

Appendix 1. Flora & Fauna Species Lists

Flora species recorded

Family	Scientific name	Common name
TREES		
Mimosaceae	<i>Acacia decurrens</i>	Black Wattle
Mimosaceae	<i>Acacia parramattensis</i>	Parramatta Wattle
Myrtaceae	<i>Acmena smithii</i>	Lillypilly
Myrtaceae	<i>Angophora costata</i>	Smooth-barked Apple
Myrtaceae	<i>Angophora subvelutina</i>	-
Casuarinaceae	<i>Casuarina cunninghamiana</i>	River Oak
Lauraceae	<i>Cinnamomum camphora</i> *	Camphor Laurel
Rutaceae	<i>Citrus limon</i> *	Lemon Tree
Rutaceae	<i>Citrus sinensis</i> *	Orange Tree
Myrtaceae	<i>Corymbia eximia</i>	Yellow Bloodwood
Myrtaceae	<i>Corymbia maculata</i>	Spotted Gum
Myrtaceae	<i>Eucalyptus eugenioides</i>	Thin-leaved Stringybark
Myrtaceae	<i>Eucalyptus microcorys</i>	Tallowwood
Myrtaceae	<i>Eucalyptus moluccana</i>	Grey Box
Myrtaceae	<i>Eucalyptus robusta</i>	Swamp Mahogany
Myrtaceae	<i>Eucalyptus scoparia</i> ^{TS}	Wallangarra White Gum
Myrtaceae	<i>Eucalyptus siderophloia</i>	Northern Grey Ironbark
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum
Santalaceae	<i>Exocarpos cupressiformis</i>	Native Cherry
Proteaceae	<i>Grevillea robusta</i>	Silky Oak
Bignoniaceae	<i>Jacaranda mimosifolia</i> *	Jacaranda
Lythraceae	<i>Lagerstroemia indica</i> *	Crepe Myrtle
Myrtaceae	<i>Melaleuca linariifolia</i>	Snow in Summer
Pinaceae	<i>Pinus radiata</i> *	Radiata or Monterey Pine
Anacardiaceae	<i>Schinus areira</i> *	Pepper Tree
Proteaceae	<i>Stenocarpus sinuatus</i>	Queensland Firewheel Tree
SHRUBS		
Mimosaceae	<i>Acacia fimbriata</i>	Fringed Wattle
Mimosaceae	<i>Acacia floribunda</i>	Sally Wattle
Mimosaceae	<i>Acacia implexa</i>	Hickory
Mimosaceae	<i>Acacia longifolia</i> var. <i>longifolia</i>	Sydney Golden Wattle
Pittosporaceae	<i>Bursaria spinosa</i> var. <i>spinosa</i>	Native Blackthorn
Myrtaceae	<i>Callistemon viminalis</i>	Weeping Bottlebrush
Solanaceae	<i>Cestrum parqui</i> *	Chilean Cestrum
Fabaceae	<i>Dillwynia sieberi</i>	Prickly Parrot-pea
Verbenaceae	<i>Duranta repens</i> *	Golden Dewdrop
Fabaceae	<i>Indigofera australis</i>	Native Indigo

Family	Scientific name	Common name
Verbenaceae	<i>Lantana camara</i> *	Lantana
Myrtaceae	<i>Leptospermum petersonii</i> *	Lemon Scented Tea-tree
Solanaceae	<i>Lycium ferocissimum</i> *	African Boxthorn
Araceae	<i>Monstera deliciosa</i> *	Fruit-salad Plant
Rutaceae	<i>Murraya paniculata</i> *	Orange Jessamine
Berberidaceae	<i>Nandina domestica</i> *	Sacred Bamboo
Oleaceae	<i>Olea europaea</i> subsp. <i>cuspidata</i> *	African Olive
Asteraceae	<i>Osteospermum fruticosum</i> *	Shrubby Daisy-bush
Rosaceae	<i>Photinia robusta</i> *	-
Phytolaccaceae	<i>Phytolacca octandra</i> *	Inkweed
Rosaceae	<i>Rubus fruticosus</i> sp. agg.*	Blackberry Complex
Solanaceae	<i>Solanum sisymbriifolium</i>	-
GROUNDCOVERS		
Liliaceae	<i>Agapanthus praecox</i> *	Agapanthus
Rubiaceae	<i>Asperula conferta</i>	Common Woodruff
Poaceae	<i>Axonopus fissifolius</i> *	Narrow-leaved Carpet Grass
Asteraceae	<i>Bidens pilosa</i> *	Cobbler's Pegs
Brassicaceae	<i>Brassica rapa</i> *	Wild Turnip
Crassulaceae	<i>Bryophyllum delagoense</i> *	Mother-of-Millions
Brassicaceae	<i>Capsella bursa-pastoris</i> *	Shepherds purse
Cyperaceae	<i>Carex appressa</i>	Tall Sedge
Asteraceae	<i>Carthamus lanatus</i> *	Saffron Thistle
Poaceae	<i>Cenchrus clandestinus</i> *	Kikuyu
Apiaceae	<i>Centella asiatica</i>	Indian Pennywort
Sinopteridaceae	<i>Cheilanthes sieberi</i>	Rock Fern
Poaceae	<i>Chloris gayana</i> *	Rhodes Grass
Poaceae	<i>Chloris truncata</i>	Windmill Grass
Poaceae	<i>Chloris ventricosa</i>	Tall Chloris
Asteraceae	<i>Cirsium vulgare</i> *	Spear Thistle
Amoryllidaceae	<i>Clivia miniata</i> *	Bush Lily
Asteraceae	<i>Conyza bonariensis</i> *	Flaxleaf Fleabane
Asteraceae	<i>Conyza sumatrensis</i> *	Fleabane
Poaceae	<i>Cynodon dactylon</i>	Common Couch
Cyperaceae	<i>Cyperus eragrostis</i> *	Umbrella Sedge
Cyperaceae	<i>Cyperus gracilis</i>	-
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed
Poaceae	<i>Ehrharta erecta</i> *	Panic Veldtgrass
Chenopodiaceae	<i>Einadia nutans</i>	Climbing Saltbush
Poaceae	<i>Eragrostis curvula</i> *	African Lovegrass
Euphorbiaceae	<i>Euphorbia peplus</i> *	Spurge
Fumariaceae	<i>Fumaria muralis</i> *	Wall Fumitory
Geraniaceae	<i>Geranium homeanum</i>	Northern Cranesbill

Family	Scientific name	Common name
Dilleniaceae	<i>Hibbertia diffusa</i>	-
Clusiaceae	<i>Hypericum gramineum</i>	Small St Johns Wort
Asteraceae	<i>Hypochaeris radicata</i> *	Flatweed
Poaceae	<i>Imperata cylindrica</i> var. <i>major</i>	Blady Grass
Juncaceae	<i>Juncus usitatus</i>	Common Rush
Brassicaceae	<i>Lepidium africanum</i> *	Common Peppergrass
Lobeliaceae	<i>Lobelia purpurascens</i>	Whiteroot
Lomandraceae	<i>Lomandra filiformis</i>	Wattle Mat-rush
Lomandraceae	<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Many-flowered Mat-rush
Fabaceae	<i>Lotus suaveolens</i> *	Hairy Bird's Foot Trefoil
Primulaceae	<i>Lysimachia arvensis</i> *	Scarlet Pimpernel
Fabaceae	<i>Medicago polymorpha</i> *	Burr Medic
Poaceae	<i>Microlaena stipoides</i> var. <i>stipoides</i>	Weeping Grass
Malvaceae	<i>Modiola caroliniana</i> *	Red-flowered Mallow
Brassicaceae	<i>Nasturtium officinale</i> *	Watercress
Onagraceae	<i>Oenothera stricta</i> *	Evening Primrose
Oxalidaceae	<i>Oxalis perennans</i>	-
Poaceae	<i>Paspalum dilatatum</i> *	Paspalum
Plantaginaceae	<i>Plantago debilis</i>	Slender Plantain
Plantaginaceae	<i>Plantago lanceolata</i> *	Ribwort
Poaceae	<i>Poa affinis</i>	-
Acanthaceae	<i>Pseuderanthemum variabile</i>	Pastel Flower
Dennstaedtiaceae	<i>Pteridium esculentum</i>	Bracken
Iridaceae	<i>Romulea rosea</i> var. <i>australis</i> *	Onion Grass
Polygonaceae	<i>Rumex crispus</i> *	Curled Dock
Poaceae	<i>Rytidosperma tenuius</i>	Wallaby Grass
Asteraceae	<i>Senecio madagascariensis</i> *	Fireweed
Poaceae	<i>Setaria parviflora</i> *	-
Malvaceae	<i>Sida rhombifolia</i> *	Paddy's Lucerne
Solanaceae	<i>Solanum prinophyllum</i>	Forest Nightshade
Solanaceae	<i>Solanum pseudocapsicum</i> *	-
Asteraceae	<i>Soliva sessilis</i> *	Jojo
Asteraceae	<i>Sonchus oleraceus</i> *	Common Sow-thistle
Poaceae	<i>Stenotaphrum secundatum</i> *	Buffalo Grass
Strelitziaceae	<i>Strelitzia juncea</i> *	Bird of Paradise
Asteraceae	<i>Taraxacum officinale</i> *	Dandelion
Poaceae	<i>Themeda triandra</i>	Kangaroo Grass
Commelinaceae	<i>Tradescantia fluminensis</i> *	Wandering Jew
Fabaceae	<i>Trifolium repens</i> *	White Clover
Typhaceae	<i>Typha orientalis</i>	Cumbungi
Scrophulariaceae	<i>Verbascum virgatum</i> *	Twiggy Mullein

Family	Scientific name	Common name
Verbenaceae	<i>Verbena bonariensis</i> *	Purpletop
Verbenaceae	<i>Verbena rigida</i> *	Veined Verbena
Plantaginaceae	<i>Veronica plebeia</i>	Creeping Speedwell
Agavaceae	<i>Yucca aloifolia</i> *	Yucca
VINES		
Basellaceae	<i>Anredera cordifolia</i> *	Madeira Vine
Apocnyaceae	<i>Araujia sericifera</i> *	Mothvine
Ranunculaceae	<i>Clematis aristata</i>	Old Man's Beard
Fabaceae	<i>Glycine clandestina</i>	Twining Glycine
Fabaceae	<i>Hardenbergia violacea</i>	False Sarsparilla
Bignoniaceae	<i>Pandorea pandorana</i>	Wonga Vine
* denotes exotic species TS denotes threatened species		

It should be noted that not all garden, cultivar or landscape species have been identified as part of this assessment.

Fauna species recorded

Common name	Scientific name	Method observed	
Birds		OEH 2016	TBE 2021
Australasian Grebe	<i>Tachybaptus novaehollandiae</i>	Not given	
Australasian Darter	<i>Anhinga novaehollandiae</i>	Not given	
Australian Hobby	<i>Falco longipennis</i>	Not given	
Australian King Parrot	<i>Alisterus scapularis</i>	Not given	
Australian Magpie	<i>Cracticus tibicen</i>	Not given	OW
Australian Owlet-nightjar	<i>Aegotheles cristatus</i>	Not given	
Australian Raven	<i>Corvus coronoides</i>	Not given	OW
Australian White Ibis	<i>Threskiornis molucca</i>	Not given	
Australian Wood Duck	<i>Chenonetta jubata</i>	Not given	O
Azure Kingfisher	<i>Ceyx azureus</i>	Not given	
Bar-shouldered Dove	<i>Geopelia humeralis</i>	Not given	
Bell Miner	<i>Manorina melanophrys</i>	Not given	W
Black-faced Cuckoo-shrike	<i>Coracina novaehollandiae</i>	Not given	
Brown Cuckoo-Dove	<i>Macropygia amboinensis</i>	Not given	
Brown Gerygone	<i>Gerygone mouki</i>	Not given	
Brown Goshawk	<i>Accipiter fasciatus</i>	Not given	
Brown Thornbill	<i>Acanthiza pusilla</i>	Not given	
Brown-headed Honeyeater	<i>Melithreptus validirostris</i>	Not given	
Common Bronzewing	<i>Phaps chalcoptera</i>	Not given	
Common Myna *	<i>Sturnus tristis</i>	Not given	
Common Starling *	<i>Sturnus vulgaris</i>	Not given	
Crested Pigeon	<i>Ocyphaps lophotes</i>	Not given	OW
Crested Shrike-tit	<i>Falcunculus frontatus</i>	Not given	
Crimson Rosella	<i>Platycercus elegans</i>	Not given	
Double-barred Finch	<i>Taeniopygia bichenovii</i>	Not given	
Dusky Moorhen	<i>Gallinula tenebrosa</i>	Not given	

Common name	Scientific name	Method observed	
Dusky Woodswallow ^{TS}	<i>Artamus cyanopterus</i>	Not given	
Eastern Cattle Egret	<i>Bubulcus coromandus</i>	Not given	
Eastern Rosella	<i>Platycercus eximius</i>	Not given	O
Eastern Spinebill	<i>Acanthorhynchus tenuirostris</i>	Not given	
Eastern Whipbird	<i>Psophodes olivaceus</i>	Not given	
Eastern Yellow Robin	<i>Eopsaltria australis</i>	Not given	
Eurasian Blackbird	<i>Turdus merula</i>	Not given	O
Fan-tailed Cuckoo	<i>Cacomantis flabelliformis</i>	Not given	
Galah	<i>Eolophus roseicapillus</i>	Not given	OW
Golden Whistler	<i>Pachycephala pectoralis</i>	Not given	
Great Cormorant	<i>Phalacrocorax carbo</i>	Not given	
Grey Butcherbird	<i>Cracticus torquatus</i>	Not given	
Grey Fantail	<i>Rhipidura albiscapa</i>	Not given	OW
Grey Shrike-thrush	<i>Colluricincla harmonica</i>	Not given	
Grey Teal	<i>Anas gracilis</i>	Not given	
Hardhead	<i>Aythya australis</i>	Not given	
Jacky Winter	<i>Microeca fascians</i>	Not given	
Laughing Kookaburra	<i>Dacelo novaeguineae</i>	Not given	OW
Lewin's Honeyeater	<i>Meliphaga lewinii</i>	Not given	W
Little Black Cormorant	<i>Phalacrocorax sulcirostris</i>	Not given	
Little Corella	<i>Cacatua sanguinea</i>	Not given	W
Little Eagle ^{TS}	<i>Hieraaetus morphnoides</i>	Not given	
Little Lorikeet ^{TS}	<i>Glossopsitta pusilla</i>	Not given	
Little Pied Cormorant	<i>Microcarbo melanoleucos</i>	Not given	
Magpie-lark	<i>Grallina cyanoleuca</i>	Not given	OW
Masked Lapwing	<i>Vanellus miles</i>	Not given	
Mistletoebird	<i>Dicaeum hirundinaceum</i>	Not given	
Musk Lorikeet	<i>Glossopsitta concinna</i>	Not given	
Nankeen Kestrel	<i>Falco cenchroides</i>	Not given	
Noisy Friarbird	<i>Philemon corniculatus</i>	Not given	
Noisy Miner	<i>Manorina melanocephala</i>	Not given	OW
Olive-backed Oriole	<i>Oriolus sagittatus</i>	Not given	
Pacific Black Duck	<i>Anas superciliosa</i>	Not given	
Peaceful Dove	<i>Geopelia striata</i>	Not given	
Pied Butcherbird	<i>Cracticus nigrogularis</i>		O
Pied Cormorant	<i>Phalacrocorax varius</i>	Not given	
Pied Currawong	<i>Strepera graculina</i>	Not given	O
Powerful Owl ^{TS}	<i>Ninox strenua</i>	Not given	
Purple Swampphen	<i>Porphyrio porphyrio</i>	Not given	
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>	Not given	W
Red-browed Finch	<i>Neochmia temporalis</i>	Not given	
Red Wattlebird	<i>Anthochaera carunculata</i>	Not given	OW
Red-rumped Parrot	<i>Psephotus haematonotus</i>	Not given	
Red-whiskered Bulbul *	<i>Pycnonotus jocosus</i>	Not given	
Restless Flycatcher	<i>Myiagra inquieta</i>	Not given	
Rose Robin	<i>Petroica rosea</i>	Not given	
Royal Spoonbill	<i>Platalea regia</i>	Not given	

Common name	Scientific name	Method observed	
Rufous Fantail ^{MS}	<i>Rhipidura rufifrons</i>	Not given	
Satin Bowerbird	<i>Ptilonorhynchus violaceus</i>	Not given	
Scarlet Honeyeater	<i>Myzomela sanguinolenta</i>	Not given	
Shining Bronze-cuckoo	<i>Chalcites lucidus</i>	Not given	
Silvereye	<i>Zosterops lateralis</i>	Not given	
Southern Boobook	<i>Ninox novaeseelandiae</i>	Not given	
Speckled Warbler ^{TS}	<i>Chthonicola sagittata</i>	Not given	
Spotted Pardalote	<i>Pardalotus punctatus</i>	Not given	
Spotted Turtle-Dove *	<i>Streptopelia chinensis</i>	Not given	
Striated Pardalote	<i>Pardalotus striatus</i>	Not given	
Sulphur Crested Cockatoo	<i>Cacatua galerita</i>	Not given	
Superb Fairy-wren	<i>Malurus cyaneus</i>	Not given	
Tawny Frogmouth	<i>Podargus strigoides</i>	Not given	
Varied Sittella ^{TS}	<i>Daphoenositta chrysoptera</i>	Not given	
Variegated Fairy-wren	<i>Malurus lamberti</i>	Not given	
Wedge-tailed Eagle	<i>Aquila audax</i>	Not given	
Weebill	<i>Smicromis brevirostris</i>	Not given	
Welcome Swallow	<i>Hirundo neoxena</i>	Not given	O
Whistling Kite	<i>Haliastur sphenurus</i>	Not given	
White-bellied Sea-Eagle ^{TS/MS}	<i>Haliaeetus leucogaster</i>	Not given	O
White-browed Scrubwren	<i>Sericornis frontalis</i>	Not given	
White-faced Heron	<i>Egretta novaehollandiae</i>	Not given	
White-naped Honeyeater	<i>Melithreptus lunatus</i>	Not given	
White-necked Heron	<i>Ardea pacifica</i>	Not given	
White-throated Treecreeper	<i>Cormobates leucophaea</i>	Not given	
White-winged Chough	<i>Corcorax melanorhamphos</i>	Not given	
Willie Wagtail	<i>Rhipidura leucophrys</i>	Not given	W
Yellow Thornbill	<i>Acanthiza nana</i>	Not given	
Yellow-faced Honeyeater	<i>Caligavis chrysops</i>	Not given	
Yellow-tailed Black-Cockatoo	<i>Calyptorhynchus funereus</i>	Not given	
Mammals			
Black Rat *	<i>Rattus rattus</i>	Not given	
Brown Hare *	<i>Lepus capensis</i>	Not given	
Cat (feral)*	<i>Felis catus</i>	Not given	
Chocolate Wattled Bat	<i>Chalinolobus morio</i>	U	
Common Brushtail Possum	<i>Trichosurus vulpecula</i>	Not given	
Common Ringtail Possum	<i>Pseudocheirus peregrinus</i>	Not given	
Common Wombat	<i>Vombatus ursinus</i>	Not given	
Domesticated Cattle *	<i>Bos taurus</i>		O
Eastern Broad-nosed Bat	<i>Scotorepens orion</i>	U	
Eastern Freetail-bat	<i>Mormopterus ridei</i>	U	
Eastern Grey Kangaroo	<i>Macropus giganteus</i>	Not given	O
Euro	<i>Macropus robustus</i>	Not given	
European Red Fox *	<i>Vulpes vulpes</i>	Not given	
Fallow Deer *	<i>Dama dama</i>	Not given	
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>	U	
House Mouse *	<i>Mus musculus</i>	Not given	

Common name	Scientific name	Method observed	
Large Bent-winged Bat ^{TS}	<i>Miniopterus orianae oceanensis</i>	U	
Large-eared Pied Bat ^{TS}	<i>Chalinolobus dwyeri</i>	U	
Large Forest Bat	<i>Vespadelus darlingtoni</i>	U ^{PO}	
Little Bent-winged Bat ^{TS}	<i>Miniopterus australis</i>	U ^{PO}	
Little Forest Bat	<i>Vespadelus vulturnus</i>	U	
Long-eared Bat	<i>Nyctophilus</i> sp.	U	
Rabbit *	<i>Oryctolagus cuniculus</i>	Not given	
Ride's Freetail-bat	<i>Ozimops ridei</i>	U	
Short-beaked Echidna	<i>Tachyglossus aculeatus</i>	Not given	
Sugar Glider	<i>Petaurus breviceps</i>	Not given	
Swamp Wallaby	<i>Wallabia bicolor</i>	Not given	
White-striped Mastiff-bat	<i>Austronomus australis</i>	U	
Reptiles			
Bar-sided Skink	<i>Eulamprus tenius</i>	Not given	
Blackish Blind Snake	<i>Anilius nigrescens</i>	Not given	
Delicate Skink	<i>Lampropholis delicata</i>	Not given	
Eastern Blue Tongue Lizard	<i>Tiliqua scincoides</i>	Not given	
Eastern Long-necked Turtle	<i>Chelodina longicollis</i>	Not given	
Eastern Water Dragon	<i>Intellagama lesueurii</i>	Not given	
Eastern Water Skink	<i>Eulamprus quoyii</i>	Not given	
Elegant Snake-eyed Skink	<i>Cryptoblepharus pulcher</i>	Not given	
Grass Skink	<i>Lampropholis guichenoti</i>	Not given	
Red-bellied Black Snake	<i>Pseudechis porphyriacus</i>	Not given	
Three-toed Skink	<i>Saiphos equalis</i>	Not given	
Amphibians			
Bleating Tree Frog	<i>Litoria dentata</i>	Not given	
Common Eastern Froglet	<i>Crinia signifera</i>	Not given	W
Dwarf Tree Frog	<i>Litoria fallax</i>	Not given	
Eastern Banjo Frog	<i>Limnodynastes dumerilii</i>	Not given	
Peron's Tree Frog	<i>Litoria peronii</i>	Not given	
Striped Marsh Frog	<i>Limnodynastes peronii</i>	Not given	
Verreaux's Frog	<i>Litoria verreauxii</i>	Not given	W
Mollusc			
Cumberland Plain Land Snail ^{TS}	<i>Meridolum corneovirens</i>	Not given ^{PO}	
Brown Garden Snail *	<i>Cornu aspersum</i>	Not given	
Note: * indicates introduced species ^{TS} indicates threatened species ^{MS} indicates Migratory species All species listed are identified to a high level of certainty unless otherwise noted as: ^{PR} indicates species identified to a 'probable' level of certainty – more likely than not ^{PO} indicates species identified to a 'possible' level of certainty – low-moderate level of confidence			
E - Nest/roost	H - Hair/feathers/skin	P - Scat	W - Heard call
F-Tracks/scratchings	K- Dead	Q- Camera	X- In scat
FB - Burrow	O - Observed	T - Trapped/netted	Y - Bone/teeth/shell
G - Crushed cones	OW- Obs & heard call	U- Anabat/ultrasound	Z- In raptor/owl pellet

Threatened flora species habitat assessment

Scientific name DATABASE SOURCE	BC Act	EPBC Act	Growth form and habitat requirements Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and / or high number of record(s) (y/n) Notes 1,2 & 3	Record(s) from recent years (y/n) Notes 1,2 & 3	Potential to occur
<i>Acacia bynoeana</i> EPBC	E1	V	Erect or spreading shrub to 0.3 m high growing in heath and dry sclerophyll open forest on sandy soils. Often associated with disturbed areas such as roadsides. <i>Distribution limits N-Newcastle S-Berrima.</i>	no	no	n/a	n/a	no
<i>Acacia pubescens</i> EPBC	V	V	Spreading shrub 1-4 m high open sclerophyll growing in open forest and woodlands on clay soils. <i>Distribution limits N-Bilpin S-Georges River.</i>	no	marginal	no	n/a	no
<i>Allocasuarina glareicola</i> EPBC	E1	E	Small shrub 1-2 m high growing in open sclerophyll forest on lateritic soils derived from tertiary alluviums. <i>Distribution limits Castlereagh NR region.</i>	no	no	n/a	n/a	no
<i>Cynanchum elegans</i> DPIE EPBC	E1	E	Climber or twiner to 1m. Grows in rainforest gullies, scrub & scree slopes. <i>Distribution limits N-Gloucester S-Wollongong.</i>	no	no	n/a	n/a	no
<i>Epacris purpurascens</i> var. <i>purpurascens</i> DPIE	V	-	Erect shrub to 1.5 m high growing in sclerophyll forest and scrub and near creeks and swamps on sandstone. <i>Distribution limits N-Gosford S-Blue Mountains.</i>	no	no	n/a	n/a	no
<i>Eucalyptus benthamii</i> DPIE EPBC	V	V	Blue gum to 40 m high. Wet forest on sandy alluvial soils. <i>Distribution limits N-Yarramundi S-Bents Basin.</i>	no	Outside of study area along Nepean River embankment	yes	yes	no

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					Suitable habitat present (y/n)	Nearby and / or high number of record(s) (y/n) Notes 1,2 & 3	Record(s) from recent years (y/n) Notes 1,2 & 3	Potential to occur
<i>Genoplesium baueri</i> EPBC	E1	E	A terrestrial orchid that grows in sparse sclerophyll forest and moss gardens over sandstone. Flowers Feb–Mar. <i>Distribution limits N – Hunter Valley S – Nowra.</i>	no	no	n/a	n/a	no
<i>Haloragis exalata</i> <i>subsp. exalata</i> EPBC	V	V	Shrub to 1.5 m high. Grows in damp places near watercourses. <i>Disjunctly distributed in the Central Coast, South Coast and North Western Slopes botanical subdivisions of NSW.</i>	no	no	n/a	n/a	no
<i>Melaleuca biconvexa</i> DPIE	V	V	Tall shrub. Grows in wetlands adjoining perennial streams and on the banks of those streams, generally within the geological series known as the Terrigal Formation. <i>Distribution limits N-Port Macquarie S-Jervis Bay.</i>	no	no	n/a	n/a	no
<i>Melaleuca deanei</i> EPBC	V	V	Shrub to 3 m high. Grows in heath on sandstone. <i>Distribution limits N-Gosford S-Nowra.</i>	no	no	n/a	n/a	no
<i>Persicaria elatior</i> EPBC	V	V	Herb to 90 cm tall which grows in damp places especially beside streams and lakes. Occasionally in swamp forest or associated with disturbance. <i>Varied distribution from SE NSW to QLD.</i>	no	no	n/a	n/a	no
<i>Persoonia bargoensis</i> EPBC	E1	V	Erect shrub to 1 m high. Grows in woodland to Dry sclerophyll forest, on sandstone and laterite. <i>Restricted to the Bargo area.</i>	no	no	n/a	n/a	no
<i>Persoonia hirsuta</i> EPBC	E1	E	Erect to decumbent shrub. Grows in dry sclerophyll forest and woodland on Hawkesbury sandstone with infrequent fire histories. <i>Distribution limits N-Glen Davis S-Hill Top.</i>	no	no	n/a	n/a	no

Scientific name DATABASE SOURCE	BC Act	EPBC Act	Growth form and habitat requirements Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and / or high number of record(s) (y/n) Notes 1,2 & 3	Record(s) from recent years (y/n) Notes 1,2 & 3	Potential to occur
<i>Pimelea spicata</i> DPIE EPBC	E1	E	Decumbent or erect shrub to 0.5 m high. Occurs principally in woodland on soils derived from Wianamatta Shales. <i>Distribution limits N-Lansdowne S-Shellharbour.</i>	no	yes	Many records 3-4km south-east	yes	yes
<i>Pomaderris brunnea</i> DPIE EPBC	V	V	Shrub to 3 m high. Confined to Upper Nepean and Colo Rivers where it grows in open forest.	no	Outside of study area along Nepean River embankment	Many records 3km south-west	yes	no
<i>Pterostylis saxicola</i> EPBC	E1	E	Terrestrial orchid. Grows in shallow sandy soil above rock shelves, usually near Wianamatta / Hawkesbury transition. <i>Distribution limits N-Hawkesbury River S-Campbelltown.</i>	no	no	n/a	n/a	no
<i>Pultenaea pedunculata</i> DPIE	E1	-	Prostrate shrub. Grows in dry sclerophyll forest and disturbed sites. <i>Confined to Prestons and Villawood in NSW.</i>	no	yes	yes	yes	yes
<i>Rhizanthella slateri</i> EPBC	V	E	Underground orchid that is poorly known. Grows in sclerophyll forests. Usually only seen if the soil is disturbed. Flowers in Oct – Nov.	no	no	n/a	n/a	no
<i>Rhodamnia rubescens</i> DPIE EPBC	E4A	CE	Shrub or small tree to 25 m high found in rainforest and riparian vegetation along the coast and up to 600 m ASL. Flowers in late winter through to spring, with a peak in October, and fruits typically begin to appear in December in the Sydney region. <i>Distribution limits N-Tweed Heads S-Batemans Bay.</i>	no	no	n/a	n/a	no

Scientific name DATABASE SOURCE	BC Act	EPBC Act	Growth form and habitat requirements Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and / or high number of record(s) (y/n) Notes 1,2 & 3	Record(s) from recent years (y/n) Notes 1,2 & 3	Potential to occur
<i>Syzygium paniculatum</i> DPIE EPBC	V	V	Small tree. Subtropical and littoral rainforest on sandy soil. <i>Distribution limits N-Forster S-Jervis Bay.</i>	no	no	n/a	n/a	no
<i>Thelymitra</i> sp. 'Kangaloon' (<i>Thelymitra kangaloonica</i>) EPBC	E4A	CE	A terrestrial orchid with dark blue flowers, presented in mid-late spring. <i>Only known from the Robertson area in the Southern Highlands.</i> Often in association with the endangered ecological community <i>Temperate Highland Peat Swamps on Sandstone.</i>	no	no	n/a	n/a	no
<i>Thesium australe</i> DPIE EPBC	V	V	Erect herb to 0.4 m high. Root parasite. Themeda grassland or woodland often damp. <i>Distribution limits N-Tweed Heads S-south of Eden.</i>	no	unlikely	1 record within 10km	Record from 1803	no
DPIE	- Denotes species listed within 10km of the development footprint on the <i>Atlas of NSW Wildlife</i>							
EPBC	- Denotes species listed within 10km of the development footprint in the <i>EPBC Act</i> habitat search							
V	- Denotes vulnerable listed species under the relevant Act							
E or E1	- Denotes endangered listed species under the relevant Act							
E4a or CE	- Denotes critically endangered listed species under the relevant Act							
NOTE:	1. This field is not considered if no suitable habitat is present within the development footprint 2. 'records' refer to those provided by the <i>Atlas of NSW Wildlife</i> 3. 'nearby' or 'recent' records are species specific accounting for home range, dispersal ability and life cycle							

Threatened fauna species habitat assessment

Common name Scientific name Database source	BC Act	EPBC Act	Preferred habitat Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
Giant Burrowing Frog <i>Heleioporus australiacus</i> DPIE EPBC	V	V	Inhabits open forests and riparian forests along non-perennial streams, digging burrows into sandy creek banks. <i>Distribution limit: N-Near Singleton S-South of Eden.</i>	N	N	N	N	Not likely
Green and Golden Bell Frog <i>Litoria aurea</i> DPIE EPBC	E	V	Prefers the edges of permanent water, streams, swamps, creeks, lagoons, farm dams and ornamental ponds. Often found under debris. <i>Distribution limit: N-Byron Bay S-South of Eden.</i>	N	Y	N	Y	Low
Southern Bell Frog <i>Litoria raniformis</i> EPBC	E	V	Prefers the edges of permanent water, streams, swamps, creeks, lagoons, farm dams and ornamental ponds. Often found under debris. <i>Distribution limit: N-ACT Bay. S-Albury.</i>	N	Y	N	N	Unlikely
Broad-headed Snake <i>Hoplocephalus bungaroides</i> EPBC	E	V	Sandstone outcrops, exfoliated rock slabs and tree hollows in coastal and near coastal areas. <i>Distribution limit: N-Mudgee Park. S-Nowra.</i>	N	N	N	N	Not likely
Blue-billed Duck <i>Oxyura australis</i> DPIE	V	-	A completely aquatic species occurring mainly throughout the Murray-Darling basin in cool to warm temperate deep permanent freshwater lakes, lagoons and swamps with extensive reed-beds. <i>Distribution limit: N-Tenterfield. S-Albury.</i>	N	Y	Y	N	Low
Freckled Duck <i>Stictonetta naevosa</i> DPIE	V	-	Occurs mainly within the Murray-Darling basin and the channel country within large cool temperate to sub-tropical swamps, lakes and floodwaters with cumbungi, lignum or melaleucas. <i>Distribution limit: N- Tenterfield. S-Albury.</i>	Y	Y	Y	Y	Y
Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	E	-	Occurs in tropical to warm temperate terrestrial wetlands, estuarine and littoral habitats such as mangroves, tidal mudflats, floodplains, open	N	Y	N	N	Not likely

Common name Scientific name Database source	BC Act	EPBC Act	Preferred habitat Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
DPIE			woodlands, irrigated lands, bore drains, sub-artesian pools, farm dams and sewerage ponds. <i>Distribution limit: N-Tweed Heads. S-Nowra.</i>					
Australasian Bittern <i>Botaurus poiciloptilus</i> DPIE EPBC	E	E	Found in or over water of shallow freshwater or brackish wetlands with tall reedbeds, sedges, rushes, cumbungi, lignum and also in ricefields, drains in tussocky paddocks, occasionally saltmarsh, brackish wetlands. <i>Distribution limit: N-North of Lismore. S- Eden.</i>	N	Y	Y	N	Low
White-bellied Sea Eagle (<i>Haliaeetus leucogaster</i>) DPIE EPBC	V	-	Occupies coasts, islands, estuaries, inlets, large rivers, inland lakes and reservoirs. <i>Sedentary; dispersive. N-Tweed Heads. S-South of Eden.</i>	Y (OEHL 2016)	Y	Y	Y	Y
Little Eagle <i>Hieraaetus morphnoides</i> DPIE	V	-	Utilises plains, foothills, open forests, woodlands and scrublands; river red gums on watercourses and lakes. <i>Distribution limit - N-Tweed Heads. S-South of Eden.</i>	Y (OEHL 2016)	Y	Y	Y	Y
Square-tailed Kite <i>Lophoictinia isura</i> DPIE	V	-	Utilises mostly coastal and sub-coastal open forest, woodland or lightly timbered habitats and inland habitats along watercourses and mallee that are rich in passerine birds. <i>Distribution limit: N-Goondiwindi. S-South of Eden.</i>	N	Y	N	Y	Low
Eastern Osprey <i>Pandion cristatus</i> EPBC	V	-	Utilises waterbodies including coastal waters, inlets, lakes, estuaries and offshore islands with a dead tree for perching and feeding. <i>Distribution limit: N-Tweed Heads. S-South of Eden.</i>	N	Y	N	N	Unlikely
Grey Falcon <i>Falco hypoleucos</i> EPBC	V	-	Occurs over mainly inland drainage systems of open plains and lightly timbered country including the acacia scrub, spinifex and tussock grasslands. <i>Distribution limit: N-Mullumbimby. S-Bega.</i>	N	Y	N	N	Not likely
Red Knot <i>Calidris canutus</i> DPIE	-	E	The red knot is a small to medium migratory shorebird. During the non-breeding season in Australasia, the red knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts and sometimes on sandy ocean beaches or shallow pools on exposed rock platforms. They	N	Y	Y	N	Low

Common name Scientific name Database source	BC Act	EPBC Act	Preferred habitat Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
			are occasionally seen on terrestrial saline wetlands near the coast and on sewage ponds and saltworks					
Gang-gang Cockatoo <i>Callocephalon fimbriatum</i> DPIE	V	-	Prefers wetter forests and woodlands from sea level to > 2,000m on the Great Dividing Range, timbered foothills and valleys, timbered watercourses, coastal scrubs, farmlands and suburban gardens. <i>Distribution limit: mid north coast of NSW to western Victoria.</i>	N	Y	Y	Y	Y
Glossy Black-Cockatoo <i>Calyptorhynchus lathami</i> DPIE	V	-	Open forests with <i>Allocasuarina</i> species and hollows for nesting. <i>Distribution limit: N-Tweed Heads. S-South of Eden.</i>	N	Y	N	N	Not likely
Little Lorikeet <i>Glossopsitta pusilla</i> DPIE	V	-	Inhabits forests, woodlands; large trees in open country; timbered watercourses, shelterbeds, and street trees. <i>Distribution limit: N-Tweed Heads. S-South of Eden.</i>	Y (OEH 2016)	Y	Y	Y	Y
Swift Parrot <i>Lathamus discolor</i> DPIE EPBC	E	E	Inhabits eucalypt forests and woodlands with winter flowering eucalypts. <i>Distribution limit: N-Border Ranges National Park. S-South of Eden.</i>	N	Y	Y	Y	Y
Turquoise Parrot <i>Neophema pulchella</i> DPIE	V	-	Inhabits coastal scrubland, open forest and timbered grassland, especially ecotones between dry hardwood forests and grasslands. <i>Distribution limit: N-Near Tenterfield. S-South of Eden.</i>	N	Y	Y	N	Low
Barking Owl <i>Ninox connivens</i> DPIE	V	-	Inhabits principally woodlands but also open forests and partially cleared land and utilises hollows for nesting. <i>Distribution limit: N-Border Ranges National Park. S-Eden.</i>	N	Y	N	N	Unlikely
Powerful Owl <i>Ninox strenua</i> DPIE	V	-	Forests containing mature trees for shelter or breeding and densely vegetated gullies for roosting. <i>Distribution limits: N-Border Ranges National Park. S-Eden.</i>	Y (OEH 2016)	Y	Y	Y	Y

Common name Scientific name Database source	BC Act	EPBC Act	Preferred habitat Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
Masked Owl <i>Tyto novaehollandiae</i> DPIE	V	-	Open forest and woodlands with cleared areas for hunting and hollow trees or dense vegetation for roosting. <i>Distribution limit: N-Border Ranges National Park. S-Eden.</i>	N	Y	N	N	Unlikely
White-throated Needletail ^{MS} <i>Hirundapus caudacutus</i> DPIE EPBC	-	V	Airspace over forests, woodlands, farmlands, plains, lakes, coasts, towns; companies often forage along favoured hilltops and timbered ranges. Breeds Siberia, Himalayas, east to Japan. Summer migrant to eastern Australia. <i>Distribution limit: N-Tweed Heads. S-South of Eden.</i>	N	Y	N	N	Unlikely
Brown Treecreeper <i>Climacteris picumnus victoriae</i> DPIE	V	-	Occupies eucalypt woodlands, open woodland lacking a dense understorey with fallen dead timber. <i>Distribution limit: (Sub species victoriae) Central NSW west of Great Div. Cumberland Plains, Hunter Valley, Richmond, Clarence, and Snowy River Valleys.</i>	N	Y	Y	Y	Y
Speckled Warbler <i>Chthonicola sagittata</i> DPIE	V	-	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts. <i>Distribution limit: N-Urbanville. S-Eden.</i>	Y (OEH 2016)	Y	Y	Y	Y
Regent Honeyeater <i>Xanthomyza phrygia</i> DPIE EPBC	E4A	CE	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts. <i>Distribution limit: N-Urbanville. S-Eden.</i>	N	Y	N	Y	Low
Painted Honeyeater <i>Grantiella picta</i> EPBC	V	V	A nomadic bird occurring in low densities within open forest, woodland and scrubland feeding on mistletoe fruits. Inhabits primarily Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests. <i>Distribution limit: N-Boggabilla. S-Albury with greatest occurrences on the inland slopes of the Great Dividing Range.</i>	N	Y	N	N	Unlikely
Black-chinned Honeyeater	V	-	Found in woodlands containing box-ironbark associations and River Red Gums, also drier coastal woodlands of the Cumberland Plain and Hunter	N	Y	N	N	Unlikely

