types

Map unit in Tozer et al (2010)	Equivalent Revised Biometric Vegetation Type	Equivalent TSC Act listing	Equivalent EPBC Act listing	Area on biobank site
Cumberland River Flat Forest	HN526: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	River Flat Eucalypt Forest on Coastal Floodplains - endangered	N/A	23.5 ha
Cumberland Shale Plains Woodland	HN528: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin	Cumberland Plain Woodland in the Sydney Basin Bioregion - critically endangered	Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest - critically endangered[2]	33.4 ha
Cumberland Shale Hills Woodland	HN529: Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	Cumberland Plain Woodland in the Sydney Basin Bioregion - critically endangered	Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest - critically endangered[3]	0.8 ha

The overall condition of the native vegetation on the site is poor. Table 2 shows the proportion of each vegetation type that was mapped as derived grassland (i.e. with native canopy and shrub layer absent) and/or with high weed levels (>30% weed foliage cover). Just 28% of the site was mapped as having an intact structure (i.e. with a native canopy and shrub layer present) and moderate to low weed levels (<30% weed cover).

Table 2: Vegetation condition

Map unit in Tozer et al (2010)	Native canopy present; <30% weed cover	Native canopy present; >30% weed cover	Native canopy absent; <30% weed cover	Native canopy absent; >30% weed cover	Total area on biobank site
Cumberland River Flat Forest	2.6 ha	9.0 ha	0.6 ha	11.3 ha	23.5 ha
Cumberland Shale Plains Woodland	13.1 ha	2.1 ha	4.8 ha	13.4 ha	33.4 ha
Cumberland Shale Hills Woodland	0.4 ha	0.2 ha	-	0.2 ha	0.8 ha
TOTAL	**16.1 ha (28%)**	**11.3 ha (20%)**	**5.4 ha (9%)**	**24.9 ha (43%)**	**57.7 ha**

1 The ecosystem credits created by Biobanking agreement are based on the BVTs that are present.
[2] Approx. 26.5 ha currently meets the condition thresholds required for Commonwealth EPBC Act listing
[3] Approx. 0.84 ha currently meets the condition thresholds required for Commonwealth EPBC Act listing

A list of plant species that were recorded from each vegetation type during the biobanking assessment is provided in Appendix A of this guide.

2.3.2 Cumberland River Flat Forest

Cumberland River Flat Forest (CRFF) occurs on alluvial soils in the low lying central and western sections of the biobank site. Two distinct forms of this vegetation type are present, Riparian Forest and Alluvial Woodland.

Riparian Forest

Riparian Forest occurs on the banks of the Nepean River and adjacent levees. A native canopy is present, although somewhat reduced, throughout much of the Riparian Forest. The main native canopy species present is River Peppermint (*Eucalyptus elata*) with Broad-leaved Apple (*Angophora subvelutina*), Rough-barked Apple (*Angophora floribunda*), Forest Red Gum (*Eucalyptus tereticornis*) and Cabbage Gum (*Eucalyptus amplifolia*) occurring less frequently. River Oak (*Allocasuarina cunninghamiana)* is also present on the riverbank and in drainage lines, and a small number of vulnerable Camden White Gum (*Eucalyptus benthamii*) trees occur on the levee near the south-west corner of the site.

Native shrub and small tree species recorded from the Riparian Forest include Blackthorn (*Bursaria spinosa* subsp. *spinosa*), White Cedar (*Melia azedarach*) and Tree Violet (*Melicytus dentatus*). Native groundcover is generally sparse due to shading by woody weeds. Native groundcover species that are present include Weeping Meadow Grass (*Microlaena stipoides* var. *stipoides*), Kidney Weed (*Dichondra repens*), Wavy Beard Grass (*Oplismenus aemulus),* Creeping Beard Grass (*Oplismenus imbecillis*) and Drooping Sedge (*Carex longebrachiata*).

The overall condition of the Riparian Forest is poor due to very high weed levels (>60% foliage cover) throughout much of its area. Weed cover comprises of:

- woody weeds including Honey Locust (*Gleditsia triacanthos*), African Olive (*Olea europaea* subsp. *cuspidata*), Large-leaved Privet (Ligustrum lucidum) and Small-leaved Privet (*Ligustrum sinense*),
- exotic vines including Balloon Vine (Cardiospermum grandiflorum), Moth Vine (Araujia sericifera) and Bridal Creeper (Asparagus asparagoides), and
- ground layer weeds including Wandering Jew (Tradescantia fluminensis) and Panic Veldtgrass (Ehrharta erecta).

Image 1: Riparian Forest - low weed cover

Image 2: Riparian Forest - high weed cover

Alluvial Woodland

Alluvial Woodland occurs on alluvial soils in the central part of the biobank site. Most of the Alluvial Woodland on the site comprises of derived grasslands resulting from the previous clearing of native canopy and shrub species and the ongoing grazing of livestock. The derived grasslands are generally in poor condition and contain very high levels (>60% foliage cover) of exotic grasses

including Carpet Grass (*Axonopus fissifolius*), Chilean Quaking Grass (*Briza subaristata*) and Common Paspalum (*Paspalum dilatatum*). The most frequently occurring native grasses in these areas include Kangaroo Grass (*Themeda triandra*), Purple Wire Grass (*Aristida ramosa*), Common Couch (*Cynodon dactylon*) and Weeping Meadow Grass *(Microlaena stipioides*).

In the areas of structurally 'intact' Alluvial Woodland (i.e. areas where the native canopy an dshrub layer has been retained), the main tree species present are Forest Red Gum (*Eucalyptus tereticornis*), Cabbage Gum (*Eucalyptus amplifolia*), Blue Box (*Eucalyptus baueriana*) and Rough-barked Apple (*Angophora floribunda*). Blackthorn (*Bursaria spinosa* subsp. *spinosa*) is the only native shrub species recorded from these areas, while the most frequently recorded native ground cover species include Weeping Meadow Grass *(Microlaena stipioides*), Purple Wire Grass (Aristida ramosa), Kidney Weeds (*Dichondra* spp.), Glycines (*Glycine* spp.), Slender Tick-trefoil (*Desmodium varians*), Drooping Sedge (*Carex longebrachiata*) and *Carex inversa.*

Highly variable levels of weed cover are present in the 'intact' Alluvial Woodland. The main woody weed species are African Olive (*Olea europaea* subsp. *cuspidata*), Large-leaved Privet (Ligustrum lucidum), Small-leaved Privet (*Ligustrum sinense*) and Blackberry (*Rubus* sp.). Groundlayer weeds include Panic Veldtgrass (*Ehrharta erecta*), Lambs Tongue (*Plantago lanceolata*), Paddies Lucerne (*Sida rhombifolia*) and Ground Asparagus (*Asparagus aethiopicus*).

Image 3: Alluvial Woodland - low weed cover

Image 4: Alluvial Woodland - derived grassland

2.3.3 Cumberland Shale Plains Woodland

Cumberland Shale Plains Woodland (CSPW) occurs on shale derived soil in the eastern half of the site. Approximately 60% of this vegetation type on the site has retained an intact tree canopy and the remaining area is derived grasslands of varying condition.

The main tree species present are Forest Red Gum (*Eucalyptus tereticornis*) and Grey Box (*Eucalyptus moluccana*) while Blackthorn (*Bursaria spinosa* subsp. *spinosa*) is the only native shrub species recorded. The groundlayer is dominated by grasses and forbs including Kangaroo Grass (*Themeda triandra*), Weeping Meadow Grass *(Microlaena stipioides*), Purple Wire Grass (Aristida ramosa), Kidney Weeds (*Dichondra* spp.), Glycines (*Glycine* spp.), Slender Tick-trefoil (*Desmodium varians*), Blue Trumpet (*Brunoniella australis*), Mulga Fern (*Cheilanthes sieberi* subsp. *sieberi)* and Bluebells *(Wahlenbergia spp.).*

Most areas of 'intact' CSPW on the site are in good condition although small areas of dense African Olive (*Olea europaea* subsp. *cuspidata*) and African Boxthorn (*Lycium ferocissimum*) are present throughout, typically occurring as 'halos' beneath large native trees.

The derived grasslands in this vegetation type are in a mixed condition. Grasslands located immediately adjacent to areas of 'intact' woodland generally have low (<10%) weed foliage cover, with weed levels increasing with distance away from the woodlands.

The most frequently occurring native species within the derived grasslands include Kangaroo Grass (*Themeda triandra*), Purple Wire Grass (*Aristida ramosa*) and Weeping Meadow Grass *(Microlaena stipioides*). Common weed species present are exotic grasses including Carpet Grass (*Axonopus fissifolius*), Chilean Quaking Grass (*Briza subaristata*) and Common Paspalum (*Paspalum dilatatum*) and herbs such as Fireweed (*Senecio madagascariensis*) and Purpletop (*Verbena bonariensis*).

Image 5: CSPW - low weed cover

Image 6: CSPW - derived grassland with low weed cover

2.3.4 Cumberland Shale Hills Woodland

Cumberland Shale Hills Woodland (CHSW) occurs in a small area (0.8 ha) in the north-east corner of the site. A native canopy is generally present and comprises of the same canopy species that are found in the CSPW (i.e. Forest Red Gum and Grey Box). The understorey of the CSHW is disturbed with African Olive dominating some areas. The floristic differences between CSHW and CSPW on the site are very subtle and difficult to identify in the field.

2.4 THREATENED FLORA AND FAUNA

The location of all post-1996 threatened flora and fauna sightings on the Mater Dei property are shown on Map 3.

2.4.1 Threatened flora

Four mature Camden White Gum (*Eucalyptus benthamii*) trees have been recorded from the Riparian Forest in the south-west corner of the biobank site (Map 3). The Camden White Gum is a tall tree to 40 m high with smooth, white bark and numerous long, loose bark ribbons, and a persistent, flaky bark stocking at the base. The species is listed as vulnerable under State (TSC Act) and Commonwealth (EPBC Act) legislation. Its distribution is confined to the alluvial flats of the Nepean River and its tributaries. More information on this species is available at http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10284.

A small population of the Matted Bush-pea (*Pultenaea pendunculata*) occurs in the conservation area in the northern part of the property. Potential habitat for this species exists in remnant Cumberland Shale Plains Woodland on the biobank site. The Matted Bush-pea site is a shrub that can form carpets more than 1 metre wide with branches less than 20 cm off the ground. It is listed as endangered under State (TSC Act) legislation. More information on this species is available at http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10716.

The biobank site contains potential habitat for a further four threatened flora species have been recorded from within 10 km of the site:

- The endangered shrub Spiked Rice-flower (*Pimelea spicata*) may be present in Cumberland Shale Plains Woodland and Cumberland Shale Hills Woodland on the site. *http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10632*

- The endangered shrub Brown Pomaderris (*Pomaderris brunnea*) may be present in River Flat Eucalypt Forest on the site.
  http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10647

- An endangered population of the climber *Marsdenia viridiflora* may be present in any of the vegetation types present on the site.
  http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10508

- The endangered climber White-flowered Wax Plant (*Cynanchum elegans*) may be present in any of the vegetation types present on the site.
  http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10196

Image 7: Camden White Gum (OEH)

Image 8: Matter Bush-pea (A. Fairley)

Image 9: Spiked Rice-flower (OEH)

Image 10: Brown Pomaderris (G. Steenbeeke)

Image 11: *Marsdenia viridiflora* (OEH)

Image 12: White-flowered Wax Plant (OEH)

2.4.2 Threatened fauna

The following information is based largely on the outcomes of a fauna survey of the Mater Dei property that was undertaken by OEH between April and June 2016. Further information on the threatened and non-threatened fauna that are present on the property is available in the survey report (OEH 2016).

The conservation status of the species referred to below is included in Table 8.

Birds

The following threatened bird species have been recently recorded on the property by OEH:

- Powerful Owl (*Ninox strenua*),
- Little Lorikeet (*Glossopsitta pusilla*),
- Speckled Warbler (*Pyrrholaemus sagittatus*),
- Little Eagle (*Hieraaetus morphnoides*),
- Dusky Woodswallow (*Artamus cyanopterus*), and
- Varied Sittella (*Daphoenositta chrysoptera*)

Of these species, only the Little Eagle and Dusky Woodswallow have been recorded on the Stage 2 biobank site (Map 3). The other species were recorded from the conservation area in the north of the property.

The Speckled Warbler sighting is of particular significance as this species does not range widely and has specific habitat preferences. The Mater Dei property is one of the few remaining known localities for this species on the Cumberland Plain. Much of the vegetation on the Stage 2 biobank site is currently unsuitable for the Speckled Warbler due to the presence of dense stands of African Olive or extensive areas which have no shrub layer present. However, it is expected that the proposed management of the site will create additional areas of suitable habitat (i.e. patches of Bursaria and other dense native shrubs) for the species on the property.

While not recorded during the OEH survey, the Swift Parrot (Lathamus discolor) was observed in the Stage 1 biobank site in May 2014 by bush regeneration contractors Toolijooa.

The Blue-billed Duck (*Oxyura australis*), Hooded Robin (*Melanodryas cucullata*), Diamond Firetail (*Stagonopleura guttata*) and Brown Treecreeper (*Climacteris picumnus victoriae*) have been recorded in the Cobbitty locality in the past and may use the property on an occasional basis (OEH 2016; DEC 2005).

Mammals

The following threatened micro-bat species have been recently recorded on the property by OEH:

- Eastern Bentwing-bat (Miniopterus schreibersii oceanensis),
- East Coast Freetail-bat (Mormopterus norfolkensis), and
- Large-eared Pied Bat (Chalinolobus dwyeri).

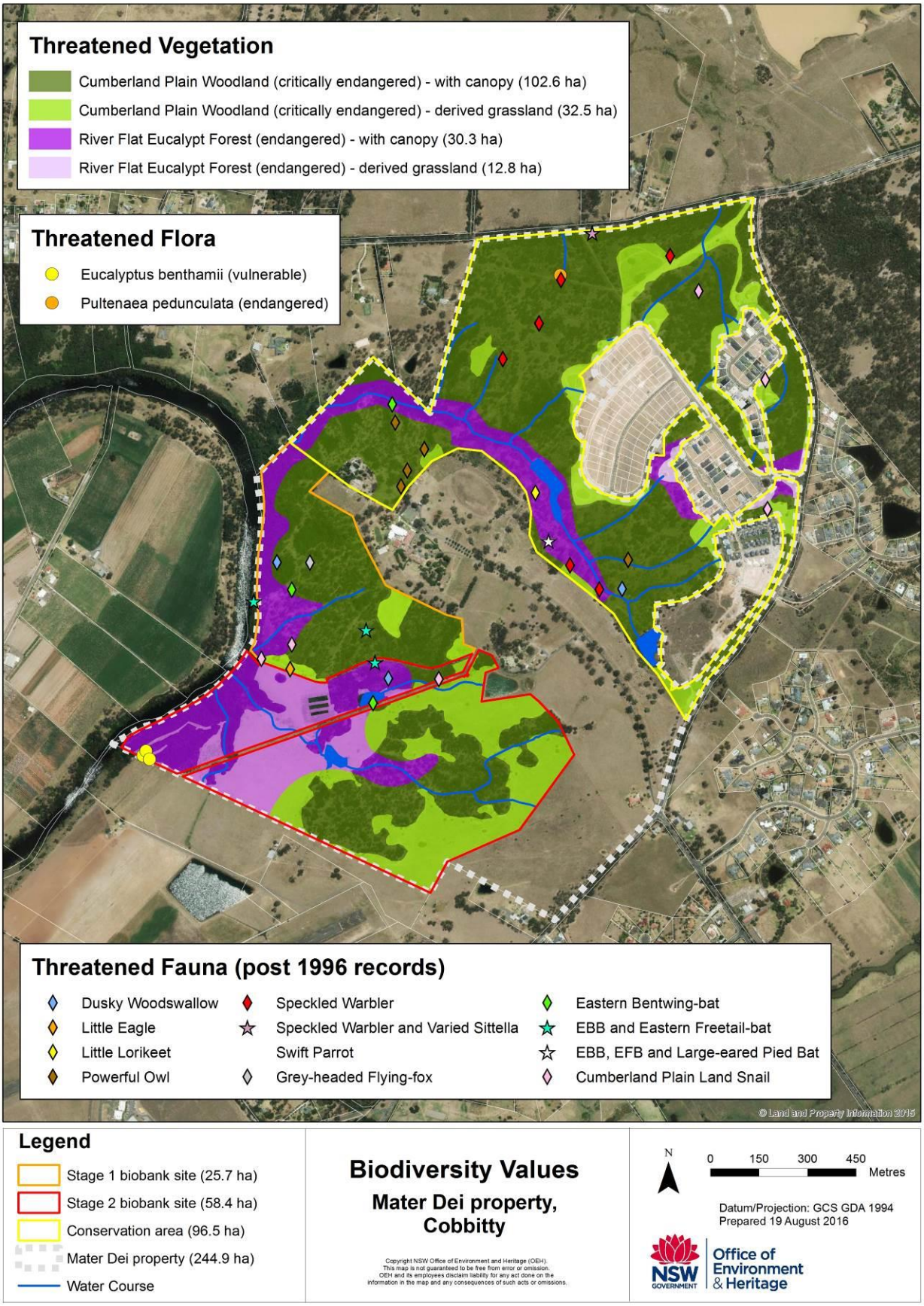
Two of these species (Eastern Bentwing-bat and East Coast Freetail-bat) were recorded on the Stage 2 biobank site, although all three species are likely to be present on the site.

There are also previous records of Grey-headed Flying-fox (*Pteropus poliocephalus*) within the property, and Southern Myotis (*Myotis macropus*) and Greater Broad-nosed Bat (*Scoteanax rueppellii*) within the locality. Although not recorded in the current survey, it is likely that these species would also use the property on an occasional basis (OEH 2016).

Invertebrates

The Cumberland Plain Land Snail (*Meridolum corneovirens*) was recorded from the property in 2005 and is potentially present in the Stage 2 biobank site.

Map 3: Biodiversity Values on the Property



2.5 MANAGEMENT ZONES

To assist with the implementation and reporting of management actions, the biobank site has been divided into nine management zones that group areas with a similar proposed management regime (Map 5). Areas within each management zone have the same weed control and revegetation requirements.

A summary of the features and management requirements for each management zone is provided in Table 3 below.

Table 3: Management Zones

Management Zone	Area (ha)	Description of management zone	Weed control and revegetation requirements
MZ1_WC_GOOD	21.15	• Better condition areas of woodland with high resilience • General very low cover of woody weeds, although small dense infestations present throughout • Low to very low cover of ground layer weeds throughout	• Staged primary weed treatment over 5 years • Ongoing targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set • Other ground layer weeds maintained at <10% foliage cover • No revegetation required
MZ2_WC_FAIR	3.67	• Degraded woodland with moderate resilience • Moderate to very high weed levels throughout, primarily woody weeds	• Staged primary weed treatment over 10 years • Ongoing targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set • Other ground layer weeds maintained at <30% foliage cover • No revegetation required
MZ3_WC_POOR	2.08	• Degraded woodland with moderate resilience • Moderate to very high weed levels throughout, primarily ground layers weeds	• Staged primary weed treatment over 2 years • Ongoing targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set • No revegetation required
MZ4_PR_PART	7.89	• Derived native grassland with moderate/low resilience • Overall high levels of ground layer weeds, but native grasses dominant • General very low cover of woody weeds	• On-going targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds • Treatment of other ground layer weeds as required to assist the establishment of planting and natural regeneration • Planting of native tree and shrub species within first 5 years
MZ5_PR_FULL	15.81	• Mixed grassland with low to very low resilience • Overall high to very high levels of ground layer weeds, with native grasses not dominant • General very low cover of woody weeds	• On-going targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds • Treatment of other ground layer weeds as required to assist the establishment of planting and natural regeneration • Planting of native tree and shrub species within first 5 years • Supplementary of native ground covers 15 years following completion of tree and shrub planting (i.e. once native canopy has established)
MZ6_RR_FULL	6.09	• Highly degraded riparian forest with moderate/low resilience • Overall weed levels very high, consisting of both woody and ground layer weeds	• Staged primary weed treatment over 15 years • Ongoing targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set • Treatment of other ground layer weeds as required to assist the establishment of planting and natural regeneration • Supplementary planting of native tree, shrub and ground layer species in 25% of the zone 3 years following primary weed treatment. Planting to target canopy gaps and areas exhibiting low levels of natural regeneration.