Common name Scientific name Database source	BC Act	EPBC Act	Preferred habitat Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
<i>Melithreptus gularis</i> DPIE			Richmond and Clarence. <i>Distribution limit: N-Cape York Pen. Qld. S-Victor H. Mt Lofty Ra & Flinders Ra. SA.</i>					
Varied Sittella <i>Daphoenositta chrysoptera</i> DPIE	V	-	Open eucalypt woodlands / forests (except heavier rainforests); mallee, inland acacia, coastal tea-tree scrubs; golf courses, shelterbelts, orchards, parks, scrubby gardens. <i>Distribution limit: N-Border Ranges National Park. S-South of Eden.</i>	Y (OEH 2016)	Y	Y	Y	Y
Dusky Woodswallow <i>Artamus cyanopterus cyanopterus</i> DPIE	V	-	Found in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. Prefers habitat with an open understorey. Often observed in farmland tree patches or roadside remnants. <i>Widespread in eastern, southern and south-western Australia.</i>	Y (OEH 2016)	Y	Y	Y	Y
Hooded Robin <i>Melanodryas cucullata cucullata</i> DPIE	V	-	Found in eucalypt woodlands, <i>Acacia</i> scrubland, open forest, and open areas adjoining large woodland blocks, with areas of dead timber. <i>Distribution limit: N-Central Qld. S-Spencer Gulf SA.</i>	N	Y	Y	N	Low
Scarlet Robin <i>Petroica boodang</i> DPIE	V	-	Found in foothill forests, woodlands, watercourses; in autumn-winter, more open habitats: river red gum woodlands, golf courses, parks, orchards, gardens. <i>Distribution limit: N-Tweed Heads. S-South of Eden.</i>	N	Y	Y	Y	Y
Flame Robin <i>Petroica phoenicea</i> DPIE	V	-	Summer: forests, woodlands, scrubs, from sea-level to c. 1800 m. Autumn-winter: open woodlands, plains, paddocks, golf courses, parks, orchards. <i>Distribution limit: N northern NSW tablelands. S-South of Eden.</i>	N	Y	Y	N	Low
Diamond Firetail <i>Stagonopleura guttata</i> DPIE	V	-	Found in eucalypt woodlands, forests and mallee where there is grassy understorey west of the Great Div. also drier coastal woodlands of the Cumberland Plain and Hunter Richmond and Clarence River Valleys. <i>Distribution limit: N-Rockhampton Q. S-Eyre Pen Kangaroo Is. SA.</i>	N	Y	Y	N	Low

Common name Scientific name Database source	BC Act	EPBC Act	Preferred habitat Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
Spotted-tailed Quoll <i>Dasyurus maculatus</i> DPIE EPBC	V	E	Dry and moist open forests containing rock caves, hollow logs or trees. <i>Distribution limit: N-Mt Warning National Park. S-South of Eden.</i>	N	Y	N	N	Unlikely
Koala <i>Phascolarctos cinereus</i> DPIE EPBC	V	V	Inhabits both wet and dry eucalypt forest on high nutrient soils containing preferred feed trees. <i>Distribution limit: N-Tweed Heads. S-South of Eden.</i>	N	Y	Y	Y	Y
Eastern Pygmy Possum <i>Cercatus nanus</i> DPIE	V	-	Found in a variety of habitats from rainforest through open forest to heath. Feeds on insects but also gathers pollen from banksias, eucalypts and bottlebrushes. Nests in banksias and myrtaceous shrubs. <i>Distribution limit: N-Tweed Heads. S-Eden.</i>	N	N	N	N	Not likely
Squirrel Glider <i>Petaurus norfolcensis</i> DPIE	V	-	Mixed aged stands of eucalypt forest & woodlands including gum barked & high nectar producing species & hollow bearing trees. <i>Distribution limit: N-Tweed Heads. S-Albury.</i>	N	Y	N	N	Unlikely
Greater Glider <i>Petauroides volans</i> DPIE EPBC	-	V	Favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species. Population density is optimal at elevation levels at 845 m above sea level. Prefer overstorey basal areas in old-growth tree stands. Highest abundance typically in taller, montane, moist eucalypt forests, with relatively old trees and abundant hollows <i>Distribution limit: N-Border Ranges National Park. S- South of Eden.</i>	N	N	N	N	Not likely
Brush-tailed Rock-wallaby <i>Petrogale penicillata</i> EPBC	E	V	Found in rocky gorges with a vegetation of rainforest or open forests to isolated rocky outcrops in semi-arid woodland country. <i>Distribution limit: N-North of Tenterfield. S-Bombala.</i>	N	N	N	N	Not likely
Grey-headed Flying-fox <i>Pteropus poliocephalus</i>	V	V	Found in a variety of habitats including rainforest, mangroves, paperbark swamp, wet and dry open forest and cultivated areas. Forms camps commonly found in gullies and in vegetation with a dense canopy. <i>Distribution limit: N-Tweed Heads. S-Eden.</i>	N	Y	Y	Y	Y

Common name Scientific name Database source	BC Act	EPBC Act	Preferred habitat Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
DPIE EPBC								
Yellow-bellied Sheathtail-bat <i>Saccolaimus flaviventris</i> DPIE	V	-	Rainforests, sclerophyll forests and woodlands. <i>Distribution limit: N-North of Walgett. S-Sydney.</i>	N	Y	Y	Y	Y
Eastern Coastal Free-tailed Bat <i>Micronomus norfolkensis</i> DPIE	V	-	Inhabits open forests and woodlands foraging above the canopy and along the edge of forests. Roosts in tree hollows, under bark and buildings. <i>Distribution limit: N-Woodenbong. S-Pambula.</i>	Y (OEH 2016)	Y	Y	Y	Y
Large-eared Pied Bat <i>Chalinolobus dwyeri</i> DPIE EPBC	V	V	Warm-temperate to subtropical dry sclerophyll forest and woodland. Roosts in caves, tunnels and tree hollows in colonies of up to 30 animals. <i>Distribution limit: N-Border Ranges National Park. S-Wollongong.</i>	Y (OEH 2016)	Y	Y	Y	Y
Eastern False Pipistrelle <i>Falsistrellus tasmaniensis</i> DPIE	V	-	Recorded roosting in caves, old buildings and tree hollows. <i>Distribution limit: N-Border Ranges National Park. S-Pambula.</i>	N	Y	Y	Y	Y
Little Bent-winged Bat <i>Miniopterus australis</i> DPIE	V	-	Roosts in caves, old buildings and structures in the higher rainfall forests along the south coast of Australia. <i>Distribution limit: N-Border Ranges National Park. S-Sydney.</i>	Y (OEH 2016, with possible certainty)	Y	Y	Y	Y
Large Bent-winged Bat	V	-	Prefers areas where there are caves, old mines, old buildings, stormwater drains and well-timbered areas. <i>Distribution limit: N-Border Ranges National Park. S-South of Eden.</i>	Y (OEH 2016)	Y	Y	Y	Y

Common name Scientific name Database source	BC Act	EPBC Act	Preferred habitat Distribution limit	Recorded on site (y/n)	If not recorded on site			
					Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
<i>Miniopterus orianae oceanensis</i> DPIE								
Southern Myotis <i>Myotis macropus</i> DPIE	V	-	Roosts in caves, mines, tunnels, buildings, tree hollows and under bridges. Forages over open water. <i>Distribution limit: N-Border Ranges National Park. S-South of Eden.</i>	N	Y	Y	Y	Y
Greater Broad-nosed Bat <i>Scoteanax rueppellii</i> DPIE	V	-	Inhabits areas containing moist river and creek systems, especially tree lined creeks. <i>Distribution limit: N-Border Ranges National Park. S-Pambula.</i>	N	Y	Y	Y	Y
New Holland Mouse <i>Pseudomys novaehollandiae</i> EPBC	-	V	Occurs in heathlands, woodlands, open forest and paperbark swamps and on sandy, loamy or rocky soils. Coastal populations have a marked preference for sandy substrates, a healthy understorey of leguminous shrubs less than 1m high and sparse ground litter. Recolonise of regenerating burnt areas. <i>Distribution limit: N-Border Ranges National Park. S-South of Eden.</i>	N	N	N	N	Not likely
Cumberland Plain Land Snail <i>Meridolum corneovirens</i> DPIE	E	-	Inhabits remnant eucalypt woodland of the Cumberland Plan. Shelters under logs, debris, clumps of grass, around base of trees and burrowing into loose soil. <i>Distribution limit: Cumberland Plain of Sydney Basin Bioregion.</i>	Y (OEH 2016, with possible certainty)	Y	Y	Y	Y
Dural Land Snail <i>Pommerhelix duralensis</i> DPIE EPBC	E	E	Occurs on shale-sandstone transitional forest landscapes within the Blue Mountains, Penrith, The Hills, Wollondilly, Hornsby and Parramatta LGA's. Occurs in low abundance and shelters under rocks or inside curled-up bark, beneath leaves and light woody debris. <i>Distribution limit: St Albans to Mulgoa with most records from The Hills LGA.</i>	N	Y	N	Y	Low
DPIE	- Denotes species listed within 10km of the development footprint on the <i>Atlas of NSW Wildlife</i>							
EPBC	- Denotes species listed within 10km of the development footprint in the <i>EPBC Act</i> habitat search							
TBE	- Denotes additional species considered by <i>Travers bushfire & ecology</i> to have potential habitat based on regional knowledge and other records							

Common name <i>Scientific name</i> Database source		BC Act	EPBC Act	Preferred habitat <i>Distribution limit</i>	Recorded on site (y/n)	If not recorded on site			
						Suitable habitat present (y/n)	Nearby and/or high number of record(s) (y/n) <i>Notes 1,2 & 3</i>	Record(s) from recent years (y/n) <i>Notes 1,2 & 3</i>	Potential to occur
V	- Denotes vulnerable listed species under the relevant Act								
E or E1	- Denotes endangered listed species under the relevant Act								
E4a or CE	- Denotes critically endangered listed species under the relevant Act								
NOTE:	1. This field is not considered if no suitable habitat is present within the development footprint 2. 'records' refer to those provided by the <i>Atlas of NSW Wildlife</i> 3. 'nearby' or 'recent' records are species specific accounting for home range, dispersal ability and life cycle								
Unlikely	Represents such a low margin but not enough to 100% rule it out. A test of significance is required.								
Not likely	Means 0% change of occurring, despite there being potential habitat. A test of significance is not applied to these species.								

The table below provides an assessment of potential habitat within the study area for nationally *protected* migratory fauna species recorded within 10 km on the *EPBC Act* Protected Matters Tool. Nationally *threatened* migratory species are instead considered above.

Protected migratory bird habitat assessment

Common name <i>Scientific name</i>	Preferred habitat <i>Migratory breeding</i>	Suitable habitat present (y/n)	Recorded on site (y/n)	Comments
Oriental Cuckoo (<i>Cuculus optatus</i>)	Mainly inhabits forests, occurring in coniferous, deciduous and mixed forest. It feeds mainly on insects and their larvae, foraging for them in trees and bushes as well as on the ground.	Y	N	
Osprey (<i>Pandion haliaetus</i>)	Occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging. They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. They exhibit a preference for coastal cliffs and elevated islands in some	Y	N	

Common name <i>Scientific name</i>	Preferred habitat <i>Migratory breeding</i>	Suitable habitat present (y/n)	Recorded on site (y/n)	Comments
	parts of their range, but may also occur on low sandy, muddy or rocky shores and over coral cays. They may occur over atypical habitats such as heath, woodland or forest when travelling to and from foraging sites. Eastern Ospreys occur sympatrically and sometimes interact with White-bellied Sea-Eagles.			
White-throated Needletail (<i>Hirundapus caudacutus</i>)	Airspace over forests, woodlands, farmlands, plains, lakes, coasts, towns; companies often forage along favoured hilltops and timbered ranges. <i>Breeds Siberia, Himalayas, east to Japan. Summer migrant to eastern Australia.</i>	Y	N	
Fork-tailed Swift (<i>Apus pacificus</i>)	Aerial: over open country, from semi-arid deserts to coasts, islands; sometimes over forests, cities. Breeds Siberia, Himalayas, east to Japan south east Asia. Summer migrant to east Australia. Mass movements associated with late summer low pressure systems into east Australia. Otherwise uncommon.	Y	N	-
Rainbow Bee-eater (<i>Merops ornatus</i>)	Open woodlands with sandy, loamy soil; sandridges, sandspits, riverbanks, road cuttings, beaches, dunes, cliffs, mangroves, rainforest, woodlands, golf courses. <i>Breeding resident in northern Australia. Summer breeding migrant to south east and south west Australia.</i>	Y	N	
Black-faced Monarch (<i>Monarcha melanopsis</i>)	Rainforests, eucalypt woodlands; coastal scrubs; damp gullies in rainforest, eucalypt forest; more open woodland when migrating. <i>Summer breeding migrant to coastal south east Australia, otherwise uncommon.</i>	Y	N	
Spectacled Monarch (<i>Monarcha trivirgatus</i>)	Understorey of mountain / lowland rainforest, thickly wooded gullies, waterside vegetation, mostly well below canopy. <i>Summer breeding migrant to south-east Qld and north-east NSW down to Port Stephens from Sept / Oct to May. Uncommon in southern part of range.</i>	N	N	-
Satin Flycatcher (<i>Myiagra cyanoleuca</i>)	Heavily vegetated gullies in forests, taller woodlands, usually above shrub-layer; during migration, coastal forests, woodlands, mangroves, trees in open country, gardens. <i>Breeds mostly south-east Australia and Tasmania over warmer months, winters in north east Qld.</i>	Y	N	-
Rufous Fantail (<i>Rhipidura rufifrons</i>)	Undergrowth of rainforests / wetter eucalypt forests / gullies; monsoon forests, paperbarks, sub-inland and coastal scrubs; mangroves, watercourses; parks, gardens. On migration, farms, streets buildings. <i>Breeding migrant to south-east Australia over warmer months. Altitudinal migrant in north-east NSW in mountain forests during warmer months.</i>	Y	Y	
Yellow Wagtail (<i>Motacilla flava</i>)	The yellow wagtail typically forages in damp grassland and on relatively bare open ground at edges of rivers, lakes and wetlands, but also feeds in dry grassland and in fields of cereal crops.	Y	N	-

Common name <i>Scientific name</i>	Preferred habitat <i>Migratory breeding</i>	Suitable habitat present (y/n)	Recorded on site (y/n)	Comments
Painted Snipe (<i>Rostratula australis</i>)	Generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum or canegrass or sometimes tea-tree. The Australian Painted Snipe sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber. Breeding habitat requirements may be quite specific: shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. Nest records are all, or nearly all, from or near small islands in freshwater wetlands, provided that these islands are a combination of very shallow water, exposed mud, dense low cover and sometimes some tall dense cover. Has also been recorded nesting in and near swamps, canegrass swamps, flooded areas including samphire, grazing land, among cumbungi, sedges, grasses, salt water couch (<i>Paspalum</i>), saltbush (<i>Halosarcia</i>) and grass, also in ground cover of water-buttons and grasses, at the base of tussocks and under low saltbush.	N	N	

Appendix 3. Biodiversity Agreement no. 1



**Biobanking agreement
ID number: 81**

**Under the
*Threatened Species Conservation Act 1995***

for

**Trustees of the Sisters of the Good Samaritan
for
“Mater Dei” property biobank site
Lot 100 in Deposited Plan number 1159926**



**Office of
Environment
& Heritage**

Biobanking agreement under Part 7A Division 2 of the *Threatened Species Conservation Act 1995*

This agreement made on the 9th day of May 2012 between the Minister for the Environment of the State of New South Wales, being the Minister currently administering the *Threatened Species Conservation Act 1995* ('the Minister', which expression shall where the context admits, be deemed to include his or her successors in office) on the one part and the Trustees of the Sisters of the Good Samaritan ARBN 062 542 036 ('the landowner') on the other part.

Background

- A The landowner is the owner of that parcel being Lot 100, Deposited Plan 1159926, Parish of Narellan, County of Cumberland, known as the Mater Dei property, 229 Macquarie Grove Road, Cobbitty, NSW, 2570 ('the land').
- B The biobank site that is the subject of this agreement forms part of the land and is shown on the Biobank site boundary map dated 24/02/2012. The biobank site covered by this agreement consists of approximately 25.7 hectares.
- C The landowner has requested the Minister to enter into a biobanking agreement under clause 14 of the BioBanking Regulation for the purpose of designating the biobank site on the land.
- D The Minister and landowner recognise that the landowner will receive biodiversity credits determined in accordance with the BioBanking Assessment Methodology (and set out in Annexure B) relating to the impact or likely impact of the management actions required to be carried out under Clause 3 and Annexure C of this agreement regarding the biodiversity values listed in Annexure B.
- E Not applicable.
- F The landowner and the Minister recognise that this biobanking agreement is being entered into for the purposes of the BioBanking Scheme established under Part 7A of the Act.
- G The landowner agrees to undertake the management actions and implement the management plans to improve the biodiversity values of the biobank site as set out in Annexure C.
- H The landowner agrees to undertake monitoring, reporting and record keeping as set out in Annexures C and D.
- I Accordingly, the parties hereby enter into the following biobanking agreement under section 127D of the Act.
- K The Minister has delegated the power to enter into this biobanking agreement to the Chief Executive of the Office of Environment and Heritage (OEH).

Now this agreement witnesses:

1 Interpretation

1.1 In this agreement, unless the contrary intention appears:

the **'Act'** means the *Threatened Species Conservation Act 1995* and any regulations from time to time in force thereunder

'adaptive management' means a process for improving management where the outcomes of monitoring indicate that minor alterations to the management actions or management plans are required to improve biodiversity values

'agreement' means this biobanking agreement entered into by the Minister and the landowner under section 127D of the Act for this biobank site

'animal' has the same meaning as in section 4 of the Act

'Annexure A' means Annexure A to this agreement entitled 'Maps of the biobank site'

'Annexure B' means Annexure B to this agreement entitled 'Biobanking Agreement Credit Report'

'Annexure C' means Annexure C to this agreement entitled 'Management actions and management plans'

'Annexure D' means Annexure D to this agreement entitled 'Monitoring, reporting and record keeping requirements'

'Annexure E' means Annexure E to this agreement entitled 'Payment schedules'

'annual report' means the annual report to be prepared by the landowner in accordance with item 2 of Annexure D

'authorised officer' means a person appointed under section 156B of the *National Parks and Wildlife Act 1974*

'biobank site' means that part of the land shown as the "biobank site" on the biobank site boundary map

'biobank site boundary map' means the map entitled Map A - Biobank site boundary map dated 24/02/2012 and included in Annexure A

'Biobanking Agreement Credit Report' means the report contained in Annexure B generated by a BioBanking Assessor for the biobank site using the BioBanking Assessment Methodology and the BioBanking Credit Calculator which includes the number and type of biodiversity credits to be created on the biobank site

'biobanking agreements register' means the register of biobank sites kept by the Director General under Part 7A of the Act

'BioBanking Assessment Methodology' means the rules established under section 127B of the Act

'BioBanking Regulation' means the Threatened Species Conservation (Biodiversity Banking) Regulation 2008

'BioBanking Scheme' means the Biodiversity Banking and Offsets Scheme established under Part 7A of the Act

'BioBanking Trust Fund' means the fund established under Part 7A of the Act to hold funds from the sale of biodiversity credits (the Total Fund Deposit)

'biodiversity credits' means biodiversity credits created under Part 7A of the Act

'biodiversity credits register' means the register of biodiversity credits kept by the Director General under Part 7A of the Act

'biodiversity values' has the same meaning as in section 4A of the Act

'Chief Executive' means the Chief Executive of the Office of Environment and Heritage, Department of Premier and Cabinet

'commencement date' means the date this agreement commences under clause 18 of this agreement

'critical habitat' has the same meaning as in section 4 of the Act

'day' means any day including Saturdays, Sundays and public holidays

'development' has the same meaning as in section 127(1) of the Act

'Director General' has the same meaning as in section 4 of the Act

'ecological burn' means a burn to improve biodiversity values carried out as part of the management of fire for conservation

'fee unit' has the same meaning as in the BioBanking Regulation

'first payment date' means the date the balance in the relevant biobank site account is equal to or greater than 80% of the Total Fund Deposit for the first time

'Fund Manager' means the person appointed by the Minister from time to time under Part 7A of the Act as the Fund Manager to manage the BioBanking Trust Fund

GST has the same meaning as given to that term in *A New Tax System (Goods and Services Tax) Act 1999* (Commonwealth) and any other Act or regulation relating to the imposition or administration of the GST

'land' means that parcel or parcels of land which contains the biobank site as described in paragraph A of this agreement

'management action' means the actions to be carried out by the landowner on the biobank site to improve biodiversity values for which biodiversity credits may be created. Such actions are set out in of Annexure C. A reference to a management action includes a reference to refraining from doing anything, whether or not that thing was being done beforehand

‘management of fire for conservation’ means the controlled application of fire under specified environmental and weather conditions to a predetermined area and at the time, intensity and rate of spread required to attain planned improvement of biodiversity values

‘management of grazing for conservation’ is the implementation of a variable and adaptive stock grazing regime for improving biodiversity values, such as for controlling exotic weeds or vegetation biomass, or enhancing the competitiveness of native perennial species. Typically it involves short periods of intensive grazing between long periods of little or no grazing. Management of grazing for conservation differs with site condition, specific management goals, seasonal conditions and regions

‘management payments’ means the payments to be made to the landowner in accordance with the payment schedules and the requirements in Annexure E

‘management plans’ means the management plans to be implemented by the landowner in carrying out the management actions and included in Section 3 and Section 4 of Annexure C (or such other management plans as approved by the Director General in accordance with the provisions of Annexure C)

‘management zone’ means those areas of the biobank site identified on the map entitled Map C – Management zones map dated 24/02/2012 and included in Annexure A

‘maximum operational surplus’ has the same meaning as in clause 33(2) of the BioBanking Regulation

‘Minister’ means the Minister for the time being administering the Act and where not repugnant to the context includes the servants and agents of the Minister

‘native animal’ has the same meaning as in section 5 of the NPW Act

‘native plant’ has the same meaning as in section 5 of the NPW Act

‘native vegetation’ has the same meaning as in section 6 of the NV Act

‘NPW Act’ means the *National Parks and Wildlife Act 1974* and any regulations from time to time in force thereunder

‘NV Act’ means the *Native Vegetation Act 2003* (NSW)

‘OEH’ means Office of Environment and Heritage, NSW Department of Premier and Cabinet

‘ongoing’ in relation to the timing of carrying out a management action means commencing on the commencement date or first payment date (as indicated) and continuing in perpetuity, unless specified otherwise

‘operational deficit’ has the same meaning as in clause 31(2) of the BioBanking Regulation

‘operational deficit threshold’ has the same meaning as in clause 32(2) of the BioBanking Regulation

‘operational surplus’ has the same meaning as in clause 31(3) of the BioBanking Regulation

'owner' has the same meaning as in section 127(1) of the Act and includes successors in title referred to in section 127J of the Act

'party' means a party to this agreement

'payment schedules' means the tables entitled 'payment schedule' and 'in perpetuity management costs' included in Annexure E

'pesticide' has the same meaning as in section 5 of the *Pesticides Act 1999* which includes herbicides, insecticides, fungicides, baits and rodenticides

'plant' has the same meaning as in section 4 of the Act

'planting schedule' means the schedule at item 6.6 of Section 1, Annexure C

'processing fee' means the processing fee which is to accompany an application to enter into a biobanking agreement as required by clause 14 of the Biobanking Regulation

'record keeping requirements' means those record keeping requirements set out in item 3 of Annexure D

'regrowth' has the same meaning as in section 9 of the NV Act

'relevant biobank site account' means the biobank site account within the Biobanking Trust Fund kept by the Fund Manager in accordance with clause 30(1) of the Biobanking Regulation

'remnant native vegetation' has the same meaning as in section 9 of the NV Act

'threatened species, populations and ecological communities' and **'threatened species, population or ecological community'** have the same meaning as in the Act

'Total Fund Deposit' has the same meaning as in clause 26(1) of the BioBanking Regulation

'waste' has the same meaning as in the *Protection of the Environment Operations Act 1997*.

- 1.2 A word or expression that indicates one or more particular genders shall be taken to indicate every other gender. A reference to a word or expression in the singular form includes a reference to the word or expression in the plural form, and vice versa.
- 1.3 Any reference to an action, or carrying out an action, includes a reference to doing anything or refraining from doing anything.
- 1.4 Any reference to a person shall be deemed to include a corporate body and vice versa.
- 1.5 Any covenant or agreement on the part of two or more persons shall be deemed to bind them jointly and severally.
- 1.6 The schedules and Annexures to this agreement form part of this agreement.
- 1.7 Any notes included in the agreement do not form part of the agreement.

2 Status of this agreement

The parties agree that this agreement is a biobanking agreement within the meaning of section 127D of the Act.

3 Use of the biobank site

The landowner covenants with the Minister as follows:

General responsibilities

- 3.1 Except as otherwise permitted by this agreement, the landowner must not carry out any act or omit to carry out any act, or cause or permit any act to be carried out or any act not to be carried out which act or omission may harm biodiversity values on the biobank site, including but not limited to any native animals, native plants, threatened species, populations and ecological communities, and their habitats.

Note: Item 5.1 of the management actions contained in Section 1 of Annexure C of this agreement sets out the limited circumstances in which native vegetation can be cleared on the biobank site. Annexure C of this agreement also contains limited exceptions in relation to when a landowner is not required to comply with the management actions contained in Annexure C.

Cultural heritage

- 3.2 To avoid any doubt, nothing in this agreement is to be construed as authorising (including, but not limited to, by way of a consent, permit, approval or authorisation of any kind for the purposes of Part 6 of the NPW Act) any person to damage or to cause or permit damage to an Aboriginal object or Aboriginal place in, on or under the biobank site.

Obtaining of consents, permits and authorisations

- 3.3 The landowner is responsible for obtaining all necessary licences, consents, authorisations, permits or approvals in order to lawfully comply with and carry out its obligations under this agreement or to undertake or enable any other identified matter under clause 3.5 and/or clause 3.6.

Development

- 3.4 The landowner must not carry out, or cause or permit to be carried out, any development (as defined under clause 1 above) on the biobank site, unless the development:
- 3.4.1 is permitted or required under Annexure C, or
 - 3.4.2 is identified in the table entitled 'Permissible development on the biobank site' contained in clause 3.5 or identified in the table entitled 'Permissible human activities on the biobank site' contained in clause 3.6.

Permissible development

- 3.5 The landowner shall be permitted to carry out, or cause or permit to be carried out, the development specified in the following table in the management zone specified in the table.

Permissible development on the biobank site	
Description of development	Management zone/s
Carrying out of any activity subject to Petroleum Exploration Licence 2 of the Petroleum (Onshore) Act 1991 or any other petroleum title that may be granted under that Act.	All zones
Carrying out of any activity subject to Authority 6 issued under the Mining Act 1992 or any other authorisation that may be granted under that Act.	All zones
The existing stockpile of gravel at the western end of the internal access track may be used (until depleted) for maintenance of the track within and external to the biobank site.	MZ9
Maintenance or removal of the existing ropes course.	MZ2

Permissible human activities

- 3.6 Notwithstanding clause 3.1, the landowner may carry out or cause or permit to be carried out any human activities specified in the following table, in the management zone specified in the table.

Permissible human activities on the biobank site	
Description of human activities	Management zone/s
Passive recreation, with the exception of overnight stays and/or camp fires, is permissible on the land to the extent that the condition of vegetation on site is not degraded. Passive recreation can include but is not limited to activities such as walking and bird watching.	All zones
Recreational use of the existing ropes course.	MZ2
Vehicular access only for the purposes of undertaking management actions is permissible.	All zones

4 Management actions and management plans

- 4.1 The landowner must carry out or procure the carrying out of the management actions in accordance with the timing, manner and requirements of Annexure C.
- 4.2 The landowner must:

i. implement or procure the implementation of; and

ii. comply or procure the compliance with

the management plans in accordance with the timing, manner and requirements of Annexure C.

Note: The management actions listed in Annexure C include requirements to take certain action and requirements to refrain from taking certain action.

4.3 Unless otherwise indicated by Annexure C, the landowner must ensure that

i. the management actions to be carried out in accordance with clause 4.1; and

ii. the management plans to be implemented and complied with in accordance with clause 4.2

are carried out in perpetuity, commencing from the date indicated in Annexure C.

4.4 The landowner's obligations under this clause are subject to clause 12.4 of this agreement.

5 Total Fund Deposit

For the purpose of clause 26 of the BioBanking Regulation, the Total Fund Deposit for this biobank site is \$1,589,592.00 excluding GST, determined in accordance with Part 6 of the BioBanking Regulation.

Note: Part 6 of the BioBanking Regulation prescribes the amount that must be deposited in the BioBanking Trust Fund before the first transfer (or retirement without transfer) of each biodiversity credit can be registered. The prescribed amount is the Total Fund Deposit, or proportion thereof if a partial sale of credits is made. The Total Fund Deposit is the present value of the total of all management payments listed under this agreement, as determined by the Director General.

6 Biodiversity credits

6.1 The Director General is permitted under section 127W(4) of the Act, to create (without application by the landowner under section 127W(4) of the Act) the biodiversity credits listed in Annexure B on the commencement date.

6.2 The biodiversity credits listed in Annexure B will be created for the biobank site.

6.3 At the commencement date, the landowner is entitled to receive \$500,000.00 excluding GST, to be satisfied in full by the creation of the biodiversity credits listed in Annexure B.

Note: \$500,000.00 is a best estimate of the market value of the biodiversity credits at the time of creation. The market value has been estimated by reference to the notional Part B amount as determined by the landowner in the credit pricing spreadsheet or reference to the notional Part B amount for the last traded biodiversity credit of the same or similar type.

The Part B amount is that part of the sale price received by the landowner (or another landowner if reference is made to a previous sale of that biodiversity credit type) after the entire Total Fund Deposit is satisfied and deposited into the BioBanking Trust Fund.

The sale price of each biodiversity credit will be negotiated between the landowner and the buyer and will be affected by supply and demand for each biodiversity credit. The final price at the time of transfer of the biodiversity credit (or retirement or the biodiversity credit without transfer) may not reflect this estimated amount.

The Minister does not warrant that the landowner will be able to sell biodiversity credits for the estimated market value.

7 Monitoring, record keeping and reporting

- 7.1 The landowner must comply with the monitoring and record keeping requirements as set out in Annexure D.
- 7.2 The landowner must submit an annual report complying with the requirements set out in Annexure D to the Director General within the timeframe specified in Annexure D.
- 7.3 The landowner must notify the Director General in writing as soon as practicable after becoming aware of any failure to comply with this agreement or any other incident at the biobank site (or surrounds) which results or may result in a sudden or significant decline of biodiversity values at the biobank site. In particular, the landowner must notify the Director General of:
 - 7.3.1 the nature, location and time of the incident
 - 7.3.2 the impact of the incident on biodiversity values
 - 7.3.3 the measures that have been taken or will be taken in response to the incident
 - 7.3.4 any provision of this agreement which may have been breached
 - 7.3.5 the extent of any damage caused or permitted by the incident
 - 7.3.6 the measures which have been taken or will be taken to prevent a recurrence of the incident.

8 Use of the land by servants, agents, lessees or licensees

The landowner must incorporate all relevant requirements of this agreement in any lease or licence issued for the biobank site, and must at all times ensure that any servant, contractor, consultant, agent, lessee or licensee occupying the biobank site area shall be aware of, and not undertake any act inconsistent with, the landowner's obligations under this agreement.

9 Change of land ownership or subdivision of land

- 9.1 The landowner must notify the Director General in writing of any change of:
 - 9.1.1 ownership of the biobank site, or any part thereof, within seven (7) days after the change of ownership of the biobank site; or
 - 9.1.2 lessee of the biobank site, or any part thereof, within twenty eight (28) days after the change of lessee or licensee of the biobank site.

The notice must include the name and address and other relevant contact details of the new landowner, lessee or licensee.

- 9.2 The landowner must provide a copy of this agreement, including a copy of each management plan and a copy of all records required to be kept under the record

keeping requirements, to the transferee before completion of the assignment, transfer, disposal or sale of any interest in the biobank site.

- 9.3 The landowner must notify the Director General in writing no less than 14 days before the biobank site is subdivided.
- 9.4 The landowner cannot assign, transfer, dispose of or sell its rights, title or interest in part of the land containing any area of the biobank site unless the landowner and the Minister have first agreed to vary the agreement to apportion the obligations and rights under the agreement in respect of that part of the biobank site that will be assigned, transferred, disposed of or sold.

10 Right to enter biobank site for research and monitoring

- 10.1 The landowner must permit access to the biobank site at any time to the Minister, the Director General, an authorised officer or an officer of OEH for the purpose of carrying out research or monitoring in relation to the biodiversity values on the biobank site for which biodiversity credits have been created under this agreement, but only where the person has given reasonable notice to the landowner and the landowner's agent, lessee or licensee, of the intention to enter the biobank site for that purpose and the nature of the research or monitoring that will be conducted. In exercising its right of access under this clause, the Minister, the Director General, an authorised officer or an officer of OEH must ensure that such access does not:
- 10.1.1 result in physical or radio interference which obstructs, interrupts or impedes the use or operation of any telecommunications network and telecommunications service of a lessee or licensee of a part of the land; or
 - 10.1.2 Interfere with the electricity supply separate from the landowner's electricity supply to any part of the land occupied by a lessee or licensee.
- 10.2 The Minister, Director General, an authorised officer or an officer of OEH may make a written request to the landowner to consent to any other person specified in the written request to enter the biobank site for the purpose of carrying out the research or monitoring referred to in clause 10.1, whether or not that person will accompany the Minister, Director General, an authorised officer or an officer of OEH. The landowner will not unreasonably withhold consent.
- 10.3 Clauses 10.1 and 10.2 do not affect or limit the powers of authorised officers under the NPW Act to enter premises for the purpose of determining whether there has been compliance with, or contravention of, this agreement.

11 Agreement preparation expenses

Each party bears its own costs in connection with the preparation and execution of this agreement.

12 Obligations of the Minister

- 12.1 Subject to clauses 12.2 and 12.3 and starting from the first payment date, the Minister is required to direct the Fund Manager to make such management payments specified in the payment schedules from the relevant biobank site account to the landowner, at such intervals specified in the payment schedules.

12.2 The Minister may only make such a direction if:

- 12.2.1 the relevant biobank site account has sufficient funds to cover the management payment, and
- 12.2.2 the landowner has submitted the annual report for the preceding reporting period in accordance with clause 7.2 and Annexure D of this agreement, and
- 12.2.3 the Minister has reviewed the annual report for the preceding reporting period and is satisfied that the landowner has complied with their obligations set out in this agreement in the preceding period.

12.3 The landowner acknowledges that the Minister may, with the agreement of the landowner, direct that the management payments should not be made, or should be reduced, for a specified period of time or until further notice if the biobank site account has an operational deficit greater than the operational deficit threshold.

Note: Withholding or lowering payments when funds in the account are below the maximum operational deficit may help to preserve the long-term financial viability of the fund for the landowner.

12.4 If the Minister, with the agreement of the landowner, directs that management payments be reduced or not be made for a specified period of time or until further notice, then:

- 12.4.1 the Minister may, by written agreement with the landowner, suspend or vary any of the landowner's obligations to carry out management actions under this agreement for the same period of time or some other period, and
- 12.4.2 despite clause 4 of this agreement, the landowner's obligations to carry out management actions under this agreement are suspended or varied in accordance with the agreement.

The Minister must not agree to any variation or suspension under this clause unless satisfied that the variation or suspension does not have a negative impact on the biodiversity values protected by the agreement.

12.5 The landowner acknowledges that the Minister may, in addition to the management payments, direct additional payments to be paid from the BioBanking Trust Fund to the landowner, but only in circumstances where the biobank site account has an operational surplus, the operational surplus amount exceeds the maximum operational surplus for the biobank site account, and the amount the Minister directs to be paid does not exceed the difference between the operational surplus amount and the maximum operational surplus.

12.6 All management payments shall be paid into the bank account nominated by the landowner in accordance with the payment schedules.

13 Ownership of the land and registration of this agreement

13.1 The landowner represents and warrants to the Minister that as at the date of this agreement, it is:

- 13.1.1 the legal and beneficial owner of the land; or
- 13.1.2 legally and beneficially entitled to become the owner of the land and will become the legal and beneficial owner of the land, prior to the date that this agreement is to be registered under clause 13.2 of this agreement.

- 13.2 As contemplated by section 127I(1) of the Act, the Minister agrees to notify the Registrar General when this agreement has been entered into, varied or terminated so the Registrar General can register the agreement, variation or termination by making an entry concerning the agreement, variation or termination in the relevant folio of the Register kept under the *Real Property Act 1900* (NSW) for the land.
- 13.3 The fee to register the agreement in accordance with section 127I(1) of the Act will be taken from the processing fee, except as provided by clause 13.4.
- 13.4 If the landowner elects to identify the exact boundaries of the biobank site on the Deposited Plan for the land, the landowner must bear any additional costs of registration.

14 Variation and termination

- 14.1 Subject to clause 14.2, this agreement can only be varied or terminated in accordance with the Act.
- 14.2 The landowner waives any right to request voluntary termination in accordance with subsections 127G(5) and (6) of the Act.
- 14.3 This clause does not affect the ability of the Minister and the landowner to terminate this agreement by consent under section 127G(2)(a) of the Act (including in the circumstances described in subsection 127G(6) of the Act).

Note: Clause 14.2 ensures that the landowner can obtain Commonwealth Government tax advantages that apply to conservation covenants. Those tax advantages would not be available if the right to request termination of the agreement under subsections 127G (5) and (6) of the Act was available.

Subsections 127(5) and (6) of the Act give landowners the right to request termination of the agreement where credits are not sold within 3 months or after 5 years of entering the agreement. The effect of clause 14.2 is that the landowner gives up that right. This is essential as the tax advantages are only available where the Commonwealth Government has conferred conservation covenant status on biobank sites – and a requirement of this status is that the sites will operate permanently.

15 Indemnity and release

- 15.1 The landowner agrees to indemnify the protected persons against all expenses, losses, damages and costs that the protected person may sustain or incur as a result, whether directly or indirectly, of carrying out obligations under this agreement.
- 15.2 The indemnity given by the landowner does not cover any loss or damage that is caused by a negligent act or omission of the protected persons, or any loss or damage that is contributed to by a negligent act or omission of the protected persons to the extent of the protected persons' contribution to that loss or damage.
- 15.3 The landowner releases to the full extent permitted by law the protected persons from all claims and demands arising out of or in connection with, or as a consequence of, carrying out of obligations by the landowners under this agreement, or in connection with, or as a consequence of, a direction made by the Minister regarding the payment of management payments to the landowner under this agreement.
- 15.4 The release given by the landowner does not cover any claims and demands in respect of any loss or damage that is caused by a negligent act or omission of the protected persons, or any loss or damage that is contributed to by a negligent act or omission of the protected persons to the extent of the protected persons' contribution to that loss or damage.

- 15.5 It is immaterial to the obligations of the landowner under this clause that a claim or demand arises out of any act, event or thing that the landowner is authorised or obliged to do under this agreement or that any time waiver or other indulgence has been given to the landowner for any such obligation under this agreement.

In clauses 15.1–15.4:

- (i) 'protected person' means:
 - (a) the Minister
 - (b) the Director General
 - (c) the employees or officers of the Director General
 - (d) any other person acting under the direction or control of the Minister or Director General for any purpose
 - (e) the Crown in right of the State of New South Wales;
- (ii) 'claims and demands' means all actions, suits, claims, demands, proceedings, losses, compensation, damages, sums of money, costs, legal costs, charges, and expenses to which the protected persons are or may become liable for in respect of loss or damage to the fixtures of the biobank site, financial or economic loss, loss of opportunity or other consequential loss of the landowner, and injury of any kind to or death of any person claiming through the landowner and however sustained on or outside the biobank site.

16 Dispute resolution

- 16.1 Where there is a dispute, difference or claim (dispute), the party raising the dispute must notify the other party in writing of the nature of the dispute, including the factual and legal basis of the dispute.
- 16.2 Within 14 days of the written notice, the Director General and the landowner, or nominated senior representatives of the parties, must confer to attempt to resolve the dispute, and if the dispute cannot be resolved within twenty-one (21) days of the written notice, the Director General and the landowner will refer the matter to mediation.
- 16.3 The parties will agree on the terms of appointment of the mediator and the terms of the mediation in writing within twenty-eight (28) days, failing which the mediation will be at an end and either party may commence court proceedings in respect of the dispute, difference or claim.
- 16.4 If the matter has not been resolved within 28 days of the appointment of the mediator, the mediation process will be at an end and either party may commence court proceedings in respect of the dispute, difference or claim.
- 16.5 Notwithstanding the above clauses, the Minister, the Director General or a person duly authorised by the Director General, may enforce this agreement under the Act, or institute proceedings without first entering into the dispute resolution procedure set out in clauses 16.1, 16.2, 16.3, and 16.4.
- 16.6 Clause 10.1 of this agreement is not affected by these arrangements for dispute resolution.

17 Governing law

This agreement is governed by the laws of the State of New South Wales and the parties agree to submit to the jurisdiction of the courts of that State.

18 Commencement

This agreement shall have effect from the day it is executed by all parties.

19 Privacy statement

The landowner acknowledges and consents to the information contained in this agreement being made publicly available on the biobanking agreements register and, where biodiversity credits have been registered, on the biobanking credits register maintained by the Director General and made available on the web.

Note: In accordance with the *Privacy and Personal Information Protection Act 1998* and the Act, some of the information contained in this agreement cannot be made available to the public.

20 Exercise of Minister's and Director General's powers

- 20.1 The landowner acknowledges that the Minister may authorise any officer of OEH to exercise any of the Minister's functions under this agreement on the Minister's behalf.
- 20.2 The landowner acknowledges that the Director General, may authorise any officer of OEH to do any thing that the Director General for the purposes of this agreement.