Management Zone	Area (ha)	Description of management zone	Weed control and revegetation requirements
MZ7_ ENCLOSURE	0.58	• Fenced enclosure containing water treatment ponds • Primary management objective for this zone is to prevent spread of weeds to adjacent areas • Moderate to very high weed levels throughout, primarily ground layers weeds	• Staged primary weed treatment over 4 years • Ongoing targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set
MZ8_ PICNIC_AREA	0.13	• Open grassed area containing picnic tables, toilet block, shed etc • Primary management objective for this zone is to allow for the recreation use of the biobank site, including camping • Moderate to high weed levels throughout, primarily ground layers weeds	• Staged primary weed treatment over 4 years • Ongoing targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set
MZ9_ROAD	0.29	• Access road and verges • Management objectives for this zone are to allow for road maintenance and prevent the establishment and spread of weeds into adjacent areas • Generally low weed levels, primarily woody weeds	• Staged primary weed treatment over 4 years • Ongoing targeted treatment of woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set

3. Management Actions

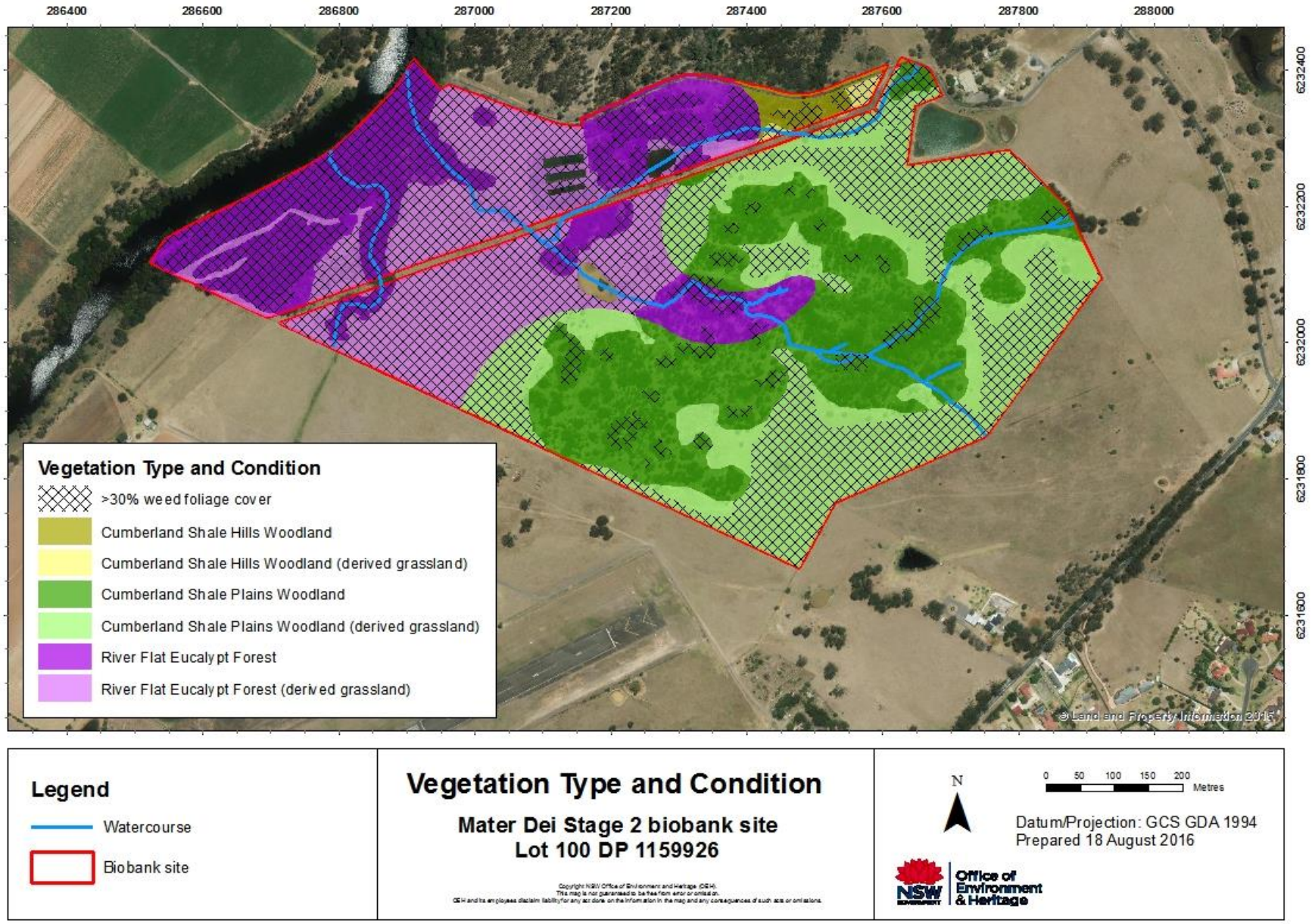
This section contains an overview of the management actions that are required to be implemented under the agreement. The management actions can be either passive or active. Passive management actions have little or no cost and include refraining from doing something, such as not removing fallen logs or clearing native vegetation. Active management actions require specific activities to be implemented and have associated costs. Examples of active management actions include weed removal, fencing and erosion control.

Annual payments from the Biobanking Trust Fund will be made to the landowner to fund the implementation of the active management actions and the monitoring and reporting requirements of the agreement. The payments include a project management component that can be used to employ a part-time project manager to coordinate the implementation of management actions by contractors or, if required, to supplement the funding allocated for specific actions.

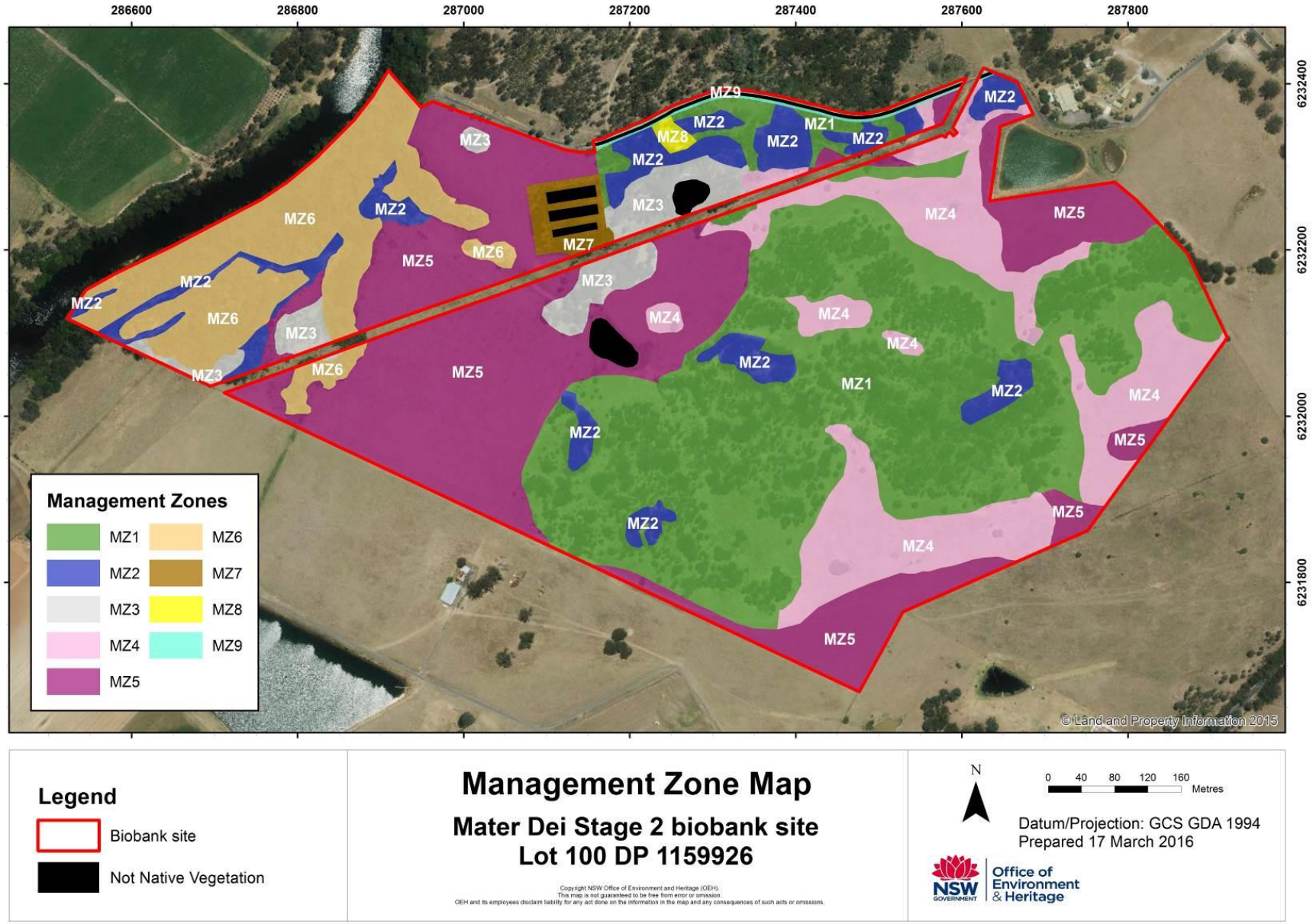
Part 2 of this guide contains a timetable for implementing the management actions during the first five years of the agreement, and describes the costs and performance measures associated with these.

NOTE: The ‘items’ referred to in the following sections are the items contained in Sections 1 and 2 of Annexure C of the Biobanking agreement. The weed, fire and feral pest management plans referred to in the following sections are located in Sections 3 and 4 of Annexure C of the Biobanking agreement.

Map 4: Vegetation Types



Map 5: Management Zones



3.1 MANAGEMENT OF GRAZING FOR CONSERVATION

3.1.1 Exclusion of livestock

Grazing by livestock has the potential to damage the native vegetation on the biobank site through physical disturbance, soil compaction and erosion. For these reasons, Item 1.1 of the agreement states that livestock must not be permitted to graze in any area of the biobank site.

Item 1.4 of the agreement states that, if at any time, the landowner observes stock in any area of the biobank site, the landowner must take necessary measures to remove the livestock from the area immediately.

RECOMMENDATION: To assist with the implementation of this measure, the bush regeneration contractors working on the site could be required to notify the landowner immediately if livestock are observed within the biobank site. This requirement can be included in the contract specifications for weed control and revegetation.

3.1.2 Requirements relating to fencing and gates

Items 1.1 and 1.2 of the agreement contain a number of measures relating to the installation, maintenance and/or removal of fencing and farm gates. The locations of the new fences and gates to be installed and maintained, the existing fences and gates to be maintained, and the existing fences and gates to be removed are described in Table 4 below and shown on the Property Management Actions map (Map 6 of this guide).

Table 4: Fencing and gate actions

Item	Description	Quantity	Symbol on Map 5
New farm gate	Install new and maintain	4 gates	Green star
Existing farm gate	Maintain existing	2 gates	Yellow star
Existing farm gate	Remove existing	4 gates	Blue star
New fence	Install new and maintain	360 m	Green fence
Existing fence	Maintain existing	2,250 m	Yellow fence
Existing fence	Remove wire and metal posts	2,500 m	Red fence

RECOMMENDATION: The agreement does not specify the standard of the fencing and gates to be installed on the site, only that the fences and gates be stock-proof. It is recommended that all new fencing consist of a minimum of five strands of wire with plain wire on at least the top and bottom strands. The purpose of this is to minimise impacts on native fauna.

3.1.3 Funding for fences and gates

Funding for the installation of new gates and fences and for the removal of the internal gates and fences (wire and metal posts only) that are no longer required will be provided in Year 1 of the agreement.

An on-going annual payment of 1/20th of the replacement cost of all fencing and gates that are to be retained on the site will be provided to cover maintenance costs. This is sufficient funding to replace all fencing and gates on the site every 20 years. Where this maintenance funding remains unspent in a particular year, it should be retained for future fence and/or gate maintenance work.

3.2 WEED CONTROL

The establishment and spread of environmental weeds can diminish biodiversity values in many ways. Environmental weeds can smother established native plants and suppress the germination and growth of native seedlings. They also compete with native plants for resources such as light and water, and alter ecological processes in bushland.

Environmental weeds can displace native fauna by reducing the area of suitable habitat that is available. However, some environmental weeds can also provide habitat for native fauna in the absence of intact native vegetation. The staged removal of dense weed infestations is often advisable in order to minimise the potential impacts on native fauna.

The regular and ongoing effective control of environmental weeds on the site is required to ensure that its biodiversity values are improved and maintained in the long term. The weed management plan in the Biobanking agreement describes the weed management actions that must be undertaken on the site. This section of the implementation guide aims to provide context and justification for these actions, and guidance on how to effectively implement them.

Further information on the appropriate techniques for controlling weeds in bushland is available in 'Recovering bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland' (DEC 2005).

3.2.1 Weed cover

Upper/mid stratum weeds

The density of weeds in the upper/mid stratum of the biobank site (i.e. height >1 metre) is shown in Map 7 of this guide. The weeds in this stratum are primarily woody weeds including African Olive, Lantana, Large Leaved Privet, Small Leaved Privet and Honey Locust. Exotic climbers including Balloon Vine and Moth Vine are also present but less widespread.

Very high woody weed densities are present throughout the Cumberland River Flat Forest remnant next to the Nepean River (i.e. the Riparian Forest). Significant widespread infestations of woody weeds are also present within much of the 'intact' (i.e. native canopy and shrub layer present) Alluvial Woodland on the site. Areas of 'intact' Cumberland Shale Plains Woodland and Cumberland Shale Hills Woodland generally contain smaller and more isolated patches of woody weeds.

No significant woody weed infestations are present in the areas of derived grassland.

Ground stratum weeds

The density of weeds in the ground stratum of the biobank site (i.e. height <1 metre) is shown in Map 8 of this guide. High to very high densities of exotic grasses (primarily Carpet Grass and Common Paspalum) are present in the areas of derived grassland that are located greater than approximately 20 to 40 metres from 'intact' woodland.

Moderate to very high levels of ground stratum weeds (primarily Wandering Jew and Panic-veldt Grass) are present in the Riparian Forest, while the other parts of the site with 'intact' have low to very low ground stratum weeds.

NOTE: The low ground stratum weed densities mapped in some areas is due to shading by the dense sub-canopy of woody weeds (primarily African Olive). It is expected that ground weed levels in these areas will increase substantially following primary woody weed removal as a result of the increased light levels. This 'flush' of ground weeds will need to be effectively managed to ensure that the regenerating native species are able to establish. Primary weed removal is proposed to be staged in these areas so that resources are available for effective secondary weed treatment.

3.2.2 Approach to weed management

Weed control program

The proposed approach to weed control on the biobank site is to undertake the effective and ongoing control of all woody weeds, exotic climbers and highly invasive weeds in all parts of the site. This includes areas that are not being managed primarily for conservation purposes such as the water treatment pond enclosure (MZ7), picnic area (MZ8) and road verges (MZ9).

Woody weeds, exotic climbers and highly invasive weeds are the weeds that are likely to have the greatest environmental impact on the biobank site and so are the highest priority for control efforts. The list of the woody weeds, exotic climbers and highly invasive weeds identified for treatment in the weed management plan in the Biobanking agreement is included in Table 5 below.

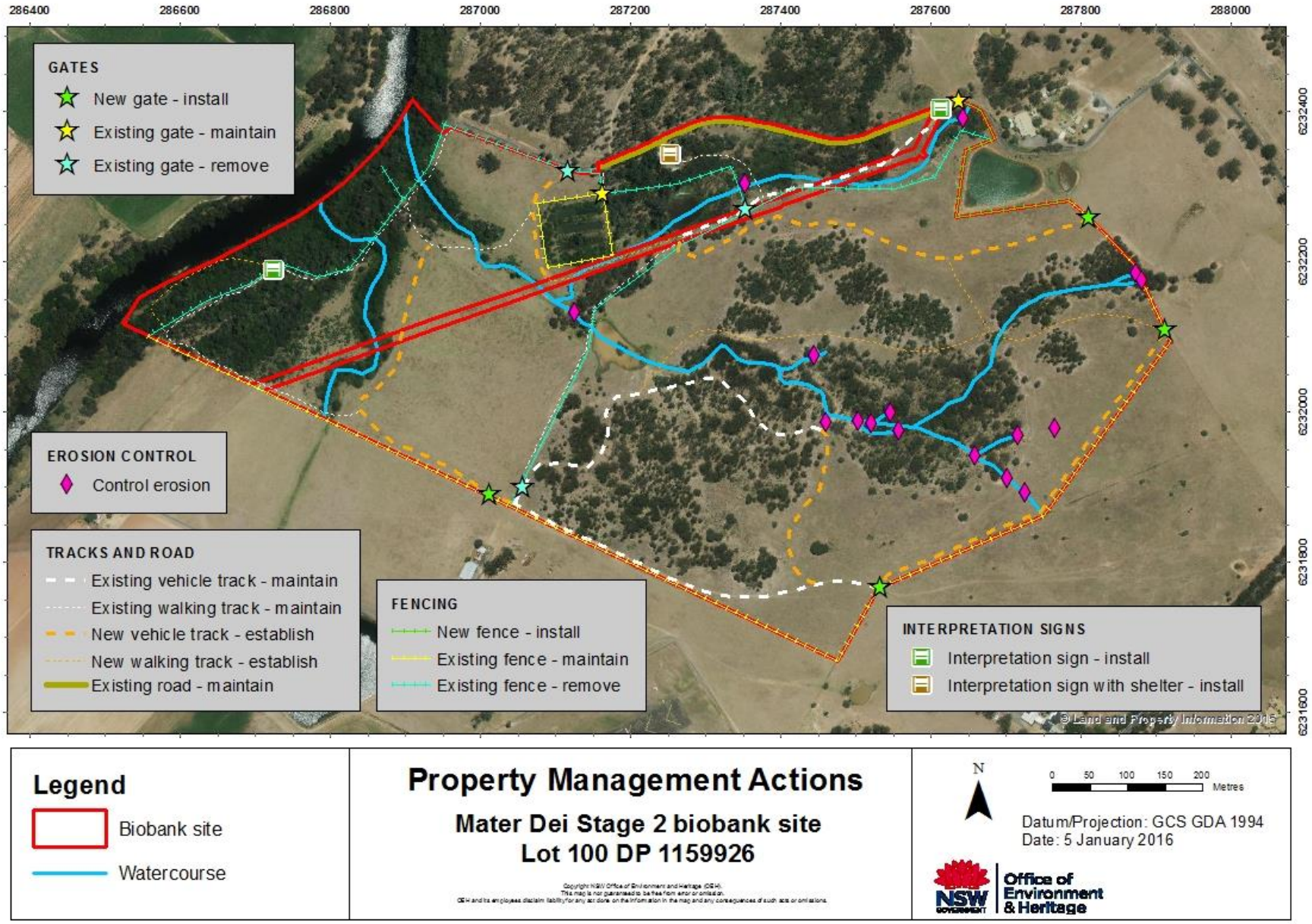
The primary treatment of woody weeds, exotic climbers and highly invasive weeds will be staged for up to 15 years (see Table 6 of this guide) to avoid the problems that can result from 'over-clearing' including loss of native fauna habitat, soil erosion, and excessive weed regrowth.

Other weeds on the biobank site will be treated as required to meet the performance measures for ground layers weeds identified in the weed management plan or to assist the establishment of regenerating and/or planted native species.

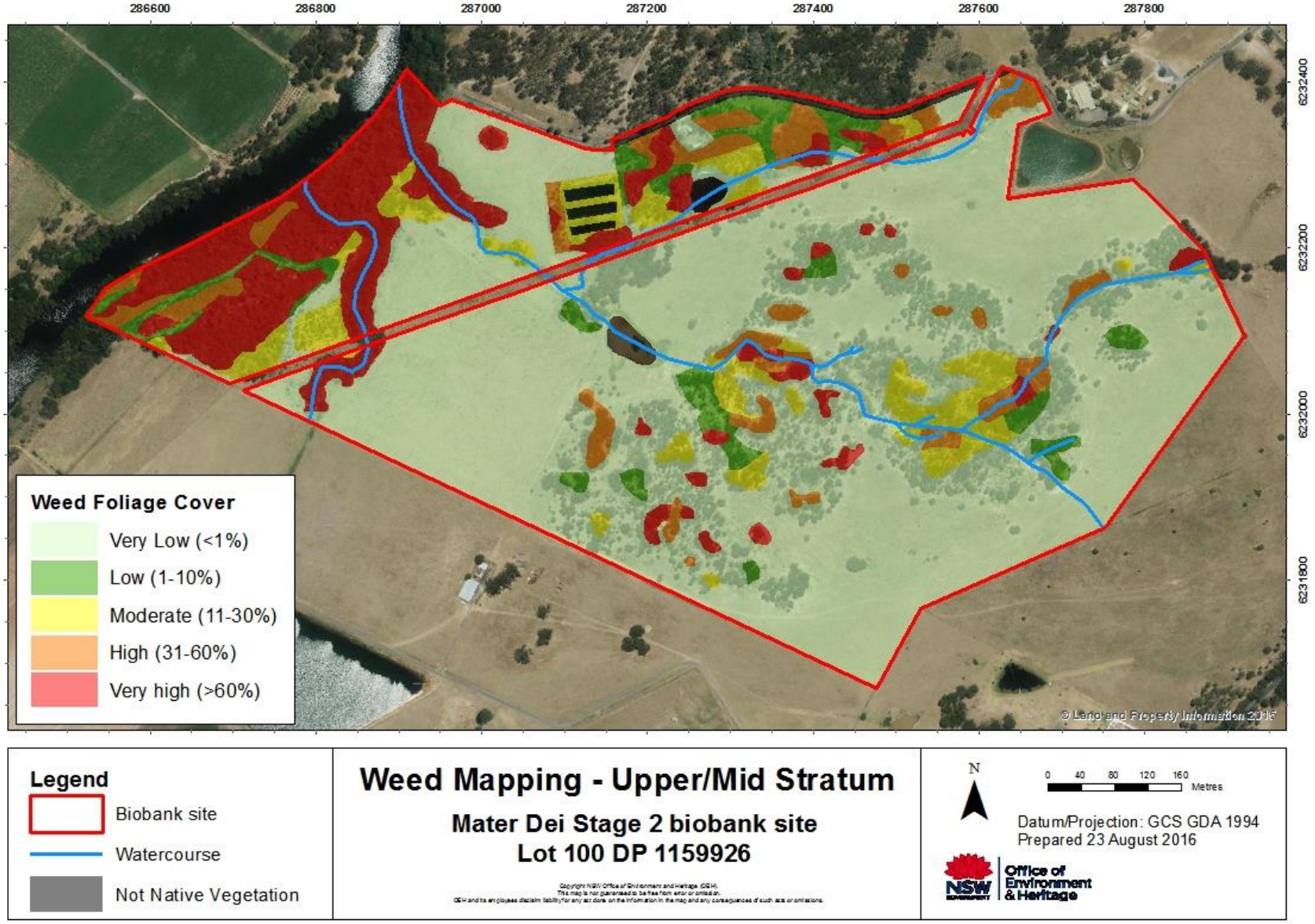
Table 5: Woody weeds, exotic vines and highly invasive

Weed type	Common name	Scientific name
Woody weed	African Boxthorn	*Lycium ferocissimum*
Woody weed	African Olive	*Olea europaea* ssp.*cuspidata*
Woody weed	Blackberry	Rubus sp.
Woody weed	Prickly Pear	*Opuntia stricta*
Woody weed	Hackberry	Celtis occidentalis
Woody weed	Green Cestrum	*Cestrum parqui*
Woody weed	Honey Locust	*Gleditsia triacanthos*
Woody weed	Lantana	*Lantana camara*
Woody weed	Large Leaved Privet	*Ligustrum lucidum*
Woody weed	Small Leaved Privet	*Ligustrum sinense*
Exotic climber	Turkey Rhubarb	*Acetosa sagittata*
Exotic climber	Balloon Vine	*Cardiospermum grandiflorum*
Exotic climber	Madeira Vine	*Anredera cordifolia*
Exotic climber	Moth Vine	*Araujia sericifera*
Exotic climber	Bridal Creeper	*Asparagus asparagoides*
Exotic climber	Honeysuckle	*Lonicera* japonica
Highly invasive ground layer weed	Rhodes Grass	*Chloris gayana*
Highly invasive ground layer weed	Red Natal Grass	*Melinis repens*
Highly invasive ground layer weed	Coolatai Grass	*Hyparrhenia hirta*
Highly invasive ground layer weed	Serrated Tussock	*Nassella trichotoma*
Highly invasive ground layer weed	Chilean Needle Grass	*Nassella neesiana*
Highly invasive ground layer weed	Climbing Nightshade	*Solanum seaforthianum*
Highly invasive ground layer weed	Wandering Jew	*Tradescantia fluminensis*
Highly invasive ground layer weed	African Love Grass	*Eragrostis curvula*
Highly invasive ground layer weed	Climbing Asparagus	*Asparagus aethiopicus*

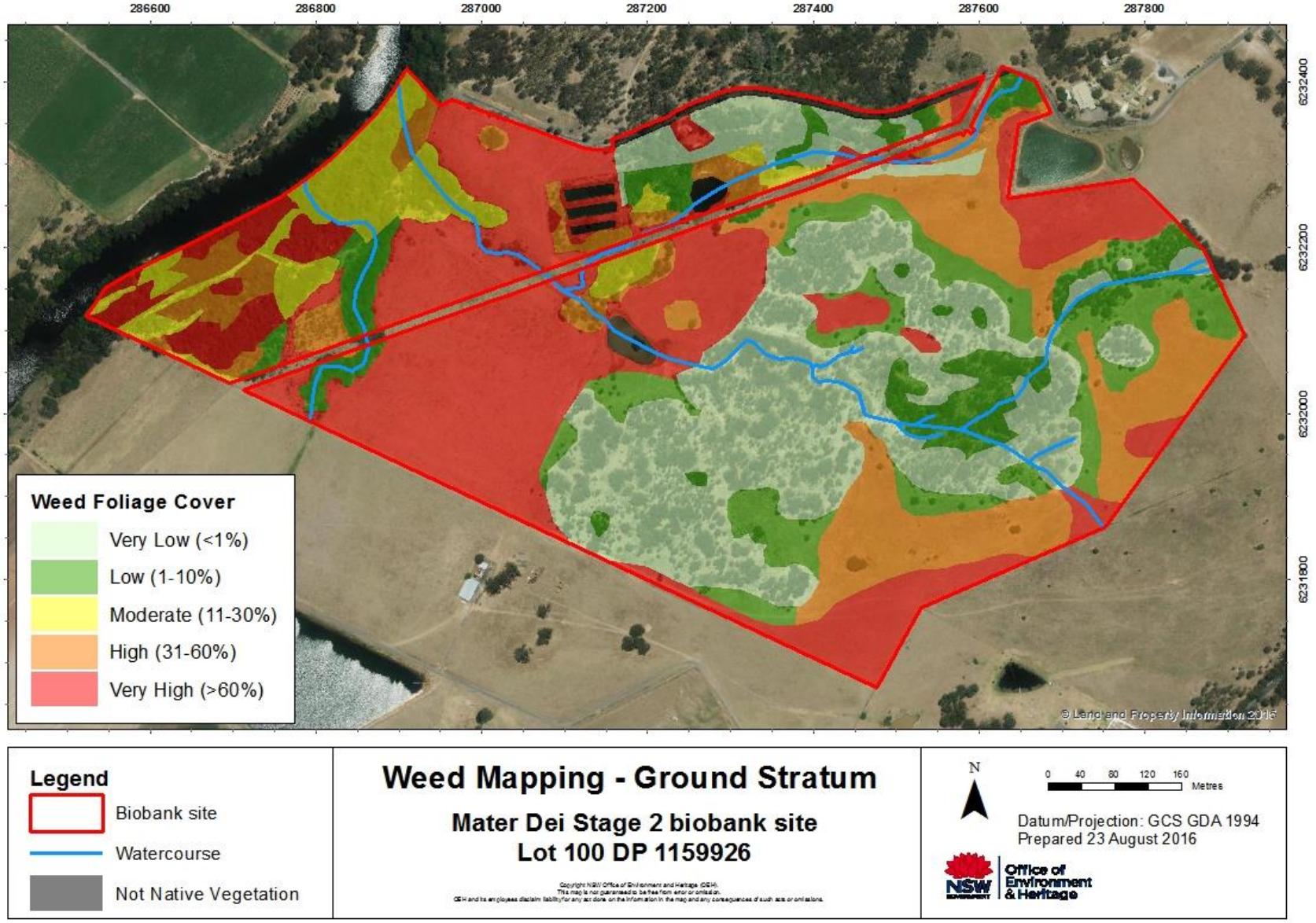
Map 6: Property Management Actions



Map 7: Upper/Mid stratum weed cover



Map 8: Ground stratum weed cover



Supervision of weed control works

Much of the native vegetation on the site is in a degraded state. Professionally planned and implemented weed control is needed to restore the health of the native vegetation, while avoiding the problems associated with the over-clearing of weeds (e.g. soil erosion, loss of fauna habitat, and the establishment of new weeds).

The 'methods of weed control' section of the weed management plan in the Biobanking agreement states that all weed control activities will be undertaken by, or under the direct supervision of, an appropriately qualified bush regenerator. This does not prevent the use of volunteers when undertaking weed control activities on the site however an appropriately qualified bush regenerator should be on site to supervise volunteers at all times.

RECOMMENDATION: The Biobanking agreement does not specify the level of qualification that a bush regenerator must have to direct works on the biobank site. It is recommended that the contract specifications for weed control and revegetation work on the biobank site include a requirement that all works be conducted under the direct supervision of a bush regenerator who has completed a recognised bush regeneration course (e.g. TAFE Certificate 3 or higher in Conservation and Land Management or equivalent) and has over 3500 hours of bush regeneration experience.

Methods of weed control

The 'methods of weed control' section of the weed management plan identifies the following weed control methods that can be implemented on the site:

- Woody weeds will be treated using drill/fill, cut/poison, scrape/poison, spot-spraying and/or hand-removal techniques as appropriate for the species and the situation in which they occur, in accordance with published Best Practice Methods.
- In accessible, less environmentally sensitive parts of MZ6 (i.e. low gradient slopes, over two metres from remnant native trees, over 25 metres from the river bank), woody weeds may be mechanically cleared using a barrel mulcher. The woody weed stumps must be manually re-cut and poisoned immediately after mulching.
- Exotic climbers will be treated using skirt/poison, cut/poison, scrape/poison, spot-spraying, crowning and/or hand-removal techniques as appropriate for the species and the situation in which they occur, in accordance with published best practice methods.
- Highly invasive ground layer weeds and other ground layer weeds will be treated using slashing, spot-spraying, crowning, and/or hand-removal techniques as appropriate for the species and the situation in which they occur, in accordance with published best practice methods.
- Dense weed infestation in low resilience areas may be treated using broad-scale spraying in situations where off-target damage to native species can be avoided.

The 'methods of weed control' section of the weed management plan also requires that a thorough search for threatened plants be undertaken in each area prior to the commencement of weed control work. Spot-spraying is not permitted within a two metre radius of threatened plants. Broad scale spraying is not permitted within a 20 metre radius of threatened plants.

Level of effort and weed control tasks

As described previously (Section 2.5 of this guide), the site has been divided into nine management zones based upon proposed management regime. The methods of weed control section of the weed management plan specifies the weed control tasks and the level of effort (i.e. the minimum number of hours of labour) that must be applied annually in each management zone, or group of management zones.

This information is provided in Table 6 of this guide.

Table 6: Weed control tasks and effort

Zone	Tasks	Effort
MZ1	• Staged primary treatment of all woody weeds, exotic climbers and highly invasive ground layer weeds over 20% of the management zone per annum from the first payment date until the end of Year 5. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set in all previously worked areas. • Treatment of other ground layer weeds as required to maintain low (<10%) weed foliage cover in the ground layer of all previously worked areas.	• A minimum of 2130 hours of weed control work annually from the start of Year 1 to the end of Year 5 • A minimum of 865 hours of weed control work annually from the start of Year 6 to the end of Year 10 • A minimum 250 hours of weed control work annually from the start of Year 11 to the end of Year 19 • A minimum of 310 hours of weed control work annually from the start of Year 20
MZ2	• Staged primary treatment of all woody weeds, exotic climbers and highly invasive ground layer weeds over 10% of the management zone per annum from the first payment date until the end of Year 10. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set in all previously worked areas. • Treatment of other ground layer weeds as required to maintain moderate (<30%) weed foliage cover in the ground layer of all previously worked areas.	• A minimum of 645 hours of weed control work annually from the start of Year 1 to the end of Year 5 • A minimum of 1075 hours of weed control work annually from the start of Year 6 to the end of Year 10 • A minimum 555 hours of weed control work annually from the start of Year 11 to the end of Year 19 • A minimum of 170 hours of weed control work annually from the start of Year 20
MZ3	• Staged primary treatment of all woody weeds, exotic climbers and highly invasive ground layer weeds over 50% of the management zone per annum from the first payment date until the end of Year 2. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set in all previously worked areas. • Treatment of other ground layer weeds as required to assist the establishment of plantings and natural regeneration.	• A minimum of 1025 hours of weed control work annually from the start of Year 1 to the end of Year 5 • A minimum of 570 hours of weed control work annually from the start of Year 6 to the end of Year 10 • A minimum 295 hours of weed control work annually from the start of Year 11 to the end of Year 19 • A minimum of 150 hours of weed control work annually from the start of Year 20
MZ4, MZ5	• Primary treatment of all woody weeds, exotic climbers and highly invasive groundcover weeds. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive groundcover weeds prior to seed set. • Treatment of other ground layer weeds as required to assist natural regeneration and the establishment of plantings.	• A minimum of 70 hours of weed control work annually from the start of Year 1 to the end of Year 5 • A minimum of 60 hours of weed control work annually from the start of Year 6 to the end of Year 10 • A minimum 55 hours of weed control work annually from the start of Year 11 to the end of Year 19 • A minimum of 55 hours of weed control work annually from the start of Year 20
MZ6	• Staged primary treatment of all woody weeds, exotic climbers and highly invasive ground layer weeds in 5% of the management zone per annum from the first payment date until the end of Year 10, and 10% of the management zone per annum from the start of Year 11 to the end of Year 15. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set in all previously worked areas. • Treatment of other ground layer weeds as required to assist natural regeneration and the establishment of plantings.	• A minimum of 1230 hours of weed control work annually from the start of Year 1 to the end of Year 5 • A minimum of 2480 hours of weed control work annually from the start of Year 6 to the end of Year 10 • A minimum 4185 hours of weed control work annually from the start of Year 11 to the end of Year 19 • A minimum of 1530 hours of weed control work annually from the start of Year 20
MZ7, MZ8, and MZ9	• Staged primary treatment of all woody weeds, exotic climbers and highly invasive groundcover weeds over 25% of the management zones. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive groundcover weeds prior to seed set in all previously worked areas.	• A minimum of 310 hours of weed control work annually from the start of Year 1 to the end of Year 5 • A minimum of 40 hours of weed control work annually from the start of Year 6 to the end of Year 10 • A minimum 10 hours of weed control work annually from the start of Year 11 to the end of Year 19 • A minimum of 10 hours of weed control work annually from the start of Year 20

The ‘methods of weed control’ section of the weed management plan requires that the landowner maintains a record of the number of hours of weed control work undertaken daily in each management zone. This can be documented by the bush regeneration contractor using the ‘Diary template for weed control and revegetation’ (Appendix B of this guide).

RECOMMENDATION: The weed control specifications for the biobank site could include a requirement for the bush regeneration contractor to complete a 'Diary template for weed control and revegetation' for each month of activity on the biobank site. The completed templates can be submitted by the landowner with the biobank site annual report.

NOTE: If the landowner decide to proceed with the option to undertake mechanical weed removal in the less environmentally sensitive areas of MZ6, it is likely that the annual minimum number of hours of labour for the management zone will not be met. This is because mechanical weed removal is faster and more expensive than manual weed removal. This will need to be explained in the relevant section of the annual report for biobank site.

Performance measures

The weed management plan in the agreement also specifies performance measures for each management zone at specific time periods following the first payment date. These performance measures are described in Table 7 of this guide.

3.2.3 Other weed management activities

The 'Other weed management activities (where required)' section of the weed management plan also requires that the woody debris created by primary weed removal be piled for burning as per Rural Fire Service standards[4].

3.2.4 Weed control monitoring

The weed control monitoring requirements of the agreement are described in the 'Monitoring and inspections of existing and new weeds' section of the weed management plan. The monitoring must be undertaken annually by a suitably qualified bush regenerator or ecologist, and will involve a field inspection to record the condition of each management zone.

The monitoring must be reported using the 'Template for the reporting of monitoring activities – weed management' (Appendix C of this guide). A separate proforma must be completed for each management zone and submitted to OEH with the annual report for the biobank site (see Section 5.2 of this guide).

RECOMMENDATION: The weed control specifications for the biobank site could include a requirement for the bush regeneration contractor to complete a separate 'Template for the reporting of monitoring activities – weed management' for each management zone at the end of each annual reporting period. The completed templates can then be submitted by the landowner with the biobank site annual report.

3.2.5 Review of the weed management plan

Timing and matters for consideration

The weed management plan in the Biobanking agreement is required to be reviewed every four to six years. Item 2.2 of the agreement specifies the timing and matters for consideration in the review of the plan. If OEH determines from this review that an update of the plan is required, the landowner must update the plan within three months.

Independent peer review

The review of the weed management plan must be undertaken by an appropriately qualified person. It is recommended that the person undertaking the review be independent of the bush regeneration contractor working on the site. None the less, the review should be undertaken in consultation with the bush regeneration contractor to ensure that the professionals working on the site have an opportunity to have their knowledge and ideas appropriately considered.

[4] Available at http://www.rfs.nsw.gov.au/__data/assets/pdf_file/0012/13323/Standards-for-Pile-Burning.pdf

NOTE: There are likely to be cost savings if one person or company is engaged to undertake the five yearly review of all management plans in the Biobanking agreement at the same time (i.e. the weed, fire, feral herbivore and vertebrate pest management plans). An ecological consultant would be best placed to complete this task. It would also be beneficial to require the consultant to update the plans as part of the review rather than at a later date as described in the agreement.

3.2.6 Funding for weed control and associated activities

The payments to the landowner from the Biobanking Trust Fund will include:

- annual funding for weed control,
- annual funding for weed control monitoring (included in the general monitoring and reporting budget),
- contingency funding for additional weed control activities if required (included in the project management budget), and
- funding to review and update the weed management plan every five years.

Table 7: Performance measures for weed control

Zone	End of Year 1	End of Year 2	End of Year 3	End of Year 5	End of Year 10	From Year 16 on
MZ1	-	-	-	No mature woody weeds, exotic climbers or highly invasive ground layer weeds present; and Density of other ground layer weeds maintained at <10% foliage cover.	Same as Year 5	Same as Year 5
MZ2	-	-	-	No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present in 50% of the management zone; and Density of other ground layer weeds in previously worked areas maintained at <30% foliage cover.	No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present; and Density of other ground layer weeds maintained at <30% foliage cover.	Same as Year 10
MZ3	-	No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present.	Same as Year 2	Same as Year 2	Same as Year 2	Same as Year 2
MZ4, MZ5	No mature woody weeds, exotic climbers or highly invasive ground layer weeds present.	Same as Year 1	Same as Year 1	Same as Year 1	Same as Year 1	Same as Year 1
MZ6	-	-	-	No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present in 25% of the management zone.	No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present in 50% of the management zone.	No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present.
MZ7, 8, & 9	-	-	-	No mature woody weeds, exotic climbers or highly invasive ground layer weeds present.	Same as Year 5	Same as Year 5

3.3 MANAGEMENT OF FIRE FOR CONSERVATION

The fire management plan in the Biobanking agreement describes the ecological burn actions that must be undertaken on the site. This section of the guide aims to provide context and justification for those actions, and guidance on how to effectively implement them.

3.3.1 Background

Fire regimes for vegetation types

Different vegetation types are adapted to specific fire regimes i.e. the frequency, intensity and season of fire. Changing the fire regime of a patch of vegetation will alter its structure and its component species. The 'Fire requirements for vegetation types and threatened species' section of the fire management plan describes the appropriate fire regimes for the vegetation types and threatened flora that are present on the site. These requirements are included in Table 8 below.

Vegetation fire status

From the absence of any observable signs of fire, it appears that there have been no fires on the biobank site for over 35 years. All areas of native vegetation on the site are therefore outside the recommended fire intervals (i.e. the minimum and maximum fire intervals specified in Table 8 below).

Table 8: Fire regimes for vegetation types and threatened plants

Vegetation type	**Minimum fire interval (years)**	**Maximum fire interval (years)**	**Time of year for burning**	**Fire intensity required**	**Adjustment required due to wildfires**
HN526: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	7	35	Preferably August to January	Moderate to high intensity	Adjust timing of planned ecological burns to ensure minimum required interval is maintained in any part of this vegetation type affected by a wildfire, arson or prescribed burn.
HN528: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin	5	12	Preferably August to January	Moderate to high intensity	Adjust timing of planned ecological burns to ensure minimum required interval is maintained in any part of this vegetation type affected by a wildfire, arson or prescribed burn.
HN529: Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	5	12	Preferably August to January	Moderate to high intensity	Adjust timing of planned ecological burns to ensure minimum required interval is maintained in any part of this vegetation type affected by a wildfire, arson or prescribed burn.
Threatened plants	**Minimum fire interval (year)**	**Maximum fire interval (years)**	**Time of year for burning**	**Fire intensity required**	**Adjustment required due to wildfires**
Eucalyptus benthamii	25	250	Preferably August to January	Low intensity	Adjust timing of planned ecological burns to ensure minimum required interval is maintained in any part of this vegetation type affected by a wildfire, arson or prescribed burn.

3.3.2 Natural assets vulnerable to fire

Threatened species and ecological communities

Table 9 of this guide describes the conditions relating the use of fire and/or mechanical forms of hazard reduction that apply to the threatened species, population and/or ecological communities that may occur on the site. These conditions may apply if a Bush Fire Hazard Reduction Certificate is issued to the landowner by the Rural Fire Service to prepare fire control lines and undertake a prescribed burn (see Section 3.3.8 of this guide).

Other values

The biobank site contains steep and erodible slopes. Fire on these slopes need to be managed to minimise erosion. Burning within 20 metres of the Nepean River should be avoided.

Table 9: Hazard reduction conditions for threatened species, populations and ecological communities

Scientific name	Common Name	TSC Act	EPBC Act	Presence on biobank site	Species specific conditions relating to the use of Fire	Conditions relating to mechanical forms of hazard reduction
Threatened ecological communities						
N/A	Cumberland Plain Woodland	Critically endangered	Critically endangered	Observed on biobank site (2016)	No fire more than once every 7 years	No slashing, trittering or tree removal
N/A	River Flat Eucalypt Forest	Endangered	Not listed	Observed on biobank site (2016)	No fire more than once every 11 years	No slashing, trittering or tree removal
Threatened fauna species						
Meridolum corneovirens	Cumberland Land Snail	Endangered	Not listed	Observed on property (2005); potential habitat on biobank site	None	No slashing, trittering or tree removal
Artamus cyanopterus	Dusky Woodswallow	Vulnerable	Not listed	Observed on property (2016); potential habitat on biobank site	Species not listed	Species not listed
Mormopterus norfolkensis	East Coast Freetail –bat	Vulnerable	Not listed	Observed on biobank site (2016)	Species not listed	Species not listed
Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Vulnerable	Not listed	Observed on biobank site (2016)	No fire around known roost sites	No slashing around maternity caves
Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Vulnerable	Observed on property (2016); potential habitat on biobank site	No burning around known roost sites	No slashing, trittering or tree removal of or around known nesting sites
Ninox strenua	Powerful Owl	Vulnerable	Not listed	Observed on property (2016); potential habitat on biobank site	No burning around known nesting sites at any time	No slashing, trittering or tree removal around known roosting sites
Pyrrholaemus sagittatus	Speckled Warbler	Vulnerable	Not listed	Observed on property (2016); potential habitat on biobank site	None	No slashing, trittering or tree removal
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable	Observed on property (1996); potential habitat on biobank site	Avoid known roost sites	Avoid known roost sites
Lathamus discolor	Swift Parrot	Endangered	Endangered	Observed on property (2016); potential habitat on biobank site	Species not listed	Species not listed
Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not listed	Observed on property (2016); potential habitat on biobank site	Species not listed	Species not listed
Hieraaetus morphnoides	Little Eagle	Vulnerable	Not listed	Observed on property (2016); potential habitat on biobank site	Species not listed	Species not listed
Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not listed	Observed on property (2016); potential habitat on biobank site	Species not listed	Species not listed
Lathamus discolor	Swift Parrot	Endangered	Endangered	Observed on property (2014); potential habitat on biobank site	Species not listed	Species not listed
Threatened flora species						
Eucalyptus benthamii	Camden White Gum	Vulnerable	Vulnerable	Observed on biobank site (2016)	No fire more than once every 15 years	No slashing, trittering or tree removal
Pultenaea pendunculata	Matted Bush-pea	Endangered	-	Observed on property (2016); potential habitat on biobank site	No fire	No slashing more frequently than every 10 years, and no trittering or tree removal

3.3.3 Cultural heritage assets vulnerable to fire

Aboriginal heritage

A search of the Aboriginal Heritage Information Management System was made on 19 November 2015. No items of Aboriginal cultural heritage significance have been recorded on the biobank site.

Non-indigenous heritage

There are no items of non-indigenous heritage known to occur on the biobank site.

3.3.4 Built assets vulnerable to fire

The following built assets on the biobank site need to be protected from planned burns:

- existing sheds, picnic tables, barbeques and toilets in Management Zone 8,
- proposed interpretive signs at the locations identified on the Property Management Actions map (Map 6 of this guide), and
- gates and fences identified on the Property Management Actions (Map 6 of this guide) for installation and/or maintenance.

An old ropes course is located in Management Zone 1 adjacent to the access road but is proposed to be removed from the biobank site prior to the first planned burn in Year 18.

3.3.5 Fire management strategy

The strategic goal of the fire management plan in the agreement is to return all areas of native vegetation on the site to within the recommended fire intervals as soon as is practical. The achievement of this objective however is tempered by the presence of:

- large stands of woody weeds that will not carry a fire and will be gradually removed over a 15 year period, and
- large areas that require revegetation, including the Riparian Forest and the derived grasslands.

A further consideration is that once the staged removal of woody weeds and proposed revegetation is completed, these areas should not be burnt until the regenerating and/or planted native species are sufficiently established to withstand fire (either by reshooting or from the soil seedbank).

For these reasons, the fire management plan states that no planned burns are to occur on the site until Year 18, with the exception of pile burns (see Section 3.3.6 of this guide). After this time it is envisaged that an ecological burn will be undertaken on the site every six years with the aim of having at least 50% of the area of each vegetation type within the recommended fire intervals by Year 54.

Burn season and intensity

The ‘Ecological burn actions’ section of the fire management plan states that planned burns should be undertaken between August and January, as this is the optimal fire season for many of Sydney’s vegetation types (DEC 2005).

The intensity of a burn is determined by multiple variables including fuel loads, slope and aspect, air temperature and humidity, and wind speed and direction. High intensity burns are preferable from a biodiversity viewpoint as such burns can trigger recruitment of a greater number of native plant species than low intensity burns. However, it is acknowledged that it may not be feasible to safely undertake high intensity burns on the site and a pragmatic approach will need to be taken to ensure that the proposed burns can be undertaken safely. For this reason, the fire management plan specifies that the fire intensity required for prescribed burns on the site should be ‘moderate to high intensity’

It is recommended that the prescribed burns be undertaken in late spring, when possible, and when conditions are suitable for supporting a ‘moderate to high intensity’ burn.

Variability
The greatest species diversity is likely to be maintained by using fire regimes that encourage variation. This includes variations in fire intervals (within the recommended thresholds), in the season of the burn (within the recommended period), and in fire intensity.