21 Notices

- 21.1 Any notice, consent, information, application or request that must or may be given or made to a party is only given or made if it is in writing and delivered or posted to that party at its address set out below, or faxed to that party at its fax number set out below:

The Minister

Address	Office of Environment and Heritage PO Box A290 SYDNEY SOUTH NSW 1232
Fax	(02) 9995 6795
Attention (nominated officer)	Manager, Biodiversity and Vegetation Programs

Landowner

Address	1A Harris Street, Five Dock, NSW, 2046
Fax	(02) 8752 5333
Attention	Congregational Business Manager

- 21.2 The name or title of the nominated officer or the address for the Minister referred to in clause 21.1 above may be updated from time to time by a further written notice being

sent to the landowner by an officer of OEHL advising of the new officer (or title of an office) and address to which such documents, information or notification may be sent.

- 21.3 For the avoidance of doubt, this clause does not fetter the Minister or Director General's discretion to give or withhold from giving such notice, consent or permission.

Agreement annexures

Annexure A Maps of biobank site

Annexure B Biobanking Agreement Credit Report

Annexure C Management actions and management plans (also approved by the Chief Executive as a Property Management Plan prepared by the Landowner under the Section 113B of the *Threatened Species Conservation Act, 1995*)

Annexure D Monitoring, reporting and record keeping requirements (also approved by the Chief Executive as a Property Management Plan prepared by the Landowner under the Section 113B of the *Threatened Species Conservation Act, 1995*)

Annexure E Payment schedules

In witness where of the parties hereto have executed this agreement the day and year first above written.

Signed by

Sally Barnes, A/Chief Executive, Office of
Environment and Heritage (OEH), Department of
Premier and Cabinet, as the Minister's delegate
under Section 142A of the *Threatened Species
Conservation Act 1995* in the presence of:


Sally Barnes

Date

9/5/12


Witness signature

Date

9/5/12

Witness name

Sandra Harris

Witness address

9/2 Blackwall Pt Rd, Abbotsford. NSW. 2046.

Signed by the landowner/s or director/s

Sr Clare Condon

Date

Provincial

Trustees of the Sisters of the Good
Samaritans

In the presence of

Witness signature

Date

Witness name

Witness address

Sr Bernadette Corboy

Date

Member

Trustees of the Sisters of the Good
Samaritans

In the presence of

Witness signature

Date

Witness name

Witness address

Sr Catherine McCahill

Date

Member

Trustees of the Sisters of the Good
Samaritans

Date

Member

Trustees of the Sisters of the Good
Samaritans

In the presence of

In the presence of

Witness signature

Date

Witness name

Witness address

Witness signature

Date

Witness name

Witness address

Seal (if signing under seal):

The **COMMON SEAL** was affixed by the body corporate
called **TRUSTEES OF THE SISTERS OF THE GOOD
SAMARITAN** ARBN 062 542 036 was affixed in the
presence of the Superior and two other Members of the
Body Corporate all of whom have signed below

Authority: Roman Catholic Church Communities' Lands
Act 1942 (sec.7)

Signature of authorised person:

Name of authorised person: CLARE THERIESE CONDON

Office Held: Superior

Signature of authorised person:

Name of authorised person:

Office Held: Member

MARIE BERNARTE CORBOY

Signature of authorised person:

Name of authorised person:

Office Held: Member

BERNARDINA PM SONTROP

The Chief Executive approves Annexure C and Annexure D as a property management plan prepared by the Landowner under the section 113B of the *Threatened Species Conservation Act, 1995*.

Signed by

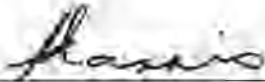
Sally Barnes, Acting Chief Executive, Office of Environment and Heritage (OEH), as delegate under Section 113B of the *Threatened Species Conservation Act 1995* in the presence of:



Sally Barnes

Date

9/5/12



Witness signature

Date

9/5/12

Witness name

Sandra Harris

Witness address

9/3 Blackwall Pt Rd, Abbotsford, NSW, 2046

Annexure A: Maps of biobank site

Map A - Biobank site boundary (24/02/2012)

Map B - Vegetation zones map (24/02/2012)

Map C - Management zones map (24/02/2012)

Map D - Property management actions map (24/02/2012)

Map E – Location of plots, transects and photo-points map (24/02/2012)

Map A - Biobank site boundary (24/02/2012)



Map B - Vegetation zones map (24/02/2012)



Map C - Management zones map (24/02/2012)



Map D - Property management actions map (24/02/2012)



Map E – Location of plots, transects and photo-points map (24/02/2012)



Annexure B: Biobanking Agreement Credit Report

BioBanking Credit Calculator



BioBanking credit report

This report identifies the number and type of credits required at a BIOBANK SITE.

Date of report: 2/04/2012

Time: 1:27:51PM

Tool version: 2.0

Biobank details

Proposal ID: 0078/2012/0025B
Proposal name: Mater Dei biobank site
Proposal address: 229 Macquarie Grove Road Cobbity NSW 2570

Proponent name: The Trustees of the Sister of the Good Samaritan
Proponent address: PO Box 876 Five Dock NSW 2046
Proponent phone: 8752 5300

Assessor name: Martin Bremner
Assessor address: 6 Betty Avenuen Winston Hills NSW 2153
Assessor phone: 9585 6930
Assessor accreditation: 0078

Additional Information required for approval:

- ☐ Use of local benchmark
- ☐ Expert report
- ☐ Change the estimated species response to gain (Tg value)

Ecosystem credits summary

Vegetation type	Area (ha)	Credits required	Red flag
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	11.43	93	No
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	2.72	22	No
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	0.04	0	No
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	1.32	15	No
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	0.51	5	No
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	1.77	12	No
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	0.16	2	No
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	0.29	1	No
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	2.12	25	No
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	3.69	40	No
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	1.68	17	No
Total	25.73	232	

Credit profiles

1. Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin, (HN526)

Number of ecosystem credits required	54
CMA sub-region	Cumberland - Hawkesbury/Nepean
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	>100 ha

2. Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin, (HN529)

Number of ecosystem credits required	5
CMA sub-region	Cumberland - Hawkesbury/Nepean
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	

3. Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin, (HN529)

Number of ecosystem credits required	173
CMA sub-region	Cumberland - Hawkesbury/Nepean
Minimum percent native vegetation cover class	11-30%
Minimum adjacent remnant area class	>100 ha

Species credits

Additional management actions

Additional management actions are required for:

Vegetation type or threatened species	Management action details
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	Cat and/or Fox control
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	Exclude miscellaneous feral species
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	Feral and/or native herbivore control/ exclusion (eg rabbit, goats, deer etc)
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	Cat and/or Fox control
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	Exclude miscellaneous feral species
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin	Feral and/or native herbivore control/ exclusion (eg rabbit, goats, deer etc)

Annexure C: Management actions and management plans

This Annexure C, together with Annexure D, is approved as a property management plan prepared by the landowner under the section 113B of the Threatened Species Conservation Act 1995.

A Management actions

A1 The landowner must undertake, or cause to be undertaken, the Management Actions contained in the following tables in this Annexure C:

- (i) Section 1: Standard management actions ('Section 1'); and
- (ii) Section 2: Additional management actions ('Section 2')

in accordance with the conditions specified in Section 1 and Section 2 and within the timeframes (if any) specified in Section 1 and Section 2.

A2 In carrying out the management actions, the landowner must implement and, at all relevant times comply with, the management plans as contained in the following tables in this Annexure C:

- (i) Section 3: Standard management plans ('Section 3'); and
- (ii) Section 4: Additional management plans ('Section 4')

in accordance with the conditions specified in those tables and management plans and within the timeframes (if any) specified in Section 3 and Section 4.

A3 Where a management action requires that something must not be done, the landowner must not do that thing and must not cause, authorise or permit any other person to do that thing.

A4 Notwithstanding A1 and A2 above, the landowner is not required to undertake the management actions so described if the action is inconsistent with anything (act or omission) required or authorised to be done by the landowner by or under any of the following:

- I. removal of noxious weeds under the Noxious Weeds Act 1993
- II. the control of noxious animals under the Rural Lands Protection Act 1998
- III. an obligation arising under an eradication order or pest control order under Part 11 of the Rural Lands Protection Act 1998
- IV. a direction under section 37A of the State Emergency and Rescue Management Act 1989 in relation to a state of emergency or a direction under section 22A of the State Emergency Service Act 1989
- V. in respect of the *Rural Fires Act 1997*:
 - (a) an emergency fire fighting act within the meaning of that Act
 - (b) emergency bushfire hazard reduction work within the meaning of that Act
 - (c) any notified steps issued to the landowner under section 63 of that Act

- (d) any notice by a local authority under section 66 of that Act to undertake specified bushfire hazard reduction work
- (e) otherwise as part of any managed bushfire hazard reduction work within the meaning of the *Rural Fires Act 1997* that is carried out in accordance with:
 - i. a current bushfire hazard reduction certificate that applies to the work
 - ii. the provisions of any bushfire code applying to the land specified in the certificate.

A5 The landowner may 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.

B Timing for carrying out management actions

B1 An obligation to carry out a management action (or implement and comply with a management plan):

- (i) will commence on the commencement date or first payment date (as indicated); and
- (ii) must be carried out in perpetuity unless otherwise indicated in Sections 1 to 4 of this Annexure C.

B2 The landowner must ensure that if a timeframe is specified in Sections 1 to 4, that the management action is carried out within that timeframe.

B3 For the avoidance of doubt, an obligation to carry out a management action within a specified timeframe continues until the management action has been carried out even if the time for compliance has passed.

Section 1: Standard management actions

Standard management actions		
Item 1	Management of grazing for conservation	Timing
1.1	Stock must not be permitted to graze in any area of the biobank site. Specific requirements: - Existing stock proof fencing and gates identified in the Property management actions map dated 24/02/2012 contained in Annexure A to this agreement as 'Existing fence - maintain' or 'Existing gate - maintain' must be retained and maintained to exclude livestock from the biobank site. - Fencing and gates identified in the Property management actions map dated 24/02/2012 contained in Annexure A to this agreement as 'New fence - install' or 'New gate - install' must be installed within 12 months of the first payment date and maintained to exclude livestock from the biobank site. - Fencing identified in the Property management actions map dated 24/02/2012 contained in Annexure A to this agreement as 'Existing fence - remove and install new', must be removed and new fencing installed within 12 months of the first payment date and maintained to exclude livestock from the biobank site. - Fencing identified in the Property management actions map dated 24/02/2012 contained in Annexure A to this agreement as 'Existing fence - remove', must be removed within 12 months of the first payment date. Fencing removal will involve the removal of wire only with the posts remaining in the ground. - The gates identified in the Property management actions map dated 24/02/2012 contained in Annexure A to this agreement as 'Existing gate - remove' must be removed when the adjacent fencing is replaced.	Ongoing from first payment date.
1.2	This item is not applicable.	
1.3	This item is not applicable	
1.4	If, at any time, the landowner observes stock in any area of the biobank site, the landowner must take necessary measures to remove the stock from the area immediately.	Ongoing from commencement date.
Item 2	Weed control	Timing
2.1	The landowner must implement and, at all relevant times, comply with, the integrated weed management plan included in Section 3 ('the weed management plan') (or such updated integrated weed management plan as has been approved by the Director General under item 2.2 below). To allow for adaptive management, minor alterations can be	Ongoing from first payment date.

	made to the implementation of the weed management plan. Any alterations must be recorded in writing in accordance with Section 3 of this Annexure.	
2.2	The weed management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person that is independent of the project manager or bush regeneration contractor working on the biobank site. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Director General in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Director General within 3 months of commencing the review. Where the Director General determines from the review that an update of the plan is required, the Director General will notify the landowner in writing that an update of the plan is required. The landowner must update the plan and submit it to the Director General for approval within 3 months of receiving written notification from the Director General that an update of the plan is required. At the same time as submitting the revised plan, the landowner must also submit to the Director General: • a statement that identifies and justifies any changes to the actions in the previous plan, including any changes to the level of effort required by those actions, and, • an implementation guide that provides information to assist in the effective implementation of the revised plan. The revised plan, statement and implementation guide must be prepared by an appropriately qualified person that is independent of the project manager or bush regeneration contractor working on the biobank site. The revised plan must cover the matters outlined below and any additional matters specified by the Director General in writing: • a description of the target weed/s at the biobank site and their location/s, linked to each management zone where weeds are present • the method/s of weed control in each zone • the frequency of weed control activities at the site, taking into account management practices where weeds are providing habitat for native species • the timing of any planting of native plant species required in each management zone to provide alternative habitat for native species affected by weed control activities • methods for monitoring the success of weed control activities • a timetable/measures for inspections to identify new weed species or exotic plant species (including noxious weeds under the <i>Noxious Weeds Act 1993</i>) • additional weed control activities to destroy or remove any new weed species that are found on the site	Ongoing from first payment date.

	• measures for assessing and reporting monitoring results • a diary for recording actions taken in accordance with the weed management plan and minor alterations to this plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	
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Item 3	Management of fire for conservation	Timing
3.1	The landowner must implement, and at all relevant times, comply with the fire management plan included in Section 3 (or such updated fire management plan as has been approved by the Director General under item 3.2 below) (‘the fire management plan’). To allow for adaptive management and weather conditions, minor alterations can be made to the implementation of the fire management plan, and must be recorded in writing in accordance with Section 3 of this Annexure.	Ongoing from first payment date.
3.2	The fire management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person that is independent of the project manager or bush regeneration contractor working on the biobank site. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Director General in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Director General within 3 months of commencing the review. Where the Director General determines from the review that an update of the fire management plan is required, the Director General will notify the landowner in writing that an update of the plan is required. The landowner must update the plan and submit it to the Director General for approval within 3 months of receiving written notification from the Director General that an update of the plan is required. At the same time as submitting the revised plan, the landowner must also submit to the Director General: • a statement that identifies and justifies any changes to the actions in the previous plan, including any changes to the level of effort required by those actions, and, • an implementation guide that provides information to assist in the effective implementation of the revised plan. The revised plan, statement and implementation guide must be prepared by an appropriately qualified person that is independent of the project manager or bush regeneration contractor working on the biobank site. The revised plan must cover the matters outlined below and any additional matters specified by the Director General in writing: • the year the last fire went through, the type of fire and the extent of the fire and location, where known • frequency of natural fires in the area of the biobank site, where known • a description of locations and management zones where ecological burns will be conducted and areas that will not be burnt • the methods that will be used for ecological burns • the fire frequency intervals recommended for the vegetation types and threatened species present, including any required adjustment to the schedule in the event of a wildfire or	Ongoing from first payment date.

	activities undertaken under the <i>Rural Fires Act 1997</i> to ensure minimum frequency between ecological burns - the fire intensity for the recommended vegetation types - the time of year suitable for ecological burns - the diary for recording actions taken in accordance with the fire management plan and minor alterations to fire management plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	
3.3	Fires must not be lit on the biobank site other than for the purpose of ecological burning in accordance with the fire management plan or as permitted as a permissible human activity on the biobank site under item 4 of this Annexure or clause 3.6 of this agreement.	Ongoing from commencement date.
Item 4	Management of human disturbance	Timing
4.1	Except as permitted under clause 3 of this agreement or item 4.2 (below), human activities that adversely affect biodiversity values on the biobank site, including repeated disturbance of native animals, must not be carried out, or caused or permitted to be carried out, on the biobank site.	Ongoing from commencement date.
4.2	Human activities that may have a negative impact on biodiversity values on the biobank site are permitted if they are listed as permissible activities under clause 3.6 of this agreement or if they are undertaken as part of the management actions or management plans.	Ongoing from commencement date.
4.3	This item is not applicable.	
4.4	The landowner must not store, dispose of, or cause or permit to be disposed of, any waste on the biobank site. Note: The storage or disposal of waste on the biobank site may require an approval under the <i>Protection of the Environment Operations Act 1997</i>	Ongoing from commencement date.
4.5	The landowner must take all reasonable steps to remove waste deposited by others on the biobank site, or which is otherwise present on the biobank site. Note: The stockpile of gravel in MZ9 may be retained and used for future track maintenance.	Ongoing from first payment date.
4.6	Signage must be installed and maintained to deter human disturbance including waste dumping. Signage must be the BioBanking signs available from the OEH. Specific requirements: - One BioBanking sign must be installed and maintained on each of the five gates into the biobank site. (Gates are identified in the Property management actions map dated 24/02/2012 and contained in Annexure A.) 6 metal starpickets must be placed at regular intervals along the line identified in the Property management actions map dated 24/02/2012 contained in Annexure A to this agreement as 'Biobanking signage – install on pickets'. One BioBanking sign must be installed and maintained on each of these starpickets.	Ongoing from first payment date.

	9 metal starpickets to be placed at practical interface locations along the lines identified in the Property management actions map dated 24/02/2012 contained in Annexure A to this agreement as "Existing fence – maintain" and "New fence – install". One BioBanking sign must be installed and maintained on each of these starpickets. - A Biobanking sign is a sign available from the OEH. Biobanking signs must be installed within 4 months of the first payment date. A Biobanking sign must be replaced if the writing or images on the sign are no longer clearly visible or are illegible. - An interpretation sign must be installed and maintained adjacent to the gates at the locations identified in the Property management actions map dated 24/02/2012 contained in Annexure A to this agreement as 'Interpretation signage – install'. - The purpose of the interpretation sign is to reduce human disturbance to the site by educating users of the site of the values being protected. - The format and information conveyed on an interpretation sign is to be set out in an Implementation Guide for the biobank site. - An interpretation sign must be replaced if the writing or images on the sign are no longer clearly visible or are illegible.	
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Item 5	Retention of regrowth and remnant native vegetation Note: An approval under the <i>Native Vegetation Act 2003</i> may be required to carry out thinning or any other removal or damage to native vegetation under this item.	Timing
5.1	Native vegetation (whether remnant native vegetation or regrowth) on the biobank site must not be cut down, felled, thinned, logged, killed, destroyed, poisoned, ringbarked, uprooted, burnt or otherwise removed, except in accordance with item 5.2 below, or if it is required as part of the management actions or it is essential for the carrying out of permissible development under clause 3.5 of this agreement. Note: Native vegetation on the biobank site may be managed to improve biodiversity values by thinning to benchmark stem densities over no more than 80% of each management zone. Benchmark stem densities has the same meaning as defined in the Vegetation Benchmark Database as published by QEH and updated from time to time. An approval under the <i>Native Vegetation Act 2003</i> may be required to carry out thinning or any other removal or damage to native vegetation under this item.	Ongoing from commencement date.
5.2	Native vegetation on the biobank site must not be burnt except in accordance with the fire management plan prepared pursuant to item 3 above.	Ongoing from commencement date.
Item 6	Replanting or supplementary planting where natural regeneration will not be sufficient 	Timing
6.1	The landowner must undertake planting or seeding of the native groundcover/shrub/tree species indicated in the planting schedule for the biobank site as set out in item 6.6 below ('the planting schedule') in the areas of planting and within the timeframe indicated in the planting schedule. 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. Appropriate site treatment (e.g. weed control) of each area of planting or seeding identified in the planting schedule must be undertaken prior to such planting. Specific requirements for all plantings: - Planting should 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 for when it is best to undertake planting will be left to the bush regenerator in consultation with the project manager and landowner. - Install a soil conditioner (e.g. Terraform or TerraCottem) in planting holes prior to planting. Specific requirements for planting trees and shrubs in MZ1: - Plant in a mosaic pattern to maintain a patchwork of open	Commencing from first payment date.

	grassland areas within the zone • Plant out 50% of the total area of the zone only • Avoid planting within 10 m of existing canopy trees or areas where strong natural regeneration is occurring • Plant trees at a rate of 400 trees/ha and shrubs at a rate of 625 shrubs/ha. • Install tree guards around each plant and maintained for 3 years from the planting date. Specific requirements for planting trees and shrubs in MZ6, MZ10 & MZ11: • Plant 50% of the total area of the zone only • Avoid planting within 10 m of existing canopy trees or areas where strong natural regeneration is occurring • Plant trees at a rate of 400 trees/ha and shrubs at a rate of 625 shrubs/ha • Undertake planting within 24 months of primary weed treatment in an area. • Install tree guards around each plant and maintained for 3 years from the planting date. Specific requirements for planting groundcovers in MZ6, MZ10 & MZ11: • Plant groundcovers in nodes covering one square metre and containing six plants • Install 200 nodes per hectare targeting areas with the lowest capacity for natural regeneration • Undertake planting within 24 months of primary weed treatment in an area.	
6.2	This item is not applicable	
6.3	The landowner must survey each area of planting or seeding established under item 6.1 above and document them to determine whether the planted plants or seeds have established and survived, and retain the findings in accordance with the record keeping requirements. If, after the first survey or subsequent surveys, the establishment and survival rate of plants in an area of planting or seeding are below those usual for the species and region, the landowner must supplement the planting in the adversely affected areas within a reasonable timeframe (usually within 12 months, though this can be varied and recorded in a diary with reasons for variation, if the weather is unsatisfactory for the establishment and survival of plants or seeds).	Conduct the first survey 24 months after the completion of planting or seeding in each area of planting or seeding, and then every 12 months thereafter.
6.4	Areas of planting and seeding must be managed as required to assist the establishment and survival of native plant species. Management includes watering, slashing, scalping, spraying of weeds, plant replacement and strategic grazing by stock (in accordance with item 6.2 above) at strategic times of the year to control weeds to improve biodiversity values. The dates of planting must be recorded in accordance with the record	As required, from the date that planting or seeding areas are established.

	keeping requirements set out in Annexure D	
6.5	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 parcels in landholders' ownership. Any seed collected must be collected in accordance with the <u>Florabank Guidelines</u> . Seed collection from any species individually listed under the <i>Threatened Species Conservation Act 1995</i> must not be undertaken, except any such species specified in item 6.6 below.	As required (from commencement date if relevant to prepare for future planting).

6.6 Planting schedule at the biobank site

Species' common name	Species' scientific name	Management zone/s of planting	No. of plants per area	Planting method	Timing (months or Year)
Blue Box	<i>Eucalyptus baueriana</i>	MZ1	40	Hiko cell	Within 4 years of commencement
Narrow-leaved Ironbark	<i>Eucalyptus crebra</i>	MZ1	20	As above	As above
Grey Box	<i>Eucalyptus moluccana</i>	MZ1	140	As above	As above
Forest Red Gum	<i>Eucalyptus tereticornis</i>	MZ1	140	As above	As above
Black Wattle	<i>Acacia decurrens</i>	MZ1	50	As above	As above
Acacia falcata	<i>Acacia falcata</i>	MZ1	110	As above	As above
Hickory Wattle	<i>Acacia implexa</i>	MZ1	50	As above	As above
Parramatta Wattle	<i>Acacia parramattensis</i>	MZ1	50	As above	As above
Blackthorn	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	MZ1	50	As above	As above
Wedge-leaf Hop-bush	<i>Dodonaea viscosa</i> subsp. <i>cuneata</i>	MZ1	110	As above	As above
Australian Indigo	<i>Indigofera australis</i>	MZ1	100	As above	As above
Blue Box	<i>Eucalyptus baueriana</i>	MZ6, MZ10	40	As above	Within 24 months of primary weed treatment
Narrow-leaved Ironbark	<i>Eucalyptus crebra</i>	MZ6, MZ10	60	As above	As above
Grey Box	<i>Eucalyptus moluccana</i>	MZ6, MZ10	200	As above	As above
Forest Red Gum	<i>Eucalyptus tereticornis</i>	MZ6, MZ10	200	As above	As above

Black Wattle	<i>Acacia decurrens</i>	MZ6, MZ10	100	As above	As above
	<i>Acacia falcata</i>	MZ6, MZ10	100	As above	As above
Hickory Wattle	<i>Acacia implexa</i>	MZ6, MZ10	100	As above	As above
Parramatta Wattle	<i>Acacia parramattensis</i>	MZ6, MZ10	100	As above	As above
Blackthorn	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	MZ6, MZ10	90	As above	As above
Wedge-leaf Hop-bush	<i>Dodonaea viscosa</i> subsp. <i>cuneata</i>	MZ6, MZ10	150	As above	As above
Australian Indigo	<i>Indigofera australis</i>	MZ6, MZ10	150	As above	As above
Austral Bugle	<i>Ajuga australis</i>	MZ6, MZ10	20	As above	As above
Purple Wiregrass	<i>Aristida ramosa</i>	MZ6, MZ10	20	As above	As above
Threeawn Speargrass	<i>Aristida vagans</i>	MZ6, MZ10	20	As above	As above
Narrow plantain	<i>Plantago gaudichaudii</i>	MZ6, MZ10	20	As above	As above
	<i>Plantago varia</i>	MZ6, MZ10	20	As above	As above
Bordered Panic	<i>Entolasia marginata</i>	MZ6, MZ10	80	As above	As above
Wallaby Grass	<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	MZ6, MZ10	80	As above	As above
Smallflower Wallaby Grass	<i>Austrodanthonia setacea</i>	MZ6, MZ10	80	As above	As above
Red-leg Grass	<i>Bothriochloa decipiens</i> var. <i>decipiens</i>	MZ6, MZ10	80	As above	As above
Tall Sedge	<i>Carex appressa</i>	MZ6, MZ10	80	As above	As above
Tall Chloris	<i>Chloris ventricosa</i>	MZ6, MZ10	80	As above	As above
Barbed Wire Grass	<i>Cymbopogon refractus</i>	MZ6, MZ10	80	As above	As above
Blue Flax-Lily	<i>Dianella longifolia</i>	MZ6, MZ10	80	As above	As above
Shorthair Plumegrass	<i>Dichelachne micrantha</i>	MZ6, MZ10	80	As above	As above
Fishweed	<i>Einadia trigonos</i> subsp. <i>trigonos</i>	MZ6, MZ10	80	As above	As above
Common Wheatgrass	<i>Elymus scaber</i> var. <i>scaber</i>	MZ6, MZ10	80	As above	As above
Paddock Lovegrass	<i>Eragrostis leptostachya</i>	MZ6, MZ10	80	As above	As above
Snowgrass	<i>Poa sieberiana</i> var. <i>sieberiana</i>	MZ6, MZ10	80	As above	As above
Slender Rat's Tail Grass	<i>Sporobolus creber</i>	MZ6, MZ10	80	As above	As above
Smooth-flower Wallaby Grass	<i>Austrodanthonia pilosa</i>	MZ6, MZ10	80	As above	As above

Wallaby Grass	<i>Austrodanthonia tenuior</i>	MZ6, MZ10	80	As above	As above
-	<i>Austrostipa rudis</i> subsp. <i>rudis</i>	MZ6, MZ10	80	As above	As above
Red-leg Grass	<i>Bothriochloa macra</i>	MZ6, MZ10	80	As above	As above
Windmill Grass	<i>Chloris truncata</i>	MZ6, MZ10	80	As above	As above
Blue Flax-Lily	<i>Dianella revoluta</i> var. <i>revoluta</i>	MZ6, MZ10	80	As above	As above
Tufted Hedgehog Grass	<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	MZ6, MZ10	80	As above	As above
Kangaroo Grass	<i>Themeda australis</i>	MZ6, MZ10	130	As above	As above
Tufted Hedgehog Grass	<i>Poa labillardieri</i> var. <i>labillardieri</i>	MZ6, MZ10	130	As above	As above
Weeping Grass	<i>Microlaena stipoides</i> var. <i>stipoides</i>	MZ6, MZ10	380	As above	As above
Berry Saltbush	<i>Einadia hastata</i>	MZ6, MZ10	300	As above	As above
Blady Grass	<i>Imperata cylindrica</i>	MZ6, MZ10	300	As above	As above
Rough-barked Apple	<i>Angophora floribunda</i>	MZ11	110	As above	As above
Broad-leaved Apple	<i>Angophora subvelutina</i>	MZ11	110	As above	As above
Camden White Gum	<i>Eucalyptus benthamii</i>	MZ11	60	As above	As above
Blue Box	<i>Eucalyptus baueriana</i>	MZ11	150	As above	As above
River Peppermint	<i>Eucalyptus elata</i>	MZ11	140	As above	As above
Forest Red Gum	<i>Eucalyptus tereticornis</i>	MZ11	140	As above	As above
-	<i>Melaleuca decora</i>	MZ11	50	As above	As above
Black Wattle	<i>Acacia decurrens</i>	MZ11	120	As above	As above
White Sally Wattle	<i>Acacia floribunda</i>	MZ11	120	As above	As above
Hickory Wattle	<i>Acacia implexa</i>	MZ11	120	As above	As above
Parramatta Wattle	<i>Acacia parramattensis</i>	MZ11	120	As above	As above
Blackthorn	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	MZ11	120	As above	As above
Large-leaf Hop-bush	<i>Dodonaea triquetra</i>	MZ11	250	As above	As above
Tick Bush	<i>Kunzea ambigua</i>	MZ11	200	As above	As above
Tree Violet	<i>Melicytus dentatus</i>	MZ11	140	As above	As above
Purple Wiregrass	<i>Aristida ramosa</i>	MZ11	80	As above	As above
Threeawn Speargrass	<i>Aristida vagans</i>	MZ11	80	As above	As above

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	<i>Austrodanthonia racemosa</i> var <i>racemosa</i>	MZ11	140	As above	As above
Tall Chloris	<i>Chloris ventricosa</i>	MZ11	140	As above	As above
Barbed Wire Grass	<i>Cymbopogon refractus</i>	MZ11	140	As above	As above
Shorthair Plumegrass	<i>Dichelachne micrantha</i>	MZ11	140	As above	As above
Forest Hedgehog Grass	<i>Echinopogon ovatus</i>	MZ11	140	As above	As above
Fishweed	<i>Einadia trigonos</i>	MZ11	140	As above	As above
Common Wheatgrass	<i>Elymus scaber</i> var. <i>scaber</i>	MZ11	140	As above	As above
Wiry Panic	<i>Entolasia stricta</i>	MZ11	140	As above	As above
Hairy Panic	<i>Panicum effusum</i>	MZ11	140	As above	As above
Scrubby Spurge	<i>Phyllanthus gunnii</i>	MZ11	140	As above	As above
Blue Flax-lily	<i>Dianella caerulea</i> var. <i>caerulea</i>	MZ11	140	As above	As above
Bordered Panic	<i>Entolasia marginata</i>	MZ11	140	As above	As above
Stout Bamboo Grass	<i>Austrostipa ramosissima</i>	MZ11	300	As above	As above
Berry Saltbush	<i>Einadia hastata</i>	MZ11	300	As above	As above
	<i>Eragrostis benthamii</i>	MZ11	300	As above	As above
Paddock Lovegrass	<i>Eragrostis leptostachya</i>	MZ11	300	As above	As above
Spiny-headed Mat-rush	<i>Lomandra longifolia</i>	MZ11	300	As above	As above
Weeping Grass	<i>Microlaena stipoides</i> var. <i>stipoides</i>	MZ11	300	As above	As above
Kangaroo Grass	<i>Themeda australis</i>	MZ11	300	As above	As above
	<i>Juncus usitatus</i>	MZ11	300	As above	As above
	<i>Poa affinis</i>	MZ11	300	As above	As above

Item 7	Retention of dead timber	Timing
7.1	Dead timber (whether standing or fallen and including branches and leaf litter) must not be removed from or moved within the biobank site, except for the existing large log piles within MZ2, MZ3 and MZ7. Large (>30 cm diameter) logs in the existing large log piles in MZ2, MZ3 and MZ7 will be redistributed across the site to improve access for weed control and to improve biodiversity values. The log piles and immediate surrounds must be inspected for the presence of the Cumberland Land Snail prior to any disturbance. Areas containing the Cumberland Land Snail are to be left undisturbed.	Ongoing from commencement date.
7.2	Timber from outside the biobank site may be introduced to and placed on the biobank site to improve biodiversity values. Once the timber has been brought onto the site, it is subject to the requirements of item 7.1 above. Timber brought from outside the biobank site must be documented by the landowner in writing and records must be kept in accordance with the record keeping requirements. The landowner must record the approximate amount of timber brought from outside the biobank site, the location where the timber was placed on the biobank site and the date on which it was placed (month, year).	When required but not required before the first payment date.
Item 8	Erosion control	Timing
8.1	All reasonable steps must be undertaken to prevent, control and remedy erosion on the biobank site. Soil management for preventing and controlling erosion is to be undertaken using best practice management, such as that developed by the Soil Conservation Service, applied as relevant for the biobank site. The following erosion control measure will be implemented during primary weed control work in MZ10 and MZ11: - African Olive logs and branches will be strategically placed across steep slopes and gullies and fixed in place using wooden stakes. - African Olive branches to be used are to be generally free from seed propagules.	Commencing from first payment date.

Item 9	Retention of rocks	Timing
9.1	The landowner must not remove, or cause or permit to be removed, rocks from the biobank site or move, or cause or permit to be moved, rocks within the biobank site.	Ongoing from commencement date.
9.2	This item is not applicable.	

Section 2: Additional management actions

Additional management actions		
Item 10	Control of feral and overabundant native herbivores	Timing
10.1	The landowner must implement, and at all relevant times, comply with the management plan to control feral and overabundant native herbivores included in Section 4 (or such updated management plan as has been approved by the Director General under item 10.2 below) ('the feral and overabundant native herbivores management plan'). To allow for adaptive management, minor alterations can be made to the implementation of the feral and overabundant native herbivores management plan, which must be recorded in writing in accordance with Section 3 of this Annexure. Note: A licence under Section 121 of the <i>National Parks and Wildlife Act 1974</i> may be required to control overabundant native herbivores.	Ongoing from first payment date.
10.2	The feral and overabundant native herbivores management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person that is independent of the project manager or bush regeneration contractor working on the biobank site. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Director General in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Director General within 3 months of commencing the review. Where the Director General determines from the review that an update of the feral and overabundant native herbivores management plan is required, the Director General will notify the landowner in writing that an update of the plan is required and the landowner must update the plan and submit the amended plan to the Director General for approval within 3 months of receiving written notification from the Director General that an update of the plan is required. At the same time as submitting the revised plan, the landowner must also submit to the Director General: • a statement that identifies and justifies any changes to the actions in the previous plan, including any changes to the level of effort required by those actions, and, • an implementation guide that provides information to assist in the effective implementation of the revised plan. The revised plan, statement and implementation guide must be prepared by an appropriately qualified person that is independent of the project manager or bush regeneration contractor working on the biobank site. The revised plan must cover the matters outlined	Ongoing from first payment date.

	below and any additional matters specified by the Director General in writing: • a description of the feral or overabundant native herbivore/s • consideration of relevant current OEH and other pest management programs and methods • the method/s for feral and overabundant native herbivore control in each management zone, determined in accordance with best practice management • the frequency and timing of the control actions in each management zone • methods for monitoring the success of the pest control actions • a timetable and measures for inspections to identify new feral or overabundant native herbivores that may adversely affect biodiversity values on the biobank site • additional control actions to destroy or remove any new feral and overabundant native herbivore pest species that occur on site • measures for assessing and reporting monitoring results • a diary for recording actions taken in accordance with the feral and overabundant native herbivores management plan and minor alterations to this plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	
Item 11	Vertebrate pest management – foxes and cats	Timing
11.1	The landowner must implement, and at all relevant times, comply with the vertebrate pest management plan included in Section 4 (or such updated vertebrate pest management plan as has been approved by the Director General under item 11.2 below) (‘the vertebrate pest management plan’). To allow for adaptive management, minor alterations can be made to the implementation of the vertebrate pest management plan, but these must be recorded in writing in accordance with Section 3 of this Annexure.	Ongoing from first payment date.
11.2	The vertebrate pest management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person that is independent of the project manager or bush regeneration contractor working on the biobank site. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the review commencement must be provided to the Director General in writing within 14 days of the commencement. The findings of the review must be submitted to the Director General within 3 months of commencing the review. Where the Director General determines from the review that an update of the plan is required, the Director General will notify the landowner in writing that an update of the plan is required. At the same time as submitting the revised plan, the landowner must also submit to the Director General: • a statement that identifies and justifies any changes to the actions in the previous plan, including any changes to the level	Ongoing from first payment date.

	of effort required by those actions, and, - an implementation guide that provides information to assist in the effective implementation of the revised plan. The revised plan, statement and implementation guide must be prepared by an appropriately qualified person that is independent of the project manager or bush regeneration contractor working on the biobank site. The revised plan must cover the matters outlined below and any additional matters specified by the Director General in writing: - a description of the target fauna species e.g. pigs, foxes or other species such as feral dogs or goats - consideration of relevant current OEH and other pest management programs - the method/s of vertebrate pest control in each management zone determined in accordance with best management practice - the frequency and timing of vertebrate pest control actions in each management zone - methods for monitoring the success of vertebrate pest control actions - a timetable and measures for inspections to identify new vertebrate pest species that may negatively impact on threatened species on the biobank site - additional vertebrate pest control actions to destroy or remove any new vertebrate pest species that occur on-site - measures for assessing and reporting monitoring results - a diary for recording actions taken in accordance with the vertebrate pest management plan and minor alterations to this plan permitted for adaptive management. The details (management zone/s, date, alternative actions) and reasons for the minor alterations must be recorded in the diary.	
Item 12	Nutrient control	Timing
12.1	This item is not applicable	
Item 13	Control of exotic fish species	Timing
13.1	This item is not applicable	
Item 14	Maintenance or reintroduction of natural flow regimes	Timing
14.1	This item is not applicable	
14.2	This item is not applicable	

14.3	This item is not applicable	
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Section 3: Standard management plans

Weed management plan

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

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

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

Weed types

Weed	Common name of target weed	Scientific name of target weed	Description of infestation (eg intensity (% cover) & location within zone)	Management zone/s
Woody weed	Green Cestrum	<i>Cestrum parqui</i>	Scattered individuals in disturbed riparian zone	MZ11
Woody weed	Honey Locust	<i>Gleditsia triacanthos</i>	Scattered individuals throughout site	ALL
Woody weed	Lantana	<i>Lantana camara</i>	Minor infestations in CSHW and CRFF, large infestation dominates MZ8	ALL
Woody weed	Large Leaved Privet	<i>Ligustrum lucidum</i>	Scattered individuals in highly disturbed areas of CSHW and CRFF	MZ5; MZ10; MZ11
Woody weed	Small Leaved Privet	<i>Ligustrum sinense</i>	Significant infestations in highly disturbed areas of CSHW and CRFF	MZ5; MZ10; MZ11
Woody weed	African Olive	<i>Olea europaea ssp.cuspidata</i>	Widespread across site, with significant infestations in highly disturbed areas of CSHW and CRFF	ALL
Woody weed	African Boxthorn	<i>Lycium ferocissimum</i>	Scattered individuals and minor infestations in most SHW zones	MZ2; MZ3; MZ4. MZ5
Succulent	Common Prickly Pear	<i>Opuntia stricta</i>	Scattered individuals throughout site	ALL
Succulent	Wandering Jew	<i>Tradescantia fluminensis</i>	Minor infestations in disturbed riparian zone	MZ12
Exotic vine	Madeira Vine	<i>Anredera cordifolia</i>	Large infestation near northern boundary of site	MZ10
Exotic vine	Moth Vine	<i>Araujia sericifera</i>	Scattered individuals throughout site	ALL
Exotic vine	Bridal Creeper	<i>Asparagus asparagoides</i>	Scattered individuals throughout site	ALL

Exotic vine	Honeysuckle	<i>Lonicera</i> sp	Minor infestations in disturbed riparian zone	MZ8
Exotic grass	Carpet Grass	<i>Axonopus fissifolius</i>	Minor infestation throughout site	ALL
Exotic grass	Chilean Quaking Grass	<i>Briza subaristata</i>	Minor infestations in areas of SHW, significant infestations in areas without canopy.	MZ1; MZ2; MZ3; MZ4; MZ5
Exotic grass	Ehrharta	<i>Ehrharta erecta</i>	Minor infestations throughout site	ALL
Exotic grass	African Love Grass	<i>Eragrostis curvula</i>	Minor infestations throughout site	ALL
Exotic grass	Common Paspalum	<i>Paspalum dilatatum</i>	Minor infestations throughout site, significant infestations in areas without canopy.	ALL
Exotic grass	Kikuyu	<i>Pennisetum clandestinum</i>	Minor infestations in more open parts of SHW	MZ1; MZ2; MZ4
Exotic grass	Pidgeon Grass	<i>Setaria gracilis</i>	Minor infestations in more open parts of SHW	MZ1; MZ2; MZ4

Exotic grass	Parramatta Grass	<i>Sporobolus africanus</i>	Scattered individuals in most SHW zones	MZ1; MZ2; MZ3; MZ4
Exotic grass	Squirrel Tail Fescue	<i>Vulpia myuros</i>	Minor infestations in parts of SHW without canopy	MZ1
Exotic forb	Pimpernel	<i>Anagallis arvensis</i>	Scattered individuals in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Climbing Asparagus	<i>Asparagus aethiopicus</i>	Minor infestations in more disturbed parts of site	MZ3; MZ5; MZ11
Exotic forb	Cobblers Peg	<i>Bidens</i> spp	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Fat Hen	<i>Chenopodium album</i>	Scattered individuals in SHW	MZ2
Exotic forb	Spear Thistle	<i>Cirsium vulgare</i>	Scattered individuals in SHW	MZ2; MZ3; MZ4
Exotic forb	Slender Celery	<i>Cyclospermum leptophyllum</i>	Scattered individuals in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Fleabane	<i>Conyza</i> sp.	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Gomphrena Weed	<i>Gomphrena celosioides</i>	Scattered individuals in SHW	MZ2
Exotic forb	Flatweed	<i>Hypochaeris</i> spp	Scattered individuals throughout site	ALL
Exotic forb	Slender Birds-foot Trefoil	<i>Lotus angustissimus</i>	Minor infestations in parts of SHW without canopy	MZ1
Exotic forb	Medics	<i>Medicago</i> spp	Scattered individuals in SHW	MZ2
Exotic forb	Brazilian Whitlow	<i>Paronychia brasiliensis</i>	Scattered individuals throughout site	ALL
Exotic forb	Lamb's Tongue	<i>Plantago lanceolata</i>	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Mexican Clover	<i>Richardia brasiliensis</i>	Scattered individuals throughout site	ALL