NOTE: Providing for variations in fire interval, season of burn and fire intensity (within the recommended parameters identified in the fire management plan) should be a consideration when planning prescribed burns on the biobank site.

3.3.6 Ecological burn actions

Item 3.3 of the agreement states that fires can only be lit on the biobank site for the purpose of ecological burning in accordance with the fire management plan. The ecological burning actions identified in the fire management plan are included in Table 10 of this guide and described below.

Supervision & extinguishing techniques
The fire management plan requires that suitably experienced and qualified staff supervise the preparation of the burn area, undertake the burn and extinguish the burn.

The fire containment and extinguishing techniques should include use of existing walking and vehicle tracks, edge burning or wet lines. Rake-hoe containment lines may be used where there is limited access for fire management vehicles.

Pile burning
The fire management plan allows the burning of piles of woody weed debris within 12 months following primary weed removal in Management Zones 1, 2, 3 and 6 (see Table 10 of this guide). Pile burning is not a requirement of the agreement but is permitted as pile burns may promote increased germination of native species from the soil seed bank. The requirement to burn the woody weed debris piles within 12 months of primary weed removal (if they are to be burned) is included as a longer delay may result in damage to nearby regenerating native species. Any unburnt piles can be left and used as fuel in the proposed ecological burns at a later date.

Threatened species inspections
The 'Other fire management activities' section of the fire management plan in the agreement requires that:

- targeted surveys for threatened flora and the Cumberland Land Snail will be conducted across each proposed burn compartment prior to burning,
- surveys will be conducted during the appropriate season for detection of the species,
- frequency of burns will take into consideration the recommended fire frequencies of any threatened species present, and
- areas containing threatened species will be avoided when constructing fire containment lines.

Minor alterations can be made to the implementation of the fire management plan if, for instance, threatened species are identified in the site. These variations must be recorded in writing in accordance with Section 3 of Annexure C of the agreement (Record keeping requirements).

3.3.7 Integration with weed and pest management

Prescribed burns can contribute to weed proliferation as a result of increased light levels, particularly in more disturbed areas. The weed management program may need to be adjusted during burn years to provide adequate resources for the control of post-fire weed regrowth.

Consideration should also be given to integrating the pest management program with the proposed burn program. Rabbit control should be considered prior to burning in areas where rabbits are present, as the post-fire regeneration will be particularly susceptible to herbivory. The reduced understorey resulting from a prescribed burn will also enable pests (e.g. fox) to move more easily through the landscape, increasing the risks of predation for native mammals and birds.

Table 10: Ecological burn actions

Management zone/s	Actions	Frequency (years)
MZ1 & MZ2: HN528/529	• No prescribed burning of HN528 or HN529 will be undertaken in these management zones until Year 18. This will enable regenerating native species to establish following primary weed treatment and allow time for the native soil seed bank to replenish following livestock exclusion. • At least one prescribed burn in HN528 and/or HN529 must be undertaken in these management zones between Year 18 and Year 24. • From the beginning of Year 25 onwards, no more than 50% of the combined area of HN528 and HN529 in these management zones is to be unburnt for more than 12 years. • Any single prescribed burn is not to burn more than 50% of the combined area of HN528 and HN529 in these management zones.	HN528/529 - every 8 to 12 years Note: if a wildfire, arson or prescribed burn occurs (including the burning of woody debris piles), any subsequent prescribed burn may only be undertaken in that area after 8 years from the date of the preceding fire.
MZ1, MZ2 & MZ3: HN526	• No prescribed burning of HN526 will be undertaken in these management zones until Year 24. This will enable regenerating native species to establish following primary weed treatment and allow time for the native soil seed bank to replenish following livestock exclusion. • At least one prescribed burn in HN526 must be undertaken in these management zones between Year 24 and Year 30. • From the beginning of Year 31 onwards, no more than 50% of HN526 in these management zones is to be unburnt for more than 35 years. • Any single prescribed burn is not to burn more than 50% of HN526 in the combined area of these management zones.	HN526 - every 10 to 35 years Note: if a wildfire, arson or prescribed occurs, any subsequent prescribed burn may only be undertaken in that area after 10 years from the date of the preceding fire.
MZ4 & MZ5: HN528/529	• No prescribed burning of HN528 or HN529 will be undertaken in these management zones until Year 30. This will enable the plantings to establish and allow time for the native soil seed bank to replenish following livestock removal. • At least one prescribed burn in HN528 and/or HN529 must be undertaken in these management zones between Year 30 and Year 36. • From the beginning of Year 37 onwards, no more than 50% of the combined area of HN528 and HN529 in these management zones is to be unburnt for more than 12 years. • Any single prescribed burn is not to burn more than 50% of the combined area of HN528 and HN529 in these management zones.	HN528/529 - every 8 to 12 years Note: if a wildfire, arson or prescribed occurs, any subsequent prescribed burn may only be undertaken in that area after 8 years from the date of the preceding fire.
MZ4 & MZ5: HN526	• No prescribed burning of HN526 will be undertaken in these management zones until Year 36. This will enable the plantings to establish and allow time for the native soil seed bank to replenish following livestock removal. • At least one prescribed burn in HN526 must be undertaken in these management zones between Year 36 and Year 42. • From the beginning of Year 43 onwards, no more than 50% of HN526 in these management zones is to be unburnt for more than 35 years. • Any single prescribed burn is not to burn more than 50% of HN526 in the combined area of these management zones.	HN526 - every 10 to 35 years Note: if a wildfire, arson or prescribed occurs, any subsequent prescribed burn may only be undertaken in that area after 10 years from the date of the preceding fire.
MZ6: HN526	• No prescribed burning of HN526 will be undertaken in this management zone until Year 48. This will enable the plantings to establish and allow time for the native soil seed bank to replenish. • At least one prescribed burn in HN526 must be undertaken in this management zone between Year 48 and Year 54. • From the beginning of Year 55 onwards, no more than 50% of HN526 in this management zone is to be unburnt for more than 35 years. • Any single prescribed burn is not to burn more than 50% of HN526 in the combined area of this management zone.	HN526 - every 10 to 35 years (except where *E. benthamii* is present - see below) Note: if a wildfire, arson or prescribed occurs, any subsequent prescribed burn may only be undertaken in that area after 10 years from the date of the preceding fire.
MZ6: Special requirements for *Eucalyptus benthamii*	• No prescribed burning will be undertaken within 25 metres of *Eucalyptus benthamii* plantings or regenerating saplings until at least 30 years following planting or germination. • Remove debris build up at the base of *Eucalyptus benthamii* trees to reduce fire duration and intensity. • Ensure that any prescribed burn in *Eucalyptus benthamii* habitat is of low intensity only.	Avoid fires at intervals less than 30 years.

MZ7, MZ8 and MZ9	No ecological burn actions apply to these management zones.	-

3.3.8 Burn approvals

Prescribed burns

The first prescribed burn on the biobank site is not proposed to occur until Year 18. At this time, the landowner should seek the assistance of the RFS to undertake the prescribed burn, or alternatively, engage a contractor to undertake the burn on its behalf. Only a limited number of contractors are available to undertake prescribed burns on private land at present but it is expected that the number of contractors will increase in the future. The landowner should contact OEH and the Rural Fire Service (RFS) prior to planning each prescribed burn to obtain the latest information on the required approval process.

Pile burns

The landowner can seek the assistance of RFS to burn piles of woody weed debris following primary weed removal. To obtain approval for this, the landowner can submit an application[5] for a Bush Fire Hazard Reduction Certificate to the RFS at least three months prior to the proposed burn. Bush Fire Hazard Reduction Certificates are issued under the *Rural Fires Act 1997* and provides an environmental approval for bush fire hazard reduction works. The RFS will assess the application in accordance with the Bush Fire Environmental Assessment Code. A certificate will be issued free of charge and is valid for one year from the date of issue.

3.3.9 Monitoring and review of the fire management plan

Recording details of planned and unplanned burns

For all fires within the biobank site (including prescribed burns, wildfire and arson), the fire management plan in the agreement requires the landowner to complete the 'Diary template for fire management' and submit it with the biobank site annual report.

The 'Diary template for fire management' is provided at Appendix D of this guide and is designed to record the following information:

- date and cause of the fire,
- intensity of the fire,
- percentage of canopy scorched,
- percentage of leaf litter remaining, and
- area burnt.

Review and updating the fire management plan

The fire management plan in the Biobanking agreement is required to be reviewed by the landowner every four to six years. Item 3.2 of the agreement specifies the timing and matters for consideration in the review of the plan. If OEH determines from this review that an update of the plan is required, the landowner must update the plan within three months.

Independent peer review

The review of the fire management plan must be undertaken by an appropriately qualified person. It is recommended that the person undertaking the review be independent of the bush regeneration contractor working on the site. None the less, the review should be undertaken in consultation with the bush regeneration contractor to ensure that the professionals working on the site have an opportunity to have their knowledge and ideas appropriately considered.

[5] Available at http://www.rfs.nsw.gov.au/__data/assets/pdf_file/0017/13319/Application-Form-Bush-Fire-Hazard-Reduction-Certificate.pdf

NOTE: There are likely to be cost savings if one person or company is engaged to undertake the five yearly review of all management plans in the Biobanking agreement at the same time (i.e. the weed, fire, feral herbivore and vertebrate pest management plans). An ecological consultant would be best placed to complete this task. It would also be beneficial to require the consultant to update the plans as part of the review rather than at a later date as described in the agreement.

Monitoring the outcomes of ecological burns

The 'Methods for monitoring the outcomes of ecological burns' section of the fire management plan requires that, at the time the review of the plan, visual monitoring of all management zones be undertaken by a suitably qualified ecologist to determine the condition of the vegetation.

The following information must be recorded for each management zone:

- A general description of the vegetation structure and species composition.
- An interpretation of the ecological outcomes of previous fires (either planned or unplanned).
- Observations of the health of threatened flora (where present) and its response to previous fires.
- Recommendation on the timing and location for future prescribed burns within the zone.
- A written and photographic report for plots relating to plant species and cover abundance starting 12 months post fire.

The results of the monitoring are to be recorded in the 'Template for reporting of monitoring activities – fire management' (Appendix E of this guide).

3.3.10 Funding for fire management activities

The management payments to the landowner from the Biobanking Trust Fund will include funding every six years commencing in Year 18 that is intended to provide for the following:

- pre-burn threatened species inspections of proposed fire compartments, and
- suitably experienced and qualified staff to supervise the preparation of burn area, undertake the burn and extinguish the burn.

Funding to review and update the fire management plan will be provided every five years.

3.4 MANAGEMENT OF HUMAN DISTURBANCE

Potential sources of human disturbance in natural areas include four wheel drives, mountain bikes, trail bikes, unregulated camping and rubbish dumping. These activities can damage or destroy native vegetation, promote weed invasion, displace native fauna and cause erosion. The effective management of these disturbances is required to maintain and improve the biodiversity values of the biobank site.

3.4.1 Permissible human activities

Item 4.1 of the Biobanking agreement states that 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. An exception to this is provided in Item 4.2 of the agreement for certain human activities that are listed as permissible activities under clause 3.6 of the agreement. These permissible activities are reproduced in Table 11 of this guide.

Item 4.2 also states that human disturbances are permitted if they are undertaken as part of the management actions or management plans in the agreement.

NOTE: Clause 3 (page 7) of the Biobanking agreement includes further details of the agreed uses of the biobank site and should be read carefully.

Table 11: Permissible human activities on the biobank site

Description of human activities	Management zone/s
Any human activity reasonably considered necessary to remove or reduce an imminent risk of serious personal injury or damage to property.	All zones
Any activity required to undertake permissible development as outlined in clause 3.5.	All zones
Any activity permitted or required as part of a management action under Annexure C.	All zones
Passive recreation by small groups as permitted or required as part of a management action under Annexure C. Passive recreation includes: bushwalking, birdwatching, nature observation, picnicking.	All zones
Vehicular access only for the purpose of undertaking management actions is permissible	All zones
Use of existing structures including sheds, picnic tables, barbeques and toilets.	MZ8
Overnight stays and/or camp fires, fuel not to be collected from biobank site, the fire must be lit in a container e.g. drum or a made fireplace, and be on the same area of ground each time.	MZ8

3.4.2 Waste dumping

Item 4.4 of the agreement states that the landowner must not store, dispose of, or cause or permit to be disposed of, any waste on the biobank site. Item 4.5 states that 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.

An exception to this is provided in Item 4.3 of the agreement for the old vehicle and machinery in Management Zone 2. These items can be retained as they are not impacting upon the biodiversity values on the site and their removal may damage the biodiversity values on the site.

3.4.3 Signage

Biobanking signs

Item 4.6 of the agreement requires that a Biobanking sign be installed and maintained on each of the six gates identified as 'New gate – install' or Existing gate – maintain' on the Property Management Actions map (Map 6 of this guide) within three months of the first payment date.

The purpose of the signs is to clearly identify the area as a biobank site and to deter human disturbance including waste dumping. The signs are available for purchase from the OEH Biobanking team (131 555) and can be attached to the gates with wire.

The Biobanking signs must be replaced if the writing or images on the sign are no longer clearly visible or are illegible.

Interpretive signage

Items 4.6 and 4.7 of the agreement require that the following interpretation signage be installed at the biobank site within 24 months of the first payment date:

- One interpretation sign with a protective shelter must be installed at the location identified as 'Interpretation Sign with Shelter - install' on the Property Management Actions (Map 6 of this guide). The purpose of this sign will be to reduce human disturbance on the biobank site by clearly identifying the location of the walking tracks and vehicle trails that can be used within the site. The dimension of the protective shelter must not exceed three metres in height by three metres in width.

- Two additional interpretation signs must be installed at locations identified as 'Interpretation Sign - install' on the Property Management Actions (Map 6). The purpose of these interpretation signs is to reduce human disturbance to the site by educating users of the site of the values being protected.

The interpretation signs must be replaced if the writing or images on the sign are no longer clearly visible or are illegible.

3.4.4 Management of existing man-made structures

Item 4.8 of the agreement requires the landowner to remove the ropes course in Management Zone 1 within 36 months of the first payment date.

Items 4.9, 4.10 and 4.11 permit the following existing structures on the biobank site to be maintained, replaced or removed:

- Sheds, picnic tables, barbeques and toilets/toilet blocks in Management Zone 8, and
- Water treatment ponds in Management Zone 7.

NOTE: The management payments from the Biobanking Trust Fund will not include funds for the removal of the ropes course and the maintenance, replacement and/or removal of the sheds, picnic tables, barbeques, toilets/toilet blocks and water treatment ponds.

3.4.5 Access tracks

Item 4.11 of the agreement allows the landowner to manage access on the biobank site by establishing and maintaining walking tracks and vehicle tracks and by maintaining the existing access road. The locations of the tracks and road to be established and/or maintained as shown on the Property Management Actions map (Map 6 of this guide).

Initial slashing will be required to clearly establish the tracks in the correct locations. Occasional maintenance slashing may be required depending on the frequency of use of the tracks.

RECOMMENDATION: Use a positrac machine to slash walking tracks and vehicle trails on the site to reduce the risk of soil compaction and erosion.

3.4.6 Passive recreation

Item 4.12 of the agreement allows passive recreation by small groups on the biobank site to the extent that, in the opinion of OEH, native vegetation on the biobank site is not degraded. If, in the opinion of OEH, native vegetation on the biobank site is degraded as a result of passive recreation activities, these activities will be suspended until such time as the native vegetation is restored.

The specific passive recreation activities permitted in Item 4.12 are:

- Overnight stays and or camp fires in Management Zone 8
- Use of existing structures including sheds, picnic tables, barbeques and toilets is permitted in Management Zone 8.
- Interpretive walks and low impact organised community activities are to be restricted to walking and vehicle trails for the purpose of environmental and heritage education and community enjoyment and involvement.

3.4.7 Funding to manage human disturbance

The payments to the landowner from the Biobanking Trust Fund will include funding to:

- purchase and install six biobanking signs in Year 1,
- replace the six biobanking signs every five years,
- purchase and install three interpretive signs and one shelter in Year 2,
- replace the interpretive signs and shelter every five years, and
- slash the walking and vehicle trails annually if required.

3.5 RETENTION OF REGROWTH AND REMNANT VEGETATION

The retention of native vegetation on the biobank site is essential for the flora and fauna habitat values of the site to be maintained and improved over time.

Under Item 5.1 of the Biobanking agreement, native vegetation (whether remnant or regrowth) must not be cut down, felled, thinned, logged, killed, destroyed, poisoned, ringbarked, uprooted,

burnt or otherwise removed, except in accordance with Item 5.2 (see 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 the agreement.

A note in Item 5.1 states that native vegetation on the site may be managed to improve biodiversity values by thinning to benchmark stem densities no more than 80% of each management zone. Such thinning may be necessary in parts of the site that have become overstocked with young Eucalypts. OEH should be contacted prior to undertaking any such thinning for further advice.

Item 5.2 of the agreement states that native vegetation on the site must not be burnt except in accordance with the fire management plan.

3.6 REPLANTING OR SUPPLEMENTARY PLANTING

Weed invasion, timber getting and grazing has resulted in much of the native vegetation on the site being significantly modified from its natural state.

Some of this disturbed native vegetation has moderate or high resilience (i.e. recovery capacity) and will improve in condition with low to moderate levels of management intervention, including stock exclusion, weed control, and ecological burning.

Large parts of the site however, have been disturbed to such an extent that their recovery capacity has been significantly diminished. Supplementary planting of native species is need in these areas to assist the recovery of the native vegetation. Details of the supplementary planting that needs to be undertaken in the site are provided in Item 6 of the Biobanking agreement.

3.6.1 Specific requirements for all plantings

Item 6.1 of the agreement requires the landowner to undertake planting of the native species indicated in the planting schedule set out in Item 6.6.

If the landowner cannot complete the planting within the timeframe indicated in the planting schedule due to local weather conditions, the landowner must complete the planting as soon as possible after that date and must make a record of and retain the reasons why the planting was not completed by the required time.

Item 6.1 of the agreement also lists the following general requirements for all plantings:

- Appropriate site treatment (e.g. weed control) of each area of planting or seeding must be undertaken prior to such planting.
- Planting must be undertaken during the months of March, April and/or May unless there are adverse weather conditions that prevent this. In this case, the decision on when to undertake planting will be left to an appropriately qualified bush regenerator in consultation with the landowner.
- Plants must be installed by hand. A hole twice the depth and width of the root-ball should be dug and native fertiliser applied to the hole.
- All plantings must be maintained to achieve an 80% survival rate after five years.
- No planting is to occur within 15 metres of power-lines
- No planting is to occur in areas identified as ‘New vehicle track – establish’, ‘Existing vehicle track - maintain’, ‘New walking track - establish’ or ‘Existing walking track - maintain’ on the Property Management Actions map (Map 6).

3.6.2 Requirements for supplementary planting in the derived grasslands (MZ4 & MZ5)

<u>Planting of trees and shrubs</u>

Revegetation efforts in the derived grasslands will initially focus on reinstating a woodland structure by planting trees and shrubs in MZ4 and MZ5. It is proposed that this work be undertaken in three stages commencing in Year 2 and finishing in Year 4. Map 9 of this guide identifies the areas to be planted in each proposed stage.

Item 6.1 of the agreement identifies the following specific requirements for the planting of trees and shrubs in MZ4 and MZ5:

- Undertake contour ripping at two metre intervals to reduce soil compaction prior to planting. Machine rip to 300mm with rip lines at least one metre wide.
- Avoid ripping and planting within 10 metres of existing native canopy trees.
- Plant trees and shrubs into rip lines within three months of ripping and within 60 months of the first payment date.
- Plant trees at a rate of 400 trees per hectare and shrubs at a rate of 1600 shrubs per hectare.
- Install tree guards around each planted tree and shrub and maintain for three years from the planting date.
- Remove tree guards from around each planted tree and shrub after three years following the planting date.

Planting of native groundcovers (MZ5)

Native groundcover species are also required to be planted in MZ5. This management zone contains the poorer condition areas of derived grassland on the biobank site. The aim of the proposed native groundcover plantings in MZ5 is to increase native species richness and cover within the zone.

The planting of native groundcovers in MZ5 is proposed to occur between Years 16 and 20 once a woodland structure has been re-established in the zone. This woodland structure will assist the establishment of the planted native groundcovers by providing sheltered conditions in the understorey.

Item 6.1 of the agreement identifies the following specific requirements for the planting native groundcovers in MZ5:

- Undertake the planting of native groundcovers 15 years after the completion of tree and shrub planting in MZ5 and continue annually for four years. The 15 year delay will provide for a tree canopy to establish and create conditions conducive to the establishment and survival of a broader range of native groundcovers.
- Plant groundcovers in groups of five plants at a rate of 625 groups per hectare (i.e. 3,150 plants per hectare) targeting areas of low resilience.

No planting of native groundcover species is required in MZ4 as these areas have retained sufficient native species cover in the ground layer.

3.6.3 Requirements for supplementary planting in the riparian forest (MZ6)

The resilience of MZ6 is uncertain due to the highly disturbed condition of the zone. While it is anticipated that large parts of the zone will regenerate from the soil seed bank following primary weed treatment it is estimated that supplementary planting will be required in approximately 25% of the zone to supplement this natural regeneration.

Item 6.1 of the agreement identifies the following specific requirements for planting native trees and shrubs in MZ6:

- Plant trees at a rate of 500 trees per hectare and shrubs at a rate of 1500 shrubs per hectare over 25 percent of the zone.
- Planted trees must be unevenly spaced and planted in ‘patches’ to mimic natural distribution.
- Avoid planting within 20 metres of existing canopy trees or in areas where natural regeneration of native trees and shrubs is occurring.
- Undertake planting where required after a minimum of 36 months following primary weed treatment to allow for natural regeneration to occur where possible.
- Install tree guards around each planted tree and shrub and maintain for three years from the planting date.

- Remove tree guards from around each planted tree and shrub after three years following the planting date.

Item 6.1 of the agreement identifies the following specific requirements for planting native groundcovers in MZ6:

- Plant groundcovers in groups of five plants at a rate of 625 groups per hectare (i.e. 3,150 plants per hectare) over 25 percent of the zone targeting areas of low resilience.
- Undertake planting where required after a minimum of 36 months following primary weed treatment to allow for natural regeneration to occur where possible.

Requirements for planting *Eucalyptus benthamii*
Item 6.1 of the agreement also requires the landowner to undertake the following actions to plant *Eucalyptus benthamii* at four new locations on the biobank site:

- Collect and propagate *Eucalyptus benthamii* from seed collected from remnant trees on the biobank site.
- Plant 10 tubestock in four locations (40 tubestock in total) across the zone selecting locations with similar landscape characteristics (i.e. top of the main levee adjacent to Nepean River) to where the remnant E. benthamii trees are located on the biobank site. Location is the top of the main levee adjacent to Nepean River and near southern boundary of biobank site.
- Undertake planting after a minimum of 36 months following primary weed treatment in the targeted locations
- Undertake planting by the end of Year 10.