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Exotic forb	Fireweed	<i>Senecio madagascariensis</i>	Scattered individuals throughout site	All
Exotic forb	Paddy Lucerne	<i>Sida rhombifolia</i>	Scattered individuals throughout site	ALL
Exotic forb	Black Nightshade	<i>Solanum nigrum</i>	Scattered individuals throughout site	ALL
Exotic forb	Sowthistle	<i>Sonchus</i> spp	Scattered individuals throughout site	ALL
Exotic forb	Stinking Roger	<i>Tagetes minuta</i>	Scattered individuals in SHW	MZ2
Exotic forb	Clover	<i>Trifolium</i> spp	Scattered individuals and minor infestations in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Purpletop	<i>Verbena</i> spp	Scattered individuals throughout site	ALL

Methods of weed control			
Management zone/s	Weed/s	Method of weed control	Timing (Year from first payment date)
All	All	All weed control activities will be undertaken by, or under the direct supervision of, an appropriately qualified bush regenerator	Ongoing, from the first payment date.
MZ1; MZ9	All	<u>Performance measures</u> 1. Weed control work within these management zones will aim to achieve the following outcomes: (a) No mature exotic vines, succulents or woody weeds present, and the density of other weeds reduced to <30% foliage cover (b) No mature exotic vines, succulents or woody weeds present, and the density of other weeds reduced to <10% foliage cover <u>Methods</u> 2. Weed control work within these management zones will involve the following: - The targeted treatment of all exotic vines, succulents and woody weeds using cut/paint, scrape/paint, hand-weeding and spot-spraying techniques as appropriate - Slashing, spot spraying and/or hand weeding of other weeds at least three times p.a. to reduce weed biomass and assist the establishment and spread of native species. <u>Effort</u> 3. The level of effort applied to weed control work within these management zones will involve the following: (a) A minimum of 187.5 hours of weed control work will be undertaken (b) A minimum of 70 hours of weed control work will be undertaken (c) A minimum of 30 hours of weed control work will be undertaken	1(a) By the end of Year 5 1(b) Ongoing from the start of Year 11 2. Ongoing, from the start of Year 1 3(a) Annually from the start of Year 1 to the end of Year 10 3(b) Annually from the start of Year 11 to the end of Year 19 3(c) Ongoing annually from the start of Year 20
MZ2; MZ7	All	<u>Performance measures</u> 1. Weed control work within these management zones will aim to achieve the following outcomes: - No mature exotic vines, succulents or woody weeds present, and - The density of other weeds maintained at <10% foliage cover <u>Methods</u> 2. Weed control work within these management zones will involve the following: (a) Staged primary treatment of woody weeds, succulents and exotic vines in approximately 50% of the combined area of the management zones p.a. using cut/paint, scrape/paint, drill/poison, hand-weeding and spot-spraying techniques as appropriate. (b) Undertake slashing, spot spraying and/or hand weeding at least three times p.a. in all areas previously worked to prevent the establishment and spread of weeds <u>Effort</u> 3. The level of effort applied to weed control work within these	1. Ongoing from the start of Year 6 2(a) From the start of Year 1 to the end of Year 2 2(b) Ongoing from the start of Year 1. 3(a) Annually from the start of Year 1 to the end of Year 2

		management zones will involve the following: (a) A minimum of 600 hours of weed control work will be undertaken (b) A minimum of 187.5 hours of weed control work will be undertaken (c) A minimum of 160 hours of weed control work will be undertaken	3(b) Annually from the start of Year 3 to the end of Year 19 3(c) Ongoing annually from the start of Year 20
MZ3	All	<u>Performance measures</u> 1. Weed control work within this management zone will aim to achieve the following outcomes: - No mature exotic vines, succulents or woody weeds present, and - Density of other weeds maintained at <10% foliage cover <u>Methods</u> 2. Weed control work within this management zone will involve the following: (a) Staged primary treatment of approximately 50% of the management zone p.a. Use drill/poison or basal bark spray methods on very large woody weeds (>300 mm DBH), use cut /poison method on smaller individuals. Use a combination of slashing, spot spraying and hand weeding on other weeds as appropriate (b) Undertake slashing, spot spraying and/or hand weeding at least three times p.a. in all areas previously worked to prevent the establishment and spread of weeds. <u>Effort</u> 3. The level of effort applied to weed control work within this management zone will involve the following: (a) A minimum of 412.5 hours of weed control work will be undertaken (b) A minimum of 150 hours of weed control work will be undertaken (c) A minimum of 120 hours of weed control work will be undertaken (d) A minimum of 90 hours of weed control work will be undertaken (e) A minimum of 60 hours of weed control work will be undertaken	1. Ongoing from the start of Year 3 2(a) Annually from the start of Year 1 to the end of Year 2 2(b) Ongoing from the start of Year 1 3(a) Annually from the start of Year 1 to the end of Year 2 3(b) Annually from the start of Year 3 to the end of Year 4 3(c) Annually from the start of Year 5 to the end of Year 7 3(d) Annually from the start of Year 8 to the end of Year 19 3(e) Ongoing annually from the start of Year 20
MZ5; MZ6; MZ8; MZ10; MZ11	All	<u>Performance measures</u> 1. Weed control work within these management zones will aim to achieve the following outcomes: - No mature exotic vines or succulents present - Primary treatment of woody weeds completed in 40% of the combined area of the management zones - Weed density maintained at <10% foliage cover in areas where primary treatment has occurred - No mature woody weeds present in areas where primary treatment has occurred 2. Weed control work within these management zones will aim to achieve the following outcomes: - No mature exotic vines, succulents or woody weeds present - Weed density maintained at <10% foliage cover	1. By the end of Year 5 2. Ongoing from the start of Year 11 3(a) From the start of Year 1 to the end of Year

		<u>Methods</u> 3. Weed control work within this management zone will involve the following: (a) Staged primary treatment of woody weeds in approximately 20% of the combined area of the management zones every two years using the following techniques: - In accessible, less sensitive parts of MZ6, MZ10 and MZ12, (i.e. low gradient slopes, >2m from remnant trees, >25 m from river bank), mechanically clear woody weeds using a barrel mulcher. Manually re-cut and poison woody weed stumps immediately after mulching. - In the non-accessible or more sensitive parts of MZ6, MZ10 and MZ12, and in all parts of MZ5 and MZ8, use a combination of cut/paint, drill/poison, basal bark spray, scrape/paint, hand-weeding and/or spot-spraying techniques as appropriate. (b) Targeted treatment of succulents and exotic vines across all management zones (c) Slashing, spot spraying and/or hand weeding at least four times p.a. in all areas previously worked to prevent the establishment and spread of weeds. <u>Effort</u> 4. The level of effort applied to weed control work within these management zones will involve the following: (a) Mechanical clearance of approximately 1.2ha of woody weed using a barrel mulcher (b) A minimum of 324 hours of weed control work will be undertaken (c) A minimum of 574 hours of weed control work will be undertaken (d) A minimum of 774 hours of weed control work will be undertaken (e) A minimum of 834 hours of weed control work will be undertaken (f) A minimum of 909 hours of weed control work will be undertaken (g) A minimum of 422.5 hours of weed control work will be undertaken (h) A minimum of 180 hours of weed control work will be undertaken	10 3(b) Ongoing from the start of Year 1. 3(c) Ongoing from the start of Year 1. 4(a) Every two years from the start of Year 1 to the end of Year 9 4(b) Annually from the start of Year 1 to the end of Year 2 4(c) Annually from the start of Year 3 to the end of Year 4 4(d) Annually from the start of Year 5 to the end of Year 6 4(e) Annually from the start of Year 7 to the end of Year 9 4(f) In Year 10 4(g) Annually from the start of Year 11 to the end of Year 19 4(h) Ongoing annually from the start of Year 20
MZ4	All	<u>Performance measures</u> 1. Weed control work within this management zone will aim to achieve the following outcomes: (a) No mature exotic vines, succulents or woody weeds present, and the density of other weeds reduced to <30% foliage cover (b) No mature exotic vines, succulents or woody weeds present, and the density of other weeds reduced to <20% foliage cover <u>Methods</u> 2. Weed control work within these management zones will involve the following: - The targeted treatment of all exotic vines, succulents and woody weeds - Slashing, spot spraying and/or hand weeding of other weeds at least three times p.a. to reduce weed biomass and assist the establishment and spread of native species. <u>Effort</u>	1(a) By the end of Year 5 1(b) Ongoing from the start of Year 11 2. Ongoing, from the start of Year 1 3(a) Annually from the start of Year 1 to the

		3. The level of effort applied to weed control work within these management zones will involve the following: (a) A minimum of 60 hours of weed control work will be undertaken (b) A minimum of 40 hours of weed control work will be undertaken (c) A minimum of 30 hours of weed control work will be undertaken (d) A minimum of 20 hours of weed control work will be undertaken	end of Year 5 3(b) Annually from the start of Year 6 to the end of Year 10 3(c) Annually from the start of Year 11 to the end of Year 19 3(d) Ongoing annually from the start of Year 20
Native planting required to provide habitat for native species affected by weed control activities			
Management zone/s	Description of planting required (reference planting schedule at item 6.6)		Timing
	N/A		
Monitoring and inspections of existing and new weeds			
Management zone/s	Weed/s	Method of monitoring	Timing (Year from first payment date)
All	All	Monitoring of the weed control activities must be undertaken by a suitably qualified bush regenerator or ecologist. Monitoring outcomes will be reported using the 'Template for reporting of monitoring activities' below.	Annually, at the completion of each year from the first payment date.
All	All	<u>Formal monitoring and reporting of groundcover weed density</u> At the completion of each 12 month period, the percentage foliage cover of groundcover weeds in each management zone will be measured. The purpose of this is to measure progress against the performance measures identified for each management zone. The percentage foliage cover of groundcover weeds will be assessed by establishing a 50 m transect through the most weed affected part of a management zone where work has previously been undertaken. At 50 cm intervals along the transect (100 points in total) place a one metre long thin stick on the ground (upright) and record whether weed species or native species (or both) are in contact with the stick. At each point, score 1 if weed species only are in contact with the stick, score 0.5 if both native and weed species are in contact with the stick, and score 0 if there are no weed species in contact with the stick. The percentage foliage cover is the sum of these values. For the purposes of this monitoring, all non-native species and native species that are outside of their natural range are counted as groundcover weeds if they are less than 1 m in height. The results of this formal monitoring will be reported annually.	Annually, at the completion of each year from the first payment date.

		<u>Visual inspections and reporting of completed works</u> A visual inspection of all management zones must be also be undertaken annually, at the completion of each year from the first payment date. For each management zone, the following information will be reported: • A summary of weed control activities works undertaken for the previous 12 months in the zone and a review of the success of these. • A description of the current condition of the zone, including reference to the presence/absence of canopy, shrub and/or ground-layer regeneration and any evidence of dieback, erosion etc. The presence of any threatened flora populations will also be noted. • Before and after photographs of areas where substantial weed control works have been undertaken (eg the primary removal of woody weed) until end of Year 10. This could include photos (as required in Annexure D to this agreement) taken from the permanent photo points that have been established in each management zone and marked with a star-picket and identified in Annexure A on the Location of plots, transects and photo points map (24/02/2012). • Descriptions of the type and locations of any significant new or remaining weed infestations. If no weed infestations are present in a zone, this should also be documented. • Recommendations, if warranted, of any adaptations to the weed control techniques previously applied.	
Other weed management activities (where required)			
• Until end of Year 10, pile woody debris for burning as per Rural Fire Service standards			

Template for reporting of monitoring activities

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

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Diary template for weed control management

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

Fire for conservation management plan

The plan includes information on all known previous fire events in the 'Fire history' table to demonstrate local fire conditions including intensity and frequency.

The ecological fire requirements for each vegetation type or threatened species on the biobank site are listed in the 'Fire requirements for vegetation types and threatened species' table. These are the fire frequency intervals recommended for the vegetation types and threatened species present on the biobank site. They include any requirement adjustments to the schedule in the event of a wildfire or activities undertaken under the *Rural Fires Act (RFA) 1997* to ensure the minimum frequencies between ecological burns.

The landowner must carry out ecological burns for each management zone according to the method and frequency described (as informed by the history and requirements sections and in accordance with Section 3 of this annexure). These actions are set out in the 'Ecological burning actions table'. Monitoring and inspections (set out in the 'Fire management monitoring' table) as described must also be implemented. The landowner must also carry out the actions listed in the 'Other fire management activities' table.

The table titled 'Template of monitoring activities' must be completed to record observations during the implementation of the plan and assessment of monitoring activities. The landowner must also complete the table titled 'Diary template for fire management activities' to record the management actions undertaken or observations made, including any minor variations.

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

Year of fire	Hazard reduction, wildfire or ecological burn and extent of fire	Management zone/s
	No known fires.	All

Fire requirements for vegetation types and threatened species

Vegetation type and/or threatened species	Fire frequency required	Time of year for burning	Fire intensity required	Adjustment required due to wildfires or RFA activities
Cumberland Shale Plains Woodland HN528: Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin	Avoid fires at intervals less than 5 years. Avoid fire exclusion greater than 12 years.	Preferably August to January.	Variable	Adjust frequency to ensure minimal interval is maintained if a wildfire or hazard reduction burn has occurred
Cumberland River Flat	Avoid fires at intervals less	Preferably August to	Variable	Adjust frequency to ensure minimal interval is maintained if a wildfire or

Forest HN526: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	than 7 years. Avoid fire exclusion greater than 35 years.	January		hazard reduction burn has occurred
Ecological burning actions				
Management zone/s	Actions	Supervision & extinguishing techniques	Time of year for burning	Frequency (years)
All of the following: MZ1, MZ6, MZ10, MZ11	<u>Revegetation Areas</u> 1.1 The identified management zones are to be protected from wildfires and planned fires as far as possible until the end of Year 12 in order to assist the revegetation of these zones. From the beginning of Year 13 onwards, wildfires and planned fires may be permitted to burn within these zones.	Ecological burns (including preparation of burn area, undertake burn and extinguish) to be done under advice and/or direction of Rural Fire Service or National Parks and Wildlife Service. Any approvals to be in place prior to undertaking ecological burn. Extinguishing techniques as applicable which may include containment lines comprising of existing management trails, trittered control lines, back burn areas or wet lines.		
All of the following: MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ9, MZ10	<u>Cumberland Shale Hills Woodland</u> 2.1 At least three planned fires must be undertaken in the combined area of the identified management zones (excluding the revegetation areas at MZ1, MZ6 & MZ10) by the end of Year 12, unless there is a	As above.	Preferably July to November	At least a portion of the identified zones is to be burnt every 6 years.

	wildfire during this period. 2.2 From the beginning of Year 13 onwards, no more than 20% of the combined area of the identified zones is to be unburnt for more than 12 years. Any single planned fire is not to burn more than 50% of the combined area of the identified zones. When containment lines are required for a planned fire, they must be constructed, to the greatest extent possible, without disturbance to the soil surface (ie; by avoiding scraping to mineral earth).			If a wildfire or planned burn occurs, any subsequent planned fire may only be undertaken in that area after 5 years from the date of the preceding fire.
All of the following MZ7; MZ8, MZ11	<u>Cumberland River Flat Forest</u> 3.1 At least one planned fire must be undertaken in the combined area of the identified zones by the end of Year 20, unless there is a wildfire during this period. 3.2 From the beginning of Year 21 onwards, no more than 20% of the combined area of the identified zones is to be unburnt for more than 35 years. Any single planned fire is not to burn more than 50% of the combined area of the identified zones. When containment lines are required for a planned fire, they must be constructed, to the greatest extent possible, without disturbance to the soil surface (ie; by avoiding scraping to mineral earth).	As above.	Preferably July to November	At least a portion of the identified zones is to be burnt every 15 years. If a wildfire occurs, any subsequent planned fire may only be undertaken in that area after 7 years from the date of the preceding fire.
Methods for monitoring the outcomes of ecological burns				
Management zone/s	Method of monitoring			Date/s required
All	Visual monitoring of all zones is required to be undertaken by a			At the time of the

	suitably qualified ecologist. The monitoring is to provide: • a general description of the vegetation structure and species composition within each zone (or group of zones), • an interpretation of the ecological outcomes of previous fires (either planned or unplanned) within the zone, and • a recommendation on the timing and location for future planned fires within the zone. The results of the monitoring are to be recorded in the 'Template for reporting of monitoring activities'.	review of this plan, as required pursuant to item 3.2 of this Annexure
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Other fire management activities (where required)

- Construction and/or maintenance of fire containment lines in all management zones to enable the safe and effective burning of fire compartments in accordance with the fire management plan.
- 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. Areas containing the Cumberland Land Snail will be avoided when constructing fire containment lines.

Template for reporting of monitoring activities

Management zone/s	Date	Observations and assessment of monitoring

Diary template for fire management activities

Date	Management zone/s	Description of activity undertaken or observation made	Minor variations (details and reasons)

Section 4: Additional management plans

Management plan to control feral and overabundant native herbivores

The management plan for feral and overabundant native herbivores includes information on the management requirements for the feral and overabundant native herbivores at the biobank site listed in the 'Feral and overabundant native herbivores' table. The possible methods of control for each species, used by OEH and other pest management programs, are listed and the suitability of each method is described in the 'Methods considered' table.

The landowner must carry out the methods for control for feral and overabundant native herbivores for each management zone according to the method and frequency as described in the 'Methods for control' table. The methods of control applied to the feral or overabundant native herbivores listed in the 'Feral or overabundant native herbivores' table as well as any other feral or overabundant herbivores that may be present on the site from time to time.

Monitoring and inspections of existing and new feral and overabundant herbivores at the biobank site as described in the 'Monitoring and inspections' table must be implemented.

The table titled 'Template for reporting of monitoring activities' must be completed to record observations during the implementation of the plan and assessment of the monitoring activities. The landowners must complete the table titled 'Diary template for feral and overabundant herbivore management' to record the management actions undertaken including any minor variations or observations made.

Feral and overabundant native herbivores

Feral type	Name of feral/overabundant native herbivore	Description of extent	Management zone/s
A	Rabbits <i>Oryctolagus cuniculus</i>	Present in low numbers	All
B	Hares <i>Lepus europaeus</i>	Present in low numbers	All
C	Goats	No sightings, may be present occasionally	All
D	Deer	Observed on adjacent property, may be present occasionally	All

Methods considered

Feral type	Name and description of program or method	Describe suitability
Rabbits/ Hares	Pindone baiting	Pindone is an effective means of controlling rabbits but is not appropriate in areas accessed by macropods, stock animals, domestic pets or children. It may however be suitable in future years if used in accordance with regulatory requirements and with appropriate safeguards (eg. bait stations to exclude macropods).

Rabbits/ Hares	Fumigation and destruction of burrows	Fumigation of active burrows with phosphine tablets and then collapsing the burrows is an effective control method as rabbits do not readily dig new burrows. This action could be undertaken in conjunction with the removal of surface shelter (eg; weed thickets, rubbish) in areas where rabbits are active.	
All	Temporary fencing	Temporary fencing (eg. plastic barrier mesh) could be used to protect revegetation areas if the proposed tree guards are determined to not be providing enough protection from herbivores. It may also be used to protect natural regeneration in areas that have been recently burnt.	
All	Controlled shooting program	Shooting is suitable for multiple feral species. Shooting is species specific and considered humane	
Methods of control			
Management zone/s	Feral type	Method of control	Frequency and timing
All	Rabbits/ Hares	<u>Temporary fencing of re-vegetation areas</u> 1.1 Temporary fencing is to be installed around the planted vegetation if there is evidence of significant grazing pressure on the plantings in these zones. It may also be used elsewhere on the site if there is evidence of significant grazing pressure on natural regeneration in areas that have been recently burnt.	To be determined by a suitably qualified bush regenerator or ecologist, in consultation with the project manager or landowner.
All	All	<u>Fumigation and destruction of burrows</u> <u>Note:</u> The 'Monitoring and Inspections' section of this management plan requires that each year the number of active rabbit burrows on the site are to be qualitatively recorded as being either Negligible (N), Minimal (Min), Moderate (Mod) or High (H). 2.1 If the annual monitoring identifies that the number of active rabbit burrows on the site is either Moderate or High then the following actions are to be undertaken within 12 months of the next payment date: a. <u>Identification of priority areas for treatment</u> A suitably qualified bush regenerator or ecologist is to identify priority areas for the treatment of burrows (that is, the fumigation and destruction of burrows) and/or for a shooting program. The priority areas are to be identified based on a consideration of the information obtained from the annual monitoring. b. <u>Identification of the level of effort required</u> A suitably qualified bush regenerator or ecologist is to identify the number of person days to be applied to the treatment of burrows	To be determined by a suitably qualified bush regenerator or ecologist, in consultation with the project manager or landowner.

		in the priority areas and/or for a shooting program. A 'person day' is equivalent to the effort of one person working for 8 hours. The number of person days applied within the 12 month period is to be adequate to address the threat to native vegetation and equal to or less than the 'surplus person days' available. The number of 'surplus person days' available is as identified in the annual monitoring (refer to the Monitoring and Inspections section). c. <u>Treatment of burrows</u> Active rabbit burrows, as determined by fresh diggings or scats, are to be fumigated and destroyed within the priority areas identified in subclause a) above. The number of burrows treated is to be the number capable of being treated by the number of person days identified in subclause b) above. The person days of effort applied to the treatment of burrows may also be applied to the removal of surface rubbish that may provide shelter for rabbits within the priority areas identified in subclause a).	
All	All	<u>Shooting program</u> 3.1 A shooting program may be implemented as an alternative to the fumigation and destruction of burrows if: d. goats or deer have been observed within the site, or e. a shooting program is demonstrated to be a more effective method of control. 3.2 If a shooting program is to replace the fumigation and destruction of burrows in any given year, then the number of person days applied to the treatment of burrows is to be replaced with an equivalent number of person nights of shooting.	To be determined by a suitably qualified bush regenerator or ecologist, in consultation with the project manager or landowner.
Monitoring and inspections			
Management zone/s	Feral type/s	Method of monitoring	Date/s required
All	All	All monitoring is to be undertaken by suitably qualified bush regenerator or ecologist	Annually, at the completion of each year from the first payment date, or more often as required.

All	All	<u>1 Observations of active rabbit burrows</u> A record is to be maintained and updated regularly on any active rabbit burrows on the site. An 'active rabbit burrow' is as determined by fresh diggings or scats adjacent to a burrow. The record is to qualitatively identify the number of active rabbit burrows within each management zone as being either Negligible (N), Minimal (Min), Moderate (Mod) or High (H). The monitoring must involve consultation with the bush regeneration team working at the site to document any active rabbit burrows that they may have seen.	Annually, at the completion of each year from the first payment date, or more often as required
All	All	<u>2 Observations of feral pests</u> A record is to be maintained and updated regularly on any traces or sightings of feral pests on the site. The record is to identify the species observed and a qualitative indication of the number of occurrences of the species as being either Negligible (N), Minimal (Min), Moderate (Mod) or High (H). The monitoring must involve consultation with the bush regeneration team working at the site to document any observations of vertebrate pests that they may have seen.	Annually, at the completion of each year from the first payment date, or more often as required
		<u>3 Reporting on number of active rabbit burrows treated</u> Reporting will be provided on the number of active burrows treated since: - the date of the last reporting, and - the first payment date as a cumulative total.	Annually, at the completion of each year from the first payment date, or more often as required
		<u>4 Reporting on number of person days applied to the treatment of burrows</u> Reporting will be provided on the number of person days applied to the treatment of burrows, and/or the number of person nights applied to shooting programs, since: - the date of the last reporting, and - the first payment date as a cumulative total.	Annually, at the completion of each year from the first payment date, or more often as required
		<u>5 Reporting on the number of surplus person days available for future treatment of burrows</u> Reporting is required to be provided on the number of surplus person days available for the future treatment of burrows. This number of 'surplus person days' is determined by the following formula: (Number of 'surplus person days') = [(2 person days per year) x (number of payment dates that have occurred)] – [number of person days applied to the treatment of burrows since the first payment date]	Annually, at the completion of each year from the first payment date, or more often as required

Other management activities (where required)

Template for reporting of monitoring activities

Management zone/s	Date	Observations of feral herbivores (see Monitoring (point 1)) This column must include details of the feral herbivores observed and a qualitative indication of the number of occurrences of the species as being either negligible (N), minimal (Min), moderate (Mod) or high (H)	Estimate of number of active rabbit burrows (see Monitoring (point 2))	Priority for treatment (see Monitoring (point 3)) Priorities are to be either numbered from 1 upwards with management zone 1 being the highest priority, or identified as being not applicable (N/A).	Observations and assessment of monitoring

Diary template for feral and overabundant herbivore management

Management zones

Date of activity	Mgmt zone/s	Number of active burrows treated since last report (see Monitoring (point 4))	Number of active burrows treated since date of first payment (cumulative total) (see Monitoring (point 4))	Description and type of any other control methods applied (Type of control technique applied eg; shooting program; level of effort (eg; no. of hours) and result (no. of feral pests	Minor variations (details and reasons)

				destroyed)	

Summary report of management actions for entire site

Date of report	Number of active burrows treated on entire site since last report (ie; sum of column above)	Number of active burrows treated on entire site since date of first payment (cumulative total) (ie; sum of column above)	Number of person days applied to the treatment of burrows since last report (see Monitoring (point 5))	Number of person days applied to the treatment of burrows since the date of first payment (cumulative total) (see Monitoring (point 5))	Number of surplus person days available for future treatment of burrows (see Monitoring (point 6))

Vertebrate pest management plan

The management plan for vertebrate pests includes information on the vertebrate pests and their extent existing at the time of the agreement as listed in the 'Vertebrate pests' table. The possible methods of control for each species, used by OEH and other pest management programs are listed and the suitability of each method to the biobank site is described in the 'Methods considered' table.

The landowner must carry out the methods for vertebrate pest control for each management zone according to the method and frequency described in the 'Methods of control' table. The methods of control will apply to the vertebrate pests listed in the 'Vertebrate pests' table as well as any other vertebrate pests that may be present on the site from time to time.

Monitoring and inspections of existing and new vertebrate pests on the biobank site, as described in the 'Monitoring and inspections' table, must be implemented.

The table titled 'Template for reporting of monitoring activities' must be completed to record observations during the implementation of the plan and assessment of monitoring activities. The landowner must also complete the 'Diary template for vertebrate pest management' to record the management actions undertaken, including any minor variations, and observations made.

Vertebrate pests

Pest	Name of vertebrate pest (e.g pig, fox, goat, dog)	Description of extent	Management zone/s
A	Fox	Likely to be present	All
B	Cat	Possibly present infrequently	All

Methods considered

Pest type	Name and description of program or method	Describe suitability
Fox / cats	1080 bait	Baiting is not considered to be effective for this site as it needs to be undertaken across properties at the landscape scale to be effective. Baiting also has the potential to impact on non-targeted species such as native carnivores, domestic dogs and cats.
Fox / cats	Leg hold trapping	Leg hold trapping is a suitable method for catching foxes, cats and wild dogs. It is, however, time consuming and therefore costly.
Fox / cats	Den fumigation	No obvious fox dens were identified within the site however could be undertaken if required in accordance with the 'Management plan to control feral and overabundant native herbivores'.
Fox / cats	Shooting	Shooting has benefits of being suitable for multiple feral species, is species specific and considered humane. A multi species approach is likely to be the most cost effective means to control feral animals at the site. Indiscriminate culling of widespread feral species within the site

		is likely to have only a short term effect in reducing impacts. This is particularly the case as these pest species are wide ranging and require coordinated management across land tenure.	
Methods of control			
Management zone/s	Pest type	Method of control	Frequency and timing
All	All	Any shooting program required to be undertaken for the purposes of the 'Management plan to control feral and overabundant native herbivores' must also target any foxes, cats or other vertebrate pests sighted during the shooting program. All appropriate licences and permits are to be obtained by the person responsible for the shooting program.	As determined by the 'Management plan to control feral and overabundant native herbivores'.
Monitoring and inspections of existing and new vertebrate pests			
Management zone/s	Pest type/s	Method of monitoring	Date/s required
All	All	Monitoring must be undertaken in accordance with Monitoring (point 1) - 'Monitoring of Feral Pests' of the 'Management plan to control feral and overabundant native herbivores'.	Annually, at the completion of each year from the first payment date, or more often as required
Other management activities (where required)			
None required			

Template for reporting of monitoring activities			
Management zone/s	Date	Observations of feral pests (see Monitoring (point 1) - 'Monitoring of Feral Pests' of the 'Management plan to control feral and overabundant native herbivores'). This column must include details of the feral pests observed and a qualitative indication of the number of occurrences of the species as being either negligible (N), minimal (Min), moderate (Mod) or high (H).	Observations and assessment of monitoring

Diary template for vertebrate pest management

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

Annexure D: Monitoring, reporting and record keeping requirements

This Annexure D, together with Annexure C, is approved as a property management plan prepared by the landowner under the section 113B of the Threatened Species Conservation Act 1995.

1 Monitoring requirements

- 1.1 The landowner must ensure that photographs are taken at photo-points at each of the locations and in the direction identified in the table below titled 'Locations of plots and photo points' within 12 months of the commencement date and then at least every 12 months thereafter.
- 1.2 The photo points are identified on the map entitled Location of plots, transects and photo-points 24/02/2012 in Annexure A of this agreement. The purpose of the photographs is to show changes over time. Photographs should be taken at approximately the same direction, location, height and time of day (during daylight hours) in each reporting period (as defined in item 2.2 of this Annexure D) and retained for the life of this agreement. All photographs must be dated, stating the direction in which they were taken and identified with their locations.

Locations of photo points			
Projected coordinate system: GDA 94 Zone 56			
Photo point reference	Easting	Northing	Direction of photo (magnetic degrees)
MD_01	287052	6232494	110
MD_02	287074	6232866	50
MD_03	287431	6232485	184
MD_04	287164	6232396	210
MD_05	286970	6232965	45
MD_06	287376	6232554	200
MD_07	287103	6232795	160
MD_08	286962	6232431	60
MD_09	287039	6232671	205
MD_10	287522	6232444	40

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

commencement date. The inspections are additional to any inspections and monitoring required by Annexure C.

Site inspection and monitoring schedule	
A. Purpose	B. Interval
The percentage of ground cover present on the biobank site for the purposes of item 1.1 of Section 1 of Annexure C.	Every 12 months
Number of stock and date/s when stock have entered the management zones on the biobank site.	Every 6 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 1 of 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

2 Reporting requirements – annual report

- 2.1 The landowner must complete and submit to the Director General for approval an annual report using the annual reporting template provided in this Annexure or, if the Director General has approved an amended version of the annual reporting template after the date of this agreement, such an amended version of the annual reporting template as has been approved by the Director General from time to time and supplied to the landowner.
- 2.2 An annual report must be prepared for each reporting period. A reporting period means:
- 2.2.1 prior to the first payment date, the period of 12 months after the commencement date, and each subsequent period of 12 months
 - 2.2.2 after the first payment date, the period of 12 months after that date, and each subsequent period of 12 months

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

- 2.3 The annual report for the report period must be supplied to the Director General by registered post not later than 30 days after the end of each reporting period.
- 2.4 If there is a change in land ownership during a reporting period, each landowner must submit the annual report required under items 1.2, 1.3 and 1.4 of this Annexure D for the period for which they were the landowner.
- 2.5 The annual report must:
 - 2.5.1 contain the results of any monitoring, inspections or surveys required in Annexure C
 - 2.5.2 contain the results of the inspections required to be conducted by item 1.2 of this annexure D, including details of the date, time, location and nature of the inspection, the name of the person conducting the inspection and observations from the inspection
 - 2.5.3 include the photographs taken at the photo points listed in Annexure D
 - 2.5.4 include any other information required in the annual reporting template.

Biodiversity Banking and Offsets Scheme
ID number 81

Biobanking agreement

8	Erosion control						
9	Retention of rocks						
10	Control of feral and overabundant native herbivores						
11	Vertebrate pest management						
12	Nutrient control						
13	Control of exotic fish species						
14	Maintenance or reintroduction of natural flow regimes						
Incident or event that has adverse effect on biodiversity values on biobank site							
Incident or event including adverse impacts (e.g. natural events)				Action taken and proposed recommended actions			
Records submitted with this report							
☐ Photographs taken at the photo points set in the biobanking agreement.							
☐ Results of the inspections required to be conducted in item 1.2 of Annexure D to the biobanking agreement.							
☐ Results of any monitoring, inspections or surveys required in Annexures C and D to the biobanking agreement.							

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

3 Record keeping requirements

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

- 3.1.1 for a management action required by this agreement (other than a management action requiring the landowner to refrain from an activity), the date and location/s the management action was carried out and a description of the actions that were undertaken
- 3.1.2 for a management action which is permitted to be carried out only in accordance with the Director General's consent or approval, a copy of that consent or approval
- 3.1.3 a copy of any management plan (or updated management plan) required by Annexure C of this agreement that has been approved by the Director General, a copy of the Director General's approval of the management plan (or updated management plan) and a copy of any review of a management plan required by Annexure C
- 3.1.4 the diaries for recording actions undertaken in accordance with the management plans required by this agreement including the details (management zone/s, date, alternative action) of any minor alterations made to the implementation of those management plans and the reasons for the minor alterations
- 3.1.5 all photographs required by item 1 of this Annexure D and the information that item requires to be recorded on the photographs
- 3.1.6 for an inspection required by this agreement, the date, time, location and nature of the inspection, the name of the person conducting the inspection and observations from the inspection
- 3.1.7 the results of monitoring, inspections or surveys required to be conducted by this agreement or any management plan that is required to be implemented under this agreement
- 3.1.8 a brief description of any climatic, weather, ecological/environmental or unplanned events that have a significant adverse affect on the biodiversity values of the biobank site.

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

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

- 3.3.1 in a legible form, or in a form that can readily be reduced to a legible form (this includes photographs taken as part of this agreement);
- 3.3.2 kept for at least 10 years after the event to which they relate took place, unless specified otherwise; and

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

- 3.3.3 produced to any authorised officer on request by an authorised officer.

Annexure E: Payment schedule

Note:

If, by participating in the BioBanking Scheme, you are carrying on an 'enterprise', and your annual income for management actions meets or exceeds \$75,000 (or \$150,000 for a non-profit organisation) you are required to register for GST.

'Enterprise' has a broad definition, and includes activities that are in the form of a business, or in the form of a concern in the nature of trade. Item 1 below assumes you are carrying on an enterprise.

If you are not carrying on an enterprise by participating in the BioBanking Scheme, GST will not apply to you – but Capital Gains Tax and income tax may still apply. In this case do not indicate an ABN in item 4 below.

If you do not meet the monetary threshold, but you are carrying on an enterprise by participating in the BioBanking Scheme, you are still entitled to register for GST if you wish and you may indicate a registered ABN in item 1.1 below.

1 Agreement to issue recipient created tax invoices

- 1.1 The parties acknowledge that, if the landowner is registered for GST, recipient created tax invoices will be issued from the BioBanking Trust Fund (Australian Business Number 83 639 386 285) to the landowner (Australian Registered Business Number 062 542 036).
- 1.2 The recipient created tax invoices will be for the supply by the landowner of the landowner's obligation to carry out the management actions as defined in this agreement ('the supplies'). These management actions are specified between the landowner and the Minister administering the Act, pursuant to Part 7A Division 2 of the Act.
- 1.3 The recipient created tax invoices will be issued on payment of the management payments as specified in item 2 of this Annexure E.
- 1.4 Under this recipient created tax invoice agreement, the landowner guarantees that the landowner will not issue any tax invoice for the supplies.
- 1.5 The landowner will notify the BioBanking Trust Fund immediately should the landowner cease to be registered for GST.
- 1.6 The BioBanking Trust Fund is registered for GST and the Minister will notify the landowner immediately should the fund cease to be registered.

2 Payment timing and amount

- 2.1 Subject to clause 12 of the agreement, the Minister is to direct the Fund Manager to make the management payments to the landowner in accordance with the payment schedules and the requirements of items 2, 3 and 4 of this Annexure E.
- 2.2 The first year of the payment timing, as set out in the payment schedules, commences from the first payment date.

- 2.3 The amount of the scheduled management payment for each year is as set out in the payment schedules.
- 2.4 Each amount is listed in the present value and is inclusive of GST for GST registered landowners and will be increased in accordance with the formula below:

In respect of indexation by CPI the following applies:

Each amount of the management payment is to be adjusted by movements in the CPI in accordance with the formula below (provided that, at all times, each instalment of the management payment is never less than its nominal dollar value as set out in the payment schedules and as at the date of this agreement).

$$\frac{A \times B}{C}$$

Where:

CPI means the published Consumer Price Index (Sydney - All Groups), or if that index is no longer published, then any other index which, in the reasonable opinion of the Minister, is a similar index

A is the dollar value (\$) of the management payment amounts as set out in the Payment Schedules prior to indexation by CPI

B is the most recent June Quarter CPI prior to the date that payment is due to be made

C is the CPI for the June Quarter 2008

2.5 Payment schedules

Payment schedule	
Payment timing	Amount
At the beginning of the first year	\$ 131,453
At the beginning of the second year	\$ 106,860
At the beginning of the third year	\$ 94,408
At the beginning of the fourth year	\$ 79,897
At the beginning of the fifth year	\$ 108,181
At the beginning of the sixth year	\$ 88,109
At the beginning of the seventh year	\$ 101,416
At the beginning of the eighth year	\$ 87,113
At the beginning of the ninth year	\$ 99,458
At the beginning of the tenth year	\$ 103,511
At the beginning of the eleventh year	\$ 53,801
At the beginning of the twelfth year	\$ 51,460

At the beginning of the thirteenth year	\$ 51,460
At the beginning of the fourteenth year	\$ 53,354
At the beginning of the fifteenth year	\$ 60,282
At the beginning of the sixteenth year	\$ 51,460
At the beginning of the seventeenth year	\$ 51,460
At the beginning of the eighteenth year	\$ 53,354
At the beginning of the nineteenth year	\$ 51,460
At the beginning of the twentieth year	\$ 41,939
At the beginning of each following year	Amount equal to the sum of the in perpetuity management cost that apply for each following year as determined by the table of in perpetuity costs below.

In perpetuity management costs (on and from the twenty-first year)		
Description of ongoing management action	Frequency	Amount (\$)
Ongoing manual weed control	Every year	\$ 20,925
Maintain gates (and replace 5 gates every 20 years)	Every year	\$ 101
Maintain fencing	Every year	\$ 1,360
Maintain starpickets at 10m intervals	Every year	\$ 36
Fire control lines	The twenty second year and every fourth year thereafter	\$ 1,320
Pre-burn threatened species inspection	The twenty second year and every fourth year thereafter	\$420
Feral animal control	Every year	\$ 2,000
Maintain BioBanking signage	The twenty fifth year and every fifth year thereafter	\$ 180
Install and maintain interpretive signage	The twenty first year and every tenth year thereafter	\$ 2,128
Other ongoing recurring costs		
Annual project management	Every year	\$ 5,584
Update management plans	The twenty fifth year and every fifth year thereafter	\$ 7,840
Insurance premiums	Every year	\$ 100

3 Nominated bank account

- 3.1 The management payments will be paid into a bank account as nominated by the landowner in accordance with the requirements of this item 3 (**'the Nominated Bank Account'**).
- 3.2 The landowner must provide the Fund Manager with details in writing of the nominated bank account within 14 days of the commencement date.
- 3.3 Where there is more than one owner of the biobank site, the notice to be provided in accordance with item 3.2 above must be signed by all owners of the biobank site.
- 3.4 The landowner must notify the Fund Manager in writing within 14 days of any change to the nominated bank account. This notice must include new bank account information and the written consent of all owners of the biobank site.

4 Annual contribution

- 4.1 The landowner authorises the Minister to retain the annual contribution from each management payment made to the landowner.
- 4.2 The Minister will, following each management payment, issue the landowner with an invoice confirming that the annual contribution has been deducted from the relevant management payment.
- 4.3 As contemplated by clause 18 of the BioBanking Regulation, the Minister may waive the annual contribution where:
 - 4.3.1 the owner of the biobank site has not sold any of the biodiversity credits created for the site, or
 - 4.3.2 there are insufficient funds in the biobank site account relating to the biobank site to meet the next scheduled management payment when it becomes payable.