The purpose of establishing these new locations for the species is to guard against the loss of genetic material in the event that the existing remnant trees are lost.

3.6.4 Planting schedule

Table 12 of this guide provides a summary of the type and number of plants that are required to be installed in each management zone and the years when they are required to be installed.

Appendix F of this guide contains a revised planting schedule for Years 1 to 5 which identifies the number and type of each species that is proposed to be planted on the biobank site and identifies the management zone and year for the planting. This schedule differs from the planting schedule at Item 6.6 of the agreement in relation to the total number of trees and shrubs to be planted in Management Zones 4 and 5. This is due to a reduction in the area (ha) of these management zones that has been identified for planting in this guide (see note below).

Any other proposed changes to the planting schedule (for example, due to unavailability of some species) should be discussed with OEH prior to implementation.

NOTE: A slightly smaller area of MZ4 and MZ5 is proposed in this guide to be planted out with tree and shrub species (19.87 ha) than was identified in the Biobanking agreement (22.58 ha). This is to ensure that small areas of good condition grassland are retained adjacent to the remnant woodland as foraging habitat for native birds. The change in the proposed planting area reduces the number of trees and shrubs to be planted in these zones from 45,150 plants to 39,725 plants. The revised planting schedule identified in Appendix F of this guide therefore differs slightly from the planting schedule in the Biobanking agreement.

RECOMMENDATION: The reduction in the number of trees and shrubs that are proposed to be planted in MZ4 and MZ5 will provide a potential cost saving to the landowner of $37,840 (ex. GST). It is recommended that this funding be retained as contingency funding to be used elsewhere on the site if required.

Map 9: Staging of supplementary planting in the derived grasslands

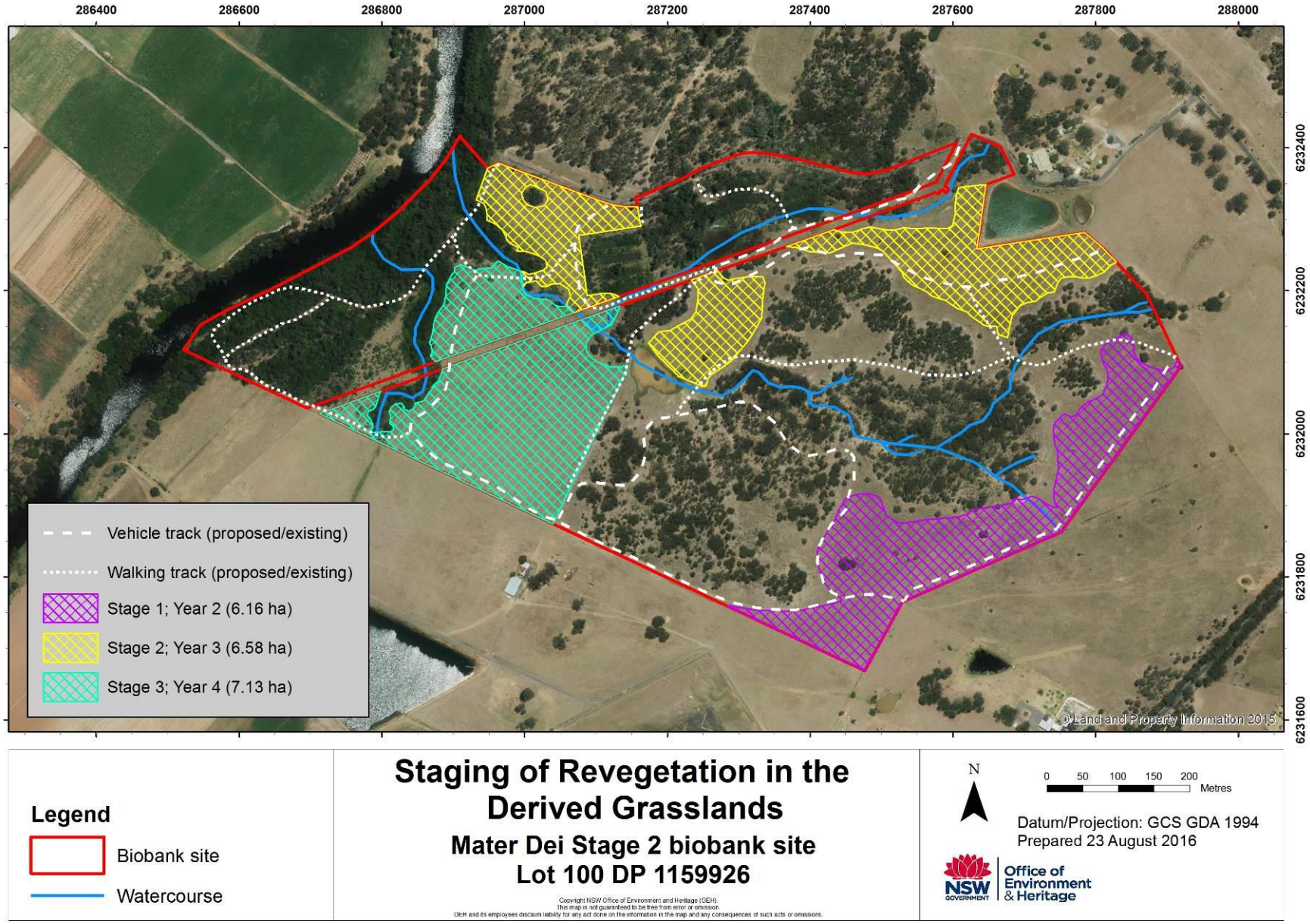


Table 12: Revegetation summary

Year	MZ4 (derived native grasslands)	MZ5 (derived mixed grasslands)	MZ6 (Riparian Forest)	Total for all derived grasslands (MZ4 & MZ5)	Total for all zones (MZ4, MZ5 & MZ6)
1	-	-	-	-	
2	CPW - 1,600 trees, 6,420 shrubs	CPW - 860 trees, 3,430 shrubs	-	CPW - 2,460 trees, 9,850 shrubs	CPW - 2,460 trees, 9,850 shrubs
3	CPW - 760 trees, 3.040 shrubs	CPW - 750 trees, 3,000 shrubs; RFEF - 1,120 trees, 4,490 shrubs	-	CPW - 1,510 trees, 6,040 shrubs; RFEF - 1,120 trees, 4,490 shrubs	CPW - 1,510 trees, 6,040 shrubs; RFEF - 1,120 trees, 4,490 shrubs
4	-	CPW - 370 trees, 1,480 shrubs; RFEF - 2,480 trees, 9,930 shrubs	RFEF - 45 trees, 145 shrubs, 300 g/covers	CPW - 370 trees, 1,480 shrubs; RFEF - 2,480 trees, 9,930 shrubs	CPW - 370 trees, 1,480 shrubs; RFEF - 2,525 trees, 10,075 shrubs, 300 g/covers
5	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
6	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
7	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
8	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
9	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
10	-	-	40 *Eucalyptus benthamii*; RFEF - 45 trees; 145 shrubs; 300 g/covers	-	40 *Eucalyptus benthamii;* RFEF - 45 trees; 145 shrubs; 300 g/covers
11	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
12	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
13	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
14	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
15	-	-	RFEF - 45 trees; 145 shrubs; 300 g/covers	-	RFEF - 45 trees; 145 shrubs; 300 g/covers
16	-	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	RFEF - 45 trees; 145 shrubs; 300 g/covers	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	CPW - 3,520 g/covers; RFEF - 45 trees; 145 shrubs; 6,200 g/covers
17	-	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	RFEF - 45 trees; 145 shrubs; 300 g/covers	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	CPW - 3,520 g/covers; RFEF - 45 trees; 145 shrubs; 6,200 g/covers
18	-	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	RFEF - 45 trees; 145 shrubs; 300 g/covers	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	CPW - 3,520 g/covers; RFEF - 45 trees; 145 shrubs; 6,200 g/covers
19	-	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	RFEF - 45 trees; 145 shrubs; 300 g/covers	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	CPW - 3,520 g/covers; RFEF - 45 trees; 145 shrubs; 6,200 g/covers
20	-	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	-	CPW - 3,520 g/covers; RFEF- 5,900 g/covers	CPW - 3,520 g/covers; RFEF- 5,900 g/covers

3.6.5 Seed collection and propagation

Item 6.5 of the agreement describes the following requirements relating to seed collection and propagation:

- Seeds and plants used for planting and seeding must be obtained from locally collected provenances, unless there are reasons to do otherwise (e.g. to ensure genetic variability or for adaptation to climate change).
- Any seed collected on site must be used on site or on other adjacent land that is in the landholders' ownership.
- Any seed collected must be collected in accordance with the Florabank Guidelines or as otherwise advised by OEH in writing. The guidelines are accessible on the internet at https://www.florabank.org.au/default.asp?V_DOC_ID=755.

3.6.6 Plant maintenance and record keeping

Item 6.4 of agreement states that the planted areas must be maintained to assist the establishment and survival of native plant species. This may include watering, slashing, scalping, spraying of weeds, and plant replacement. The dates of planting must be also be recorded in accordance with the record keeping requirements set out in Annexure D of the agreement (see Section 5.3 of this guide).

A 'Diary template for weed control and revegetation' (Appendix G of this guide) has been prepared for the purpose of documenting the implementation of revegetation activities.

RECOMMENDATION: The contractor specifications for revegetation on the biobank site could include a requirement for the bush regeneration contractor to complete a 'Diary template for weed control and revegetation' for each month of activity on the biobank site. The completed templates can then be submitted by the landowner with the biobank site annual report.

3.6.7 Monitoring survival rates and supplementary planting

Item 6.3 of the agreement requires that a survey of each planting area be undertaken 24 months after the completion of planting and then every 12 months thereafter, to determine whether the plants have established and survived. If, after the first survey or subsequent surveys, the establishment and survival rate of plants in an area of planting are below those usual for the species and region (i.e. below 85% establishment rate) then the landowner must supplement the planting in the adversely affected areas within a reasonable timeframe (usually within 12 months).

This requirement has been included as a task to be recorded annually on the 'Template for the reporting of monitoring activities – weed control and revegetation'.

RECOMMENDATION: The contractor specifications for revegetation on the biobank site could include a requirement for the bush regeneration contractor to complete a separate 'Template for the reporting of monitoring activities – weed control and revegetation' for each management zone at the end of each annual reporting period. The completed templates can then be submitted by the landowner with the biobank site annual report.

3.6.8 Funding for revegetation works

The payments to the landowner from the Biobanking Trust Fund will include funds to supply, install and maintain the following plantings:

- Native trees and shrubs in MZ4 and MZ5 in Years 2, 3 and 4,
- Native groundcovers in MZ5 in Years 16 to 20,
- Native trees, shrubs and groundcovers in MZ6 in Years 4 to 19, and
- *Eucalyptus benthamii* in MZ6 in Year 10.

3.7 DEAD TIMBER

Dead timber refers to standing dead trees and fallen timber on the ground. Dead timber provides essential habitat for many native fauna species and can provide microhabitats for native flora.

Dead trees often contain hollows which are important roosting or breeding sites for fauna, particularly arboreal (tree-dwelling) mammals and birds. Fallen timber provides perching habitat for birds and shelter for ground dwelling mammals and reptiles. Fallen timber also contains insects for fauna to eat.

Item 7.1 of the Biobanking agreement states that dead timber (whether standing or fallen and including branches and leaf litter) must not be removed from or moved within the biobank site. Timber from outside the biobank site may be introduced to and placed on the biobank site to improve biodiversity values in accordance with Item 7.2 of agreement. However once the timber has been brought onto the site, it is subject to the requirements of Item 7.1.

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 (Section 5.3 of this guide). 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.

3.8 EROSION CONTROL

Soil erosion can occur when native vegetation has been removed exposing bare soils and making them susceptible to dispersal by wind or water. Soil erosion often occurs along creek lines and slopes where water flows are concentrated but can also occur in paddocks where overgrazing or vegetation clearance exposes bare soil. Soil erosion can be difficult to remedy especially along creek lines.

Item 8.1 of the Biobanking agreement states that 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.

Active head-cut erosion is occurring in a number of locations along the main drainage lines through the biobank site. The locations are identified as ‘Control erosion’ on the Property Management Actions map (Map 6 of this guide).

The landowner must manage the existing erosion at these locations by conducting the following activities:

- excavate head cut to create a stable profile,
- line re-profiled head cut with geotextile,
- armour re-profiled head cut with imported sandstone rock,
- install bed control structures downstream of each head cut using imported sandstone rock, and
- maintain as required.

The payments to the landowner from the Biobanking Trust Fund will include funds to:

- undertake the initial treatment of the active erosion areas in Year 2 of the agreement,
- maintain the treated active erosion areas for the following five years, and
- treat any additional erosion areas on the biobank site form Year 8 onwards.

3.9 RETENTION OF ROCKS

Rocks are an important habitat feature and serve many purposes in the natural environment. They provide habitat for native flora and fauna species, some of which are threatened.

Many animals use rocks and rock environments for shelter and to hide from predators, find food, avoid extreme weather conditions and escape bushfires. Rocks are also known to provide egg-laying sites for reptiles.

Item 9.1 of the agreement states that 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.

3.10 CONTROL OF FERAL AND OVERABUNDANT NATIVE HERBIVORES

The management plan to control feral and overabundant native herbivores ('feral herbivore management plan') in the Biobanking agreement describes the management actions that must be undertaken on the site to control feral herbivores. This section of the guide aims to provide context and justification for these actions, and guidance on how to effectively implement them.

3.10.1 Impacts of herbivores

Herbivores have the potential to significantly impact upon the health of native vegetation on the biobank site. For example, grazing and trampling by herbivores can kill established plants, regenerating seedlings and plantings, as well as create erosion problems.

Four feral herbivore species are identified as likely to occur or occurring in low numbers on the biobank site (Table 13). The current level of impact of these feral herbivores on the site is considered to be negligible. There are no overabundant native herbivores present.

Table 13: Feral herbivores that are present or likely to be present

Name of feral herbivore	Description of extent	Location
Rabbit	Present in low numbers	MZ1, MZ2, MZ3 and MZ6
Hare	Present in low numbers	MZ1, MZ2, MZ3 and MZ6
Goat	No sightings, may be present occasionally	All
Deer	Observed in other parts of property, may be present occasionally	All

3.10.2 Control of feral herbivores

Factors to take into consideration when determining the type, frequency and timing of feral herbivore control activities on the biobank site include the type and abundance of feral herbivores present, their level of impact on the biodiversity values of the site, and the feral pest control budget.

At present there are no feral herbivores present on the biobank site whose abundance and level of impact is sufficient to require active management. Grazing by rabbits poses the greatest potential threat to regenerating native vegetation on the site, particularly once fox control commences.

The 'Methods of control' section in the feral herbivore management plan describes the feral herbivore control techniques that are suitable for use on the biobank site and the situations in which they should be applied. This information is provided in Table 14 of this guide.

Rabbit control must be implemented where rabbit activity is assessed as being either Moderate or High in the annual monitoring. Efforts to control other feral herbivores should be implemented if the annual monitoring identifies large numbers of feral herbivores on the site and these feral herbivores are, or are likely to, cause significant damage to native vegetation or create erosion problems.

The control efforts will be most effective if they prioritise the parts of the site that are most sensitive to herbivory or erosion, including revegetation areas, areas that are regenerating following fire or primary weed treatment, or drainage lines.

Details of the implementation and success of all feral herbivore control activities on the biobank site must be recorded on the 'Diary template for feral pest management' (Appendix G of this guide).

Note: The 'Diary template for feral pest management' can be completed by the landowner or by the person undertaking the activity. The template can be used to record both feral herbivore and vertebrate pest control activities. A separate template should be completed for each activity. The completed templates should be submitted by the landowner with the biobank site annual report.

Table 14: Feral herbivore control methods

Mgmnt zone/s	Feral herbivore	Description of method and assessment of suitability	Proposed implementation of method	Frequency and timing of implementation
All	Rabbit	Fumigation of active burrows with phosphine tablets and then ripping or collapsing the burrows is an effective control method and suitable for use on the biobank site. This action could be undertaken on the biobank site in conjunction with the removal of surface shelter (e.g. weed thickets, rubbish) in areas where rabbits are active.	Manual warren destruction and/or fumigation is to be implemented in management zones where rabbit activity is assessed as being either Moderate or High in the annual monitoring.	As required, based on the outcomes of monitoring
All	Rabbit	Pindone baiting is an effective means of controlling rabbits but has the potential for non-target impacts on macropods, stock animals, domestic pets, children etc. Pindone baiting may be suitable for use on the biobank site provided it is used in accordance with regulatory requirements and with appropriate safeguards (e.g. bait stations to exclude macropods).	Pindone baiting can be implemented as an alternative to manual warren destruction and/or fumigation in circumstances where it will be more cost-effective.	As required, based on the outcomes of monitoring
All	Rabbit, hare, goat, deer	Ground shooting is suitable for multiple feral species, is species specific and humane.	A controlled shooting program can be implemented where vertebrate pests (other than rabbits) are regularly observed on the biobank site or observed in large numbers in the annual monitoring or to supplement other methods of feral herbivore control.	As required, based on the outcomes of monitoring

Note: The landowner should seek advice from Local Land Services on how to effectively and legally undertake feral herbivore pest control prior to commencing control on the biobank site. If the methods identified by Local Land Services differ from those identified in the management plan, OEH must be contacted prior to commencing control.

3.10.3 Monitoring and inspections

The 'Monitoring and inspections' section of the feral herbivore management plan establishes a program to monitor the presence and/or impacts of feral herbivores on the biobank site and to report on the control measures that have been implemented. This section of the management plan is reproduced in Table 15.

The monitoring is to comprise of an early morning traverse of the site (minimum of 3 hours survey effort) to record:

- rabbit density in each management zone using a standard rabbit density classification, and
- the location, type and number of feral herbivores observed, and
- any other evidence of feral herbivore activity.

The monitoring must also involve consultation with the bush regeneration contractors that work on the site to document their observations of feral herbivore activity.

The outcomes of the monitoring should be recorded in the 'Template for the reporting of monitoring activities - feral pests' (Appendix H of this guide). It is intended that this monitoring and reporting be combined with the monitoring and reporting for vertebrate pests (see Section 3.11.3 of this guide) and recorded on the same 'Template for the reporting monitoring activities - feral pests'.

RECOMMENDATION: The contractor specifications for weed control on the biobank site could include could include a requirement for the bush regeneration contractor to undertake the six monthly monitoring of feral herbivores and vertebrate pests and to complete the 'Template for the reporting of monitoring activities - feral pests'. There will be cost savings if this monitoring is undertaken at the same time as the six-monthly inspections of the site to document rubbish dumping, human disturbance and active erosion (see Section 5.1.2 of this guide).

Table 15: Monitoring and inspections of feral herbivores

Mgmnt zone/s	Feral herbivore	Method of monitoring	Date/s required
All	Rabbit, hare, goat, deer	All monitoring is to be undertaken by suitably qualified bush regenerator or ecologist.	Every six months from the first payment date, or more often as required.
All	Rabbit, hare, goat, deer	Provide details of the implementation and success of all feral herbivore control activities on the biobank site using the 'Diary template for feral pest management' and submit it with the biobank site annual report.	Every six months from the first payment date, or more often as required.
All	Rabbit	Monitoring of rabbit activity Monitoring is to comprise of a six-monthly inspection to record rabbit density in each management zone according to the following standard rabbit density classification (see NSW DPI 2014): • High density - abundant active warrens, rabbits visible any time • Medium density – active warrens present, a fair amount of sign (scratches, dung heaps, feeding areas) • Low density – some sign, few holes • Zero – no sign The outcomes of this monitoring should be recorded in the 'Template for reporting monitoring of feral pest activity' and submitted with the biobank site annual report.	Every six months from the first payment date, or more often as required.
All	Rabbit, hare, goat, deer	Observations of other feral herbivores A record of feral herbivore activity on the site is to be prepared on a six-monthly basis following an early morning traverse of the site (minimum of 3 hours survey effort). The record is to identify the location, type and number of feral herbivores observed, and describe any other evidence of feral herbivore activity. The monitoring must also involve consultation with the bush regeneration contractors that work on the site to document their observations of feral herbivore activity. The outcomes of this monitoring should be recorded in the 'Template for reporting monitoring of feral pest activity' and submitted with the biobank site annual report.	Every six months from the first payment date, or more often as required.

3.10.4 Review of the management plan

Timing and matters for consideration

The management plan to control feral and overabundant native herbivores is required to be reviewed by the landowner every four to six years. Item 10.2 of the Biobanking agreement specifies the timing and matters for consideration in the review of the plans. If OEH determines from the review that the plans require an update, the landowner must update the plans within three months.

Independent peer review

The review of the plans must be undertaken by an appropriately qualified person that is independent of the bush regeneration contractor working on the site.

NOTE: There are likely to be cost savings if one person or company is engaged to undertake the five yearly review of all management plans in the Biobanking agreement at the same time (i.e. the weed, fire, feral herbivore and vertebrate pest management plans). An ecological consultant would be best placed to complete this task. It would also be beneficial to require the consultant to update the plans as part of the review rather than at a later date as described in the agreement.

3.10.5 Funding for feral herbivore control

The payments to the landowner from the Biobanking Trust Fund will include funds to undertake and monitor feral pest control activities, including for both feral herbivores and vertebrate pests. It is envisaged that if this funding is not required in any one year, it will be allowed to accumulate so that sufficient funds are available if a significant threat from feral pests arises in future years. Funding will also be provided every 5 years to review and update of the feral herbivore management plan.

3.11 CONTROL OF VERTEBRATE PESTS

The vertebrate pest management plan in the Biobanking agreement describes the management actions that must be undertaken to control vertebrate pests on the site. This section of the guide aims to provide context and justification for these actions, and guidance on how to effectively implement them.

3.11.1 Impact of vertebrate pests

A wide variety of vertebrates have been introduced into Australia since European settlement. Many have become pest species, adapting to the Australian environment and having significant impacts on native fauna and flora. Threats to biodiversity from vertebrate pests include predation (e.g. cats and foxes), competition with native species for food and nesting sites (e.g. introduced bird species), and the potential to act as reservoirs for exotic diseases (e.g. pigs and foot-and-mouth disease).

The fox is the only vertebrate pest that has been observed on the biobank. The fox predates upon a broad range of fauna species on the biobank site, potentially including the vulnerable Speckled Warbler. Although not recorded from the biobank site, the Speckled Warbler has been recorded from other parts of the Mater Dei property and is particularly susceptible to fox predation as it is a small ground nesting species. This bird does not range widely and has specific habitat preferences. As such the population that occurs on the Mater Dei property is of particular significance.

3.11.2 Control of vertebrate pests

The ‘Methods of control’ section in the vertebrate pest management plan describes the vertebrate pest control techniques that are suitable for use on the biobank site and the situations in which they should be applied. This information is provided in Table 16 of this guide.

Given the confirmed presence of the Speckled Warbler on the property and the presence of potential habitat for the species on the biobank site, a monthly (year round) baiting program using 1080 is required to control foxes. A controlled shooting program can also be implemented to supplement the 1080 baiting program if required.

The landowner should contact Local Land Services to obtain advice and assistance in planning vertebrate pest control activities on the biobank site and obtaining the necessary approvals.

RECOMMENDATION: The proposed fox baiting program will be more effective if it is undertaken on all of the conservation lands on the Mater Dei property, and ideally on neighbouring properties. It is recommended that the landowner approach the owners of neighbouring properties to seek their interest in being involved in the fox baiting program.

Details of the implementation and success of all vertebrate pest control activities on the biobank site must be recorded on the ‘Diary template for feral pest management’ (Appendix G of this guide)

Note: The ‘Diary template for feral pest management’ can be completed by the landowner or by the person undertaking the activity. The template can be used to record both feral herbivore and vertebrate pest control activities. A separate template should be completed for each activity. The completed templates should be submitted by the landowner with the biobank site annual report.

Table 16: Vertebrate pest control methods

Mgmnt zone/s	Vertebrate pest	Description of method and assessment of suitability	Proposed implementation of method	Frequency and timing of implementation
All	Fox	Given the large size of this biobank site, baiting with 1080 will be the most effective method of fox control, particularly if it can be implemented in conjunction with similar programs on adjacent properties. 1080 baiting has the potential to impact on non-targeted species such as native carnivores/omnivores, domestic dogs and cats. It must be used in accordance with regulatory requirements and with appropriate safeguards.	Monthly (year round) 1080 baiting is to be implemented on the biobank site when fox control is required.	As required, based on the outcomes of monitoring
All	Fox	Ground shooting is not effective as a general fox control method. It may be suitable for fox control however where multiple feral pests are present on the site or to supplement other feral pest control methods.	A controlled shooting program can be implemented to supplement the 1080 baiting program if required.	As required, based on the outcomes of monitoring

Note: The landowner should seek advice from Local Land Services on how to effectively and legally undertake vertebrate pest control on the biobank site prior to commencing control. If the methods identified by Local Land Services differ from those identified in the vertebrate pest management plan, OEH must be contacted prior to commencing control.

3.11.3 Monitoring and inspections

The monitoring and inspections section of the vertebrate pest management plan establishes a program to monitor the presence and/or impacts of vertebrate pests on the biobank site and to report on the control measures that have been implemented.

This section of the plan is reproduced in Table 17 below.

Table 17: Monitoring and inspections of vertebrate pests

Mgmnt zone/s	Vertebrate pest	Method of monitoring	Date/s required
All	Fox	Qualifications All monitoring is to be undertaken by suitably qualified bush regenerator or ecologist	Every six months from the first payment date, or more often as required.
All	Fox	Diary template for feral pest management Provide details of the implementation and success of all vertebrate pest control activities on the biobank site using the 'Diary template for feral pest management' and submit with the biobank site annual report.	At the completion of the vertebrate pest control activity
All	Fox	Observations of vertebrate pests A record of vertebrate pest activity on the site is to be prepared on a six-monthly basis following an early morning traverse of the site (minimum of 3 hours survey effort). The record is to identify the location, type and number of vertebrate pests observed, and describe any other evidence of vertebrate pest activity. The monitoring must also involve consultation with the bush regeneration contractors that work on the site to document their observations of vertebrate pest activity. The outcomes of this monitoring should be recorded in the 'Template for reporting monitoring of feral pest activity' and submitted with the biobank site annual report.	Every six months from the first payment date, or more often as required.

The monitoring is to comprise of an early morning traverse of the site (minimum of 3 hours survey effort) to record the location, type and number of vertebrate pests observed, and any other evidence of vertebrate pest activity.

The monitoring must also involve consultation with the bush regeneration contractors that work on the site to document their observations of feral herbivore activity.

The outcomes of the monitoring should be recorded in the 'Template for the reporting of monitoring activities - feral pests' (Appendix H of this guide). It is intended that this monitoring and reporting be combined with the monitoring and reporting for feral herbivores (Section 3.10.3) and recorded on the same 'Template for the reporting of monitoring activities - feral pests'.

RECOMMENDATION: The contractor specifications for weed control on the biobank site could include could include a requirement for the bush regeneration contractor to undertake the six monthly monitoring for feral herbivores and vertebrate pests and to complete the 'Template for the reporting of monitoring activities - feral pests'. There will be cost savings if this monitoring is undertaken at the same time as the six-monthly inspections of the site to document rubbish dumping, human disturbance and active erosion (see Section 5.1.2 of this guide).

3.11.4 Review of the management plan

Timing and matters for consideration

The vertebrate pest management plan is required to be reviewed by the landowner every four to six years. Item 11.2 of the agreement specifies the timing and matters for consideration in the review of the plans. If OEH determines from the review that the plans require an update, the landowner must update the plans within three months.

Independent peer review

The review of the plans must be undertaken by an appropriately qualified person that is independent of the bush regeneration contractor working on the site.

NOTE: There are likely to be cost savings if one person or company is engaged to undertake the five yearly review of all management plans in the Biobanking agreement at the same time (i.e. the weed, fire, feral herbivore and vertebrate pest management plans). An ecological consultant would be best placed to complete this task. It would also be beneficial to require the consultant to update the plans as part of the review rather than at a later date as described in the agreement.

3.10.5 Funding for vertebrate pest control

The payments to the landowner from the Biobanking Trust Fund will include funds to undertake and monitor feral pest control activities, including for both feral herbivores and vertebrate pests. It is envisaged that if this funding is not required in any one year, it will be allowed to accumulate so that sufficient funds are available if a significant threat from feral pests arises in future years. Funding will also be provided every 5 years to review and update of the vertebrate pest management plan.

4. Minor Alterations to Management Actions

Item A5 (Annexure C) of the Biobanking agreement permits the landowner to make minor alterations to any management actions as part of adaptive management, where the outcomes of monitoring, including documented observations of the landowner or his/her servant, lessee, agent or licensee/s, indicate that the minor alterations to the management actions are required to improve biodiversity values in accordance with the Biobanking agreement.

The landowner must document the minor alterations made to the management actions and the reasons for the alterations, and retain a record of the documentation and include it in the annual report for the biobank site (see Section 5.2 of this guide).

5. Monitoring, Reporting and Record Keeping

The general monitoring, reporting and record keeping requirements for the biobank site are described in Annexure D of the Biobanking agreement.

5.1 GENERAL MONITORING

The general monitoring requirements of the agreement are described below. These are additional to the specific monitoring and reporting requirements described previously in this guide for weed management (Section 3.2.4), fire management (Section 3.3.9), supplementary planting (Section 3.6.7), feral herbivores (Section 3.10.3), and vertebrate pests (Section 3.11.3).

The payments to the landowner from the Biobanking Trust Fund to undertake all monitoring and reporting activities (i.e. both general and specific) are included in the monitoring and reporting budget.

5.1.1 Photo-monitoring

Photographs must be taken from photo-monitoring points at each of the locations and in the directions identified on Page 79 of the Biobanking agreement every 12 months. The purpose of the photographs is to show changes over time. It is envisaged that the photographs will be taken during the 12 month inspection of the site (see Section 5.1.2 below).

Details of the locations and directions of the photo-points, as well as copies of the original 2015 photos, are included on the annual site inspection checklist for the biobank site (Appendix J of this guide).

Photographs should be taken at approximately the same direction, location, height and time of day (during daylight hours) each year and retained for the life of the agreement. All photographs must be dated, stating the direction in which they were taken and identified with their locations.

The photo-monitoring points are marked in the field with a metal star-picket.

5.1.2 Site Inspections

The site inspection and monitoring schedule on Page 80 of the Biobanking agreement identifies the purpose and timing of the site inspections that are required to be undertaken by the landowner from the commencement date of the agreement. This schedule is reproduced in Table 18 below.

Table 18: Site inspection and monitoring schedule

A. Purpose	B. Interval
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 • 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	Every 12 months
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

A six-monthly inspection checklist (Appendix I of this guide) and an annual site inspection checklist (Appendix J of this guide) have been prepared to record the results of these inspections, and the results of the photo-monitoring (see Section 5.1.1 above).

NOTE: Inspections for livestock on the biobank site are required to be made every 3 months under the Biobanking agreement (see Table 18 of this guide). However, the six monthly inspection checklist at Appendix I f this guide will only report on the presence of livestock every 6 months. It may not be necessary to conduct more frequent inspections for livestock if bush regeneration contractors are present on the site regularly and are required to report any sightings of livestock immediately as part of their contract specifications.

RECOMMENDATION: The contractor specifications for weed control on the biobank could include a requirement for the bush regeneration contractor to undertake the six monthly and annual inspections of the biobank site and the photo-monitoring using the checklists provided in Appendix I and Appendix J of this guide. These inspections can be combined with the traverses of the site that are proposed to be undertaken by the bush regeneration contractor for the purpose of monitoring feral herbivore and vertebrate pest activity. It is also recommended that the bush regeneration contractor be required to immediately report any sightings of livestock when working on the site to the landowner instead of a separate 3 monthly inspection for livestock being undertaken.

5.2 ANNUAL REPORT

The landowner must submit an annual report within 30 days of the end of each reporting period for the agreement. The reporting period for the agreement is 12 months after the first payment date and every subsequent period of 12 months.

A tailored annual reporting template for the biobank site is provided in Appendix K of this guide. The following completed proformas and checklists should be submitted with the annual report:

- Template for the reporting of monitoring activities – weed control and revegetation (one template to be completed annually for each management zone)
- Diary template for weed control and revegetation (one template for each month of weed control or revegetation activity)
- Diary template for fire management (only required if a fire occurred during the reporting period; one template to be completed for each burn within the biobank site)
- Diary template for feral pest management (one template to be completed for each type of vertebrate pest and/or feral herbivore management activity undertaken)
- Template for the reporting of monitoring activities - feral pests (one template to be completed every 6 months during the reporting period)
- Photographs taken at the 10 photo points set out in the biobanking agreement
- Six monthly site inspection checklists (two completed checklists for each reporting period)
- Annual site inspection checklist (one completed checklist for each reporting period)

RECOMMENDATION: The landowner, rather than a contractor, could complete the annual report using the information contained on the various templates completed by contractors. This will assist the landowner to maintain knowledge of the various requirements of the Biobanking agreement and to keep up to date with how management of the site is progressing and which management actions are required in the following year.

5.3 RECORD KEEPING

The record keeping requirements of the Biobanking agreement are described in Section 3 of Annexure D of the agreement.

Among these, is the requirement that a diary be kept to record actions undertaken in accordance with the management plans required by the agreement, including the details (management zone/s, date, alternative action) of any minor alterations made to the implementation of the management plans and the reasons for the minor alterations. This requirement will be met by completing the diary templates for weed control and revegetation, fire management, feral pest control included as Appendices B, D and G of this guide respectively.

6. Licences, consents, authorisations, permits and approvals

Clause 3.3 (Page 7) of the Biobanking agreement states that the landowner is responsible for obtaining all necessary licenses, consents, authorisations, permits or approvals to lawfully comply with and carry out its obligations under the agreement.

Annexures C and D of the agreement have been approved as a property management plan under Section 113B of the *Threatened Species Conservation Act 1995* (TSC Act). This means that Section 91 licensing under the TSC Act is not required to carry out the prescribed management actions in the habitat of threatened species, population and ecological communities.

However, other licenses or approvals may be required to implement certain management actions required under the agreement (e.g. prescribed burns, feral pest control) and it is the responsibility of the landowner to obtain these approvals.

References

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Appendix A:
Flora species recorded from biobank site

The table below provides the cover scores of the flora species that were recorded during plot surveys of the Stage 2 biobank site conducted by OEH between July 2015 and January 2016.

The cover score method used is as follows:

- 1 - <5% foliage cover and <6 individuals
- 2 - <5% foliage cover and 6 to 20 individuals
- 3 - <5% foliage cover and 21 to 100 individuals
- 4 - <5% foliage cover and >100 individuals
- 5 - 5 to 25% foliage cover
- 6 - 26 to 50% foliage cover
- 7 - 51 to 75% foliage cover
- 8 - 76 to 100% foliage cover

Orange shading indicates that the plot is located in Cumberland Shale Hills Woodland
Green shading indicates that the plot is located in Cumberland Shale Plains Woodland (lighter shading denotes derived grassland)
Blue shading indicates that the plot is located in Cumberland River-flat Eucalypt Forest (lighter shading denotes derived grassland)

* indicates that the species is exotic

Species Name	Plot 1	Plot 5	Plot 9	Plot 10	Plot 11	Plot 12	Plot 2	Plot 3	Plot 6	Plot 7	Plot 15	Plot 16	Plot 4	Plot 8	Plot 13	Plot 14	Plot 17
Acacia decurrens	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ajuga australis	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
Araujia sericifera*	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	4	0
Aristida ramosa	5	6	5	3	5	0	5	5	5	5	4	0	1	0	5	0	0
Aristida vagans	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Asparagus aethiopicus*	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Asparagus asparagoides*	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Asperula conferta	1	0	0	2	2	0	0	0	0	0	0	0	0	0	2	0	0
Austrostipa ramosissima	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
Axonopus fissifolius*	1	5	5	3	4	5	2	0	0	5	0	5	0	0	3	0	0
Bacopa spp.*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bidens pilosa*	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Bothriochloa macra	0	0	0	2	2	2	1	0	0	0	4	2	0	0	1	0	0
Briza subaristata*	0	0	0	4	5	5	0	0	1	0	4	4	0	0	3	0	0

Species Name	Plot 1	Plot 5	Plot 9	Plot 10	Plot 11	Plot 12	Plot 2	Plot 3	Plot 6	Plot 7	Plot 15	Plot 16	Plot 4	Plot 8	Plot 13	Plot 14	Plot 17
Bromus catharticus*	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
Bromus molliformis*	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
Brunoniella australis	3	0	1	0	0	0	2	0	3	0	0	0	0	0	0	0	0
Brunoniella pumilio	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Bursaria spinosa	5	2	2	2	2	0	5	5	5	0	0	3	6	0	3	0	1
Cardiospermum grandiflorum*	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	4	1
Carex breviculmis	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Carex inversa	0	0	0	0	0	0	0	0	1	0	3	2	0	0	4	2	0
Carex longebrachiata	0	0	0	1	0	0	1	0	0	1	1	6	1	0	1	0	2
Carex spp.?	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Celtis spp.*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Centella asiatica	0	0	0	2	0	0	0	0	0	0	0	4	0	0	2	0	0
Centaurium spp.*	0	0	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0
Centaurium erythraea*	0	0	0	0	4	0	0	0	0	0	0	2	0	0	0	0	0
Centaurium tenuiflorum*	0	0	0	0	0	0	0	0	1	0	3	4	0	0	0	0	0
Cheilanthes sieberi subsp. sieberi	2	1	2	0	0	0	2	2	3	0	0	0	2	2	0	0	0
Chloris gayana*	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Chloris ventricosa	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
Cirsium vulgare*	1	0	0	1	0	0	0	0	0	2	2	3	1	0	0	0	0
Convolvulus erubescens	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Conyza spp.*	1	0	0	2	1	0	1	1	0	2	0	4	0	0	0	0	0
Cyclospermum leptophyllum*	0	0	0	0	3	0	0	0	0	0	3	3	0	0	1	0	0
Cymbonotus lawsonianus	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Cymbopogon refractus	0	0	2	0	0	0	0	3	2	0	0	0	0	0	0	0	0
Cynodon dactylon	4	3	0	1	0	3	0	0	1	2	6	5	0	0	4	0	0
Cyperus imbecillis	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0
Daucus glochidiatus	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0
Desmodium varians	3	2	2	3	0	0	2	0	2	0	0	0	4	0	3	0	0
Dianella longifolia var. longifolia	1	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0
Dichelachne micrantha	0	0	0	3	3	0	0	0	3	0	0	1	0	0	0	0	0

Species Name	Plot 1	Plot 5	Plot 9	Plot 10	Plot 11	Plot 12	Plot 2	Plot 3	Plot 6	Plot 7	Plot 15	Plot 16	Plot 4	Plot 8	Plot 13	Plot 14	Plot 17
Dichopogon spp.	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dichondra repens	4	0	0	0	0	0	4	0	0	0	0	0	4	0	0	2	1
Dichondra sp. A	4	3	0	4	0	0	2	4	4	0	0	0	0	1	4	0	0
Echinopogon caespitosus	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Ehrharta erecta*	0	0	0	0	0	0	0	0	0	0	0	0	0	6	5	4	7
Einadia hastata	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Einadia nutans subsp. nutans	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Elymus scaber	0	0	0	0	0	0	0	0	0	0	4	4	0	0	1	0	0
Entolasia marginata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Entolasia stricta	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0
Eragrostis brownii	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Eragrostis curvula*	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0
Eragrostis leptostachya	2	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0
Eremophila debilis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Eucalyptus amplifolia	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	0
Eucalyptus baueriana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0
Eucalyptus elata	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	1	5
Eucalyptus moluccana	5	0	0	0	0	0	5	5	5	0	0	0	0	0	0	0	0
Eucalyptus tereticornis	5	0	2	0	0	0	5	5	2	0	0	0	0	0	5	0	0
Euchiton sphaericus	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Galium leiocarpum	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Galium propinquum	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Gamochaeta purpurea*	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0
Gamochaeta spp.*	0	0	2	0	0	0	0	0	0	0	1	2	0	0	0	0	0
Geranium spp.?	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Geranium solanderi var. solanderi	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Gleditsia triacanthos*	0	0	0	0	0	0	0	0	0	0	1	2	0	0	2	2	1
Glossocardia bidens	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0
Glycine clandestina	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
Glycine microphylla	2	0	0	4	0	0	2	2	0	0	0	0	3	1	2	0	0

Species Name	Plot 1	Plot 5	Plot 9	Plot 10	Plot 11	Plot 12	Plot 2	Plot 3	Plot 6	Plot 7	Plot 15	Plot 16	Plot 4	Plot 8	Plot 13	Plot 14	Plot 17
Glycine tabacina	3	2	1	2	3	0	2	0	2	0	2	0	0	0	4	0	0
Gomphocarpus fruticosus*	0	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0
Goodenia hederacea subsp. hederacea	0	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0
Hypericum gramineum	0	2	3	4	3	2	1	1	0	2	0	0	0	0	0	0	0
Hypochaeris spp.*	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Hypochaeris radicata*	0	0	2	0	3	2	1	0	0	3	2	4	0	0	2	0	0
Juncus usitatus	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Lagenifera stipitata	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lagenophora stipitata	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Lantana camara*	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	3
Laxmannia gracilis	0	0	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0
Ligustrum lucidum*	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	6	3
Ligustrum sinense*	0	0	0	0	0	0	0	0	0	1	1	5	2	4	3	5	7
Linum trigynum*	0	0	1	3	1	0	0	0	0	0	0	3	0	0	2	0	0
Lolium perenne*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Lolium spp.*	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Lomandra confertifolia subsp. pallida	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lomandra filiformis subsp. coriacea	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Lomandra filiformis subsp. filiformis	0	0	3	0	2	0	0	2	3	0	0	0	0	0	3	0	0
Lomandra filiformis	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Lonicera japonica*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
Lycium ferocissimum*	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0
Lysimachia arvensis*	0	0	2	2	0	0	0	0	1	0	1	2	0	0	0	0	0
Medicago spp.*	0	0	2	0	0	0	0	0	0	3	1	0	0	0	0	0	0
Melicytus dentatus	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
Mentha diemenica	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Microlaena stipoides var. stipoides	6	0	0	0	0	3	6	5	5	0	4	5	4	4	6	2	4
Olea europaea subsp. cuspidata*	5	0	0	1	1	0	3	3	2	0	0	1	8	6	2	2	5
Opercularia diphylla	0	0	0	0	0	0	2	2	1	0	0	0	0	0	0	0	0
Oplismenus aemulus	2	0	0	0	0	0	1	2	1	0	0	0	4	4	0	4	4

Species Name	Plot 1	Plot 5	Plot 9	Plot 10	Plot 11	Plot 12	Plot 2	Plot 3	Plot 6	Plot 7	Plot 15	Plot 16	Plot 4	Plot 8	Plot 13	Plot 14	Plot 17
Oplismenus imbecillis	2	0	0	0	0	0	1	0	0	0	0	0	0	3	0	4	2
Opuntia stricta*	0	0	0	0	0	0	1	0	0	0	0	0	0	4	0	0	0
Opuntia spp.*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Oxalis corniculata*	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Oxalis exilis	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0
Oxalis perennans	2	0	2	0	0	0	2	0	2	2	0	3	4	0	1	0	0
Panicum effusum	0	3	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Paspalidium distans	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Paspalum dilatatum	1	6	4	6	6	6	0	0	2	7	7	5	0	0	3	0	0
Phalaris spp.*	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Phyllanthus gunnii	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Phyllanthus virgatus	0	0	0	2	2	1	1	0	2	0	0	0	0	0	0	0	0
Plantago debilis	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Plantago gaudichaudii	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Plantago hispida	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
Plantago lanceolata*	1	0	2	0	4	0	2	0	1	3	3	3	4	0	3	0	0
Plantago varia	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Poa affinis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
Poa labillardierei var. labillardierei	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Polygala japonica	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Poranthera microphylla	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0
Pratia purpurascens	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
Richardia stellaris*	1	0	1	0	3	0	1	0	1	0	0	0	1	0	0	0	0
Romulea rosea var. australis*	0	0	3	0	2	2	0	0	0	4	0	3	0	0	3	0	0
Rumex spp.?	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Rytidosperma racemosum var. racemosum	0	0	0	0	0	0	0	0	3	0	0	3	0	0	5	0	0
Senecio madagascariensis*	2	2	4	4	4	2	2	2	2	3	4	3	3	0	2	0	0
Setaria parviflora*	1	3	3	2	0	3	0	1	0	4	3	0	2	0	0	0	0
Sida corrugata	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0
Sida rhombifolia*	1	2	0	0	0	0	1	1	1	0	0	0	3	0	3	0	1

Species Name	Plot 1	Plot 5	Plot 9	Plot 10	Plot 11	Plot 12	Plot 2	Plot 3	Plot 6	Plot 7	Plot 15	Plot 16	Plot 4	Plot 8	Plot 13	Plot 14	Plot 17
Solanum prinophyllum	1	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0
Solanum pseudocapsicum*	1	0	0	0	0	0	1	0	0	0	0	0	6	0	0	0	0
Solenogyne bellioides	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
Solenogyne dominii	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0
Sporobolus africanus*	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Sporobolus creber	0	3	2	0	0	1	2	0	0	0	2	0	0	0	0	0	0
Sporobolus elongatus	0	0	0	1	2	0	0	0	0	0	0	2	0	0	0	0	0
Stackhousia muricata	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Stackhousia viminea	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Stellaria flaccida	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Stellaria media*	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
Taraxacum officinale*	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0
Themeda triandra	2	5	6	7	6	6	5	5	5	4	3	5	1	0	3	0	0
Tradescantia fluminensis*	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	5
Tricoryne elatior	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Trifolium spp.*	0	3	0	0	0	0	0	0	0	0	4	2	0	0	2	0	0
Verbena bonariensis*	0	1	1	2	1	0	1	0	0	2	0	2	0	0	0	0	0
Verbena spp.*	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Verbena rigida var. rigida*	0	0	0	1	0	1	0	0	0	0	2	0	0	0	0	0	0
Veronica plebeia	1	0	0	0	0	0	1	0	1	0	0	1	4	0	0	0	1
Vicia spp.*	1	0	0	0	0	0	0	0	0	2	2	3	0	0	0	0	0
Wahlenbergia gracilis	1	2	2	0	3	0	2	0	1	0	0	0	0	0	1	0	0
Wahlenbergia stricta	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Wahlenbergia stricta subsp. stricta	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Zornia dyctiocarpa var. dyctiocarpa	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

Appendix B:
Diary template for weed control and revegetation

Mater Dei Stage 2 biobank site:
Diary template for weed control and revegetation

This template is to be completed monthly by the bush regeneration contractor to record details of the weed control and revegetation activity during each month. Submit the completed template to the landowner who will provide it to OEH with the annual report.