Appendix 4. Biodiversity Agreement no. 2



**BioBanking agreement
ID number: 217**

Under the
Threatened Species Conservation Act 1995
for
Trustees of the Sisters of the Good Samaritan
for
Mater Dei (Stage 2)
Lot 100 in Deposited Plan Number 1159926



**Office of
Environment
& Heritage**

Handwritten signatures and initials in the bottom right corner.

BioBanking agreement under Part 7A Division 2 of the *Threatened Species Conservation Act 1995*

This agreement made on the **4th** day of **May 2016** between the Minister for the Environment of the State of New South Wales, being the Minister currently administering the *Threatened Species Conservation Act 1995* ('the Minister', which expression shall where the context admits, be deemed to include his or her successors in office) on the one part and Trustees of the Sisters of the Good Samaritan ABN 42 062 542 036, ARBN 062 542 036 ('the landowner') of 229 Macquarie Grove Road on the other part.

Background

- A The landowner is the owner of that parcel being Lot 100, Deposited Plan 1159926, Parish of Narrellan, County of Cumberland, known as Mater Dei 229 Macquarie Grove Road, Cobbitty NSW 2570 ('the land').
- B The biobank site that is the subject of this agreement forms part of the land and is shown on the biobank site boundary map titled 'Map B Site Map - Mater Dei Stage 2 Biobank Site Lot 100 DP 1159926 (Dated 5 January 2016)' included in Annexure A of this agreement.

The biobank site covered by this agreement consists of approximately 58.4 hectares.

- C The landowner has requested the Minister to enter into a biobanking agreement under clause 14 of the BioBanking Regulation for the purpose of designating the biobank site on the land.
- D The Minister and landowner recognise that the landowner will receive biodiversity credits determined in accordance with the BioBanking Assessment Methodology (and set out in Annexure B) relating to the impact or likely impact of the management actions required to be carried out under Clause 3 and Annexure C of this agreement regarding the biodiversity values listed in Annexure B.
- E Not applicable.
- F The landowner and the Minister recognise that this biobanking agreement is being entered into for the purposes of the BioBanking Scheme established under Part 7A of the Act.
- G The landowner agrees to undertake the management actions and implement the management plans to improve the biodiversity values of the biobank site as set out in Annexure C.
- H The landowner agrees to undertake monitoring, reporting and record keeping as set out in Annexure D.
- I Accordingly, the parties hereby enter into the following biobanking agreement under section 127D of the Act.
- J The Minister has delegated the power to enter into this biobanking agreement to the Chief Executive of the Office of Environment and Heritage.

Now this agreement witnesses:

1. Interpretation

1.1 In this agreement, unless the contrary intention appears:

the **'Act'** means the *Threatened Species Conservation Act 1995* and any regulations from time to time in force thereunder

'adaptive management' means a process for improving management where the outcomes of monitoring indicate that minor alterations to the management actions or management plans are required to improve biodiversity values

'agreement' means this biobanking agreement entered into by the Minister and the landowner under section 127D of the Act for this biobank site

'animal' has the same meaning as in section 4 of the Act

'Annexure A' means Annexure A to this agreement entitled 'Maps of the biobank site'

'Annexure B' means Annexure B to this agreement entitled 'BioBanking Agreement Credit Report'

'Annexure C' means Annexure C to this agreement entitled 'Management actions and management plans'

'Annexure D' means Annexure D to this agreement entitled 'Monitoring, reporting and record keeping requirements'

'Annexure E' means Annexure E to this agreement entitled 'Payment schedules'

'annual report' means the annual report to be prepared by the landowner in accordance with item 2 of Annexure D

'authorised officer' means a person appointed under section 156B of the *National Parks and Wildlife Act 1974*

'biobank site' means that part of the land shown as the "biobank site" on the biobank site boundary map

'biobank site boundary map' means the map entitled 'Map B Site Map -Mater Dei Stage 2 Biobank Site Lot 100 DP 1159926 (Dated 5 January 2016)' and included in Annexure A

'Biobanking Agreement Credit Report' means the report contained in Annexure B generated by a BioBanking Assessor for the biobank site using the BioBanking Assessment Methodology and the BioBanking Credit Calculator which includes the number and type of biodiversity credits to be created on the biobank site

'biobanking agreements register' means the register of biobank sites kept by the Chief Executive under Part 7A of the Act

'BioBanking Assessment Methodology' means the rules established under section 127B of the Act

'BioBanking Regulation' means the Threatened Species Conservation (Biodiversity Banking) Regulation 2008

'BioBanking Scheme' means the Biodiversity Banking and Offsets Scheme established under Part 7A of the Act

'BioBanking Trust Fund' means the fund established under Part 7A of the Act to hold funds from the sale of biodiversity credits (the Total Fund Deposit)

'biodiversity credits' means biodiversity credits created under Part 7A of the Act

'biodiversity credits register' means the register of biodiversity credits kept by the Chief Executive under Part 7A of the Act

'biodiversity values' has the same meaning as in section 4A of the Act

'Chief Executive' means the Chief Executive of the Office of Environment and Heritage

'commencement date' means the date this agreement commences under clause 18 of this agreement

'critical habitat' has the same meaning as in section 4 of the Act

'day' means any day including Saturdays, Sundays and public holidays

'development' has the same meaning as in section 127(1) of the Act

'Director General' has the same meaning as in section 4 of the Act

'ecological burn' means a burn to improve biodiversity values carried out as part of the management of fire for conservation

'fee unit' has the same meaning as in the BioBanking Regulation

'first payment date' means the date the balance in the relevant biobank site account is equal to or greater than 80% of the Total Fund Deposit for the first time

'Fund Manager' means the person appointed by the Minister from time to time under Part 7A of the Act as the Fund Manager to manage the BioBanking Trust Fund

GST has the same meaning as given to that term in *A New Tax System (Goods and Services Tax) Act 1999* (Commonwealth) and any other Act or regulation relating to the imposition or administration of the GST

'land' means that parcel or parcels of land which contains the biobank site as described in paragraph A of this agreement

'management action' means the actions to be carried out by the landowner on the biobank site to improve biodiversity values for which biodiversity credits may be created. Such actions are set out in of Annexure C. A reference to a management action includes a reference to refraining from doing anything, whether or not that thing was being done beforehand

'management of fire for conservation' means the controlled application of fire under specified environmental and weather conditions to a predetermined area and at the time, intensity and rate of spread required to attain planned improvement of biodiversity values

'management of grazing for conservation' is the implementation of a variable and adaptive stock grazing regime for improving biodiversity values, such as for controlling exotic weeds or vegetation biomass, or enhancing the competitiveness of native perennial species. Typically it involves short periods of intensive grazing between long periods of little or no grazing. Management of grazing for conservation differs with site condition, specific management goals, seasonal conditions and regions

'management payments' means the payments to be made to the landowner in accordance with the payment schedules and the requirements in Annexure E

'management plans' means the management plans to be implemented by the landowner in carrying out the management actions and included in Section 3 and Section 4 of Annexure C (or such other management plans as approved by the Chief Executive in accordance with the provisions of Annexure C)

'management zone' means those areas of the biobank site identified on the map entitled 'Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016)' and included in Annexure A

'maximum operational surplus' has the same meaning as in clause 33(2) of the BioBanking Regulation

'Minister' means the Minister for the time being administering the Act and where not repugnant to the context includes the servants and agents of the Minister

'native animal' has the same meaning as in section 5 of the NPW Act

'native plant' has the same meaning as in section 5 of the NPW Act

'native vegetation' has the same meaning as in section 6 of the NV Act

'NPW Act' means the *National Parks and Wildlife Act 1974* and any regulations from time to time in force thereunder

'NV Act' means the *Native Vegetation Act 2003* (NSW)

'OEH' means the Office of Environment and Heritage

'ongoing' in relation to the timing of carrying out a management action means commencing on the commencement date or first payment date (as indicated) and continuing in perpetuity, unless specified otherwise

'operational deficit' has the same meaning as in clause 31(2) of the BioBanking Regulation

'operational deficit threshold' has the same meaning as in clause 32(2) of the BioBanking Regulation

'operational surplus' has the same meaning as in clause 31(3) of the BioBanking Regulation

'owner' has the same meaning as in section 127(1) of the Act and includes successors in title referred to in section 127J of the Act

'party' means a party to this agreement

'payment schedules' means the tables entitled 'payment schedule' and 'in perpetuity management costs' included in Annexure E

'pesticide' has the same meaning as in section 5 of the *Pesticides Act 1999* which includes herbicides, insecticides, fungicides, baits and rodenticides

'plant' has the same meaning as in section 4 of the Act

'planting schedule' means the schedule at item 6.6 of Section 1, Annexure C

'processing fee' means the processing fee which is to accompany an application to enter into a biobanking agreement as required by clause 14 of the BioBanking Regulation

'record keeping requirements' means those record keeping requirements set out in item 3 of Annexure D

'regrowth' has the same meaning as in section 9 of the NV Act

'relevant biobank site account' means the biobank site account within the BioBanking Trust Fund kept by the Fund Manager in accordance with clause 30(1) of the BioBanking Regulation

'remnant native vegetation' has the same meaning as in section 9 of the NV Act

'sensitive threatened species' means any threatened species, populations or ecological communities or any critical habitat (or any area or areas of land proposed to be identified as critical habitat), information relating to the location of which must not be made available to the public on a register kept under Part 7A of the Act, as required by clause 48(1)(a) or (b) of the BioBanking Regulation

'threatened species, populations and ecological communities' and **'threatened species, population or ecological community'** have the same meaning as in the Act

'Total Fund Deposit' has the same meaning as in clause 26(1) of the BioBanking Regulation

'waste' has the same meaning as in the *Protection of the Environment Operations Act 1997*.

- 1.2 A word or expression that indicates one or more particular genders shall be taken to indicate every other gender. A reference to a word or expression in the singular form includes a reference to the word or expression in the plural form, and vice versa.
- 1.3 Any reference to an action, or carrying out an action, includes a reference to doing anything or refraining from doing anything.
- 1.4 Any reference to a person shall be deemed to include a corporate body and vice versa.

- 1.5 Any covenant or agreement on the part of two or more persons shall be deemed to bind them jointly and severally.
- 1.6 The schedules and Annexures to this agreement form part of this agreement.
- 1.7 Any notes included in the agreement do not form part of the agreement.

2. Status of this agreement

The parties agree that this agreement is a biobanking agreement within the meaning of section 127D of the Act.

3. Use of the biobank site

The landowner covenants with the Minister as follows:

General responsibilities

- 3.1 Except as otherwise permitted by this agreement, the landowner must not carry out any act or omit to carry out any act, or cause or permit any act to be carried out or any act not to be carried out which act or omission may harm biodiversity values on the biobank site, including but not limited to any native animals, native plants, threatened species, populations and ecological communities, and their habitats.

Note: The clearing of native vegetation that is otherwise permissible in accordance with the NV Act (whether it is permissible under a Property Vegetation Plan, routine agricultural management activity (as defined under the NV Act), or is otherwise permitted under Part 3 of that Act) can only be carried out on the biobank site to which this agreement applies if it is also permissible under this agreement. Item 5.1 of the management actions contained in Section 1 of Annexure C of this agreement sets out the limited circumstances in which native vegetation can be cleared on the biobank site. Annexure C of this agreement also contains limited exceptions in relation to when a landowner is not required to comply with the management actions contained in Annexure C.

Cultural heritage

- 3.2 To avoid any doubt, nothing in this agreement is to be construed as authorising (including, but not limited to, by way of a consent, permit, approval or authorisation of any kind for the purposes of Part 6 of the NPW Act) any person to damage or to cause or permit damage to an Aboriginal object or Aboriginal place in, on or under the biobank site.

Obtaining of consents, permits and authorisations

- 3.3 The landowner is responsible for obtaining all necessary licences, consents, authorisations, permits or approvals in order to lawfully comply with and carry out its obligations under this agreement or to undertake or enable any other identified matter under clause 3.5 and/or clause 3.6.

Development

- 3.4 The landowner must not carry out, or cause or permit to be carried out, any development (as defined under clause 1 above) on the biobank site, unless the development:

3.4.1 is permitted or required under Annexure C, or

3.4.2 is identified in the table entitled 'Permissible development on the biobank site' contained in clause 3.5 or identified in the table entitled 'Permissible human activities on the biobank site' contained in clause 3.6.

Permissible development

3.5 The landowner shall be permitted to carry out, or cause or permit to be carried out, the development specified in the following table in the management zone specified in the table.

Permissible development on the biobank site	
Description of development	Management zone/s
Any development within the meaning of section 127(1) of the Act reasonably considered necessary to remove or reduce an imminent risk of serious personal injury or damage to property.	All zones
Carrying out of any activity subject to Petroleum Exploration Licence 2 of the Petroleum (Onshore) Act 1991 or any other any petroleum title that may be granted under the <i>Petroleum (Onshore) Act 1991</i> .	All zones
Carrying out of any activity subject to Authority 6 or Authority 281 issued under the <i>Mining Act 1992</i> or any other authorisation that may be granted under that Act.	All zones
Implementation of all forms of hazard reduction works as directed under the <i>Rural Fires Act 1997</i> .	All zones
Any development permitted or required as part of a management action provided for in Annexure C.	All zones
The establishment of new walking tracks, vehicle tracks, interpretation signs, protective shelter, fencing and gates as permitted or required as part of a management action provided for in Annexure C.	Zones as permitted in Annexure C
The maintenance of walking tracks, vehicle tracks, access road, interpretation signs, protective shelter, fencing and gates as permitted or required as part of a management action provided for in Annexure C.	Zones as permitted in Annexure C
The maintenance and or replacement of sheds, picnic tables, barbeques, toilets and water treatment ponds.	Zones as permitted in Annexure C
The removal of gates, fences, the ropes course, sheds, picnic tables, barbeques, toilets/toilet blocks and water treatment ponds as permitted or required as part of a management action provided for in Annexure C.	Zone as permitted in Annexure C

16/10/15

Permissible human activities

- 3.6 Notwithstanding clause 3.1, the landowner may carry out or cause or permit to be carried out any human activities specified in the following table, in the management zone specified in the table.

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

4. Management actions and management plans

- 4.1 The landowner must carry out or procure the carrying out of the management actions in accordance with the timing, manner and requirements of Annexure C.

- 4.2 The landowner must:

i. implement or procure the implementation of; and

ii. comply or procure the compliance with

the management plans in accordance with the timing, manner and requirements of Annexure C.

Note: The management actions listed in Annexure C include requirements to take certain action and requirements to refrain from taking certain action.

- 4.3 Unless otherwise indicated by Annexure C, the landowner must ensure that
- i. the management actions to be carried out in accordance with clause 4.1; and
 - ii. the management plans to be implemented and complied with in accordance with clause 4.2
- are carried out in perpetuity, commencing from the date indicated in Annexure C.
- 4.4 The landowner's obligations under this clause are subject to clause 12.4 of this agreement.

5. Total Fund Deposit

For the purpose of clause 26 of the BioBanking Regulation, the Total Fund Deposit for this biobank site is \$7,163,980.00 excluding GST, determined in accordance with Part 6 of the BioBanking Regulation.

Note: Part 6 of the BioBanking Regulation prescribes the amount that must be deposited in the BioBanking Trust Fund before the first transfer (or retirement without transfer) of each biodiversity credit can be registered. The prescribed amount is the Total Fund Deposit, or proportion thereof if a partial sale of credits is made. The Total Fund Deposit is the present value of the total of all management payments listed under this agreement, as determined by the Chief Executive.

6. Biodiversity credits

- 6.1 The Chief Executive is permitted under section 127W(4) of the Act, to create (without application by the landowner under section 127W(4) of the Act) the biodiversity credits listed in Annexure B on the commencement date.
- 6.2 The biodiversity credits listed in Annexure B will be created for the biobank site.
- 6.3 At the commencement date, the landowner is entitled to receive \$ 4,401,910.00 excluding GST, to be satisfied in full by the creation of the biodiversity credits listed in Annexure B.

Note: \$11,565,890.00 is a best estimate of the market value of the biodiversity credits at the time of creation. The market value has been estimated by reference to the notional Part B amount as determined by the landowner in the credit pricing spreadsheet or reference to the notional Part B amount for the last traded biodiversity credit of the same or similar type.

The Part B amount is that part of the sale price received by the landowner (or another landowner if reference is made to a previous sale of that biodiversity credit type) after the entire Total Fund Deposit is satisfied and deposited into the BioBanking Trust Fund.

The sale price of each biodiversity credit will be negotiated between the landowner and the buyer and will be affected by supply and demand for each biodiversity credit. The final price at the time of transfer of the biodiversity credit (or retirement or the biodiversity credit without transfer) may not reflect this estimated amount.

The Minister does not warrant that the landowner will be able to sell biodiversity credits for the estimated market value.

7. Monitoring, record keeping and reporting

- 7.1 The landowner must comply with the monitoring and record keeping requirements as set out in Annexure D.

- 7.2 The landowner must submit an annual report complying with the requirements set out in Annexure D to the Chief Executive within the timeframe specified in Annexure D.
- 7.3 The landowner must notify the Chief Executive in writing as soon as practicable after becoming aware of any failure to comply with this agreement or any other incident at the biobank site (or surrounds) which results or may result in a sudden or significant decline of biodiversity values at the biobank site. In particular, the landowner must notify the Chief Executive of:
- 7.3.1 the nature, location and time of the incident
 - 7.3.2 the impact of the incident on biodiversity values
 - 7.3.3 the measures that have been taken or will be taken in response to the incident
 - 7.3.4 any provision of this agreement which may have been breached
 - 7.3.5 the extent of any damage caused or permitted by the incident
 - 7.3.6 the measures which have been taken or will be taken to prevent a recurrence of the incident.

8. Use of the land by servants, agents, lessees or licensees

The landowner must incorporate all relevant requirements of this agreement in any lease or licence issued for the biobank site, and must at all times ensure that any servant, contractor, consultant, agent, lessee or licensee occupying the biobank site area shall be aware of, and not undertake any act inconsistent with, the landowner's obligations under this agreement.

9. Change of land ownership or subdivision of land

- 9.1 The landowner must notify the Chief Executive in writing of any change of:
- 9.1.1 ownership of the biobank site, or any part thereof, within seven (7) days after the change of ownership of the biobank site; or
 - 9.1.2 lessee of the biobank site, or any part thereof, within twenty-eight (28) days after the change of lessee or licensee of the biobank site.

The notice must include the name and address and other relevant contact details of the new landowner, lessee or licensee.

- 9.2 The landowner must provide a copy of this agreement, including a copy of each management plan and a copy of all records required to be kept under the record keeping requirements, to the transferee before completion of the assignment, transfer, disposal or sale of any interest in the biobank site.
- 9.3 The landowner must notify the Chief Executive in writing no less than 14 days before the biobank site is subdivided.

- 9.4 The landowner cannot assign, transfer, dispose of or sell its rights, title or interest in part of the land containing any area of the biobank site unless the landowner and the Minister have first agreed to vary the agreement to apportion the obligations and rights under the agreement in respect of that part of the biobank site that will be assigned, transferred, disposed of or sold.

10. Right to enter biobank site for research and monitoring

- 10.1 The landowner must permit access to the biobank site at any time to the Minister, the Chief Executive, an authorised officer or an officer of OEH for the purpose of carrying out research or monitoring in relation to the biodiversity values on the biobank site for which biodiversity credits have been created under this agreement, but only where the person has given reasonable notice to the landowner and the landowner's agent, lessee or licensee, of the intention to enter the biobank site for that purpose and the nature of the research or monitoring that will be conducted. In exercising its right of access under this clause, the Minister, the Chief Executive, an authorised officer or an officer of OEH must ensure that such access does not:

10.1.1 result in physical or radio interference which obstructs, interrupts or impedes the use or operation of any telecommunications network and telecommunications service of a lessee or licensee of a part of the land; or

10.1.2 interfere with the electricity supply separate from the landowner's electricity supply to any part of the land occupied by a lessee or licensee.

- 10.2 The Minister, Chief Executive, an authorised officer or an officer of OEH may make a written request to the landowner to consent to any other person specified in the written request to enter the biobank site for the purpose of carrying out the research or monitoring referred to in clause 10.1, whether or not that person will accompany the Minister, Chief Executive, an authorised officer or an officer of OEH. The landowner will not unreasonably withhold consent.

- 10.3 Clauses 10.1 and 10.2 do not affect or limit the powers of authorised officers under the NPW Act to enter premises for the purpose of determining whether there has been compliance with, or contravention of, this agreement.

11. Agreement preparation expenses

Each party bears its own costs in connection with the preparation and execution of this agreement.

12. Obligations of the Minister

- 12.1 Subject to clauses 12.2 and 12.3 and starting from the first payment date, the Minister is required to direct the Fund Manager to make such management payments specified in the payment schedules from the relevant biobank site account to the landowner, at such intervals specified in the payment schedules.

- 12.2 The Minister may only make such a direction if:



- 12.2.1 the relevant biobank site account has sufficient funds to cover the management payment, and
- 12.2.2 the landowner has submitted the annual report for the preceding reporting period in accordance with clause 7.2 and Annexure D of this agreement, and
- 12.2.3 the Minister has reviewed the annual report for the preceding reporting period and is satisfied that the landowner has complied with their obligations set out in this agreement in the preceding period.

- 12.3 The landowner acknowledges that the Minister may, with the agreement of the landowner, direct that the management payments should not be made, or should be reduced, for a specified period of time or until further notice if the biobank site account has an operational deficit greater than the operational deficit threshold.

Note: Withholding or lowering payments when funds in the account are below the maximum operational deficit may help to preserve the long-term financial viability of the fund for the landowner.

- 12.4 If the Minister, with the agreement of the landowner, directs that management payments be reduced or not be made for a specified period of time or until further notice, then:

- 12.4.1 the Minister may, by written agreement with the landowner, suspend or vary any of the landowner's obligations to carry out management actions under this agreement for the same period of time or some other period, and
- 12.4.2 despite clause 4 of this agreement, the landowner's obligations to carry out management actions under this agreement are suspended or varied in accordance with the agreement.

The Minister must not agree to any variation or suspension under this clause unless satisfied that the variation or suspension does not have a negative impact on the biodiversity values protected by the agreement.

- 12.5 The landowner acknowledges that the Minister may, in addition to the management payments, direct additional payments to be paid from the BioBanking Trust Fund to the landowner, but only in circumstances where the biobank site account has an operational surplus, the operational surplus amount exceeds the maximum operational surplus for the biobank site account, and the amount the Minister directs to be paid does not exceed the difference between the operational surplus amount and the maximum operational surplus.
- 12.6 All management payments shall be paid into the bank account nominated by the landowner in accordance with the payment schedules.

13. Ownership of the land and registration of this agreement

- 13.1 The landowner represents and warrants to the Minister that as at the date of this agreement it is:

- 13.1.1 the legal and beneficial owner of the land; or

13.1.2 legally and beneficially entitled to become the owner of the land and will become the legal and beneficial owner of the land, prior to the date that this agreement is to be registered under clause 13.2 of this agreement.

13.2 As contemplated by section 127L(1) of the Act, the Minister agrees to notify the Registrar General when this agreement has been entered into, varied or terminated so the Registrar General can register the agreement, variation or termination by making an entry concerning the agreement, variation or termination in the relevant folio of the Register kept under the *Real Property Act 1900* (NSW) for the land.

13.3 The fee to register the agreement in accordance with section 127L(1) of the Act will be taken from the processing fee, except as provided by clause 13.4.

13.4 If the landowner elects to identify the exact boundaries of the biobank site on the Deposited Plan for the land, the landowner must bear any additional costs of registration.

14. Variation and termination

14.1 Subject to clause 14.2, this agreement can only be varied or terminated in accordance with the Act.

14.2 The landowner waives any right to request voluntary termination in accordance with subsections 127G(5) and (6) of the Act.

14.3 This clause does not affect the ability of the Minister and the landowner to terminate this agreement by consent under section 127G(2)(a) of the Act (including in the circumstances described in subsection 127G(6) of the Act).

Note: Clause 14.2 ensures that the landowner can obtain Commonwealth Government tax advantages that apply to conservation covenants. Those tax advantages would not be available if the right to request termination of the agreement under subsections 127G (5) and (6) of the Act was available.

Subsections 127(5) and (6) of the Act give landowners the right to request termination of the agreement where credits are not sold within 3 months or after 5 years of entering the agreement. The effect of clause 14.2 is that the landowner gives up that right. This is essential as the tax advantages are only available where the Commonwealth Government has conferred conservation covenant status on biobank sites – and a requirement of this status is that the sites will operate permanently.

15. Indemnity and release

15.1 The landowner agrees to indemnify the protected persons against all expenses, losses, damages and costs that the protected person may sustain or incur as a result, whether directly or indirectly, of carrying out obligations under this agreement.

15.2 The indemnity given by the landowner does not cover any loss or damage that is caused by a negligent act or omission of the protected persons, or any loss or damage that is contributed to by a negligent act or omission of the protected persons to the extent of the protected persons' contribution to that loss or damage.

15.3 The landowner releases to the full extent permitted by law the protected persons from all claims and demands arising out of or in connection with, or as a consequence of, carrying out of obligations by the landowners under this agreement, or in connection

with, or as a consequence of, a direction made by the Minister regarding the payment of management payments to the landowner under this agreement.

- 15.4 The release given by the landowner does not cover any claims and demands in respect of any loss or damage that is caused by a negligent act or omission of the protected persons, or any loss or damage that is contributed to by a negligent act or omission of the protected persons to the extent of the protected persons' contribution to that loss or damage.
- 15.5 It is immaterial to the obligations of the landowner under this clause that a claim or demand arises out of any act, event or thing that the landowner is authorised or obliged to do under this agreement or that any time waiver or other indulgence has been given to the landowner for any such obligation under this agreement.

In clauses 15.1–15.4:

- (i) 'protected person' means:
- (a) the Minister
 - (b) the Chief Executive
 - (c) the employees or officers of the Office of Environment and Heritage
 - (d) any other person acting under the direction or control of the Minister or Chief Executive for any purpose
 - (e) the Crown in right of the State of New South Wales;
- (ii) 'claims and demands' means all actions, suits, claims, demands, proceedings, losses, compensation, damages, sums of money, costs, legal costs, charges, and expenses to which the protected persons are or may become liable for in respect of loss or damage to the fixtures of the biobank site, financial or economic loss, loss of opportunity or other consequential loss of the landowner, and injury of any kind to or death of any person claiming through the landowner and however sustained on or outside the biobank site.

16. Dispute resolution

- 16.1 Where there is a dispute, difference or claim (dispute), the party raising the dispute must notify the other party in writing of the nature of the dispute, including the factual and legal basis of the dispute.
- 16.2 Within 14 days of the written notice, the Chief Executive and the landowner, or nominated senior representatives of the parties, must confer to attempt to resolve the dispute, and if the dispute cannot be resolved within twenty-one (21) days of the written notice, the Chief Executive and the landowner will refer the matter to mediation.
- 16.3 The parties will agree on the terms of appointment of the mediator and the terms of the mediation in writing within twenty-eight (28) days, failing which the mediation will be at an end and either party may commence court proceedings in respect of the dispute, difference or claim.

- 16.4 If the matter has not been resolved within 28 days of the appointment of the mediator, the mediation process will be at an end and either party may commence court proceedings in respect of the dispute, difference or claim.
- 16.5 Notwithstanding the above clauses, the Minister, the Chief Executive or a person duly authorised by the Chief Executive, may enforce this agreement under the Act, or institute proceedings without first entering into the dispute resolution procedure set out in clauses 16.1, 16.2, 16.3, and 16.4.
- 16.6 Clause 10.1 of this agreement is not affected by these arrangements for dispute resolution.

17. Governing law

This agreement is governed by the laws of the State of New South Wales and the parties agree to submit to the jurisdiction of the courts of that State.

18. Commencement

This agreement shall have effect from the day it is executed by all parties.

19. Privacy statement

The landowner acknowledges and consents to the information contained in this agreement being made publicly available on the biobanking agreements register and, where biodiversity credits have been registered, on the biobanking credits register maintained by the Chief Executive and made available on the web.

Note: In accordance with the *Privacy and Personal Information Protection Act 1998* and the Act, some of the information contained in this agreement cannot be made available to the public.

20. Exercise of Minister's and Chief Executive's powers

- 20.1 The landowner acknowledges that the Minister may authorise any officer of OEH to exercise any of the Minister's functions under this agreement on the Minister's behalf.
- 20.2 The landowner acknowledges that the Chief Executive, may authorise any officer of OEH to do anything that the Chief Executive authorises for the purposes of this agreement.

21. Notices

21.1 Any notice, consent, information, application or request that must or may be given or made to a party is only given or made if it is in writing and delivered or posted to that party at its address set out below, or faxed to that party at its fax number set out below:

The Minister

Address	Office of Environment and Heritage PO Box A290 SYDNEY SOUTH NSW 1232
Fax	(02) 9995 6795
Attention (nominated officer)	Senior Team Leader, Ecosystems and Threatened Species, Environmental Programs Branch

Landowner

Address	2 Avenue Road, Glebe Point, NSW 2032
Fax	8752 5333
Attention	Michael McDonald

21.2 The name or title of the nominated officer or the address for the Minister referred to in clause 21.1 above may be updated from time to time by a further written notice being sent to the landowner by an officer of OEHL advising of the new officer (or title of an office) and address to which such documents, information or notification may be sent.

21.3 For the avoidance of doubt, this clause does not fetter the Minister or Chief Executive's discretion to give or withhold from giving such notice, consent or permission.

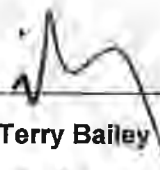
Agreement annexures

- Annexure A Maps of biobank site
- Annexure B Biobanking Agreement Credit Report
- Annexure C Management actions and management plans
- Annexure D Monitoring, reporting and record keeping requirements
- Annexure E Payment schedules

In witness where of the parties hereto have executed this agreement the day and year first above written.

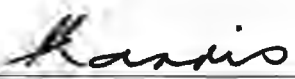
Signed by

Terry Bailey, Chief Executive, Office of Environment and Heritage, as delegate under Section 142A of the *Threatened Species Conservation Act 1995* in the presence of:


Terry Bailey

4 May 2016.

Date


Witness signature

4 May 2016
Date

Sandra Harris

Witness name-Please Print

59 Coulburn St,

SYDNEY . NSW . 2000 .

Witness address

Signed by the landowner/s or director/s

THE COMMON SEAL of the body corporate called **TRUSTEES OF THE SISTERS OF THE GOOD SAMARITAN** ARBN 062 542 036 was affixed in the presence of the Superior and two other Member of the Body Corporate all of whom have signed below

Roman Catholic Church Communities'
Lands Act 1942 (sec.7)



Clare Therese Condon

Signature

12 April 2016

Date



Veronica Joan Hoey

Signature

14 April 2016

Date

Superior and Trustee

Position

In the presence of:



Witness signature

12 APRIL 2016

Date

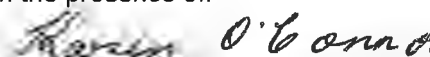
MARY B ROBINSON

Witness name-Please Print

Trustee

Position

In the presence of:



Witness signature

14th April 2016

Date

KAREN O'CONNOR

Witness name-Please Print

23 TALEGBAN ROAD, RIVERVIEW
2066

Witness address

2-30 DOUGLAS ST ASHWOOD
3147

Witness address


Bernardina Paulina Maria Sontrop

Signature

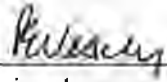
13.4.2016

Date

Trustee

Position

In the presence of:


Witness signature

13.4.2016

Date

PATRICIA VESELY

Witness name-Please Print

18 HIGHLAND RACE
BRIDGEMAN DOWNS 4035

Witness address

Seal (if signing under seal):

The Chief Executive approves Annexure C and Annexure D as a property management plan prepared by the Landowner under the section 113B of the *Threatened Species Conservation Act 1995*.

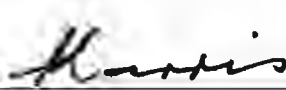
Signed by

Terry Bailey, Chief Executive, Office of Environment and Heritage, as delegate under Section 113B of the *Threatened Species Conservation Act 1995* in the presence of:


Terry Bailey

4 May 2016

Date


Witness signature

4 May 2016
Date

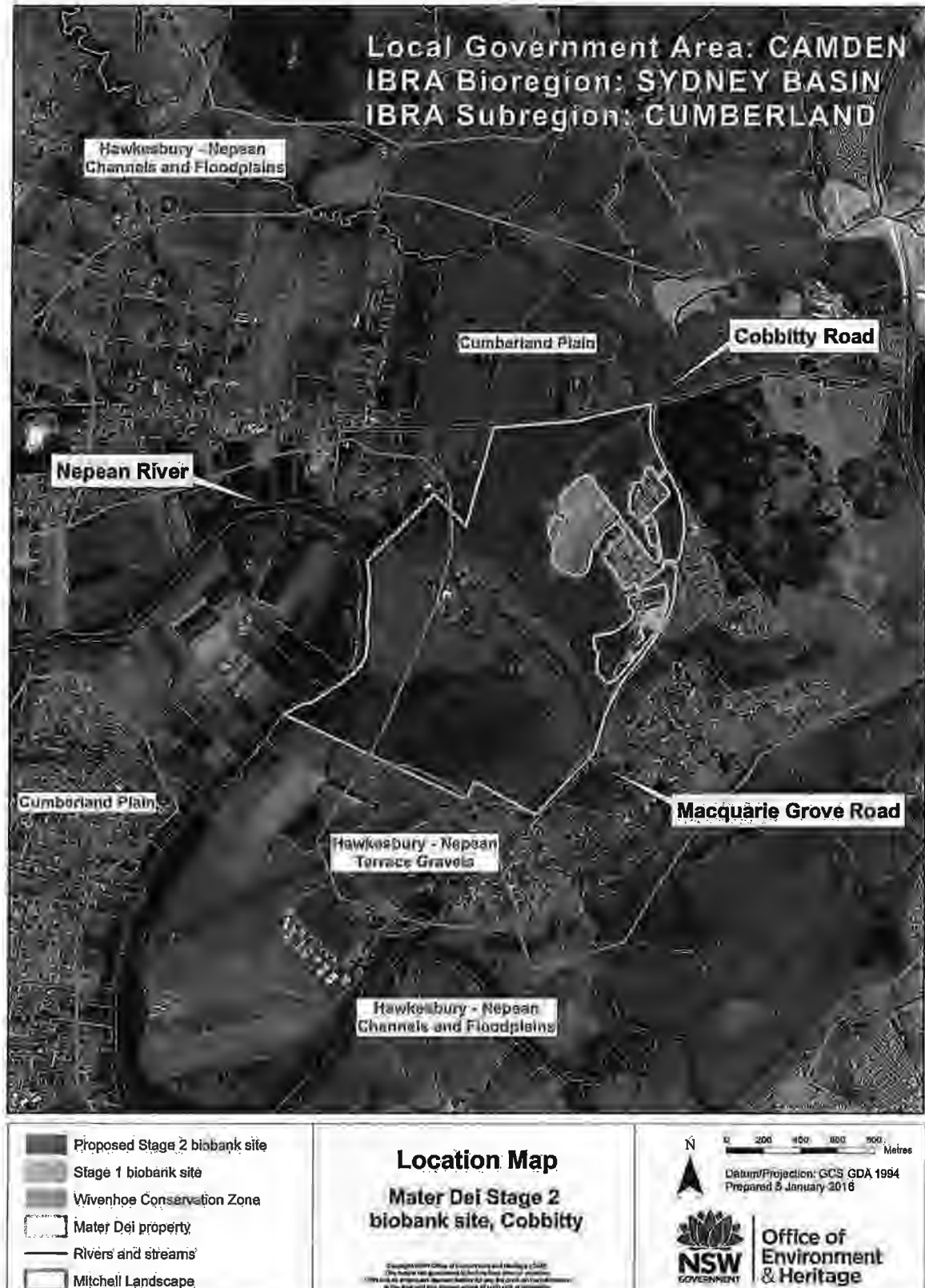
Sandra Harris
Witness name-Please Print

59 Coulburn St,
SYDNEY. NSW. 2000.
Witness address

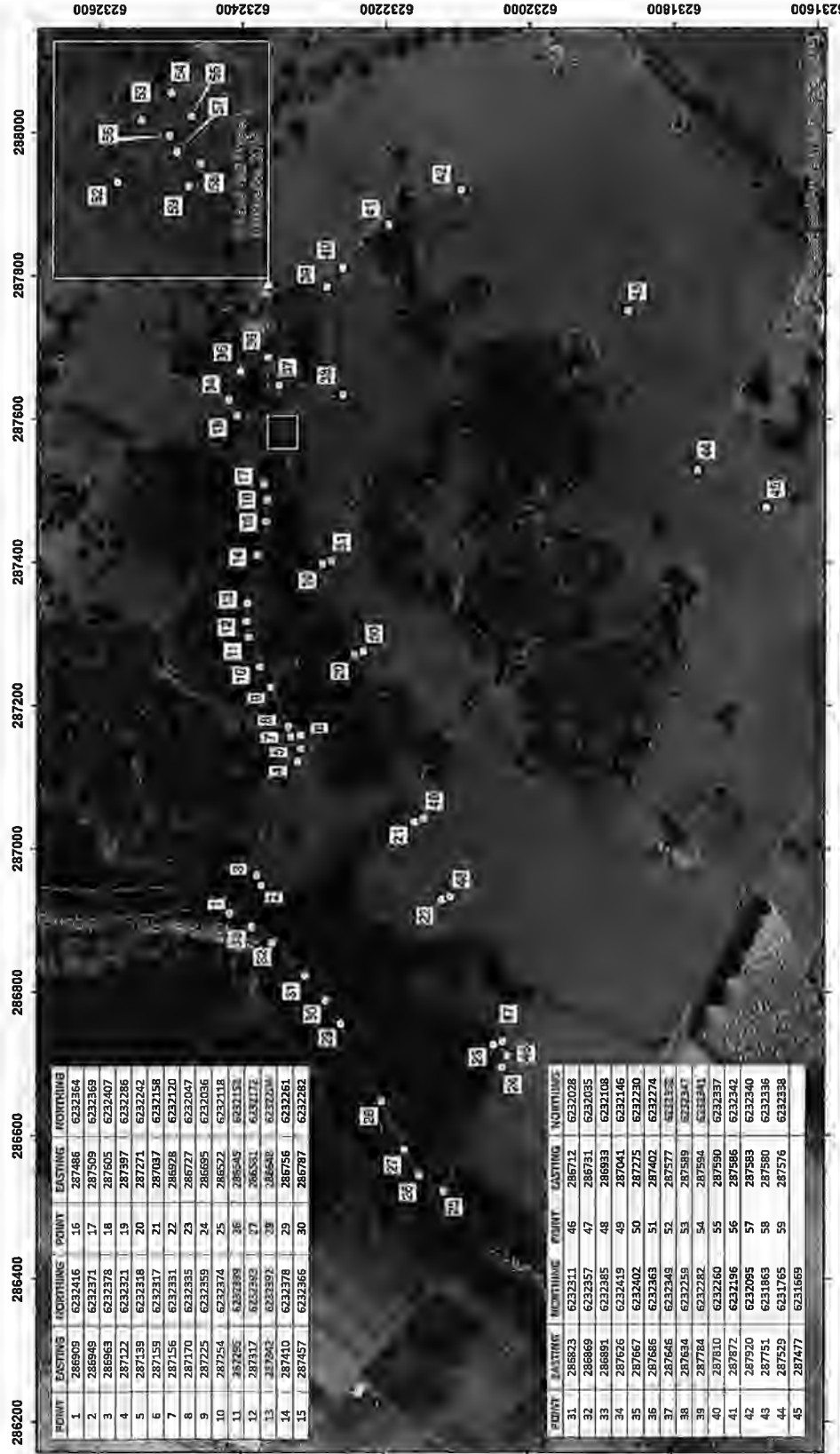
Annexure A: Maps of biobank site

- Map A Location Map - Mater Dei Stage 2 Biobank site, Cobbity (Dated 5 January 2016)
- Map B Site Map - Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016)
- Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016)
- Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016)
- Map E Vegetation Zones - Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 17 March 2016)
- Map F Photo Monitoring Points - Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016)

Map A: Location Map- Mater Dei Stage 2 Biobank site, Cobbitty (Dated 5 January 2016)



Map B Site Map - Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016)



0 60 120 180 240 Metres

N

Datum/Projection: GCS GDA 1994
Prepared 5 January 2016

Office of Environment & Heritage

NSW

Site Map

Mater Dei Stage 2 biobank site

Lot 100 DP 1159926

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OEH and its employees disclaim liability for any loss or damage to the property and any consequences of such loss or damage.

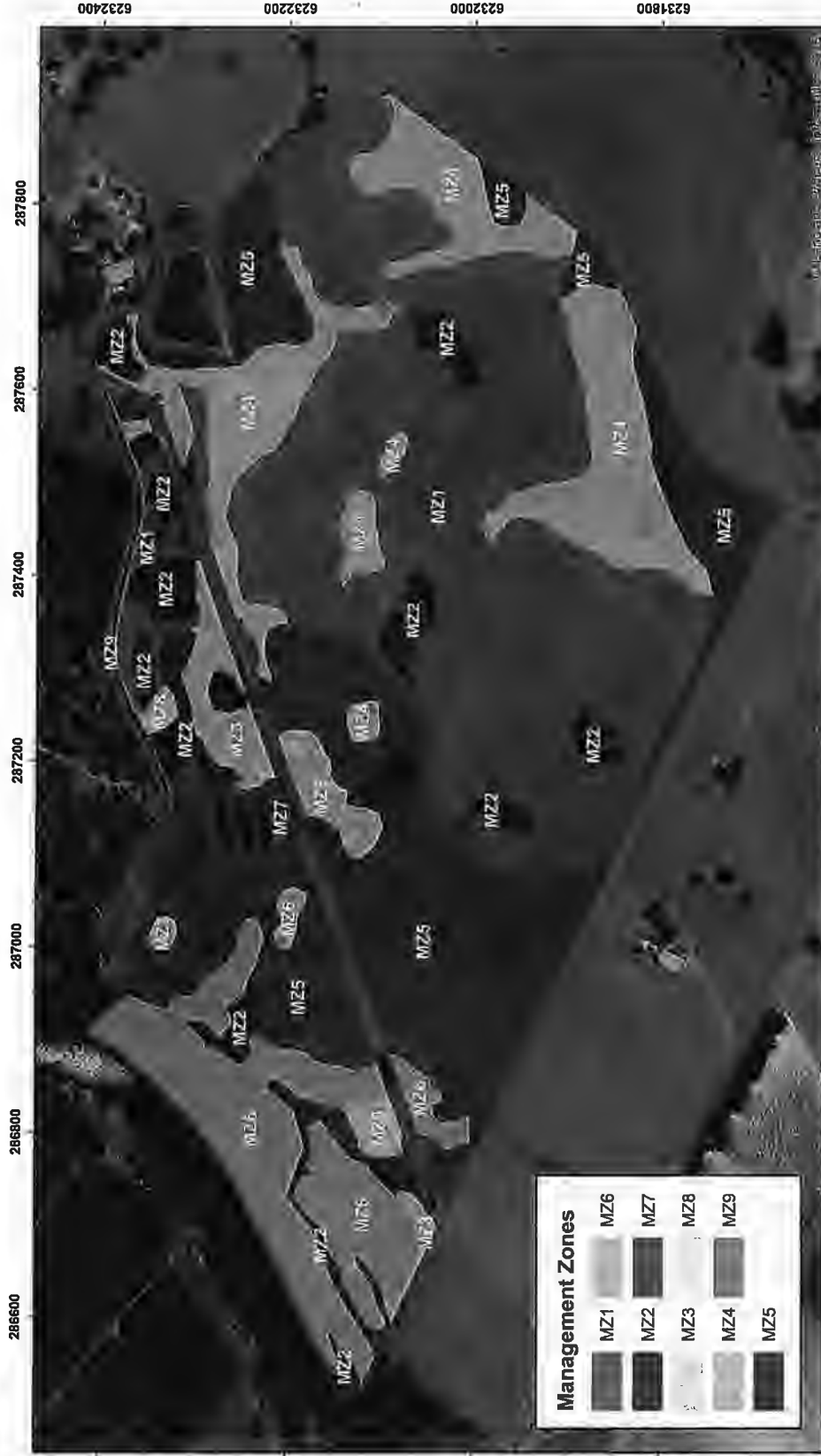
Legend

○ Boundary points

□ Biobank site

□ Cadastre

Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016)



Management Zone Map
Mater Dei Stage 2 biobank site
Lot 100 DP 1159926

Datum/Projection: GCS GDA 1994
Prepared 17 March 2016

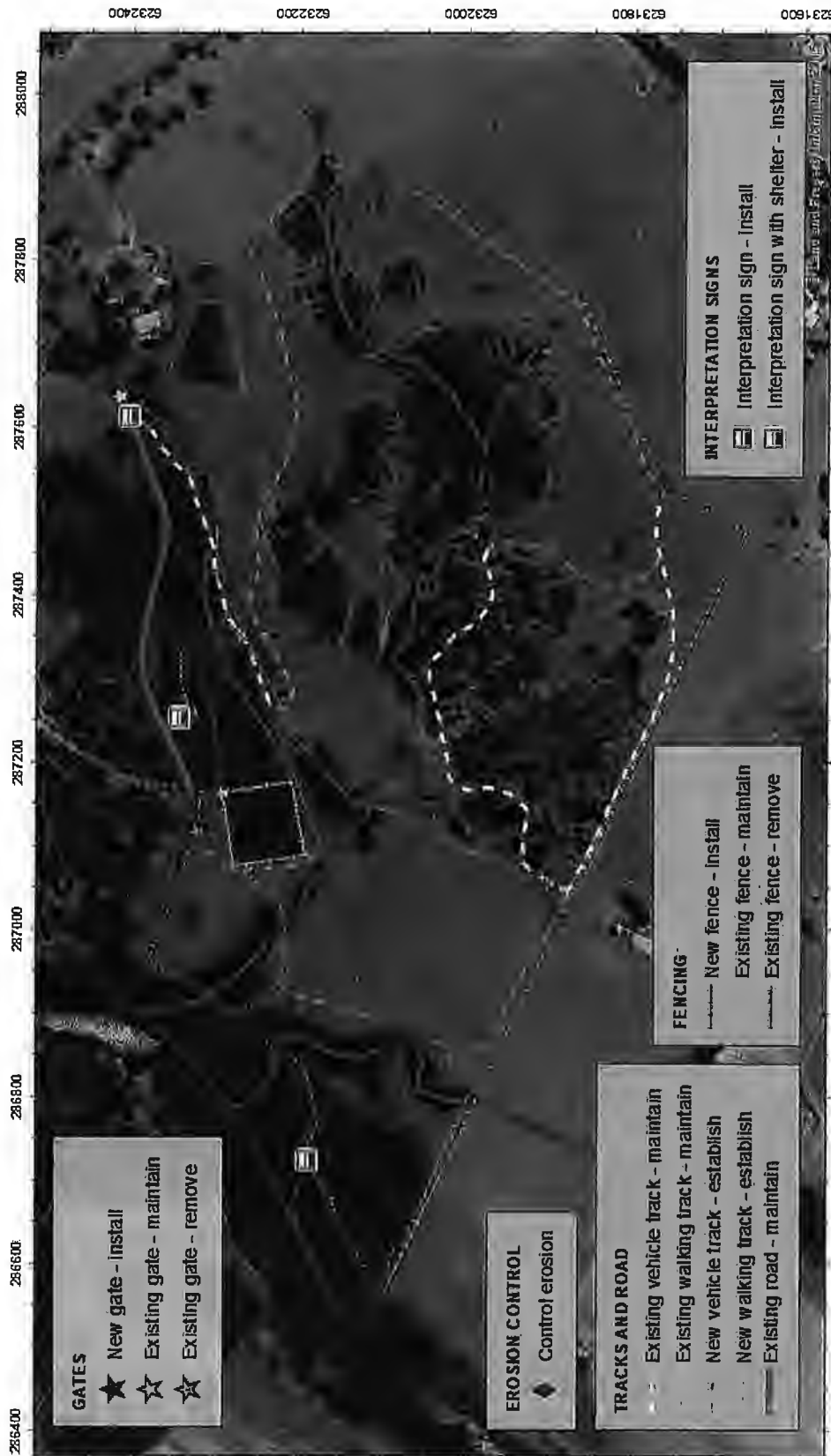
Office of
Environment
& Heritage
NSW

Legend

Biobank site

Not Native Vegetation

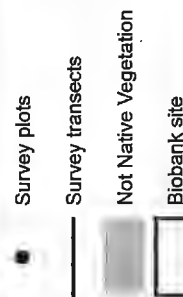
Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016)



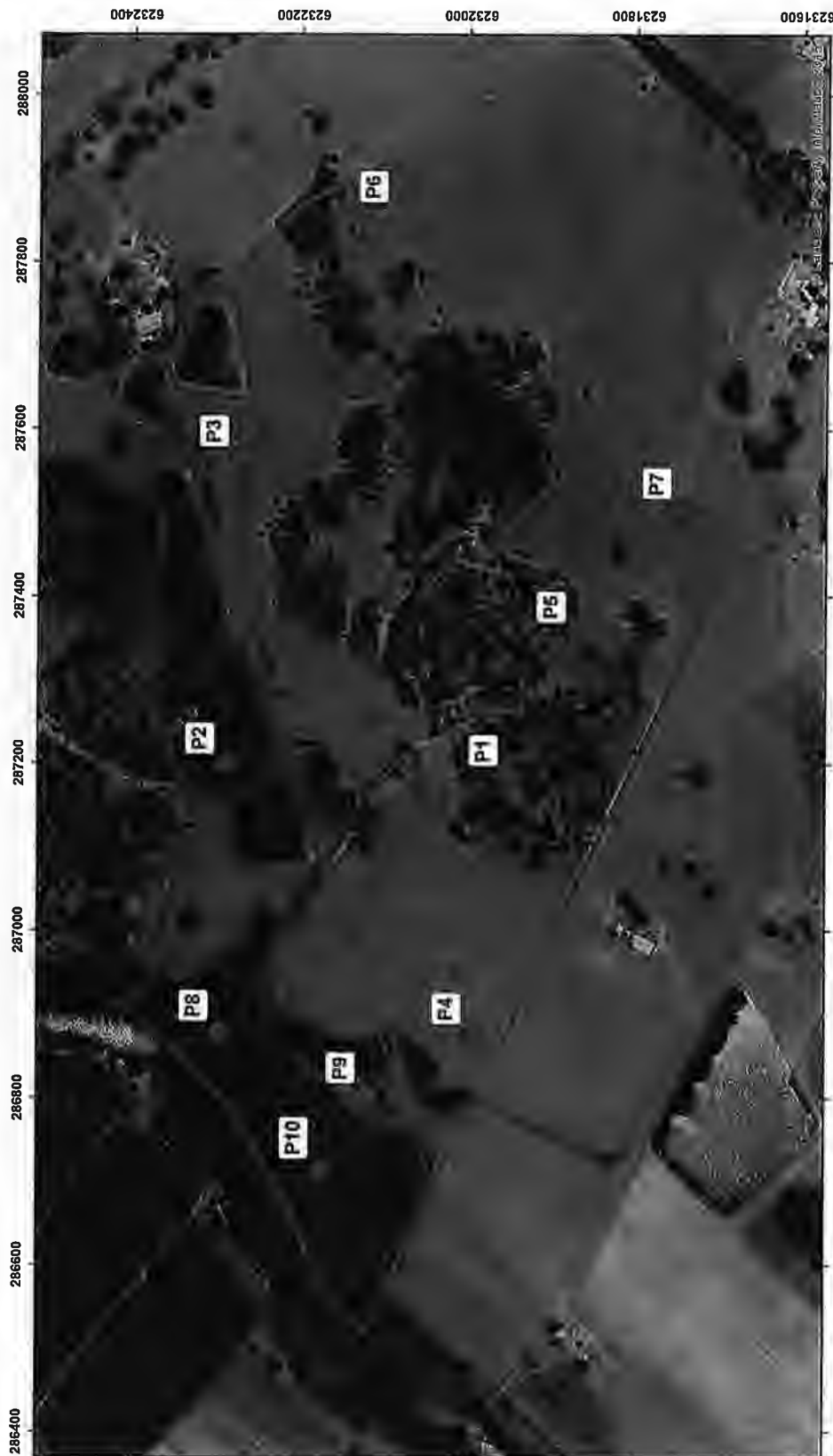
Legend □ Biobank site — Watercourse	Property Management Actions Mater Dei Stage 2 biobank site Lot 100 DP 1159926 Copyright 2016 Office of Environment and Heritage, NSW. All rights reserved. This map is for informational purposes only and does not constitute a guarantee of accuracy or completeness. The map is subject to change without notice.	Office of Environment & Heritage NSW Datum/Projection: GCS GDA 1994 Date: 5 January 2016 0 50 100 150 200 Metres
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8/1/16
JH

ID number 217



Map F Photo Monitoring Points - Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016)



Legend  Biobank site  Photo Monitoring Points	Photo-monitoring Points Mater Dei Stage 2 biobank site Lot 100 DP 1159926 Copyright (C) 2016 by the Office of Environment and Heritage (OEH). This map is a reproduction of the map of the biobank site and is not to be used for any other purpose without the written permission of the OEH.	N  0 50 100 150 200 Metres Datum/Projection: GCS GDA 1994 Prepared 5 January 2016  Office of Environment & Heritage
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Handwritten signatures and initials at the bottom right of the page.

Annexure B: Biobanking Agreement Credit Report

BioBanking credit report

Request for additional gain in site value
This report identifies the number and type of credits required at a BIOBANK SITE



Office of
Environment
& Heritage

Date of report: 3/2/19/2019

Time: 2:31:45PM

Calculator version: v4.0

Biobank details

Proposal ID: 0078/2016/2376B
Proposal name: Mater Dei Stage 2 - final
Proposal address: 228 Macquarie Grove Road Cobbitty NSW 2570

Proponent name: Trustees of the Estate of the Good Samaritan
Proponent address: PO Box 1076 Glebe NSW 2037
Proponent phone: (02) 8752 5314

Assessor name: Martin Bremner
Assessor address: 6 Betty Ave Winston Hill NSW 2153
Assessor phone: 9585 6930
Assessor accreditation: 0078

Additional information required for approval

☐ Use of local benchmark

☐ Expert report...

SP 1/19

Ecosystem credits summary

Plant Community type	Area (ha)	Credits created
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	23.47	341.00
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	33.38	538.00
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	0.84	12.00
Total	57.69	891

Credit profiles

1. Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion, (HN528)

Number of ecosystem credits created 424
 IBRA sub-region Cumberland - Hawkesbury/Nepean

2. Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion, (HN528)

Number of ecosystem credits created 112
 IBRA sub-region Cumberland - Hawkesbury/Nepean

3. Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion, (HN529)

Number of ecosystem credits created 12
 IBRA sub-region Cumberland - Hawkesbury/Nepean

4. Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion, (HN526)

Number of ecosystem credits created 147
 IBRA sub-region Cumberland - Hawkesbury/Nepean

5. Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion, (HN526)

Number of ecosystem credits created 194
 IBRA sub-region Cumberland - Hawkesbury/Nepean

Species credits summary

Common name	Scientific name	Extent of impact Ha or individuals	Number of species credits created
Camden White Gum	<i>Eucalyptus benhamii</i>	4.00	28

Additional management actions

Additional management actions are required for:

Vegetation type or threatened species	Management action details
Camden White Gum	Control of feral pigs
Camden White Gum	Feral and/or over-abundant native herbivore control
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Exclude commercial apiaries
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Exclude miscellaneous feral species
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Feral and/or over-abundant native herbivore control
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Fox control
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Slashing
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Exclude commercial apiaries
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Exclude miscellaneous feral species
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Feral and/or over-abundant native herbivore control
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Fox control
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Slashing
Grey Box - Forest Red Gum grassy woodland on flats of the southern Cumberland Plain, Sydney Basin Bioregion	Exclude commercial apiaries
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Exclude miscellaneous feral species
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Feral and/or over-abundant native herbivore control
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Fox control

Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Slashing
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Annexure C: Management actions and management plans

This Annexure C, together with Annexure D, is approved as a property management plan prepared by the landowner under the section 113B of the *Threatened Species Conservation Act 1995*.

A Management actions

A1 The landowner must undertake, or cause to be undertaken, the Management Actions contained in the following tables in this Annexure C:

- (i) Section 1: Standard management actions ('Section 1'); and
- (ii) Section 2: Additional management actions ('Section 2')

in accordance with the conditions specified in Section 1 and Section 2 and within the timeframes (if any) specified in Section 1 and Section 2.

A2 In carrying out the management actions, the landowner must implement and, at all relevant times comply with, the management plans as contained in the following tables in this Annexure C:

- (i) Section 3: Standard management plans ('Section 3'); and
- (ii) Section 4: Additional management plans ('Section 4')

in accordance with the conditions specified in those tables and management plans and within the timeframes (if any) specified in Section 3 and Section 4.

A3 Where a management action requires that something must not be done, the landowner must not do that thing and must not cause, authorise or permit any other person to do that thing.

A4 Notwithstanding A1 and A2 above, the landowner is not required to undertake the management actions so described if the action is inconsistent with anything (act or omission) required or authorised to be done by the landowner by or under any of the following:

- I. removal of noxious weeds under the *Noxious Weeds Act 1993*
- II. the control of noxious animals under the *Rural Lands Protection Act 1998*
- III. an obligation arising under an eradication order or pest control order under Part 11 of the *Rural Lands Protection Act 1998*
- IV. a direction under section 37A of the *State Emergency and Rescue Management Act 1989* in relation to a state of emergency or a direction under section 22A of the *State Emergency Service Act 1989*
- V. in respect of the *Rural Fires Act 1997*:
 - (a) an emergency fire fighting act within the meaning of that Act
 - (b) emergency bushfire hazard reduction work within the meaning of that Act
 - (c) any notified steps issued to the landowner under section 63 of that Act

- (d) any notice by a local authority under section 66 of that Act to undertake specified bushfire hazard reduction work
 - (e) otherwise as part of any managed bushfire hazard reduction work within the meaning of the *Rural Fires Act 1997* that is carried out in accordance with:
 - i. a current bushfire hazard reduction certificate that applies to the work
 - ii. the provisions of any bushfire code applying to the land specified in the certificate.
- A5 The landowner may 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.

B Timing for carrying out management actions

- B1 An obligation to carry out a management action (or implement and comply with a management plan):
- (i) will commence on the commencement date or first payment date (as indicated); and
 - (ii) must be carried out in perpetuity unless otherwise indicated in Sections 1 to 4 of this Annexure C.
- B2 The landowner must ensure that if a timeframe is specified in Sections 1 to 4, that the management action is carried out within that timeframe.
- B3 For the avoidance of doubt, an obligation to carry out a management action within a specified timeframe continues until the management action has been carried out even if the time for compliance has passed.

Section 1: Standard management actions

Standard management actions		
Item 1	Management of grazing for conservation	Timing
1.1	Stock must not be permitted to graze in any area of the biobank site. Specific requirements: Existing stock proof fencing and gates identified on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement as 'Existing fence - maintain' or 'Existing gate - maintain' must be retained and maintained to exclude livestock from the biobank site.	Ongoing from first payment date.
1.2	The landowner can prevent stock from grazing in specific areas by erecting and maintaining stock proof fencing and gates. Specific requirements: - Fencing and gates identified on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement as 'New fence - install' or 'New gate - install' must be installed within 12 months of the first payment date and maintained to exclude livestock from the biobank site. - Fencing identified on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement as 'Existing fence - remove', must be removed within 12 months of the first payment date. Fence removal will involve the removal of wire and metal posts only. Wooden posts can be left in the ground. - The gates identified on Map D Property Management Actions Mater Dei Stage 2 Biobank Site- Lot 100 DP1159926 (Dated 5 January 2016) contained in Annexure A to this agreement as 'Existing gate - remove' must be removed when the adjacent fencing is replaced.	Installation of new gates and new fences within 12 months of the first payment date, and maintenance ongoing. Removal of existing gates and existing fences within 12 months of the first payment date.
1.3	This item is not applicable.	
1.4	If, at any time, the landowner observes stock in any area of the biobank site, the landowner must take necessary measures to remove the stock from the area immediately.	Ongoing from first payment date.
Item 2	Weed control	Timing
2.1	The landowner must implement and, at all relevant times, comply with, the integrated weed management plan included in Section 3 ('the weed management plan') (or such updated integrated weed management plan as has been approved by the Chief Executive under item 2.2 below). To allow for adaptive management, minor alterations can be made to the implementation of the weed management plan. Any alterations must be recorded in writing in accordance with Section	Ongoing from first payment date.

	3 of this Annexure.	
2.2	The weed management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Chief Executive in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Chief Executive within 3 months of commencing the review. Where the Chief Executive determines from the review that an update of the weed management plan is required, the Chief Executive will notify the landowner in writing that an update of the plan is required. The landowner must update the plan and submit it to the Chief Executive for approval within 3 months of receiving written notification from the Chief Executive that an update of the plan is required. The revised plan must be prepared by an appropriately qualified person and must cover the matters outlined below and any additional matters specified by the Chief Executive in writing: • a description of the target weed/s at the biobank site and their location/s, linked to each management zone where weeds are present • the method/s of weed control in each zone • the frequency of weed control activities at the site, taking into account management practices where weeds are providing habitat for native species • the timing of any planting of native plant species required in each management zone to provide alternative habitat for native species affected by weed control activities • methods for monitoring the success of weed control activities • a timetable/measures for inspections to identify new weed species or exotic plant species (including noxious weeds under the <i>Noxious Weeds Act 1993</i>) • additional weed control activities to destroy or remove any new weed species that are found on the site • measures for assessing and reporting monitoring results • a diary for recording actions taken in accordance with the weed management plan and minor alterations to this plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	Ongoing from first payment date.
Item 3	Management of fire for conservation	Timing
3.1	The landowner must implement, and at all relevant times, comply with the fire management plan included in Section 3 (or such updated fire management plan as has been approved by the Chief Executive under item 3.2 below) (the fire management plan). To allow for adaptive management and weather conditions, minor alterations can be made to the implementation of the fire management plan, and must be recorded in writing in accordance with Section 3 of this Annexure.	Ongoing from first payment date.
3.2	The fire management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person. The review is to consider the efficacy of the	Ongoing from first payment date.

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	management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Chief Executive in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Chief Executive within 3 months of commencing the review. Where the Chief Executive determines from the review that an update of the fire management plan is required, the Chief Executive will notify the landowner in writing that an update of the plan is required. The landowner must update the plan and submit it to the Chief Executive for approval within 3 months of receiving written notification from the Chief Executive that an update of the plan is required. The revised plan must be prepared by an appropriately qualified person and cover the matters outlined below and any additional matters specified by the Chief Executive in writing: • the year the last fire went through, the type of fire and the extent of the fire and location, where known • frequency of natural fires in the area of the biobank site, where known • a description of locations and management zones where ecological burns will be conducted and areas that will not be burnt • the methods that will be used for ecological burns • the fire frequency intervals recommended for the vegetation types and threatened species present, including any required adjustment to the schedule in the event of a wildfire or activities undertaken under the <i>Rural Fires Act 1997</i> to ensure minimum frequency between ecological burns • the fire intensity for the recommended vegetation types • the time of year suitable for ecological burns • the diary for recording actions taken in accordance with the fire management plan and minor alterations to fire management plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	
3.3	Fires must not be lit on the biobank site other than for the purpose of ecological burning in accordance with the fire management plan or as permitted as a permissible human activity on the biobank site under item 4 of this Annexure or clause 3.6 of this agreement.	Ongoing from commencement date.
Item 4	Management of human disturbance	Timing
4.1	Except as permitted under clause 3 of this agreement or item 4.2 (below), human activities that adversely affect biodiversity values on the biobank site, including repeated disturbance of native animals, must not be carried out, or caused or permitted to be carried out, on the biobank site.	Ongoing from commencement date.
4.2	Human activities that may have a negative impact on biodiversity values on the biobank site are permitted if they are listed as permissible activities under clause 3.6 of this agreement or if they	Ongoing from commencement date.

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	are undertaken as part of the management actions or management plans.	
4.3	Existing waste on the biobank site comprises of an old vehicle and machinery in Management Zone 2, identified as MZ2 on Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016) contained in Annexure A to this agreement. These may 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.	Ongoing from commencement date.
4.4	The landowner must not store, dispose of, or cause or permit to be disposed of, any waste on the biobank site. Note: The storage or disposal of waste on the biobank site may require an approval under the <i>Protection of the Environment Operations Act 1997</i> .	Ongoing from commencement date.
4.5	The landowner must take all reasonable steps to remove waste deposited by others on the biobank site, or which is otherwise present on the biobank site. Note: The old vehicle and machinery in Management Zone 2 (and referred to in Management Action 4.3) may 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.	Ongoing from first payment date.
4.6	Signage must be installed and maintained to deter human disturbance including waste dumping. Unless otherwise indicated, signage must be the biobanking signs available from the OEH. Specific requirements: - One biobanking sign must be installed on each of the gates identified as 'New gate – install' or 'Existing gate - maintain' on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) and contained in Annexure A to this agreement within 3 months of the first payment date. - A Biobanking sign must be replaced if the writing or images on the sign are no longer clearly visible or are illegible. - One interpretation sign must be installed with a protective shelter in Management Zone 8 within 24 months of the first payment date. The sign with protective shelter must be installed at the location identified as 'Interpretation Sign with Shelter - install' on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) and contained in Annexure A to this agreement. 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. - Two additional interpretation signs must be installed within 24 months of the first payment date at locations identified as 'Interpretation Sign - install' on Map D Property Management Actions Mater Dei Stage 2 Biobank Site – Lot 100 DP 1159926 (Dated 5 January 2016) and contained in Annexure A to this agreement. 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.	Install BioBanking sign within 3 months of first payment date. Install Interpretation Sign with protective shelter within 24 months of first payment date. Install Interpretation Signs within 24 months of first payment date.

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4.7	A protective shelter will be constructed around the Interpretation Sign at the time of installation of the Interpretation Sign at the location identified as 'Interpretation Sign with Shelter - install' on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement. The dimensions of the protective shelter will not exceed 3 metres in height by 3 metres in width.	Install protective shelter around Interpretation Sign at same time as installation of sign and within 24 months of first payment date.
4.8	The landowner must remove the ropes course in Management Zone 1.	Removal within 36 months of the first payment date.
4.9	The landowner may maintain and or replace 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. Note: These areas are in management zones bordering other areas of the biobank site or other biobank sites and it is important that active management of weeds in these zones is undertaken to protect this site or other biobank sites. These zones did not increase the site value of the biobank site for the purpose of creating biodiversity credits.	Ongoing from commencement date.
4.10	The landowner may 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. Note: These areas are in management zones bordering other areas of the biobank site or other biobank sites and it is important that active management of weeds in these zones is undertaken to protect this site or other biobank sites. These zones did not increase the site value of the biobank site for the purpose of creating biodiversity credits.	Ongoing from commencement date.
4.11	The landowner can manage access to the biobank site for the purposes of biodiversity protection and management of the biobank site. The landowner can manage this access by establishing and maintaining walking tracks and vehicle tracks and by maintaining an existing access road. Specific requirements: - Maintenance of the existing access road identified as 'Existing road - maintain' on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement. - The establishment and maintenance of new walking and vehicle tracks for the purpose of biodiversity protection and management at the locations identified as 'New walking track - establish' and 'New vehicle track - establish' on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement. - The maintenance of existing walking and vehicle tracks for the purpose of biodiversity management and protection at the locations identified as 'Existing walking track - establish' and 'Existing vehicle track - establish' on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement.	Maintenance of existing road ongoing from commencement date. Establishment and maintenance of new walking and vehicle tracks ongoing from first payment date. Maintenance of existing walking and vehicle tracks ongoing from first payment date.

4.12	Passive recreation by small groups is permitted 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. Specific requirements: - Overnight stays and or camp fires are permitted in Management Zone 8 of the biobank site, identified as MZ8 on Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016) contained in Annexure A to this agreement. - 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. - Use of existing structures including sheds, picnic tables, barbeques and toilets is permitted in Management Zone 8 of the biobank site, identified as MZ8 on Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016) contained in Annexure A to this agreement.	Ongoing from commencement date
Item 5	Retention of regrowth and remnant native vegetation Note: An approval under the <i>Native Vegetation Act 2003</i> may be required to carry out thinning or any other removal or damage to native vegetation under this item.	Timing
5.1	Native vegetation (whether remnant native vegetation or regrowth) on the biobank site must not be cut down, felled, thinned, logged, killed, destroyed, poisoned, ringbarked, uprooted, burnt or otherwise removed, except in accordance with item 5.2 below, or if it is required as part of the management actions or it is essential for the carrying out of permissible development under clause 3.5 of this agreement. Note: Native vegetation on the biobank site may be managed to improve biodiversity values by thinning to benchmark stem densities over no more than 80% of each management zone. Benchmark stem densities has the same meaning as defined in the Vegetation Benchmark Database as published by OEH and updated from time to time. An approval under the <i>Native Vegetation Act 2003</i> may be required to carry out thinning or any other removal or damage to native vegetation under this item.	Ongoing from commencement date.
5.2	Native vegetation on the biobank site must not be burnt except in accordance with the fire management plan prepared pursuant to item 3 above.	Ongoing from commencement date.
Item 6	Replanting or supplementary planting where natural regeneration will not be sufficient	Timing
6.1	The landowner must undertake planting or seeding of the native groundcover/shrub/tree species indicated in the planting schedule for the biobank site as set out in item 6.6 below ('the planting schedule') in the areas of planting and within the timeframe indicated in the planting schedule. If the landowner cannot complete the planting within the timeframe indicated in the planting schedule due to local weather	Commencing from first payment date according to timeframe indicated in the planting schedule.

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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.

Appropriate site treatment (e.g. weed control) of each area of planting or seeding identified in the planting schedule must be undertaken prior to such planting.

Specific requirements for all plantings:

- 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 or in areas identified as 'New vehicle track – establish', 'Existing vehicle track - maintain', 'New walking track - establish' or 'Existing walking track - maintain' on Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement.

Specific requirements for planting native trees and shrubs in Management Zone 4 and Management Zone 5 (paddock revegetation zones)

- Management Zone 4 and Management Zone 5 are those areas identified as MZ4 and MZ5 respectively on Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016) contained in Annexure A to this agreement.
- 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.

Specific requirements for planting native groundcovers in Management Zone 5 (paddock full revegetation zone):

- Management Zone 5 is that area identified as MZ5 on Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016) contained in Annexure A to this agreement.
- 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. <u>Specific requirements for planting native trees and shrubs in Management Zone 6 (riparian revegetation zone):</u> • Management Zone 6 is that area identified as MZ6 on Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016) contained in Annexure A to this agreement. • 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. <u>Specific requirements for planting native groundcovers in Management Zone 6 (riparian revegetation zone):</u> • Management Zone 6 is that area identified as MZ6 on Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016) contained in Annexure A to this agreement. • 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. <u>Specific requirements for planting <i>Eucalyptus benthamii</i> in Management Zone 6 (riparian revegetation zone):</u> • Management Zone 6 is that area identified as MZ6 on Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016) contained in Annexure A to this agreement. • Collect and propagate <i>Eucalyptus benthamii</i> from seed collected from remnant trees on the biobank site.	
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	- 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 <i>E. benthamii</i> 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	
6.2	This item is not applicable.	
6.3	The landowner must survey each area of planting or seeding established under item 6.1 above and document them to determine whether the planted plants or seeds have established and survived, and retain the findings in accordance with the record keeping requirements. If, after the first survey or subsequent surveys, the establishment and survival rate of plants in an area of planting or seeding are below those usual for the species and region, the landowner must supplement the planting in the adversely affected areas within a reasonable timeframe (usually within 12 months, though this can be varied and recorded in a diary with reasons for variation, if the weather is unsatisfactory for the establishment and survival of plants or seeds).	Conduct the first survey 24 months after the completion of planting or seeding in each area of planting or seeding, and then every 12 months thereafter.
6.4	Areas of planting and seeding must be managed as required to assist the establishment and survival of native plant species. Management includes watering, slashing, scalping, spraying of weeds, plant replacement and strategic grazing by stock (in accordance with item 6.2 above) at strategic times of the year to control weeds to improve biodiversity values. The dates of planting must be recorded in accordance with the record keeping requirements set out in Annexure D.	As required, from the date that planting or seeding areas are established.
6.5	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	As required (from commencement date if relevant to prepare for future planting).

6.6 Planting schedule at the biobank site					
Species type	Species' scientific name	Management zone/s (MZ) of planting	No. of plants per area	Planting method	Timing
CANOPY	<i>Eucalyptus moluccana</i>	MZ4 (HN528 or HN529)	1500	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	<i>Eucalyptus tereticornis</i>	MZ4 (HN528 or HN529)	1550	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia decurrens</i>	MZ4 (HN528 or HN529)	3000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia falcata</i>	MZ4 (HN528 or HN529)	1000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia implexa</i>	MZ4 (HN528 or HN529)	3000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia parramattensis</i>	MZ4 (HN528 or HN529)	3000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Bursaria spinosa subsp. spinosa</i>	MZ4 (HN528 or HN529)	1000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Indigofera australis</i>	MZ4 (HN528 or HN529)	1000	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	<i>Eucalyptus moluccana</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	<i>Eucalyptus tereticornis</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia decurrens</i>	MZ5 (HN528 or HN529)	2500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia falcata</i>	MZ5 (HN528 or HN529)	500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia implexa</i>	MZ5 (HN528 or HN529)	2500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia parramattensis</i>	MZ5 (HN528 or HN529)	2500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Bursaria spinosa subsp. spinosa</i>	MZ5 (HN528 or HN529)	500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Indigofera australis</i>	MZ5 (HN528 or HN529)	500	Hiko cell	Between Years 3 and 5 (inclusive)
GROUND COVER	<i>Brunoniella australis</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Dianella revoluta var. revoluta</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Dichelachne micrantha</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Echinopogon ovatus</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Einadia hastata</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Einadia trigonos</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Goodenia hederacea ssp hederacea</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Juncus usitatus</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Microlaena stipoides var. stipoides</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Oplismenus aemulus</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Phyllanthus virgatus</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)

GROUND COVER	<i>Poa labillardieri</i> var.	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Pratia purpurascens</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Solanum prinophyllum</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Themeda australis</i>	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
CANOPY	<i>Angophora floribunda</i>	MZ5 (HN526)	400	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	<i>Angophora subvelutina</i>	MZ5 (HN526)	400	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	<i>Eucalyptus amplifolia</i>	MZ5 (HN526)	900	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	<i>Eucalyptus baueriana</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	<i>Eucalyptus tereticornis</i>	MZ5 (HN526)	900	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	<i>Melaleuca decora</i>	MZ5 (HN526)	200	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia decurrens</i>	MZ5 (HN526)	1500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia floribunda</i>	MZ5 (HN526)	1500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia implexa</i>	MZ5 (HN526)	2500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Acacia parramattensis</i>	MZ5 (HN526)	4000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Breynia oblongifolia</i>	MZ5 (HN526)	2000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	MZ5 (HN526)	1800	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	<i>Melicytus dentatus</i>	MZ5 (HN526)	1800	Hiko cell	Between Years 3 and 5 (inclusive)
GROUND COVER	<i>Adiantum aethiopicum</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Austrostipa ramosissima</i>	MZ5 (HN526)	2000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Brunoniella australis</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Carex longibrachiata</i>	MZ5 (HN526)	4000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Centella asiatica</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Cymbopogon refractus</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16

					and 20 (inclusive)
GROUND COVER	<i>Dianella longifolia</i>	MZ5 (HN526)	2000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Dichelachne micrantha</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Echinopogon ovatus</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Einadia hastata</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Einadia trigonos</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Entolasia marginata</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Geranium homeanum</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Imperata cylindrica</i>	MZ5 (HN526)	4000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Juncus usitatus</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Lomandra longifolia</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Microlaena stipoides</i> var. <i>stipoides</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Oplismenus aemulus</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Pallaea falcata</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Phyllanthus virgatus</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Poa affinis</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Poa labillardieri</i> var. <i>labillardieri</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Pratia purpurascens</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	MZ5 (HN526)	1000	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Solanum prinophyllum</i>	MZ5 (HN526)	500	Hiko cell	Between Years 16 and 20 (inclusive)
GROUND COVER	<i>Themeda australis</i>	MZ5 (HN526)	2000	Hiko cell	Between Years 16 and 20 (inclusive)
CANOPY	<i>Eucalyptus benthamii</i>	MZ6 (HN526)	40	Tubestock	By the end of year 10
CANOPY	<i>Angophora floribunda</i>	MZ6 (HN526)	100	Hiko cell	Between Years 4 and 19 (inclusive)

CANOPY	<i>Angophora subvelutina</i>	MZ6 (HN526)	100	Hiko cell	Between Years 4 and 19 (inclusive)
CANOPY	<i>Casuarina cunninghamiana</i>	MZ6 (HN526)	100	Hiko cell	Between Years 4 and 19 (inclusive)
CANOPY	<i>Eucalyptus elata</i>	MZ6 (HN526)	440	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Acacia binervia</i>	MZ6 (HN526)	300	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Acacia decurrens</i>	MZ6 (HN526)	300	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Acacia floribunda</i>	MZ6 (HN526)	300	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Acacia parramattensis</i>	MZ6 (HN526)	300	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Acmena smithii</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Backhousia myrtifolia</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Breynia oblongifolia</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Bursaria spinosa subsp. spinosa</i>	MZ6 (HN526)	100	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Melia azedarach</i>	MZ6 (HN526)	100	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Melicytus dentatus</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
SHRUB	<i>Tristanopsis laurina</i>	MZ6 (HN526)	100	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Adiantum aethiopicum</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Austrostipa ramosissima</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Carex longibrachiata</i>	MZ6 (HN526)	500	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Centella asiatica</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Cymbopogon refractus</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Dianella longifolia</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Dichelachne micrantha</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Echinopogon ovatus</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Einadia hastata</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Einadia trigonos</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Entolasia marginata</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Geranium homeanum</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Imperata cylindrica</i>	MZ6 (HN526)	500	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Lomandra longifolia</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Microlaena stipoides</i> var. <i>stipoides</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Oplismenus aemulus</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Pallaea falcata</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)

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GROUND COVER	<i>Phyllanthus virgatus</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Poa affinis</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Poa labillardieri</i> var. <i>labillardieri</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Pratia purpurascens</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Solanum prinophyllum</i>	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUND COVER	<i>Themeda australis</i>	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)

Item 7	Retention of dead timber	Timing
7.1	Dead timber (whether standing or fallen and including branches and leaf litter) must not be removed from or moved within the biobank site.	Ongoing from commencement date.
7.2	Timber from outside the biobank site may be introduced to and placed on the biobank site to improve biodiversity values. Once the timber has been brought onto the site, it is subject to the requirements of item 7.1 above. Timber brought from outside the biobank site must be documented by the landowner in writing and records must be kept in accordance with the record keeping requirements. The landowner must record the approximate amount of timber brought from outside the biobank site, the location where the timber was placed on the biobank site and the date on which it was placed (month, year).	When required but not required before the first payment date.
Item 8	Erosion control	Timing
8.1	All reasonable steps must be undertaken to prevent, control and remedy erosion on the biobank site. Soil management for preventing and controlling erosion is to be undertaken using best practice management, such as that developed by the Soil Conservation Service, applied as relevant for the biobank site. The landowner must manage existing erosion on the biobank site, at the locations identified as 'Control erosion' on the Map D Property Management Actions Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) contained in Annexure A to this agreement 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.	Commencing from first payment date.

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Item 9	Retention of rocks	Timing
9.1	The landowner must not remove, or cause or permit to be removed, rocks from the biobank site or move, or cause or permit to be moved, rocks within the biobank site.	Ongoing from commencement date.
9.2	This item is not applicable	

Section 2: Additional management actions

Additional management actions		
Item 10	Control of feral and overabundant native herbivores	Timing
10.1	The landowner must implement, and at all relevant times, comply with the management plan to control feral and overabundant native herbivores included in Section 4 (or such updated management plan as has been approved by the Chief Executive under item 10.2 below) ('the feral and overabundant native herbivores management plan'). To allow for adaptive management, minor alterations can be made to the implementation of the feral and overabundant native herbivores management plan, which must be recorded in writing in accordance with Section 3 of this Annexure. <i>Note:</i> A licence under Section 121 of the <i>National Parks and Wildlife Act 1974</i> may be required to control overabundant native herbivores.	Ongoing from first payment date.
10.2	The feral and overabundant native herbivores management plan must be reviewed at intervals of no less than 4 years and no more than 6 years by an appropriately qualified person. The review is to consider the efficacy of the management actions in the plan and consider the effectiveness of the matters contained in the plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Chief Executive in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Chief Executive within 3 months of commencing the review. Where the Chief Executive determines from the review that an update of the feral and overabundant native herbivores management plan is required, the Chief Executive will notify the landowner in writing that an update of the plan is required and the landowner must update the plan and submit the amended plan to the Chief Executive for approval within 3 months of receiving written notification from the Chief Executive that an update of the plan is required. The revised plan must be prepared by an appropriately qualified person and cover the matters outlined below and any additional matters specified by the Chief Executive in writing: • a description of the feral or overabundant native herbivore/s • consideration of relevant current OEH and other pest management programs and methods • the method/s for feral and overabundant native herbivore control in each management zone, determined in accordance with best practice management • the frequency and timing of the control actions in each management zone • methods for monitoring the success of the pest control actions • a timetable and measures for inspections to identify new feral or overabundant native herbivores that may adversely affect	Ongoing from first payment date.

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

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	any new vertebrate pest species that occur on-site • measures for assessing and reporting monitoring results • a diary for recording actions taken in accordance with the vertebrate pest management plan and minor alterations to this plan permitted for adaptive management. The details (management zone/s, date, alternative actions) and reasons for the minor alterations must be recorded in the diary.	
Item 12	Nutrient control	Timing
12.1	Fertilisers, pesticides and herbicides must not be applied on the biobank site, except where required to undertake the management actions. Use of fertilisers for establishing native vegetation through planting or seeding, use of herbicides for controlling weeds or use of pesticides for controlling vertebrate pests or feral herbivores can be undertaken in accordance with best practice management when required to undertake the management actions.	Ongoing from commencement date.
Item 13	Control of exotic fish species	Timing
13.1	This item is not applicable	
Item 14	Maintenance or reintroduction of natural flow regimes	Timing
14.1	This item is not applicable	
14.2	This item is not applicable	
14.3	This item is not applicable.	

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Section 3: Standard management plans

Weed management plan

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

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

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

Weed types

Weed	Common name of target weed	Scientific name of target weed	Description of infestation (e.g. intensity (% cover) & location within zone)	Management zone/s
Woody weed	African Boxthorn	<i>Lycium ferocissimum</i>	Widespread localised minor infestations	MZ1, MZ2, MZ3, MZ6, MZ7
Woody weed	African Olive	<i>Olea europaea ssp.cuspidata</i>	Moderate and major infestations	MZ1, MZ2, MZ3, MZ6, MZ7, MZ8
Woody weed	Blackberry	<i>Rubus</i> sp.	Localised minor infestations	MZ2, MZ3, MZ6, MZ7
Woody weed	Prickly Pear	<i>Opuntia stricta</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ6, MZ7, MZ8
Woody weed	Hackberry	<i>Celtis occidentalis</i>	Small number of individuals	MZ6
Woody weed	Green Cestrum	<i>Cestrum parqui</i>	Small number of individuals	MZ6
Woody weed	Honey Locust	<i>Gleditsia triacanthos</i>	Major infestation along drainage lines	MZ3, MZ6, MZ7
Woody weed	Lantana	<i>Lantana camara</i>	Minor to moderate infestations	MZ1, MZ2, MZ3, MZ6, MZ7
Woody weed	Large Leaved Privet	<i>Ligustrum lucidum</i>	Minor to moderate infestations	MZ2, MZ3, MZ6, MZ7
Woody weed	Small Leaved Privet	<i>Ligustrum sinense</i>	Minor to moderate infestations	MZ2, MZ3, MZ6, MZ7
Exotic climber	Turkey Rhubarb	<i>Acetosa sagittata</i>	Small number of individuals	MZ6
Exotic climber	Balloon Vine	<i>Cardiospermum grandiflorum</i>	Localised minor infestations	MZ6
Exotic climber	Madeira Vine	<i>Anredera cordifolia</i>	Localised minor infestations	MZ6

Exotic climber	Moth Vine	<i>Araujia sericifera</i>	Widespread individuals	MZ6
Exotic climber	Bridal Creeper	<i>Asparagus asparagoides</i>	Small number of individuals	MZ2, MZ6
Exotic climber	Honeysuckle	<i>Lonicera japonica</i>	Localised minor infestations	MZ6
Highly invasive ground layer weed	Rhodes Grass	<i>Chloris gayana</i>	Localised minor infestations	MZ4, MZ5
Highly invasive ground layer weed	Red Natal Grass	<i>Melinis repens</i>	Potentially present	MZ3, MZ4, MZ5, MZ7
Highly invasive ground layer weed	Coolatai Grass	<i>Hyparrhenia hirta</i>	Potentially present	MZ3, MZ4, MZ5, MZ7
Highly invasive ground layer weed	Serrated Tussock	<i>Nassella trichotoma</i>	Potentially present	MZ3, MZ4, MZ5, MZ7
Highly invasive ground layer weed	Chilean Needle Grass	<i>Nassella neesiana</i>	Potentially present	MZ3, MZ4, MZ5, MZ7
Highly invasive ground layer weed	Climbing Nightshade	<i>Solanum seaforthianum</i>	Potentially present	MZ2, MZ3, MZ4, MZ5, MZ6, MZ7
Highly invasive ground layer weed	Wandering Jew	<i>Tradescantia fluminensis</i>	Moderate infestations	MZ6
Highly invasive ground layer weed	African Love Grass	<i>Eragrostis curvula</i>	Localised minor infestations	MZ4, MZ5
Highly invasive ground layer weed	Climbing Asparagus	<i>Asparagus aethiopicus</i>	Localised minor infestations	MZ2, MZ3, MZ6
Other ground layer weed	Common Paspalum	<i>Paspalum dilatatum</i>	Widespread major infestations	MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Chilean Quaking Grass	<i>Briza subaristata</i>	Widespread major infestations	MZ2, MZ3, MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Panic Veldtgrass	<i>Ehrharta erecta</i>	Localised minor and moderate infestations	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Prairie Grass	<i>Bromus cartharticus</i>	Widespread minor infestations	MZ3, MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Carpet Grass	<i>Axonopus fissifolius</i>	Widespread major infestations	MZ3, MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Cudweeds	<i>Gamochaeta</i> spp	Widespread individuals	MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Kikuyu	<i>Pennisetum clandestinum</i>	Widespread minor infestations	MZ3, MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Pidgeon Grass	<i>Setaria parviflora</i>	Widespread minor infestations	MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Parramatta Grass	<i>Sporobolus africanus</i>	Widespread minor infestations	MZ4, MZ5, MZ7, MZ8
Other ground layer	Squirrel Tail	<i>Vulpia myuros</i>	Widespread individuals	MZ4, MZ5, MZ7,

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weed	Fescue			MZ8
Other ground layer weed	Pimpernel	<i>Anagallis arvensis</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Cobblers Peg	<i>Bidens pilosa</i>	Widespread individuals	MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Spear Thistle	<i>Cirsium vulgare</i>	Widespread individuals	MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Slender Celery	<i>Cyclospermum leptophyllum</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Fleabane	<i>Conyza sp</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Century Plants	<i>Centaurium spp</i>	Widespread individuals	MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Cotton Bush	<i>Gomphocarpus fruticosus</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Catsear	<i>Hypochaeris radicata</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	French Flax	<i>Linum trigynum</i>	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Rye Grasses	<i>Lolium spp</i>	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Slender Birds-foot Trefoil	<i>Lotus angustissimus</i>	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Medics	<i>Medicago spp</i>	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Phalaris	<i>Phalaris sp</i>	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Lamb's Tongue	<i>Plantago lanceolata</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Mexican Clover	<i>Richardia brasiliensis</i>	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Onion Grass	<i>Romulea rosea</i>	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Fireweed	<i>Senecio madagascariensis</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Paddy Lucerne	<i>Sida rhombifolia</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8

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Other ground layer weed	Jerusalem Cherry	<i>Solanum pseudocapsicum</i>	Widespread individuals	MZ6, MZ7, MZ8
Other ground layer weed	Black Nightshade	<i>Solanum nigrum</i>	Widespread individuals	MZ6, MZ7, MZ8
Other ground layer weed	Sowthistle	<i>Sonchus</i> spp	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Stinking Roger	<i>Tagetes minuta</i>	Localised minor infestations	MZ5, MZ6
Other ground layer weed	Clover	<i>Trifolium</i> spp	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Dandelion	<i>Taraxacum officinale</i>	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Purpletop	<i>Verbena bonariensis</i>	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Veined Verbena	<i>Verbena rigida</i>	Widespread individuals	MZ3, MZ4, MZ5, MZ7, MZ8

Methods of weed control			
Management zone/s	Weed/s	Method of weed control	Timing (Year from first payment date)
All	All	<u>Qualifications</u> All weed control activities will be undertaken by, or under the direct supervision of, an appropriately qualified bush regenerator	Ongoing, from the first payment date.
All	All	<u>Documenting level of effort</u> A record of the number of hours of weed control work undertaken daily in each management zone must be documented using the 'Diary template for weed management'. The completed template should be submitted with the biobank site annual report.	Ongoing, from the first payment date.
All	All	<u>Methods</u> - 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 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. Manually re-cut and poison woody weed stumps 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	Ongoing, from the first payment date.

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		species can be avoided. Undertake a thorough search for threatened plants 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.	
MZ1	All	<u>Tasks</u> 1. Weed control work within this management zone will involve the following: - 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. <u>Performance measures</u> 2. 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 and the density of other ground layer weeds maintained at <10% foliage cover. <u>Effort</u> 3. The level of effort applied to weed control work within this management zone will involve the following: (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	1 Ongoing, from the first payment date 2 Ongoing, from the start of Year 6 3(a) From the first payment date to the end of Year 5 3(b) From the start of Year 6 to the end of Year 10 3(c) From the start of Year 11 to the end of Year 19. 3(d) Ongoing annually from the start of Year 20.
MZ2	All	<u>Tasks</u> 1. Weed control work within this management zone will involve the following: - 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. <u>Performance measures</u> 2. 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 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. <u>Effort</u> 3. The level of effort applied to weed control work within this management zone will involve the following: (a) A minimum of 645 hours annually (b) A minimum of 1075 hours annually (c) A minimum of 555 hours annually (d) A minimum of 170 hours annually	1 Ongoing, from the first payment date 2(a) By the end of Year 5 2(b) Ongoing from the start of Year 11 3(a) From the first payment date to the end of Year 5 3(b) From the start of Year 6 to the end of Year 10 3(c) From the start of Year 11 to the end of Year 19. 3(d) Ongoing annually from the start of Year 20.
MZ3	All	<u>Tasks</u> 1. Weed control work within this management zones will involve the following: Staged primary treatment of all woody weeds, exotic climbers and	1 Ongoing, from the first payment

		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. <u>Performance measures</u> 2. 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. <u>Effort</u> 3. 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 (c) A minimum of 295 hours annually (d) A minimum of 150 hours annually	date 2 Ongoing, from the start of Year 3 3(a) From the first payment date to the end of Year 5 3(b) From the start of Year 6 to the end of Year 10 3(c) From the start of Year 11 to the end of Year 19. 3(d) Ongoing annually from the start of Year 20.
MZ4, MZ5	All	<u>Tasks</u> 1. Weed control work within these management zones will involve the following: - 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. <u>Performance measures</u> 2. 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. <u>Effort</u> 3. 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 (d) A minimum of 55 hours annually	1 Ongoing, from the first payment date 2 Ongoing, from the start of Year 2 3(a) From the first payment date to the end of Year 5 3(b) From the start of Year 6 to the end of Year 10 3(c) From the start of Year 11 to the end of Year 19. 3(d) Ongoing annually from the start of Year 20.
MZ6	All	<u>Tasks</u> 1. Weed control work within this management zone will involve the following: - 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. <u>Performance measures</u> 2. 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	1 Ongoing, from the first payment date 2(a) By the end of Year 5 2(b) By the end of Year 10 2(c) Ongoing, from the start of Year 16 3(a) From the first payment date to the end of Year 5 3(b) From the start of Year 6 to

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		weeds present. <u>Effort</u> 3. 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	the end of Year 10 3(c) From the start of Year 11 to the end of Year 19. 3(d) Ongoing annually from the start of Year 20.
MZ7, MZ8, MZ9 and MZ10	All	<u>Tasks</u> 1. Weed control work within these management zones will involve the following: - 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. <u>Performance measures</u> 2. 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. <u>Effort</u> 3. The level of effort applied to weed control work within these management zones will involve the following: (a) A minimum of 310 hours annually (b) A minimum of 40 hours annually (c) A minimum of 10 hours annually (d) A minimum of 10 hours annually	1 Ongoing, from the first payment date 2 Ongoing, from the start of Year 5 3(a) From the first payment date to the end of Year 5 3(b) From the start of Year 6 to the end of Year 10 3(c) From the start of Year 11 to the end of Year 19. 3(d) Ongoing annually from the start of Year 20.

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

Management zone/s	Description of planting required (reference planting schedule at item 6.6)	Timing
	NOT APPLICABLE	

Monitoring and inspections of existing and new weeds

Management zone/s	Weed/s	Method of monitoring	Timing (Year from first payment date)
All	All	Monitoring and reporting of the outcomes of weed control activities must be undertaken by a suitably qualified bush regenerator or ecologist.	Annually, at the completion of each year from the first payment date.
All	All	<u>Visual inspections and reporting of works undertaken</u> Monitoring will be reported using the 'Template for the reporting of monitoring activities - weed management'. A separate proforma will be completed for each management zone on the biobank site. The following information will be reported: A summary and review of all weed control activities undertaken within the previous 12 months and their effectiveness through	Annually, at the completion of each year from the first payment date.

		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 area of follow-up weed treatment (ha), and the weeds that were treated. • A map showing the locations of primary and follow-up weed treatment during the previous 12 months. • A summary of the type and density of the main weeds that remain and the recommended techniques for controlling these. • A record of the following condition measures marked as either A (absent), O (occasional), M (moderate) or F(frequent): ○ regeneration of native canopy species, ○ regeneration of native shrubs, ○ regeneration of native groundcovers, ○ native species dieback, and ○ erosion. • Any additional comments on the condition of the management zone, including reference to areas where supplementary planting or erosion control is required (mark on a map where necessary). • The survival rate of plantings within the management zone (where applicable)	
Other weed management activities (where required)			
• Pile woody debris for burning as per Rural Fire Service standards following primary weed treatment			

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20/10/15

Diary template for weed management

This template is to be completed to document the hours of weed control work that are undertaken in each management zone. The completed templates should be submitted with the biobank site annual report.

Completed by:

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Template for the reporting of monitoring activities – weed management	
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:	
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.	

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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				

Fire for conservation management plan

The plan includes information on all known previous fire events in the 'Fire history' table to demonstrate local fire conditions including intensity and frequency.

The ecological fire requirements for each vegetation type or threatened species on the biobank site are listed in the 'Fire requirements for vegetation types and threatened species' table. These are the fire frequency intervals recommended for the vegetation types and threatened species present on the biobank site. They include any requirement adjustments to the schedule in the event of a wildfire or activities undertaken under the *Rural Fires Act (RFA) 1997* to ensure the minimum frequencies between ecological burns.

The landowner must carry out ecological burns for each management zone according to the method and frequency described (as informed by the history and requirements sections and in accordance with Section 3 of this annexure) and in accordance with the provisions of the RFA Act 1997. These actions are set out in the 'Ecological burning actions table'. Monitoring and inspections (set out in the 'Fire management monitoring' table) as described must also be implemented. The landowner must also carry out the actions listed in the 'Other fire management activities' table.

The table titled 'Template of monitoring activities' must be completed to record observations during the implementation of the plan and assessment of monitoring activities. The landowner must also complete the table titled 'Diary template for fire management activities' to record the management actions undertaken or observations made, including any minor variations.

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

Year of fire	Hazard reduction, wildfire or ecological burn and extent of fire	Management zone/s
-	No known fires.	-

Fire requirements for vegetation types and threatened species

Vegetation type and/or threatened species	Fire frequency required	Time of year for burning	Fire intensity required	Adjustment required due to wildfires or RFA activities
HN526: Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin	Avoid fires at intervals less than 7 years. Avoid fire exclusion greater than 35 years.	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	Avoid fires at intervals less than 5 years. Avoid fire exclusion greater than 12 years.	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	Avoid fires at intervals less than 5 years. Avoid fire exclusion greater than 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

Cumberland Plain, Sydney Basin	years.			wildfire, arson or prescribed burn.
<i>Eucalyptus benthamii</i>	Avoid fires at intervals less than 25 years. Avoid fire exclusion greater than 250 years.	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.
Ecological burning actions				
Management zone/s	Actions	Supervision & extinguishing techniques	Time of year for burning	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. Note: The burning of woody debris piles within 12 months following primary weed removal is not considered to be a prescribed burn for the purposes of this management plan and is permitted in these management zones.	Suitably experienced and qualified staff to supervise preparation of burn area, undertake burn and extinguish. 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.	August to January	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	Suitably experienced and qualified staff to supervise preparation of burn area, undertake burn and extinguish. 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.	August to January	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.

	years. Any single prescribed burn is not to burn more than 50% of HN526 in the combined area of these management zones. Note: The burning of woody weed debris piles within 12 months following primary weed removal is not considered to be a prescribed burn for the purposes of this management plan and is permitted in these management zones.			
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.	Suitably experienced and qualified staff to supervise preparation of burn area, undertake burn and extinguish. 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.	August January to	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.	Suitably experienced and qualified staff to supervise preparation of burn area, undertake burn and extinguish. 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.	August January to	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.	Suitably experienced and qualified staff to supervise preparation of burn area, undertake burn and extinguish.	August January to	HN526 - every 10 to 35 years (except where <i>E. benthamii</i> is present - see below)

	- 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. Note: The burning of woody debris piles within 12 months following primary weed removal is not considered to be a prescribed burn for the purposes of this management plan and is permitted in these management zones.	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.		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 <i>Eucalyptus benthamii</i>	- No prescribed burning will be undertaken within 25 metres of <i>Eucalyptus benthamii</i> plantings or regenerating saplings until at least 30 years following planting or germination. - Remove debris build up at the base of <i>Eucalyptus benthamii</i> trees to reduce fire duration and intensity. - Ensure that any prescribed burn in <i>Eucalyptus benthamii</i> habitat is of low intensity only.	Suitably experienced and qualified staff to supervise preparation of burn area, undertake burn and extinguish. 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.	August to January	Avoid fires at intervals less than 30 years.
MZ7, MZ8, MZ9 and MZ10	No ecological burn actions apply to these management zones.	-	-	-

Methods for monitoring the outcomes of ecological burns

Management zone/s	Method of monitoring	Date/s required
All	For all fires within the biobank site (prescribed burns, wildfire and arson) record the date and cause of fire, the intensity of fire, any canopy scorched and the percentage of leaf litter remaining. Provide a map of the area that was burnt. These details are to be recorded in the 'Diary template for fire management' and submitted with the biobank site annual report.	Concurrent with each burn
All	Visual monitoring of each management zone is required to be undertaken by a suitably qualified ecologist or bush regenerator. The monitoring is to provide: - A general description of the vegetation structure and species composition within the zone. - An interpretation of the ecological outcomes of previous fires (either planned or unplanned) within the zone. - 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	At the time of the review of this plan, as required pursuant to item 3.2 of this Annexure.

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	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'.	
Other fire management activities (where required)		
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. Areas containing threatened species will be avoided when constructing fire containment lines.		

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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:

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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.	

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Section 4: Additional management plans

Management plan to control feral and overabundant native herbivores

The management plan for feral and overabundant native herbivores includes information on the management requirements for the feral and overabundant native herbivores at the biobank site listed in the 'Feral and overabundant native herbivores' table. The possible methods of control for each species, used by OEH and other pest management programs, are listed and the suitability of each method is described in the 'Methods considered' table.

The landowner should seek advice from Local Land Services on how to effectively and legally implement feral herbivore control methods prior to commencing control on the biobank site. If these methods differ from those identified in the management plan to control feral and overabundant native herbivores, OEH must be contacted in writing.

The landowner must carry out the methods for control for feral and overabundant native herbivores for each management zone according to the method and frequency as described in the 'Methods for control' table. The methods of control applied to the feral or overabundant native herbivores listed in the 'Feral or overabundant native herbivores' table as well as any other feral or overabundant herbivores that may be present on the site from time to time.

Monitoring and inspections of existing and new feral and overabundant herbivores at the biobank site as described in the 'Monitoring and inspections' table must be implemented.

The table titled 'Template for reporting of monitoring activities' must be completed to record observations during the implementation of the plan and assessment of the monitoring activities. The landowners must complete the table titled 'Diary template for feral and overabundant herbivore management' to record the management actions undertaken including any minor variations or observations made.

Feral and overabundant native herbivores

Feral type	Name of feral/overabundant native herbivore	Description of extent	Management zone/s
A	Rabbits <i>Oryctolagus cuniculus</i>	Present in low numbers	MZ1, MZ2, MZ6, and MZ6
B	Hares <i>Lepus europaeus</i>	Present in low numbers	MZ1, MZ2, MZ3 and MZ6
C	Goats	No sightings, may be present occasionally	All
D	Deer	Observed on other parts of property, may be present occasionally	All

Methods considered

Feral type	Name and description of program or method	Describe suitability
A	Pindone baiting	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).

A	Fumigation and destruction of burrows	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.	
All	Controlled shooting program	Shooting is suitable for multiple feral species, is species specific and humane.	
Methods of control			
Management zone/s	Feral type	Method of control	Frequency and timing
All	A	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	A	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	A, B, C, D	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
Monitoring and inspections			
Management zone/s	Feral type/s	Method of monitoring	Date/s required
All	A, B, C, D	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	A, B, C, D	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	A	<u>Monitoring of rabbit activity</u> 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	A, B, C, D	<u>Observations of other feral herbivores</u> 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	Every six months from the first payment date, or more often as required.

		activity' and submitted with the biobank site annual report.	
Other management activities (where required)			

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.

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Summary of feral pest observations by bush regeneration contractors

Include details of the type and number of feral herbivores and vertebrate pests observed on the site in the previous six months and the frequency of these observations.

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)

Vertebrate pest management plan

The management plan for vertebrate pests includes information on the vertebrate pests and their extent existing at the time of the agreement as listed in the 'Vertebrate pests' table. The possible methods of control for each species, used by OEH and other pest management programs are listed and the suitability of each method to the biobank site is described in the 'Methods considered' table.

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

The landowner must carry out the methods for vertebrate pest control for each management zone according to the method and frequency described in the 'Methods of control' table. The methods of control will apply to the vertebrate pests listed in the 'Vertebrate pests' table as well as any other vertebrate pests that may be present on the site from time to time.

Monitoring and inspections of existing and new vertebrate pests on the biobank site, as described in the 'Monitoring and inspections' table, must be implemented.

The table titled 'Template for reporting of monitoring activities' must be completed to record observations during the implementation of the plan and assessment of monitoring activities. The landowner must also complete the 'Diary template for vertebrate pest management' to record the management actions undertaken, including any minor variations, and observations made.

Vertebrate pests

Pest	Name of vertebrate pest	Description of extent	Management zone/s
A	Fox	Likely to be present	All

Methods considered

Pest type	Name and description of program or method	Describe suitability
A	Trapping (leg hold or cage)	Trapping of foxes is undertaken in areas where poison baiting is unacceptable and other methods cannot be used. Trapping may be useful for the control of nuisance animals but is not effective as a general fox control. The use of leg-hold trapping on the biobank site is not recommended.
A	Opportunistic ground shooting	Ground shooting is labour intensive and is not effective as a general fox control method. It may be suitable where multiple feral pests are present on the site or to supplement other feral pest control methods.
A	1080 Baiting	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.

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Methods of control			
Management zone/s	Pest type	Method of control	Frequency and timing
All	A	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	A	A controlled shooting program can be implemented to supplement the 1080 baiting program if required.	As required, based on the outcomes of monitoring
Monitoring and inspections of existing and new vertebrate pests			
Management zone/s	Pest type/s	Method of monitoring	Date/s required
All	A	<u>Qualifications</u> 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	A	<u>Diary template for feral pest management</u> 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	A	<u>Observations of vertebrate pests</u> 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.
Other management activities (where required)			

Annexure D: Monitoring, reporting and record keeping requirements

This Annexure D, together with Annexure C, is approved as a property management plan prepared by the landowner under the section 113B of the *Threatened Species Conservation Act 1995*.

1 Monitoring requirements

- 1.1 The landowner must ensure that photographs are taken at photo-points at each of the locations and in the direction identified in the table below titled 'Locations of photo points' within 12 months of the commencement date and then at least every 12 months thereafter.
- 1.2 The photo points are identified on the map entitled Map F Photo Monitoring Points - Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 5 January 2016) in Annexure A of this agreement. The purpose of the photographs is to show changes over time. Photographs should be taken at approximately the same direction, location, height and time of day (during daylight hours) in each reporting period (as defined in item 2.2 of this Annexure D) and retained for the life of this agreement. All photographs must be dated, stating the direction in which they were taken and identified with their locations.

Locations of photo points			
Projected coordinate system: GDA 94 Zone 56			
Photo point reference	Easting	Northing	Direction of photo (magnetic degrees)
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

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

Site inspection and monitoring schedule	
A. Purpose	B. Interval
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 1 of 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

2 Reporting requirements – annual report

- 2.1 The landowner must complete and submit to the Chief Executive for approval an annual report using the annual reporting template provided in this Annexure or, if the Chief Executive has approved an amended version of the annual reporting template after the date of this agreement, such an amended version of the annual reporting template as has been approved by the Chief Executive from time to time and supplied to the landowner.
- 2.2 An annual report must be prepared for each reporting period. A reporting period means:
- 2.2.1 prior to the first payment date, the period of 12 months after the commencement date, and each subsequent period of 12 months
 - 2.2.2 after the first payment date, the period of 12 months after that date, and each subsequent period of 12 months.

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

- 2.3 The annual report for the report period must be supplied to the Chief Executive by registered post not later than 30 days after the end of each reporting period. .
- 2.4 If there is a change in land ownership during a reporting period, each landowner must submit the annual report required under items 1.2, 1.3 and 1.4 of this Annexure D for the period for which they were the landowner.
- 2.5 The annual report must:
 - 2.5.1 contain the results of any monitoring, inspections or surveys required in Annexure C
 - 2.5.2 contain the results of the inspections required to be conducted by item 1.2 of this annexure D, including details of the date, time, location and nature of the inspection, the name of the person conducting the inspection and observations from the inspection
 - 2.5.3 include the photographs taken at the photo points listed in Annexure D
 - 2.5.4 include any other information required in the annual reporting template.

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Biobank site annual report

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7	Retention of dead timber					
8	Erosion control					
9	Retention of rocks					
10	Control of feral and overabundant native herbivores					
11	Vertebrate pest management					
12	Nutrient control					
13	Control of exotic fish species					
14	Maintenance or reintroduction of natural flow regimes					
Incident or event that has adverse effect on biodiversity values on biobank site						
Incident or event including adverse impacts (e.g. natural events)					Action taken and proposed recommended actions	

10/11/2018

Records submitted with this report

- ☐ Photographs taken at the photo points set in the biobanking agreement.
- ☐ Results of the inspections required to be conducted in item 1.2 of Annexure D to the biobanking agreement.
- ☐ Results of any monitoring, inspections or surveys required in Annexures C and D to the biobanking agreement.

Signature and certification

I hereby declare that the information supplied in this report is accurate and complies with the reporting requirements under item 2 of the Annexure D to the biobanking agreement.

Note: If the land that forms the biobank site is owned by multiple persons, each landowner must sign this annual report.

Signed	Signed
Date	Date

3 Record keeping requirements

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

- 3.1.1 for a management action required by this agreement (other than a management action requiring the landowner to refrain from an activity), the date and location/s the management action was carried out and a description of the actions that were undertaken
- 3.1.2 for a management action which is permitted to be carried out only in accordance with the Chief Executive's consent or approval, a copy of that consent or approval
- 3.1.3 a copy of any management plan (or updated management plan) required by Annexure C of this agreement that has been approved by the Chief Executive, a copy of the Chief Executive's approval of the management plan (or updated management plan) and a copy of any review of a management plan required by Annexure C
- 3.1.4 the diaries for recording actions undertaken in accordance with the management plans required by this agreement including the details (management zone/s, date, alternative action) of any minor alterations made to the implementation of those management plans and the reasons for the minor alterations
- 3.1.5 all photographs required by item 1 of this Annexure D and the information that item requires to be recorded on the photographs
- 3.1.6 for an inspection required by this agreement, the date, time, location and nature of the inspection, the name of the person conducting the inspection and observations from the inspection
- 3.1.7 the results of monitoring, inspections or surveys required to be conducted by this agreement or any management plan that is required to be implemented under this agreement
- 3.1.8 a brief description of any climatic, weather, ecological/environmental or unplanned events that have a significant adverse affect on the biodiversity values of the biobank site.

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

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

- 3.3.1 in a legible form, or in a form that can readily be reduced to a legible form (this includes photographs taken as part of this agreement);
- 3.3.2 kept for at least 10 years after the event to which they relate took place, unless specified otherwise; and

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

- 3.3.3 produced to any authorised officer on request by an authorised officer.

Annexure E: Payment schedule

Note:

If, by participating in the BioBanking Scheme, you are carrying on an 'enterprise', and your annual income for management actions meets or exceeds \$75,000 (or \$150,000 for a non-profit organisation) you are required to register for GST.

'Enterprise' has a broad definition, and includes activities that are in the form of a business, or in the form of a concern in the nature of trade. Item 1 below assumes you are carrying on an enterprise.

If you are not carrying on an enterprise by participating in the BioBanking Scheme, GST will not apply to you – but Capital Gains Tax and income tax may still apply. In this case do not indicate an ABN in item 1.1 below.

If you do not meet the monetary threshold, but you are carrying on an enterprise by participating in the BioBanking Scheme, you are still entitled to register for GST if you wish and you may indicate a registered ABN in item 1.1 below.

1 Agreement to issue recipient created tax invoices

- 1.1 The parties acknowledge that, if the landowner is registered for GST, recipient created tax invoices will be issued from the BioBanking Trust Fund (Australian Business Number 83 639 386 285) to the landowner (Australian Business Number 42 062 542 036).
- 1.2 The recipient created tax invoices will be for the supply by the landowner of the landowner's obligation to carry out the management actions as defined in this agreement ('the supplies'). These management actions are specified between the landowner and the Minister administering the Act, pursuant to Part 7A Division 2 of the Act.
- 1.3 The recipient created tax invoices will be issued on payment of the management payments as specified in item 2 of this Annexure E.
- 1.4 Under this recipient created tax invoice agreement, the landowner guarantees that the landowner will not issue any tax invoice for the supplies.
- 1.5 The landowner will notify the BioBanking Trust Fund immediately should the landowner cease to be registered for GST.
- 1.6 The BioBanking Trust Fund is registered for GST and the Minister will notify the landowner immediately should the fund cease to be registered.

2 Payment timing and amount

- 2.1 Subject to clause 12 of the agreement, the Minister is to direct the Fund Manager to make the management payments to the landowner in accordance with the payment schedules and the requirements of items 2, 3 and 4 of this Annexure E.
- 2.2 The first year of the payment timing, as set out in the payment schedules, commences from the first payment date.

- 2.3 The amount of the scheduled management payment for each year is as set out in the payment schedules.
- 2.4 Each amount is listed in the present value and is inclusive of GST for GST registered landowners and will be increased in accordance with the formula below:

In respect of indexation by CPI the following applies:

Each amount of the management payment is to be adjusted by movements in the CPI in accordance with the formula below (provided that, at all times, each instalment of the management payment is never less than its nominal dollar value as set out in the payment schedules and as at the date of this agreement).

$$\frac{A \times B}{C}$$

Where:

CPI means the published Consumer Price Index (Sydney - All Groups), or if that index is no longer published, then any other index which, in the reasonable opinion of the Minister, is a similar index

A is the dollar value (\$) of the management payment amounts as set out in the Payment Schedules prior to indexation by CPI

B is the most recent June Quarter CPI prior to the date that payment is due to be made

C is the CPI for the June Quarter 2016

2.5 Payment schedules

Payment schedule (including GST)	
Payment timing	Amount
At the beginning of the first year	\$ 358,369.00
At the beginning of the second year	\$ 638,506.00
At the beginning of the third year	\$ 462,506.00
At the beginning of the fourth year	\$ 465,619.00
At the beginning of the fifth year	\$ 352,154.00
At the beginning of the sixth year	\$ 329,076.00
At the beginning of the seventh year	\$ 337,634.00
At the beginning of the eighth year	\$ 322,234.00
At the beginning of the ninth year	\$ 322,234.00
At the beginning of the tenth year	\$ 329,054.00
At the beginning of the eleventh year	\$ 336,776.00
At the beginning of the twelfth year	\$ 345,334.00

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At the beginning of the thirteenth year	\$ 336,534.00
At the beginning of the fourteenth year	\$ 336,534.00
At the beginning of the fifteenth year	\$ 342,254.00
At the beginning of the sixteenth year	\$ 388,586.00
At the beginning of the seventeenth year	\$ 397,144.00
At the beginning of the eighteenth year	\$ 410,344.00
At the beginning of the nineteenth year	\$ 388,344.00
At the beginning of the twentieth year	\$ 204,776.00
At the beginning of each following year	Amount equal to the sum of the in perpetuity management cost that apply for each following year as determined by the table of in perpetuity costs below.

In perpetuity management costs (on and from the twenty-first year) (excluding GST and subject to rate of return)		
Description of ongoing management action	Frequency	Amount (\$)
Weed treatment	The twenty-first year and every year thereafter	\$102,250.00
Erosion control	The twenty-first year and every year thereafter	\$1,000.00
Fence maintenance	The twenty-first year and every year thereafter	\$2,285.00
Gate maintenance	The twenty-first year and every year thereafter	\$125.00
Feral animal control	The twenty-first year and every year thereafter	\$10,000.00
Ecological burn	The twenty-fourth year and every six years thereafter	\$20,000.00
Track maintenance	The twenty-first year and every year thereafter	\$2,500.00
Biobank sign maintenance	The twenty-first year and every five years thereafter	\$220.00
Interpretation sign maintenance	The twenty-second year and every five years thereafter	\$8,000.00

Other recurring costs		
Annual report fee (payable to OEH)	The twenty-first year and every year thereafter	\$1,232.00
Monitoring and reporting	The twenty-first year and every year thereafter	\$3,200.00
Five yearly review of management plans	The twenty-fifth year and every five years thereafter	\$5,200.00
Project management	The twenty-first year and every year thereafter	\$12,500.00
Total present value of payments after 20 years (excl. GST)		\$2,077,675.00
Total present value of payments after 20 years (incl. GST)		\$2,285,443.00

3 Nominated bank account

- 3.1 The management payments will be paid into a bank account as nominated by the landowner in accordance with the requirements of this item 3 (**the Nominated Bank Account**).
- 3.2 The landowner must provide the Fund Manager with details in writing of the nominated bank account within 14 days of the commencement date.
- 3.3 Where there is more than one owner of the biobank site, the notice to be provided in accordance with item 3.2 above must be signed by all owners of the biobank site.
- 3.4 The landowner must notify the Fund Manager in writing within 14 days of any change to the nominated bank account. This notice must include new bank account information and the written consent of all owners of the biobank site.

4 Annual contribution

- 4.1 The landowner authorises the Minister to retain the annual contribution from each management payment made to the landowner.
- 4.2 The Minister will, following each management payment, issue the landowner with an invoice confirming that the annual contribution has been deducted from the relevant management payment.
- 4.3 As contemplated by clause 18 of the BioBanking Regulation, the Minister may waive the annual contribution where:
 - 4.3.1 the owner of the biobank site has not sold any of the biodiversity credits created for the site, or
 - 4.3.2 there are insufficient funds in the biobank site account relating to the biobank site to meet the next scheduled management payment when it becomes payable.



Biodiversity credit ownership report

On the 4 July, 2016, under the *Threatened Species Conservation Act 1995*, the biodiversity credits listed in Attachment 1 of this report are held by:

Owner(s) of biodiversity credits listed in Attachment 1

Credit owner ID: 276

Trustees of the Sisters of the Good Samaritan

2 Avenue Road Glebe Point NSW 2037

The BioBanking public register is available at: www.environment.nsw.gov.au/biobanking/publicregister



Office of
Environment
& Heritage

Credit register ID	276
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Use the credit register ID number to search the current credit holdings on the biodiversity credit register.

Designated email:	mjmcdonald@goodsams.org.au
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Note: The designated email is publicly available on the register to assist with contact between credit buyers and sellers. For privacy purposes, individual or personal information is not displayed on the public register.

Attachment 1 - Biodiversity credit ownership report

This report lists credits that may be transferred (i.e. bought or sold) or retired by the current owner. Credits that are pending (expected on establishment of a biobank site), or credits that are suspended, revoked or that have been retired will not be listed.

Ecosystem credit profiles								
Credit profile ID	Agreement ID	Vegetation code	Vegetation type	CMA subregion	Surrounding vegetation	Patch size	Vegetation formation (see key)	Available credits
2,264	217	HN528	HN528/Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	>100 ha	GRW	16
2,265	217	HN528	HN528/Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	GRW	75
2,266	217	HN528	HN528/Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	>100 ha	GRW	10
2,267	217	HN528	HN528/Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	GRW	18

2,268	217	HN528	HN528/Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	GRW	93
2,269	217	HN529	HN529/Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	GRW	4
2,284	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	142
2,285	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	46
2,286	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	5
2,277	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	47
2,278	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	1
2,279	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	>100 ha	FRW	2

2,280	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	7
2,281	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	8
2,282	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	>100 ha	FRW	4
2,270	217	HN529	HN529/Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	GRW	4
2,271	217	HN529	HN529/Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	GRW	1
2,273	217	HN529	HN529/Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	>100 ha	GRW	3
2,274	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	29
2,275	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland Hawkesbury /Nepean	31-70%	<5 ha	FRW	29

2,276	217	HN526	HN526/Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion	Cumberland - Hawkesbury /Nepean	31-70%	<5 ha	FRW	21
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Species credit profiles				
Credit profile ID	Agreement ID	Scientific name	Common name	Available credits
460	217	Eucalyptus benthamii	Camden White Gum	28

Key to vegetation formations

Code	Vegetation formation
ALP	Alpine complex
ASA	Arid shrublands (Acacia)
ASC	Arid shrublands (Chenopod)
DSG	Dry sclerophyll forests (shrub/grass)
DSS	Dry sclerophyll forests (shrubby)
FRW	Forested wetlands
FWW	Freshwater wetlands
GLD	Grasslands
GRW	Grassy woodlands
HLD	Heathlands
MES	Miscellaneous ecosystems
RFT	Rainforests
SAW	Saline wetlands
SWG	Semi-arid woodlands (grassy)
SWS	Semi-arid woodlands (shrubby)
WSG	Wet sclerophyll forests (grassy)
WSS	Wet sclerophyll forests (shrubby)

For more information, please contact the Environment Line - phone: 131555; email: biobanking@environment.nsw.gov.au

Tax invoice for supply of biodiversity credits

Date of issue

Name of credit supplier

Address of supplier

ABN of supplier

Name of purchaser
receiving credits

Address of purchaser

ABN of purchaser

Biodiversity credits being supplied			
Name or address of biobank site			
Biodiversity credit (name of ecosystem or species credit)	Number of credits	Price per credit \$	Total price \$

Payment to be made by the purchaser in accordance with the following:

Item	Amount \$	Instructions for payment
Part A (exclusive of GST)		Part A must be paid by cheque only (payable to 'BioBanking Trust Fund'). Quote the biobank site account on the back of the cheque. Mail to: Biobanking Fund Manager PO Box A290 Sydney South NSW 1232
Part B plus GST for the total value of the sale of biodiversity credits $\$B + [\$A + \$B \div 10]$		Must be paid to the landowners bank account: Name: Bank: BSB: Account:
Total value of sale (inclusive of GST) $\$A + \$B + [\$A + \$B \div 10]$		Total amount to be paid in accordance with above instructions

Part A payment must be directly remitted to the BioBanking Trust Fund. Registration of the transfer of biodiversity credits to the purchaser will not be issued until these funds are paid into the BioBanking Trust Fund. The landowner must provide a copy of this invoice to the BioBanking Trust Fund.

Important notes about transfer of biodiversity credits

1. The landowner is the holder of the biodiversity credits listed in this tax invoice and transfers them to the purchaser as authorised by section 127Z of the *Threatened Species Conservation Act 1995*.
2. Section 127ZA of the *Threatened Species Conservation Act 1995* and clause 25 of the Threatened Species Conservation (Biodiversity Banking) Regulation 2008 require the amount referred as 'Part A payment' in this tax invoice to be transferred into the Biobanking Trust Fund before the transfer of the biodiversity credits is registered under the Act.
3. The purchaser must pay the amount referred as 'Part A payment' in this tax invoice directly into the Biobanking Trust Fund. The landowner does not receive and is not entitled to receive this amount. Nor is this amount applied for the landowner's benefit or paid into the Biobanking Trust Fund at the direction of the landowner.



Tax implications of a BioBanking agreement

There are likely to be tax implications for landowners who enter into a BioBanking agreement under the BioBanking Scheme.

This guide covers income tax (including capital gains tax) and the goods and services tax (GST). It outlines how taxation law might affect you. However, the exact manner in which taxation laws will affect you depends on your individual circumstances.

This advice relies heavily on a sound understanding of the BioBanking Scheme. For all the necessary background information, please consult the *Guide to establishing a biobank site*, which can be downloaded from the BioBanking website landowners' page.

All landowners are likely to be subject to income tax, including capital gains tax, but not all will be subject to GST. The Australian Taxation Office (ATO) has provided rulings on these taxes. Whether or not GST applies will depend on the nature of your involvement in the BioBanking Scheme. If you are entering the scheme as part of your business and you are registered for GST purposes you may need to comply with GST rules.

If you are entering the scheme as a private landowner who wants to participate in BioBanking for altruistic reasons, you may not need to comply with GST rules.

Seek independent legal and taxation advice

We strongly advise you to seek legal and/or taxation advice before deciding to enter into a BioBanking agreement or before making any decisions based on this information.

The information contained here needs to be taken as guidance rather than personalised legal or taxation advice.

Every effort has been made to ensure this information is accurate at the time of publication. However, it is intended as a guide only and does not replace the need for independent advice.