Completed by: **For month/year:**

Date/s	**Management zone**	**Description and type of activity** (e.g. primary/secondary/maintenance weeding, treatment method, weeds treated, ripping, planting, plant maintenance etc)	**Area (m^2)**	**Planting details** (include no. of trees, shrubs and g/covers planted)	**Hours** (of weed control activity)

Date/s	**Management zone**	**Description and type of activity** (e.g. primary/secondary/maintenance weeding, treatment method, weeds treated, ripping, planting, plant maintenance etc)	**Area (m^2)**	**Planting details** (include no. of trees, shrubs and g/covers planted)	**Hours** (of weed control activity)

Comments/Issues (include justification for any variations from contract specification or management plan)

Attach the following:

- A map showing areas of activity during the month – clearly identifying areas of primary, secondary and maintenance weed treatment and areas that were ripped, planted etc
- A list of the name and number of each species planted in each management zone during the month

Appendix C:

Template for the reporting of monitoring activities – weed control and revegetation

Mater Dei Stage 2 biobank site:

Template for the reporting of monitoring activities – weed control and revegetation

This template is to be completed annually for each management zone by a suitably qualified bush regenerator or ecologist. The completed template should be submitted with the biobank site annual report.

Management Zone:	**Reporting period:**
Completed by:	**Date:**

Weed control summary

Provide a summary and review of all weed control activities undertaken within the previous 12 months and their effectiveness through evaluation against the relevant performance measures for the management zone. As a minimum this should include number of person hours worked, methods used, type and quantity of chemical used, approximate area (ha) of primary weed treatment and follow-up weed treatment, and the main weeds that were treated. Attach a map of locations worked.

Description and recommendations for remaining weed infestations

Provide a summary of the type and density of the main weeds that remain in the Management Zone, their location (mark on a map if necessary), and describe the recommended techniques for controlling these.

Assessment of condition

Record each of the following condition measures as either absent, occasional, moderate or frequent when assessed across the part of the management zone where active management has commenced

	Absent	Occasional	Moderate	Frequent
Regeneration of native canopy species				
Regeneration of native shrubs				
Regeneration of native groundcovers				
Dieback of native species				
Erosion				

Comments on condition

Provide any additional comments on the condition of the Management Zone, including reference to areas where supplementary planting or erosion control is required or has occurred (mark on a map where necessary)

Planting survival rates

Record the survival rate of plantings within the management zone (where applicable)

	<25%	26-50%	51-75%	>75%
Survival rate of planted trees				
Survival rate of planted shrubs				
Survival rate of planted groundcovers				

Appendix D:
Diary template for fire management

Mater Dei Stage 2 biobank site:
Diary template for fire management

This template is to be completed following any fire (prescribed burns, wildfire and arson) within the biobank site. The completed template should be submitted with the biobank site annual report.

Completed by:

Date of burn:

Cause of burn:

Management zone:

Area (hectares) burnt (attach map):

Intensity of fire:

Canopy scorched (%):

Leaf litter remaining (%):

Other comments/observations (include justification for any variation from fire management plan)**:**

Appendix E:

Template for the reporting of monitoring activities – fire management

Mater Dei Stage 2 biobank site: Template for the reporting of monitoring activities - fire management	
This template is to be completed for each management zone at the time of the review of the fire management plan. It is required to be completed by a suitably qualified ecologist or bush regenerator.	
Completed by:	
Date:	
Management zone:	
Date of burn/s:	
General description of the vegetation structure and species composition	
Observations of the health of threatened flora and its response to previous fires	
Interpretation of other ecological outcomes of previous fires	
Recommendation on the timing and location for future planned fires within the zone.	

Appendix F:
Revised planting schedule

Planting Schedule (Year 2)

Species type	Species' scientific name	Management zone/s	Veg Type	No. of plants	Planting method
CANOPY	Eucalyptus moluccana	MZ4	CPW	750	Hiko cell
CANOPY	Eucalyptus tereticornis	MZ4	CPW	850	Hiko cell
SHRUB	Acacia decurrens	MZ4	CPW	2250	Hiko cell
SHRUB	Acacia falcata	MZ4	CPW	380	Hiko cell
SHRUB	Acacia implexa	MZ4	CPW	380	Hiko cell
SHRUB	Acacia parramattensis	MZ4	CPW	2250	Hiko cell
SHRUB	Bursaria spinosa subsp. spinosa	MZ4	CPW	650	Hiko cell
SHRUB	Indigofera australis	MZ4	CPW	510	Hiko cell
				8,020	

Species type	Species' scientific name	Management zone/s	Veg Type	No. of plants	Planting method
CANOPY	Eucalyptus moluccana	MZ5	CPW	380	Hiko cell
CANOPY	Eucalyptus tereticornis	MZ5	CPW	480	Hiko cell
SHRUB	Acacia decurrens	MZ5	CPW	1200	Hiko cell
SHRUB	Acacia falcata	MZ5	CPW	200	Hiko cell
SHRUB	Acacia implexa	MZ5	CPW	200	Hiko cell
SHRUB	Acacia parramattensis	MZ5	CPW	1200	Hiko cell
SHRUB	Bursaria spinosa subsp. spinosa	MZ5	CPW	350	Hiko cell
SHRUB	Indigofera australis	MZ5	CPW	280	Hiko cell
				4,290	

Planting Schedule (Year 3)

Species type	Species' scientific name	Management zone/s	Veg Type	No. of plants	Planting method
CANOPY	Eucalyptus moluccana	MZ4	CPW	350	Hiko cell
CANOPY	Eucalyptus tereticornis	MZ4	CPW	410	Hiko cell
SHRUB	Acacia decurrens	MZ4	CPW	1060	Hiko cell
SHRUB	Acacia falcata	MZ4	CPW	180	Hiko cell
SHRUB	Acacia implexa	MZ4	CPW	180	Hiko cell
SHRUB	Acacia parramattensis	MZ4	CPW	1060	Hiko cell
SHRUB	Bursaria spinosa subsp. spinosa	MZ4	CPW	320	Hiko cell
SHRUB	Indigofera australis	MZ4	CPW	240	Hiko cell
				3,800	

Species type	Species' scientific name	Management zone/s	Veg Type	No. of plants	Planting method
CANOPY	Eucalyptus moluccana	MZ5	CPW	330	Hiko cell
CANOPY	Eucalyptus tereticornis	MZ5	CPW	420	Hiko cell
SHRUB	Acacia decurrens	MZ5	CPW	1050	Hiko cell
SHRUB	Acacia falcata	MZ5	CPW	150	Hiko cell
SHRUB	Acacia implexa	MZ5	CPW	150	Hiko cell
SHRUB	Acacia parramattensis	MZ5	CPW	1050	Hiko cell
SHRUB	Bursaria spinosa subsp. spinosa	MZ5	CPW	350	Hiko cell
SHRUB	Indigofera australis	MZ5	CPW	250	Hiko cell
				3,750	

Species type	Species' scientific name	Management zone/s	Veg Type	No. of plants	Planting method
CANOPY	Angophora floribunda	MZ5	RFEF	40	Hiko cell
CANOPY	Angophora subvelutina	MZ5	RFEF	90	Hiko cell
CANOPY	Eucalyptus amplifolia	MZ5	RFEF	340	Hiko cell
CANOPY	Eucalyptus baueriana	MZ5	RFEF	270	Hiko cell
CANOPY	Eucalyptus tereticornis	MZ5	RFEF	340	Hiko cell
CANOPY	Melaleuca decora	MZ5	RFEF	40	Hiko cell
SHRUB	Acacia decurrens	MZ5	RFEF	450	Hiko cell
SHRUB	Acacia floribunda	MZ5	RFEF	1350	Hiko cell
SHRUB	Acacia implexa	MZ5	RFEF	220	Hiko cell
SHRUB	Acacia parramattensis	MZ5	RFEF	1570	Hiko cell
SHRUB	Breynia oblongifolia	MZ5	RFEF	450	Hiko cell
SHRUB	Bursaria spinosa subsp. spinosa	MZ5	RFEF	225	Hiko cell
SHRUB	Melicytus dentatus	MZ5	RFEF	225	Hiko cell
				5,610	

Planting Schedule (Year 4)

Species type	Species' scientific name	Management zone/s	Veg type	No. of plants	Planting method
CANOPY	Eucalyptus moluccana	MZ5	CPW	160	Hiko cell
CANOPY	Eucalyptus tereticornis	MZ5	CPW	210	Hiko cell
SHRUB	Acacia decurrens	MZ5	CPW	520	Hiko cell
SHRUB	Acacia falcata	MZ5	CPW	80	Hiko cell
SHRUB	Acacia implexa	MZ5	CPW	80	Hiko cell
SHRUB	Acacia parramattensis	MZ5	CPW	520	Hiko cell
SHRUB	Bursaria spinosa subsp. spinosa	MZ5	CPW	160	Hiko cell
SHRUB	Indigofera australis	MZ5	CPW	120	Hiko cell
				1,850	

Species type	Species' scientific name	Management zone/s	Veg type	No. of plants	Planting method
CANOPY	Angophora floribunda	MZ5	RFEF	90	Hiko cell
CANOPY	Angophora subvelutina	MZ5	RFEF	200	Hiko cell
CANOPY	Eucalyptus amplifolia	MZ5	RFEF	750	Hiko cell
CANOPY	Eucalyptus baueriana	MZ5	RFEF	600	Hiko cell
CANOPY	Eucalyptus tereticornis	MZ5	RFEF	750	Hiko cell
CANOPY	Melaleuca decora	MZ5	RFEF	90	Hiko cell
SHRUB	Acacia decurrens	MZ5	RFEF	990	Hiko cell
SHRUB	Acacia floribunda	MZ5	RFEF	2980	Hiko cell
SHRUB	Acacia implexa	MZ5	RFEF	490	Hiko cell
SHRUB	Acacia parramattensis	MZ5	RFEF	3480	Hiko cell
SHRUB	Breynia oblongifolia	MZ5	RFEF	990	Hiko cell
SHRUB	Bursaria spinosa subsp. spinosa	MZ5	RFEF	500	Hiko cell
SHRUB	Melicytus dentatus	MZ5	RFEF	500	Hiko cell
				12,410	

Species type	Species' scientific name	Management zone/s	Veg type	No. of plants	Planting method
CANOPY	Angophora floribunda	MZ6	RFEF	5	Hiko cell
CANOPY	Angophora subvelutina	MZ6	RFEF	5	Hiko cell
CANOPY	Casuarina cunninghamiana	MZ6	RFEF	5	Hiko cell
CANOPY	Eucalyptus elata	MZ6	RFEF	30	Hiko cell
SHRUB	Acacia binervia	MZ6	RFEF	20	Hiko cell
SHRUB	Acacia decurrens	MZ6	RFEF	20	Hiko cell
SHRUB	Acacia floribunda	MZ6	RFEF	30	Hiko cell
SHRUB	Acacia parramattensis	MZ6	RFEF	20	Hiko cell
SHRUB	Acmena smithii	MZ6	RFEF	10	Hiko cell
SHRUB	Backhousia myrtifolia	MZ6	RFEF	10	Hiko cell
SHRUB	Breynia oblongifolia	MZ6	RFEF	10	Hiko cell

Species type	Species' scientific name	Management zone/s	Veg type	No. of plants	Planting method
SHRUB	Bursaria spinosa subsp. spinosa	MZ6	RFEF	5	Hiko cell
SHRUB	Melia azedarach	MZ6	RFEF	5	Hiko cell
SHRUB	Melicytus dentatus	MZ6	RFEF	10	Hiko cell
SHRUB	Tristaniopsis laurina	MZ6	RFEF	5	Hiko cell
G/COVER	Adiantum aethiopicum	MZ6	RFEF	10	Hiko cell
G/COVER	Austrostipa ramosissima	MZ6	RFEF	15	Hiko cell
G/COVER	Carex longebrachiata	MZ6	RFEF	30	Hiko cell
G/COVER	Centella asiatica	MZ6	RFEF	10	Hiko cell
G/COVER	Cymbopogon refractus	MZ6	RFEF	10	Hiko cell
G/COVER	Dianella longifolia	MZ6	RFEF	10	Hiko cell
G/COVER	Dichelachne micrantha	MZ6	RFEF	10	Hiko cell
G/COVER	Echinopogon ovatus	MZ6	RFEF	10	Hiko cell
G/COVER	Einadia hastata	MZ6	RFEF	10	Hiko cell
G/COVER	Einadia trigonos	MZ6	RFEF	10	Hiko cell
G/COVER	Entolasia marginata	MZ6	RFEF	10	Hiko cell
G/COVER	Geranium homeanum	MZ6	RFEF	10	Hiko cell
G/COVER	Imperata cylindrica	MZ6	RFEF	30	Hiko cell
G/COVER	Lomandra longifolia	MZ6	RFEF	10	Hiko cell
G/COVER	Microlaena stipoides var. stipoides	MZ6	RFEF	10	Hiko cell
G/COVER	Oplismenus aemulus	MZ6	RFEF	10	Hiko cell
G/COVER	Pallaea falcata	MZ6	RFEF	10	Hiko cell
G/COVER	Phyllanthus virgatus	MZ6	RFEF	10	Hiko cell
G/COVER	Poa affinis	MZ6	RFEF	15	Hiko cell
G/COVER	Poa labillardieri var. labillardieri	MZ6	RFEF	15	Hiko cell
G/COVER	Pratia purpurascens	MZ6	RFEF	10	Hiko cell
G/COVER	Rytidosperma racemosum var racemosum	MZ6	RFEF	10	Hiko cell
G/COVER	Solanum prinophyllum	MZ6	RFEF	15	Hiko cell
G/COVER	Themeda australis	MZ6	RFEF	10	Hiko cell
				490	

Planting Schedule (Year 5)

Species type	Species' scientific name	Management zone/s	Veg Type	No. of plants	Planting method
CANOPY	Angophora floribunda	MZ6	RFEF	5	Hiko cell
CANOPY	Angophora subvelutina	MZ6	RFEF	5	Hiko cell
CANOPY	Casuarina cunninghamiana	MZ6	RFEF	5	Hiko cell
CANOPY	Eucalyptus elata	MZ6	RFEF	30	Hiko cell
SHRUB	Acacia binervia	MZ6	RFEF	20	Hiko cell
SHRUB	Acacia decurrens	MZ6	RFEF	20	Hiko cell
SHRUB	Acacia floribunda	MZ6	RFEF	30	Hiko cell
SHRUB	Acacia parramattensis	MZ6	RFEF	20	Hiko cell
SHRUB	Acmena smithii	MZ6	RFEF	10	Hiko cell
SHRUB	Backhousia myrtifolia	MZ6	RFEF	10	Hiko cell
SHRUB	Breynia oblongifolia	MZ6	RFEF	10	Hiko cell
SHRUB	Bursaria spinosa subsp. spinosa	MZ6	RFEF	5	Hiko cell
SHRUB	Melia azedarach	MZ6	RFEF	5	Hiko cell
SHRUB	Melicytus dentatus	MZ6	RFEF	10	Hiko cell
SHRUB	Tristaniopsis laurina	MZ6	RFEF	5	Hiko cell
G/COVER	Adiantum aethiopicum	MZ6	RFEF	10	Hiko cell
G/COVER	Austrostipa ramosissima	MZ6	RFEF	15	Hiko cell
G/COVER	Carex longebrachiata	MZ6	RFEF	30	Hiko cell
G/COVER	Centella asiatica	MZ6	RFEF	10	Hiko cell
G/COVER	Cymbopogon refractus	MZ6	RFEF	10	Hiko cell
G/COVER	Dianella longifolia	MZ6	RFEF	10	Hiko cell
G/COVER	Dichelachne micrantha	MZ6	RFEF	10	Hiko cell
G/COVER	Echinopogon ovatus	MZ6	RFEF	10	Hiko cell
G/COVER	Einadia hastata	MZ6	RFEF	10	Hiko cell
G/COVER	Einadia trigonos	MZ6	RFEF	10	Hiko cell
G/COVER	Entolasia marginata	MZ6	RFEF	10	Hiko cell
G/COVER	Geranium homeanum	MZ6	RFEF	10	Hiko cell
G/COVER	Imperata cylindrica	MZ6	RFEF	30	Hiko cell
G/COVER	Lomandra longifolia	MZ6	RFEF	10	Hiko cell
G/COVER	Microlaena stipoides var. stipoides	MZ6	RFEF	10	Hiko cell
G/COVER	Oplismenus aemulus	MZ6	RFEF	10	Hiko cell
G/COVER	Pallaea falcata	MZ6	RFEF	10	Hiko cell
G/COVER	Phyllanthus virgatus	MZ6	RFEF	10	Hiko cell
G/COVER	Poa affinis	MZ6	RFEF	15	Hiko cell
G/COVER	Poa labillardieri var. labillardieri	MZ6	RFEF	15	Hiko cell
G/COVER	Pratia purpurascens	MZ6	RFEF	10	Hiko cell
G/COVER	Rytidosperma racemosum var racemosum	MZ6	RFEF	10	Hiko cell
G/COVER	Solanum prinophyllum	MZ6	RFEF	15	Hiko cell
G/COVER	Themeda australis	MZ6	RFEF	10	Hiko cell
				490	

Appendix G:
Diary template for feral pest management

Mater Dei Stage 2 biobank site:
Diary template for feral pest management

This template is to be completed to record the details of any feral pest (i.e. feral herbivore and vertebrate pest) management control actions implemented on the biobank site. The completed template should be submitted with the biobank site annual report.

Completed by:

Date of activity:

Management zone/s:

Description and type of control undertaken

Include details of the target species and the control technique used.

Assessment of results of control technique

Include details of the results of the control technique and how it could be improved in future

Minor variations from management plan (if any)

(Include details and reasons)

Appendix H:

Template for the reporting of monitoring activities - feral pests

Mater Dei Stage 2 biobank site:

Template for the reporting of monitoring activities – feral pests

This template is to be completed to record the outcomes of each six-monthly inspection of the biobank site for the purpose of monitoring feral pest (i.e. feral herbivore and vertebrate pest) activity. It is required to be completed by a suitably qualified bush regenerator or ecologist. The completed template should be submitted with the biobank site annual report.

Completed by:

Date and time of monitoring:

Management zone	**Rabbit density** Record as: • High (abundant active warrens, rabbits visible any time), • Medium (active warrens present, a fair amount of sign i.e. scratches, dung heaps, feeding areas) • Low (some sign, few holes) • Zero (no sign) Mark warren locations on a map	**Feral pest observations** Record all observations of feral pests (other than rabbits) made during the inspection. Include details of the number and type of pests sighted and any other evidence of feral pest activity observed.
MZ1		
MZ2		
MZ3		
MZ4		
MZ5		
MZ6		
MZ7		
MZ8		
MZ9		
MZ10		

Appendix I: Six monthly inspection checklist

Mater Dei Stage 2 biobank site:

Six monthly site inspection checklist

This template is to be completed to record the outcomes of each six-monthly inspection for the purpose of documenting any human disturbance, erosion or waste on the biobank site. The completed template should be submitted with the biobank site annual report.

Completed by:

Date of site inspection:

Is there evidence of livestock present on the biobank site? (YES / NO)

If yes, provide a brief description of type, number and location.

Is there evidence of waste/rubbish dumping on the biobank site? (YES / NO)

If yes, provide a brief description. Attach photos and mark the location on a map.

Is there evidence of human disturbance on the biobank site? (YES / NO)

If yes, provide a brief description. Attach photos and mark the location on a map.

Is there evidence of active erosion on the biobank site? (YES / NO)

If yes, provide a brief description. Attach photos and mark the location on a map.

Appendix J: Annual inspection checklist

Mater Dei Stage 2 biobank site:

Annual site inspection checklist

This template is to be completed to record the outcomes of the annual inspection of the biobank site for the purpose of documenting the physical condition of the fencing and gates, and for taking photographs from the photo-points. The completed template and photographs should be submitted with the biobank site annual report.

Completed by:

Date of site inspection:

Are all fences on the perimeter of the biobank site in good condition and capable of excluding stock from the biobank site? (YES / NO)

If no, provide a brief description. Attach photos and mark the location on a map.

Are all gates on the biobank site in good condition and capable of excluding stock from the biobank site? (YES / NO)

If no, provide a brief description. Attach photos and mark the location on a map.

Is a legible biobanking sign attached to the each gate on the biobank site? (YES / NO)

If no, provide a brief description. Attach photos and mark the location on a map.

Have photos been taken at each of the locations and in the directions specified below? (YES / NO)

Refer to 'before' photos from 2015 on next page and try to capture similar field of view to enable comparison.