Note Figures used in the examples are general in nature and do not represent real scenarios. You should obtain independent valuation advice where market values are required.

Australian Taxation Office rulings

The Office of Environment and Heritage (OEH), which administers the BioBanking Scheme, sought two rulings from the ATO to provide a foundation for basic guidance to BioBanking participants.

When reviewing how taxation law might affect you, refer to:

- the private binding ruling on GST (authorisation number 1011357060386)
- the class ruling on income tax including capital gains tax (CR2009/77).

These rulings cover those landowners who are undertaking an enterprise or business, or otherwise hold their land as a capital asset. These rulings do not consider landowners who hold their land on revenue account.

Capital gains tax and conservation covenants

The Commonwealth Department of the Environment has ruled that a BioBanking agreement is a conservation covenant. When you enter into a conservation covenant, a capital gains tax event occurs. Therefore, entering into a BioBanking agreement may result in a capital gain or loss arising. Additionally, the disposal of your biodiversity credits is a capital gains tax event so when you sell or retire your biodiversity credits, a capital gain or loss may arise.

Capital gain or loss on land value on signing the agreement

The method for determining a capital gain or loss on entering into the BioBanking agreement is set out in section 104-47 of the *Income Tax Assessment Act 1997*.

If you make a capital gain on entering into the BioBanking agreement, you may be eligible for certain capital gains tax concessions, including:

- capital gains tax discounts
- an exemption for landowners who acquired their land prior to 20 September 1985
- small business capital gains tax concessions if the land is an active business asset.

You make a capital gain if the proceeds from entering into the BioBanking agreement are more than the cost-base of the land that is apportioned to the BioBanking agreement. You make a capital loss if the proceeds from entering into the BioBanking agreement are less than the reduced cost-base of the land that is apportioned to the BioBanking agreement.

$$\text{Capital gain (or loss)} = \text{capital proceeds} - \text{cost-base (or reduced cost-base) of land apportioned to the BioBanking agreement}$$

Capital proceeds

Your capital proceeds from entering into the BioBanking agreement are the value of the biodiversity credits created by the BioBanking agreement. This amount is specified in clause 5.3 of the BioBanking agreement. It is likely to be equivalent to the Part B payment you expect to receive when you sell your biodiversity credits.

Where you are registered for GST, the amount taken to be your capital proceeds should be exclusive of GST (for further details refer to the GST section following).

Cost-base of land apportioned to the BioBanking agreement

The formula to calculate the cost-base or reduced cost-base of the land apportioned to the BioBanking agreement is:

$$\begin{array}{rcl} \text{Cost-base} & & \text{capital proceeds from entering into} \\ \text{(or reduced} & & \text{the BioBanking agreement} \\ \text{cost-base)} & \times & \\ \text{of the land} & & \hline & & \text{(capital proceeds from entering into} \\ & & \text{the BioBanking agreement} \\ & & + \\ & & \text{market value of the land after entering} \\ & & \text{into the BioBanking agreement)} \end{array}$$

Cost-base of land

The cost-base of your land generally includes:

- the money you paid to acquire it and the market value of any property you gave to acquire it
- certain incidental costs incurred in relation to the land (e.g. stamp duty, costs of obtaining valuations, borrowing costs) to the extent that you have not already obtained deductions for these expenses
- costs related to owning the land (e.g. rates or land tax, interest on money borrowed to acquire the land) to the extent that you have not already obtained deductions for these expenses.

The reduced cost-base of your land does not include the costs related to owning the land.

Market value of land

The market value of the land can be determined by the usual land valuation methods such as engaging a qualified valuer and researching recent sales history. A conservation covenant places restrictions on the use of the land and attaches to the land title so it may affect the market value of the land.

Example 1

This simplified example (without reference to possible discount provisions) shows how the capital gain or loss formula works.

A landowner receives biodiversity credits worth **\$20,000** (for the Part B portion) for entering into a BioBanking agreement. The land was bought 10 years ago for **\$300,000**. However, since the property was purchased it has increased in value to **\$400,000**. After entering the BioBanking agreement, with the estimated devaluation due to of the conservation covenant, the land is worth **\$385,000**.

The cost-base of the land apportioned to the BioBanking agreement is:

$$\text{\$300,000} \times [\text{\$20,000} \div (\text{\$20,000} + \text{\$385,000})] = \text{\$14,815}$$

Given that the capital proceeds are **\$20,000**, the landowner has made a capital gain for income tax purposes of **\$5,185** (i.e. **\$20,000 – \$14,815**).

At the time of signing your BioBanking agreement, you will not have sold any credits or received any cash. Depending on your circumstances, you may need to ensure you will be able to sell your credits before your tax liability for the year in which you sign your BioBanking agreement is due.

Note: this example does not consider GST.

Capital gain or loss when you sell or retire biodiversity credits

For landowners who hold their credits on capital account, biodiversity credits are treated as capital gains tax assets (not trading stock or depreciating assets). Therefore you can also make a capital gain or loss on your biodiversity credits when you sell them.

If you make a capital gain on selling your biodiversity credits you may be eligible for certain capital gains tax concessions, including:

- capital gains tax discount
- small business capital gains tax concessions.

Similar to the method for calculating capital gain or loss on land value, the capital gain or loss on biodiversity credits is calculated by subtracting the cost-base (or reduced cost-base) of the credits from the capital proceeds when the credits are sold.

The cost-base of the credits should be the amount specified in clause 5.3 of the BioBanking agreement. For capital gains tax purposes this is taken to be the 'money paid' to acquire – that is, the likely value of – the biodiversity credits. The cost-base of the biodiversity credits also includes the application fee paid to OEHL and fees to consultants or legal advisors incurred to acquire the biodiversity credits.

Where you are registered for GST, the amounts forming part of your cost-base should be exclusive of GST (for further details, refer to the GST section later in this guide).

The capital proceeds from biodiversity credits are made up of the Part B amount and the market value of the right to receive annual payments from the BioBanking Trust Fund (from the Part A amount known as the Total Fund Deposit). On the basis that annual payments have been calculated solely to enable the landowner to satisfy their obligations (i.e. the management actions), the likely outcome is that the market value of these payments will be \$0. The Part A amount itself is not capital proceeds.

Example 2

A landowner receives **\$15,000** for the Part B payment on the sale of biodiversity credits. The market value of the right to receive annual payments is **\$0**. Therefore, the capital proceeds received on the sale of the credits is **$\$15,000 + \$0 = \$15,000$** .

The cost-base of the credits on the date the BioBanking agreement was signed was **\$20,000**. The application fee paid to OEHL to enter into the agreement was **\$612** and **\$2,288** was paid to an accredited BioBanking Assessor for the site assessment. Therefore the cost-base of the biodiversity credits is **\$22,900**.

Given that the capital proceeds from the sale were **\$15,000**, the landowner has made a capital loss of **\$7,900**.

If this loss was made in a different income year to when the landowner entered into the BioBanking agreement then they could not use it to offset any gain arising from entering into the BioBanking agreement.

Note: this example does not consider GST.

Income tax

On the sale of biodiversity credits, the Part A portion of the proceeds is not treated as ordinary assessable income as it is deposited directly into the BioBanking Trust Fund. However, the Part B portion is treated as ordinary assessable income through the capital gains tax provisions (outlined earlier).

The annual payments from the BioBanking Trust Fund are treated as ordinary assessable income. Bonus payments from the BioBanking Trust Fund are also treated as ordinary assessable income.

Under section 8-1 of the *Income Tax Assessment Act 1997*, you may be able to claim expenses as income tax deductions to the extent they are incurred in gaining or producing your assessable income; for example, costs incurred in maintaining or improving biodiversity through management actions. This could include labour and administration costs for management actions such as weed control, annual compliance monitoring fees, and annual rates and insurance payments (apportioned appropriately where they relate to property other than the BioBanking site). Additionally, a deduction may be claimed for the decline in value of equipment where the equipment is purchased to carry out management actions.

Where you are registered for GST, the amounts assessable and deductible should be exclusive of GST (for further details refer to the GST section below).

In the event of an unsuccessful application, you may be able to claim deductions over five years for the preliminary costs incurred (e.g. fees incurred assessing the proposed BioBanking site and fees incurred for professional or legal advice regarding entering into the BioBanking agreement). This will depend on your individual circumstances. For further information refer to paragraphs 80–85 of the class ruling.

For individuals, these deductions may be denied under the non-commercial loss provisions.

Example 3

A landowner receives an annual payment of **\$10,000** from the BioBanking Trust Fund to cover the anticipated cost of management actions detailed in the BioBanking agreement. During the year the landowner incurs actual expenses of **\$6,000** in delivering these management actions. At the end of June, the landowner receives a bonus payment of **\$2,000** to reflect the better-than-anticipated return for the BioBanking Trust Fund. The landowner must declare a total income of **$\$10,000 + \$2,000 = \$12,000$** .

The landowner can claim a deduction of **\$6,000**.

The landowner makes a net profit/surplus for tax purposes of **$\$12,000 - \$6,000 = \$6,000$** .

Assuming a business tax rate of 30% and no other applied provisions, the landowner is liable to pay **$\$6,000 \times 0.3 = \$1,800$**

Note This example does not consider the application of GST.

Goods and services tax

Three BioBanking transactions involve a goods and services tax (GST) liability for landowners who are registered for GST. These are:

- the creation of biodiversity credits on entering into a BioBanking agreement
- the sale of credits
- the annual payment.

There will also be GST implications for registered landowners for other related transactions such as the acquisition of goods or services when performing management actions.

GST on the creation of biodiversity credits

Biodiversity credits are created when a landowner enters into a BioBanking agreement. The notional value of these credits, which includes GST, is set out in clause 5.3 of the BioBanking agreement.

The landowner agreeing to the obligations of the BioBanking agreement and OEH creating biodiversity credits are both supplies that are provided in connection with each other for GST purposes. This means both OEH and the landowner (who is registered for GST):

- are required to pay GST in respect of their supply. The GST to be paid is calculated on the notional value of the credits. Both parties will need to issue tax invoices in respect of their supply.
- can claim an input tax credit (ITC) in respect of the tax invoice they have received from the other party.

As the GST payable and the input tax credit that can be claimed are the same amount, the net GST position for both the landowner and OEH is zero.

GST when you sell your biodiversity credits

For the purposes of GST, the sale of credits is the supply of goods. This means a purchaser of your credits has to pay you GST on the total amount; that is, both the Part A and Part B amounts. This is the case even though the Part A amount (net of GST) is paid by the purchaser directly into the BioBanking Trust Fund.

GST and your annual payments

For the purposes of GST, the management actions that you agree to do are considered a service. If you are registered for GST, this means the BioBanking Trust Fund will include an amount for GST when making the annual payments for management actions you deliver. It is then the responsibility of the landowner to pay the GST liability to the ATO. Given the BioBanking Trust Fund is registered for GST, an input tax credit will be claimed for the GST included in the payment made to the landowner.

Registering for GST

If, by participating in the BioBanking Scheme, you are carrying on an 'enterprise', and your annual income meets or exceeds \$75,000 (or \$150,000 for a non-profit organisation) you are required to register for GST.

'Enterprise' has a broad definition and includes activities that are in the form of a business or in the form of a concern in the nature of trade.

If you are not carrying on an enterprise by participating in the BioBanking Scheme, you will not be required to register or remit GST to the ATO. Also, you will not be entitled to claim input tax credits.

If you do not meet the monetary threshold but are carrying on an enterprise by participating in the BioBanking Scheme, you are still entitled to register for GST if you wish. This will enable you to claim an input tax credit for GST expenses incurred in delivering management actions.

If you do not register for GST you may be liable for an out-of-pocket expense to the value of GST incurred by OEHL on creating the credits.

If you do register for GST and you are carrying on an enterprise, you are required to lodge business activity statements (BAS).

Business activity statement

In order to report on your GST obligations, you are required to submit a business activity statement (BAS) to the ATO.

In order to comply with GST reporting requirements, you must issue a tax invoice for the sale of the credits with a breakdown of Part A and B payments and GST. An invoice template for the sale of credits can be downloaded from the BioBanking website.

Input tax credits

You may be entitled to claim input tax credits for the goods and services you acquire as part of your BioBanking enterprise. This may include costs of establishing your land as a biobank site (e.g. fees for professional advice) and the costs of carrying out management actions.

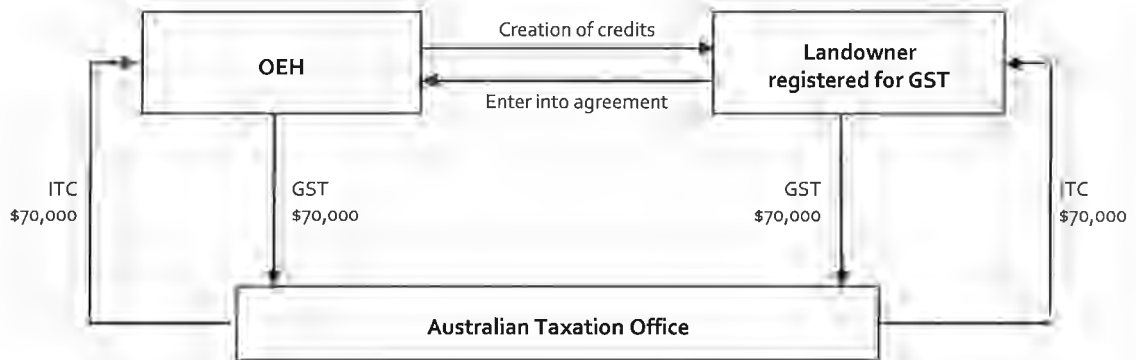
Remitting GST to the ATO

Landowners are required to pass on or remit, to the ATO, any GST received from the purchaser or BioBanking Trust Fund.

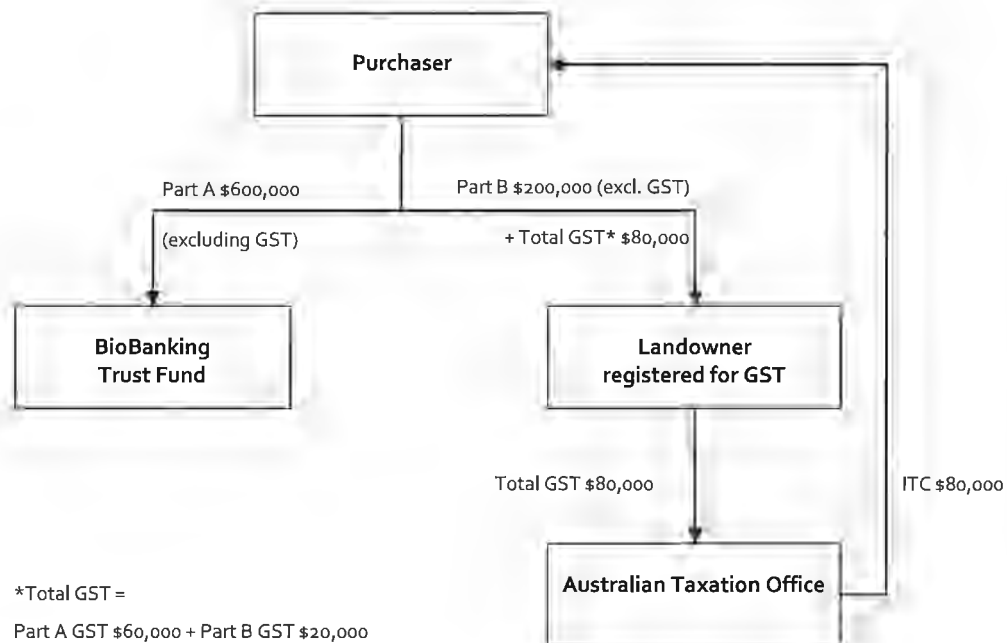
There are three BioBanking transactions that have a GST liability for the landowner. These are illustrated on the following page through an example that assumes:

- a total biodiversity credit value on entering into the BioBanking agreement of \$770,000 (GST inclusive)
- sale of credits of \$880,000 (GST inclusive), being \$660,000 Part A and \$220,000 Part B
- an annual payment of \$44,000 (GST inclusive).

GST Liability 1: On entering a BioBanking agreement and creating biodiversity credits



GST Liability 2: Sale of credits



GST Liability 3: Annual payment for management actions



More information

Contact the OEH BioBanking team:

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OEH has compiled this publication in good faith, with all due care and attention.

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Appendix 5. Guide to Managing the Mater Dei Biobank Site, Cobbitty (Part 1)

Appendix 5. Guide to Managing the Mater Dei Biobank Site, Cobbitty (Part 1)

Guide to managing the
MATER DEI BIOBANK SITE, COBBITTY



Part 1: Site Description and Management Actions

July 2012

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

EXECUTIVE SUMMARY

The Mater Dei biobank site permanently protects 25.7 ha of high conservation value bushland on the banks of the Nepean River, Cobbitty. The site contains 20 hectares of critically endangered Cumberland Plain Woodland and 6 ha of endangered River Flat Eucalypt Forest. It is home to a variety of threatened fauna species, including the Powerful Owl, Speckled Warbler and the Cumberland Land Snail.

Much of the bushland within the biobank site is currently in poor health and infested with the invasive woody weed, African Olive. Without active management, the bushland will continue to degrade and eventually its conservation values will be lost.

Under a Biobanking agreement established on 9 May 2012 between the landowner (the Trustees of the Sisters of the Good Samaritan) and the NSW Government, the landowner is responsible for implementing a suite of management actions that will restore and maintain the health of this bushland in-perpetuity. Annual payments will be made to the landowner to fund the management of the site, 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 (July 2012 – June 2017).

This document forms Part 1 of the implementation guide. It provides an overview of the biodiversity values that are present, the management actions that are required to maintain and improve these values, and the monitoring and reporting activities associated with the agreement.

Part 2 of the guide covers the first five year period of the agreement only. It contains a timetable for implementing the actions and activities that are required by the agreement during this period, and describes the estimated cost of these. It is envisaged that Part 2 of the guide will be updated after five years.

Please note that this document is intended to be 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 its obligations under the Biobanking agreement are satisfied.

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1. Introduction

This document is the first part of a two part guide that has been prepared to assist the landowner in managing the Mater Dei biobank site in accordance with the Biobanking agreement ('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 is located on Macquarie Grove Road, Cobbitty, in the local government area of Camden (Map 1). The 280 ha property is owned by the Trustees of the Sisters of the Good Samaritan and contains the Mater Dei Special School and Wivenhoe Historic House. The property borders the Nepean River and has extensive areas of bushland and pasture.

The 25.7 ha biobank site is located in the western section of the property. It directly adjoins the Nepean River, as well as a conservation area that is being established as part of the Wivenhoe Residential Development Project (Map 2).

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

2.2 NATIVE VEGETATION

2.2.1 Vegetation types

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

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

The distribution of vegetation types on the site was determined in the field and mapped as part of the Biobanking assessment (Map 3; Table 1).

A list of species recorded from each vegetation type is provided in Appendix A.

Cumberland Shale Hills Woodland (20.1 ha)

This vegetation type is present in parts of the site that are upslope and away from the river. The canopy is dominated by Forest Red Gum (*Eucalyptus tereticornis*) and Grey Box (*Eucalyptus moluccana*).

The mid-storey of much of this vegetation type contains very high densities of the woody weed African Olive. This includes:

- 2.73 ha with 40-80% foliage cover of African Olive, and
- 3.97 ha with >80% foliage cover of African Olive.

Table 1: Vegetation types

Map Unit in Tozer et al (2010)	Equivalent biometric vegetation type referred to in the Biobanking agreement	Equivalent community under State legislation ¹	Equivalent community under Commonwealth legislation ²	Area (ha) mapped during the Biobanking assessment ³
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 ⁴	20.1
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	5.6

An open grassy understorey dominated is present where the mid-storey is not dominated by African Olive. *Bursaria spinosa* is the only native shrub species consistently recorded from this vegetation type on the site.

Three areas of native-dominated grassland totalling 1.97 ha occur in the southern section of the site where the native canopy has been removed. In other areas, the native canopy has been much reduced due through dieback. The causes of this are not known.

Cumberland Shale Hills Woodland forms part of the critically endangered Cumberland Plain Woodland ecological community which is protected under State and Commonwealth legislation.

Cumberland River Flat Forest (5.6 ha)

This vegetation type occurs in close proximity to the Nepean River. Canopy species present include Forest Red Gum, Cabbage Gum (*E. amplifolia*), Blue Box (*E. baueriana*), Rough-barked Apple (*Angophora floribunda*), and Broad-leaved Apple (*Angophora subvelutina*). River Peppermint (*E. elata*) is also present in areas immediately adjacent to the river.

The mid-storey of most of this vegetation type (3.85 ha or 69%) contains >80% foliage cover of African Olive. Where present, the native understorey is dominated by grasses and herbs in areas away from the river, and becomes increasingly shrub dominated closer to the river.

The canopy in much of this vegetation type has also been much reduced through dieback. The causes of this are not known

Cumberland River Flat Forest forms part of the endangered River Flat Eucalypt Forest on Coastal Floodplains ecological community which is protected under State legislation.

¹ Threatened Species Conservation Act 1995

² Environment Protection and Biodiversity Conservation Act 1999

³ Includes 0.5 ha of Cumberland Shale Hills Woodland that was assessed as being in low condition using the biobanking methodology

⁴ 14.5 ha of this vegetation type meets the condition thresholds specified in the Commonwealth listing

2.3 THREATENED FLORA AND FAUNA

2.3.1 Threatened flora

There are no records of threatened flora species on the site, although targeted threatened flora surveys have not been undertaken. The site contains potential habitat for the following threatened flora species that have been recorded from nearby properties:

- Brown Pomaderris (*Pomaderris brunnea*) – vulnerable species,
- Camden White Gum (*Eucalyptus benthamii*) – vulnerable species,
- *Marsdenia viridiflora* subsp. *viridiflora* - endangered population,
- Spiked Rice-flower (*Pimelea spicata*) – endangered species, and
- White-flowered Wax Plant (*Cynanchum elegans*) – endangered species.

2.3.2 Threatened fauna

OEH undertook a rapid fauna assessment of the property in 2006 as part of the preparation of the Cumberland Plain Recovery Plan. Three threatened fauna species were recorded from the property during the study:

- Cumberland Land Snail (endangered species) - recorded at a number of localities and is likely to be scattered throughout the property.
- Speckled Warbler (vulnerable species) - groups of two and three individuals were observed in late June 2006 around bulldozed piles of dead African Olive in patchy Grey Box woodland in the northern section of the property. A pair was observed adjacent to the creek line north of the Mater Dei private road in February 2006. It is likely that this species is scattered in suitable habitat throughout the property.
- Powerful Owl (vulnerable species) - a male was heard calling prior to darkness and later in the night a pair was spotlighted almost a kilometre to the north east. It is possible that the two records involved the same individuals.

The following threatened species were not recorded during the 2006 study but had previously been recorded from the property. They were described as follows in the 2006 study:

- Hooded Robin (*Melanodryas cucullata cucullata*) - vulnerable species. This species has been recorded within the Mater Dei/Cobbitty area in the last 10 years and may still occur (D. Hobcroft records).
- Diamond Firetail (*Stagonopleura guttata*) – vulnerable species. There have been sightings of this species within the Mater Dei/Cobbitty area in the last 10 years and it may still occur or visit the area (D. Hobcroft records).
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – vulnerable species. It is likely that this species is widespread throughout the area when dominant eucalypt species are in flower and the African Olive is fruiting.

The following threatened species were not recorded but were considered in the 2006 study to potentially be present:

- Blue-billed Duck (*Oxyura australis*) – vulnerable species. It is likely that this species is an occasional visitor to larger dams within the area.
- Large-footed Myotis (*Myotis macropus*). One Atlas record from south of the property adjacent to the Nepean River. It is likely that this species occurs along the Nepean River on the western boundary of the property.
- Threatened woodland nectarivores including the Black-chinned Honeyeater (*Melithreptus gularis* – vulnerable species) and Swift Parrot (*Lathamus discolor* –

endangered species) particularly when the Ironbarks and Grey Box are in flower, and

- Threatened bat species such as the Greater Broad-nosed Bat and Eastern Freetail-bat are likely to have been overlooked as no bat survey work was conducted in the area.

2.4 WEED AND MANAGEMENT ZONES

The biobank site has been stratified into five weed zones based upon the broad condition of the native vegetation, including consideration of factors such as weediness and native canopy cover. A profile of each weed zone is provided at Appendix B.

The weed zones are further divided into 11 management zones based upon vegetation type and broad management objective. For example, Weed Zone 1 contains one vegetation type but was split into two management zones to separate proposed revegetation areas from an area that is to be retained as a road easement.

Management sub-zones are identified for separate areas that are part of the same management zone. There are 20 management subzones on the biobank site.

Table 2 shows the relationship between weed zones, management zones and management sub-zones.

Map 4 shows the locations of the weed and management sub-zones.

Table 2: Weed and Management Zones

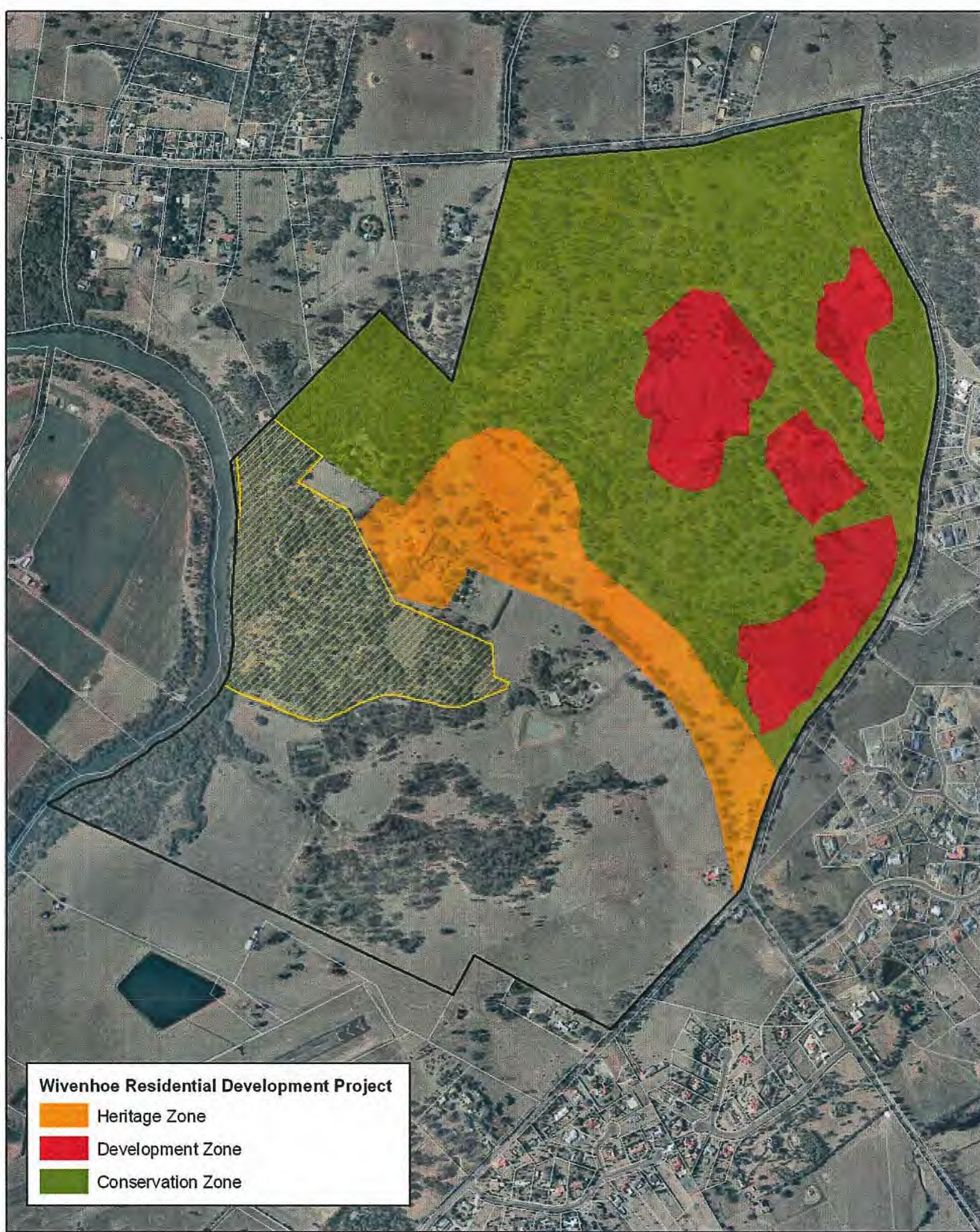
Weed Zone	Management Zone	Management Sub-zone	Area (ha)
WZ1	MZ1_SHW_NO CANOPY_REVEG	MSZ1a	0.37
		MSZ1b	0.96
		MSZ1c	0.35
	MZ9_SHW_EASEMENT	MSZ9a	0.29
WZ2	MZ2_SHW_LOW WEED	MSZ2a	11.43
	MZ7_RFF_LOW WEED	MSZ7a	1.77
WZ3	MZ3_SHW_MODERATE WW	MSZ3a	0.17
		MSZ3b	0.53
		MSZ3c	0.24
		MSZ3d	0.71
		MSZ3e	0.65
		MSZ3f	0.42
WZ4	MZ5_SHW_DENSE WW	MSZ5a	0.22
	MZ5_SHW_DENSE WW	MSZ5b	0.60
	MZ5_SHW_DENSE WW	MSZ5c	0.51
	MZ6_SHW_LOW CONDITION_REVEG	MSZ6a	0.51
	MZ8_RFF_DENSE WW	MSZ8a	0.16
	MZ10_SHW_DENSE WW_REVEG	MSZ10a	2.12
	MZ11_RFF_DENSE WW_REVEG	MSZ11a	3.69
WZ5	MZ4_SHW_DENSE GW	MSZ4a	0.04

Key: SHW = Shale Hills Woodland; RFF = River Flat Forest; WW = woody weed; GW = ground weed; REVEG = supplementary planting proposed; NO CANOPY = native canopy is much reduced; LOW CONDITION = in low condition as per Biobanking methodology

Map 1: Regional Context



Map 2: Site Context



Legend

- Mater Dei property
- Biobank site
- Cadastre

Site Context
Mater Dei biobank site

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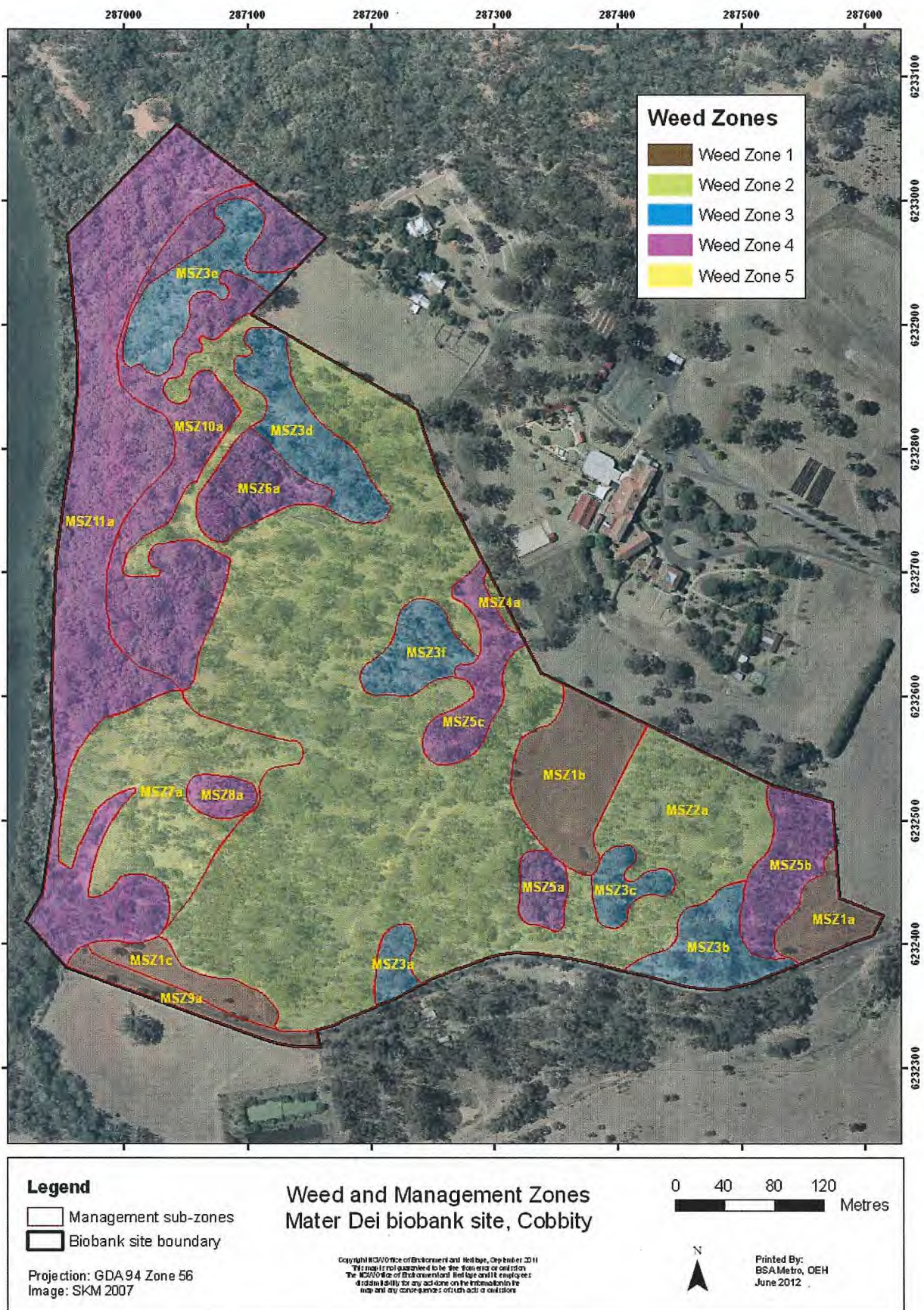


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Map 3: Vegetation Types



Map 4: Weed and Management Zones



3. Management Actions

This section contains an overview of the management actions that are required by the Biobanking agreement to be implemented at the site. These management actions are classified as 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 activities associated with these. 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.

Part 2 of the guide contains a timetable for implementing the management actions during the first five years of the agreement, and describes the estimated cost of these. It is envisaged that Part 2 of the guide will be updated after five years.

3.1 MANAGEMENT OF GRAZING FOR CONSERVATION

3.1.1 Exclusion of livestock

Grazing by livestock has the potential to damage existing native vegetation and suppress natural regeneration through physical damage, soil compaction and erosion. For these reasons, Item 1.1 (page 32) of the agreement states that stock 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 stock from the area immediately. It is recommended that the contractors working on the site be asked to notify the landowner if stock are observed within the biobank site.

3.1.2 Requirements relating to fencing and gates

Item 1.1 also requires that stock proof fences and farm gates be installed and maintained around the perimeter of the site to exclude livestock, and that internal fencing and gates be removed. The locations of the fences and gates that must be installed, and the redundant fences and gates that must be removed, are shown in Map 5 (Property Management Actions) of this guide.

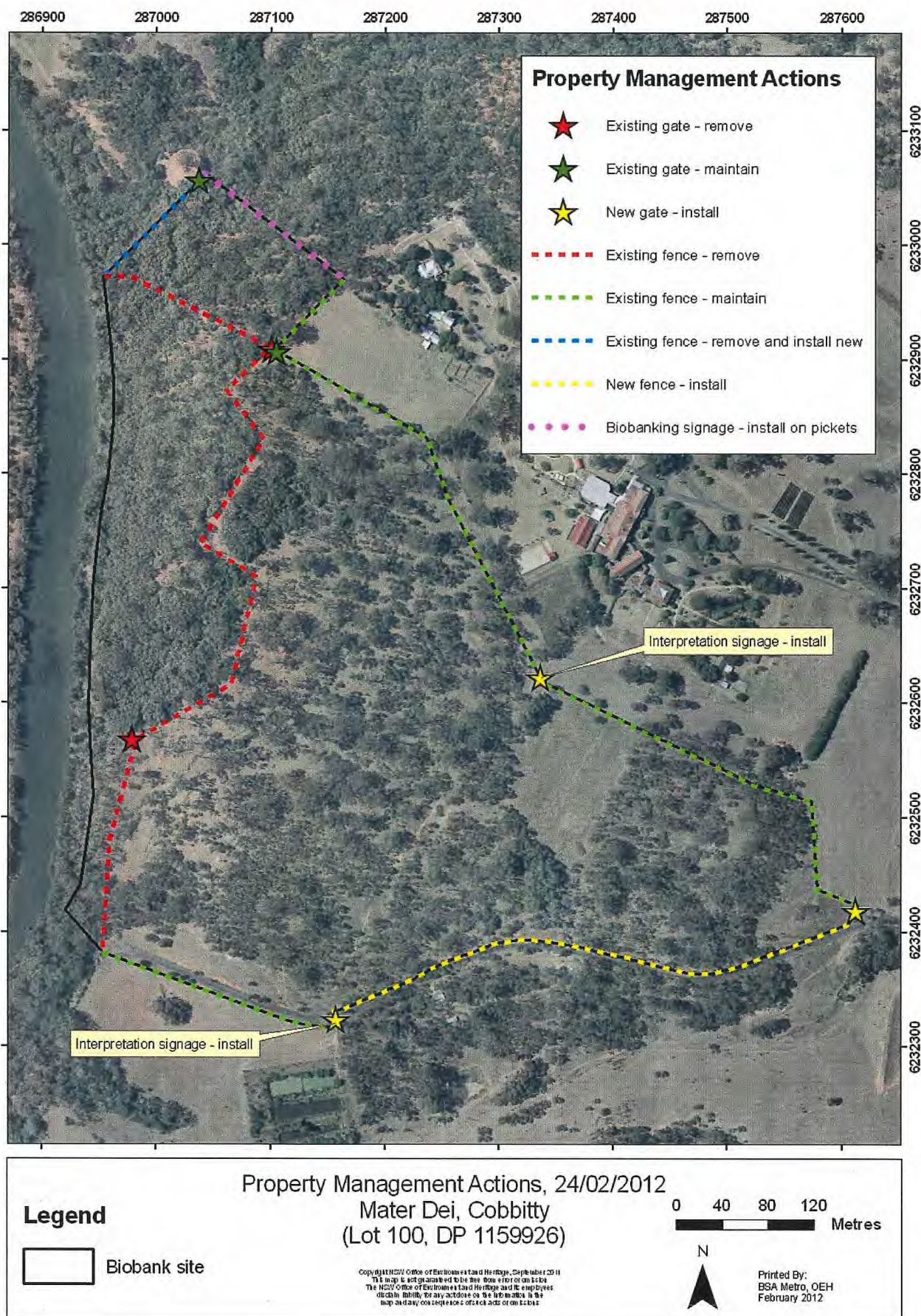
The fencing installed around the perimeter of the site must be stock-proof. It is recommended that, at a minimum, the fences consist of 5 strands of barbed wire with wooden posts every 9 metres and 2 galvanised star pickets in between. Fence removal will involve the removal of wire only with the posts remaining in the ground. The wire should be disposed of at an appropriate recycling facility. The standard of the farm gates to be installed should be, as a minimum, a 3 m wide galvanised gate.

3.1.3 Funding for fences and gates

Funding

Funds for the installation of the new gates and fences will be provided in Year 1 of the agreement. An on-going annual payment of 1/20th of the replacement cost of all the fencing and gates will be provided to cover maintenance costs (i.e. sufficient funds for all fences and gates to be replaced every 20 years). Where this maintenance funding remains unspent in a year, it should be retained for future years when fence and/or gate maintenance will be required.

Map 5: Property Management Actions



3.2 WEED CONTROL

The establishment and spread of environmental weeds can diminish biodiversity values in a number of ways. Environmental weeds can smother established native plants and suppress native seedlings. They compete with native vegetation for resources such as light and water, and alter ecological processes in bushland. They can also displace native fauna by reducing the amount of suitable habitat. The regular and ongoing effective control of environmental weeds on the site is required to ensure that biodiversity values are restored and maintained in the long term.

The weed management plan contained in the agreement (page 50) describes the weed management actions that must be undertaken on the site. This section of the guide provides context and justification for those 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

The density of woody weeds and exotic vines at the site is provided in Map 6. The most significant woody weed on the site is African Olive, although significant localised infestations of Small and Large Leaved Privet are also present. Exotic vines such as Moth Vine and Bridal Creeper are scattered throughout the site. One large infestation of Madeira Vine occurs in the near the northern boundary of Management Subzone 3e.

The density of exotic groundcovers at the site is provided in Map 7. The density of ground weeds over much of the site is low (i.e. <10% foliage cover). Moderate to high densities of ground weeds are present in areas where the native canopy is absent or much reduced. One small area on the eastern boundary of the site (Management Subzone 4a) contains very high densities of ground weeds (i.e. >80% foliage cover).

Appendix C describes the distribution of the weeds that have been recorded from the site.

3.2.2 Approach to weed management

Supervision of weed control works

Much of the native vegetation on the site is currently