Projected coordinate system: GDA 94 Zone 56

Photo point	Easting	Northing	Direction of photo (magnetic degrees)	Date taken
P1	287184	6231949	315	
P2	287198	6232288	35	
P3	287565	6232273	250	
P4	286875	6231992	12	
P5	287356	6231869	298	
P6	287858	6232084	212	
P7	287504	6231743	205	
P8	286878	6232294	195	
P9	286804	6232118	137	
P10	286714	6232174	130	

P1

P2

P3

P4

P5

P6

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Appendix K:
Tailored annual reporting template

Annual report for Mater Dei Stage 2 biobank site

Location details

Biobanking agreement ID: 217 **Reporting date:**	**Property address: 229 Macquarie Grove Road, Cobbitty** **Name of landowner/site contact:**

Record of management actions undertaken

Management action	**Item no.**	**Description**	**Required timing and frequency**	**Action undertaken or management consistent with action** (Yes/No/NA)	**Actual timing and frequency date/s** (where relevant)	**Description of actions undertaken** (including where undertaken, any variations and the reasons for variation)	**Visual observations and other comments**
Management of grazing for conservation	1.1	Do not permit stock to graze in any area of the biobank site.	Ongoing from [insert first payment date]				
	1.2	Install, remove and/or maintain fences and gates at the locations indicated on the property management actions map	Installation & removal within 12 months of [insert first payment date]; maintenance ongoing				
	1.4	Take necessary measures to remove stock from the biobank site immediately if stock are observed in the biobank site	Ongoing from [insert first payment date]				
Weed control	2.1	Implement the weed management plan	Ongoing from [insert first payment date]	See 'Details of implementation of management plans' section below	-	-	-

Management action	**Item no.**	**Description**	**Required timing and frequency**	**Action undertaken or management consistent with action** (Yes/No/NA)	**Actual timing and frequency date/s** (where relevant)	**Description of actions undertaken** (including where undertaken, any variations and the reasons for variation)	**Visual observations and other comments**
	2.2	Review the weed management plan every 5 years	Every 5 years from [insert first payment date]				
Management of fire for conservation	3.1	Implement the fire management plan	Ongoing from [insert first payment date]	See 'Details of implementation of management plans' section below	-	-	-
	3.2	Review the fire management plan every 5 years	Every 5 years from [insert first payment date]				
	3.3	Do not light fires on the biobank site other than in accordance with fire management plan or as permitted under item 4 or clause 3.6 of the agreement.	Ongoing from 4 May 2016				
Management of human disturbance	4.1 & 4.2	Do not carry out, or cause or permit to be carried out, any human activities that adversely affect biodiversity values except where permitted under clause 3.6 of the biobanking agreement or if undertaken as part of a management action	Ongoing from 4 May 2016				
	4.3	Retain old vehicle and machinery in Management Zone 2	Ongoing from 4 May 2016				

Management action	**Item no.**	**Description**	**Required timing and frequency**	**Action undertaken or management consistent with action** (Yes/No/NA)	**Actual timing and frequency date/s** (where relevant)	**Description of actions undertaken** (including where undertaken, any variations and the reasons for variation)	**Visual observations and other comments**
	4.4	Do not store, dispose of, or cause or permit to be disposed of, any waste on the biobank site.	Ongoing from 4 May 2016				
Management of human disturbance	4.5	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 [insert first payment date]				
	4.6	Install and maintain one biobanking sign on each of the six gates to be installed or maintained at the locations indicated on the property management actions map	Installation within 3 months of [insert first payment date]; maintenance ongoing				
	4.6 & 4.7	Install and maintain one interpretation sign with a protective shelter at the location identified on the property management actions map.	Installation within 24 months of [insert first payment date]; maintenance ongoing				
	4.6	Install and maintain two additional interpretation signs at the locations identified on the property management actions map	Installation within 24 months of [insert first payment date]; maintenance ongoing				

Management action	**Item no.**	**Description**	**Required timing and frequency**	**Action undertaken or management consistent with action** (Yes/No/NA)	**Actual timing and frequency date/s** (where relevant)	**Description of actions undertaken** (including where undertaken, any variations and the reasons for variation)	**Visual observations and other comments**
	4.8	Remove the ropes course in Management Zone 1.	Within 36 months of [insert first payment date]				
Management of human disturbance	4.9 & 4.10	Maintain, replace or remove the following existing structures on the biobank site: • Sheds, picnic tables, barbeques and toilets/toilet blocks in Management Zone 8. • Water treatment ponds in Management Zone 7.	Ongoing from 4 May 2016				
	4.11	Maintain the existing access road identified on the property management actions map	Ongoing from 4 May 2016				
	4.11	Establish new and/or maintain existing walking and vehicle tracks at the locations identified on the property management actions map	Ongoing from [insert first payment date]				
	4.12	Permit overnight stays and or camp fires in Management Zone 8	Ongoing from 4 May 2016				
	4.12	Restrict interpretive walks and low impact organised community activities to walking and vehicle trails identified on the property management actions map	Ongoing from 4 May 2016				

Management action	**Item no.**	**Description**	**Required timing and frequency**	**Action undertaken or management consistent with action** (Yes/No/NA)	**Actual timing and frequency date/s** (where relevant)	**Description of actions undertaken** (including where undertaken, any variations and the reasons for variation)	**Visual observations and other comments**
Management of human disturbance	4.12	Permit the use of existing structures including sheds, picnic tables, barbeques and toilets in Management Zone 8	Ongoing from 4 May 2016				
Retention of native vegetation	5.1	Do not cut down, fell, thin, kill, destroy, poison, ringbark, uproot, burn or otherwise remove native vegetation on the biobank site, except in accordance with item 5.2 below, clause 3.5 of the biobanking agreement, or if required as part of a management action	Ongoing from 4 May 2016				
	5.2	Do not burn native vegetation on the biobank site except in accordance with the fire management plan	Ongoing from 4 May 2016				
Planting or seeding	6.1	Undertake planting of the native species indicated in the planting schedule (item 6.6) in the areas of planting and within the timeframe indicated in the planting schedule.	As indicated in the planting schedule				
	6.1	Follow the specific requirements described in Item 6.1 when planting the native species specified in the planting schedule (item 6.6)	As indicated in the planting schedule				

Management action	**Item no.**	**Description**	**Required timing and frequency**	**Action undertaken or management consistent with action** (Yes/No/NA)	**Actual timing and frequency date/s** (where relevant)	**Description of actions undertaken** (including where undertaken, any variations and the reasons for variation)	**Visual observations and other comments**
Planting or seeding	6.3	Survey each area of planting to determine whether the planted plants have established and survived, and retain the findings in accordance with the record keeping requirements.	Conduct the first survey 24 months after the completion of planting in each area of planting, and then every 12 months thereafter			Annual estimates of planting survival rates are provided in the attached 'Template for the reporting of monitoring activities – weed control and revegetation'. One template has been prepared for each management zone.	
	6.4	Undertake replacement plantings in areas where the establishment and survival rate of the planted plants are below those usual for the species and region, within a reasonable timeframe (usually within 12 months).	As required, from the date that planting areas are established.				
	6.5	Collect seeds and plants used for planting from locally collected provenances, unless there are reasons to do otherwise	As required				
	6.5	Use all seed collected on site either on site or on other adjacent land in the landholders' ownership.	As required				
	6.5	Collect seed using the methods described in the Florabank Guidelines or as otherwise advised by OEH in writing.	As required				

Management action	**Item no.**	**Description**	**Required timing and frequency**	**Action undertaken or management consistent with action** (Yes/No/NA)	**Actual timing and frequency date/s** (where relevant)	**Description of actions undertaken** (including where undertaken, any variations and the reasons for variation)	**Visual observations and other comments**
Retention of dead timber	7.1	Do not remove dead timber from, or move dead timber within, the biobank site	Ongoing from 4 May 2016				
	7.2	If dead timber from outside the biobank site is placed on the biobank site, record in writing the approximate amount of timber brought from outside the biobank site, the location where the timber was placed and the date on which it was placed (month, year).	Ongoing from 4 May 2016				
Erosion control	8.1	Take all reasonable steps to prevent, control and remedy erosion on the biobank site.	Ongoing from [insert first payment date]				
	8.1	Manage existing erosion on the biobank site at the locations identified on the property management actions map.	Commencing from [insert first payment date]				
Retention of rocks	9.1	Do 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 4 May 2016				
Control of feral and overabundant native	10.1	Implement the feral and overabundant native herbivore management plan	Ongoing from [insert first payment date]	See 'Details of implementation of management plans' section below	-	-	-

Management action	**Item no.**	**Description**	**Required timing and frequency**	**Action undertaken or management consistent with action** (Yes/No/NA)	**Actual timing and frequency date/s** (where relevant)	**Description of actions undertaken** (including where undertaken, any variations and the reasons for variation)	**Visual observations and other comments**
herbivores	10.2	Review the feral and overabundant native herbivore management plan every 5 years	Every 5 years from [insert first payment date]				
Vertebrate pest management	11.1	Implement the vertebrate pest management plan	Ongoing from [insert first payment date]	See 'Details of implementation of management plans' section below	-	-	-
	11.2	Review the vertebrate pest management plan every 5 years	Every 5 years from [insert first payment date]				
Nutrient control	12.1	Do not apply fertilisers, pesticides and herbicides on the biobank site, except where required to undertake the management actions. Use in accordance with best practice when required to undertake the management actions.	Ongoing from [insert first payment date]				

Details of implementation of management plans

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
Weed management plan	MZ1	TASKS • Staged primary treatment of all woody weeds, exotic climbers and highly invasive ground layer weeds over 20% of the management zone per annum from the first payment date until the end of Year 5. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set in all previously worked areas. • Treatment of other ground layer weeds as required to maintain low (<10%) weed foliage cover in the ground layer of all previously worked areas.	• Ongoing, from [insert first payment date]	
Weed management plan	MZ1	PERFORMANCE MEASURES - CONDITION • No mature woody weeds, exotic climbers or highly invasive ground layer weeds present and the density of other ground layer weeds maintained at <10% foliage cover.	• Ongoing, from the start of Year 6	
Weed management plan	MZ1	PERFORMANCE MEASURES – EFFORT The effort applied to weed control work within this management zone will involve: (a) A minimum of 2130 hours annually (b) A minimum of 865 hours annually (c) A minimum of 250 hours annually (d) A minimum of 130 hours annually	(a) From the [insert first payment date] to the end of Year 5 (b) From the start of Year 6 to the end of Year 10 (c) From the start of Year 11 to the end of Year 19. (d) Ongoing annually from the start of Year 20.	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
Weed management plan	MZ2	TASKS • Staged primary treatment of all woody weeds, exotic climbers and highly invasive ground layer weeds over 10% of the management zone per annum from the first payment date until the end of Year 10. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set in all previously worked areas. • Treatment of other ground layer weeds as required to maintain moderate (<30%) weed foliage cover in the ground layer of all previously worked areas.	• Ongoing, from [insert first payment date]	
Weed management plan	MZ2	PERFORMANCE MEASURES - CONDITION (a) No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present in 50% of the management zone, and the density of other ground layer weeds in previously worked areas maintained at <30% foliage cover. (b) No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present, and the density of other ground layer weeds maintained at <30% foliage cover.	(a) By the end of Year 5 (b) Ongoing from the start of Year 11	
Weed management plan	MZ2	PERFORMANCE MEASURES - EFFORT The effort applied to weed control work within this management zone will involve: (a) A minimum of 2130 hours annually (b) A minimum of 865 hours annually	(a) From the [insert first payment date] to the end of Year 5 (b) From the start of Year 6 to the end of Year 10	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
		(c) A minimum of 250 hours annually (d) A minimum of 130 hours annually	(c) From the start of Year 11 to the end of Year 19. (d) Ongoing annually from the start of Year 20.	
Weed management plan	MZ3	TASKS • Staged primary treatment of all woody weeds, exotic climbers and highly invasive ground layer weeds over 50% of the management zone per annum from the first payment date until the end of Year 2. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set in all previously worked areas. • Treatment of other ground layer weeds as required to assist the establishment of plantings and natural regeneration.	• Ongoing, from [insert first payment date]	
Weed management plan	MZ3	PERFORMANCE MEASURES - CONDITION Weed control work within this management zone will aim to achieve the following outcomes: • No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present.	• Ongoing from the start of Year 3	
Weed management plan	MZ3	PERFORMANCE MEASURES - EFFORT The level of effort applied to weed control work within this management zone will involve the following: (a) A minimum of 1025 hours annually (b) A minimum of 570 hours annually	(a) From the [insert first payment date] to the end of Year 5 (b) From the start of Year 6 to the end of Year 10 (c) From the start of Year 11	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
		(c) A minimum of 295 hours annually (d) A minimum of 150 hours annually	to the end of Year 19. (d) Ongoing annually from the start of Year 20.	
Weed management plan	MZ4, MZ5	<u>TASKS</u> • Primary treatment of all woody weeds, exotic climbers and highly invasive groundcover weeds. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive groundcover weeds prior to seed set. • Treatment of other ground layer weeds as required to assist natural regeneration and the establishment of plantings.	• Ongoing, from [insert first payment date]	
Weed management plan	MZ4, MZ5	<u>PERFORMANCE MEASURES - CONDITION</u> Weed control work within these management zones will aim to achieve the following outcomes: • No mature woody weeds, exotic climbers or highly invasive ground layer weeds present.	• Ongoing from the start of Year 2	
Weed management plan	MZ4, MZ5	<u>PERFORMANCE MEASURES - EFFORT</u> The level of effort applied to weed control work within these management zones will involve the following: (a) A minimum of 70 hours annually (b) A minimum of 60 hours annually (c) A minimum of 55 hours annually	(a) From the [insert first payment date] to the end of Year 5 (b) From the start of Year 6 to the end of Year 10 (c) From the start of Year 11 to the end of Year 19. (d) Ongoing annually from the	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
		(d) A minimum of 55 hours annually	start of Year 20.	
Weed management plan	MZ6	<u>TASKS</u> • Staged primary treatment of all woody weeds, exotic climbers and highly invasive ground layer weeds in 5% of the management zone per annum from the first payment date until the end of Year 10 and 10% of the management zone per annum from the start of Year 11 to the end of Year 15. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive ground layer weeds prior to seed set in all previously worked areas. • Treatment of other ground layer weeds as required to assist natural regeneration and the establishment of plantings.	• Ongoing, from [insert first payment date]	
Weed management plan	MZ6	<u>PERFORMANCE MEASURES - CONDITION</u> Weed control work within this management zone will aim to achieve the following outcomes: (a) No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present in 25% of the management zone. (b) No mature woody weeds, exotic climbers, or highly invasive ground layer weeds present in 50% of the management zone. (c) No mature woody weeds, exotic climbers, or highly invasive ground layer weeds	(a) By the end of Year 5 (b) By the end of Year 10 (c) Ongoing, from the start of Year 16	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
Weed management plan	MZ6	PERFORMANCE MEASURES - EFFORT The level of effort applied to weed control work within this management zone will involve the following: (a) A minimum of 1230 hours annually (b) A minimum of 2480 hours annually (c) A minimum of 4185 hours annually (d) A minimum of 1530 hours annually	(a) From the [insert first payment date] to the end of Year 5 (b) From the start of Year 6 to the end of Year 10 (c) From the start of Year 11 to the end of Year 19. (d) Ongoing annually from the start of Year 20.	
Weed management plan	MZ7, MZ8, MZ9, MZ10	TASKS • Primary treatment of all woody weeds, exotic climbers and highly invasive groundcover weeds. • Ongoing treatment of all non-mature woody weeds, exotic climbers and highly invasive groundcover weeds prior to seed set.	• Ongoing, from [insert first payment date]	
Weed management plan	MZ7, MZ8, MZ9, MZ10	PERFORMANCE MEASURES - CONDITION Weed control work within these management zones will aim to achieve the following outcomes: • No mature woody weeds, exotic climbers or highly invasive ground layer weeds present.	• Ongoing, from the start of Year 5	
Weed management plan	MZ7, MZ8, MZ9, MZ10	PERFORMANCE MEASURES - EFFORT The level of effort applied to weed control work within this management zone will involve the following: (a) A minimum of 310 hours annually (b) A minimum of 40 hours annually	(a) From the [insert first payment date] to the end of Year 5 (b) From the start of Year 6 to the end of Year 10 (c) From the start of Year 11	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
		(c) A minimum of 10 hours annually (d) A minimum of 10 hours annually	to the end of Year 19. (d) Ongoing annually from the start of Year 20.	
Weed management plan	All	Undertake monitoring at the completion of each annual reporting period using the 'Template for the reporting of monitoring activities - weed control and revegetation'. Complete a separate proforma for each management zone and attach to this annual report.	• Every 12 months, from [insert first payment date]	
Weed management plan	All	Provide details of all weed management activities using the 'Diary template for weed control and revegetation' and attach to this annual report.	• One template for each month of weed control activity	
Fire management plan	MZ1 & MZ2 (HN528; HN529)	(a) No prescribed burning of HN528 or HN529 will be undertaken in these management zones until Year 18. (b) At least one prescribed burn in HN528 and/or HN529 must be undertaken in these management zones between Year 18 and Year 24. (c) From the beginning of Year 25 onwards, no more than 50% of the combined area of HN528 and HN529 in these management zones is to be unburnt for more than 12 years. (d) Any single prescribed burn is not to burn more than 50% of the combined area of HN528 and HN529 in these management zones.	(a) From the [insert first payment date] to the end of Year 17 (b) From the start of Year 18 until the end of Year 24 (c) From the start of Year 25 onwards. (d) Commencing at the start of Year 18.	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
Fire management plan	MZ4 & MZ5 (HN528; HN529)	(a) No prescribed burning of HN528 or HN529 will be undertaken in these management zones until Year 30. (b) At least one prescribed burn in HN528 and/or HN529 must be undertaken in these management zones between Year 30 and Year 36. (c) From the beginning of Year 37 onwards, no more than 50% of the combined area of HN528 and HN529 in these management zones is to be unburnt for more than 12 years. (d) Any single prescribed burn is not to burn more than 50% of the combined area of HN528 and HN529 in these management zones.	(a) From the [insert first payment date] to the end of Year 29 (b) From the start of Year 30 until the end of Year 36 (c) From the start of Year 37 onwards. (d) Commencing at the start of Year 30.	
Fire management plan	MZ6 (HN526)	(a) No prescribed burning of HN526 will be undertaken in this management zone until Year 48. (b) At least one prescribed burn in HN526 must be undertaken in this management zone between Year 48 and Year 54. (c) From the beginning of Year 55 onwards, no more than 50% of the combined area of HN528 and HN529 in these management zones is to be unburnt for more than 12 years. (d) Any single prescribed burn is not to burn more than 50% of the combined area of HN528 and HN529 in these management zones.	(a) From the [insert first payment date] to the end of Year 47 (b) From the start of Year 48 until the end of Year 54 (c) From the start of Year 55 onwards. (d) Commencing at the start of Year 48.	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
Fire management plan	MZ6	Special requirements for *Eucalyptus benthamii* • No prescribed burning will be undertaken within 25 metres of Eucalyptus benthamii plantings or regenerating saplings until at least 30 years following planting or germination. • Remove debris build up at the base of Eucalyptus benthamii trees to reduce fire duration and intensity. • Ensure that any prescribed burn in *Eucalyptus benthamii* habitat is of low intensity only	• Ongoing, from [insert first payment date]	
Fire management plan	All	• Undertake targeted surveys for threatened flora and the Cumberland Land Snail across each proposed burn compartment prior to burning. Surveys will be conducted during the appropriate season for detection of the species. Frequency of burns will take into consideration the recommended fire frequencies of any threatened species present. Areas containing threatened species will be avoided when constructing fire containment lines.	• Prior to each prescribed burn	
Fire management plan	All	• For all fires within the biobank site (prescribed burns, wildfire and arson) record details on the 'Diary template for fire management' and attach to this annual report.	• Following any fire (prescribed burns, wildfire and arson) on the biobank site	
Feral and overabundant native	All	• Manual warren destruction and/or fumigation is to be implemented in management zones where rabbit activity	• As required, based on the outcomes the six-monthly monitoring of feral pest	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
herbivore management plan		is assessed as being either Moderate or High in the six-monthly monitoring of feral pest activity. Pindone baiting can be implemented as an alternative to manual warren destruction and/or fumigation in circumstances where it will be more cost-effective.	activity	
Feral and overabundant native herbivore management plan	All	• A controlled shooting program can be implemented where vertebrate pests (other than rabbits) are regularly observed on the biobank site or observed in large numbers in the annual monitoring or to supplement other methods of feral herbivore control.	• As required, based on the outcomes the six-monthly monitoring of feral pest activity	
Feral and overabundant native herbivore management plan		• Provide details of all feral herbivore management activities using the 'Diary template for feral pest management' and attach to this annual report.	• Following any feral herbivore management on the biobank site	
Feral and overabundant native herbivore management plan	All	• Record observations of rabbit density and any other feral herbivore activity during an early morning traverse of the biobank site (minimum of 3 hours survey effort). Record details on the 'Template for the reporting of monitoring activities - feral pests'.	• Every 6 months from [insert first payment date]	
Vertebrate pest management plan	All	• Monthly (year round) 1080 baiting is to be implemented when fox control is required. A controlled shooting program can be implemented to supplement the 1080	• As required, based on the outcomes the six-monthly monitoring of feral pest activity	

Management Plan	Location	Description of actions & performance measures required	Required timing and frequency	Description of actions undertaken (including reasons for any variations) and/or progress towards performance measures
		baiting program if required.		
Vertebrate pest management plan	All	• Provide details of all vertebrate pest management activities using the 'Diary template for feral pest management' and attach to this annual report.	• Following any vertebrate pest management on the biobank site	
Vertebrate pest management plan	All	• Record observations of vertebrate pest on the site during an early morning traverse of the biobank site (minimum of 3 hours survey effort). Record details on the 'Template for reporting the monitoring of feral pest activity'.	• Every 6 months from [insert first payment date]	

Additional site inspection and monitoring requirements

Description of additional site inspection or monitoring requirement	Required timing and frequency	Dates completed
Take photographs at photo-points established at each of the 10 locations and in the directions identified on the annual site inspection checklist. Submit the photos with this annual report.	Every 12 months, from [insert first payment date]	
Undertake inspections for the purpose of recording the number and dates when stock have entered the biobank site. Record your observations under Item 1.4 in the 'Record of management actions undertaken' section of this report.	Every 3 months, from [insert first payment date]	
Undertake inspections for the purpose of documenting any human disturbance, erosion or waste on the biobank site. Record your observations on the six monthly site inspection checklist and attach to this annual report.	Every 6 months, from [insert first payment date]	
Undertake inspections for the purpose of documenting whether the fences and gates are in good condition and capable of excluding stock from the biobank site. Record your observations on the annual site inspection checklist and attach to this annual report.	Every 12 months, from [insert first payment date]	

Details of incidents or events that have had an adverse effect on biodiversity values on biobank site

Description of incident or event (e.g. natural events)	Action taken and/or proposed recommended actions

Any other comments or observations regarding the biobank site

Records and monitoring templates to be completed and submitted with this report

- □ Template for the reporting of monitoring activities – weed control and revegetation (one template to be completed for each management zone)
- □ Diary template for weed control and revegetation (one template for each month of weed management activities)
- □ Diary template for fire management (only required if a fire occurred during the reporting period; one template to be completed for each burn within the biobank site)
- □ Diary template for feral pest management (one template to be completed for each type of vertebrate pest and/or feral herbivore management activity undertaken)
- □ Template for the reporting of monitoring activities - feral pests (one template to be completed every 6 months during the reporting period)
- □ Photographs taken at the 10 photo points set out in the biobanking agreement
- □ Six monthly site inspection checklists (two completed checklists for each reporting period)
- □ Annual site inspection checklist (one completed checklist for each reporting period)

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:
Name:	Name:
Date:	Date:
Signed:	Signed:
Name:	Name:
Date:	Date: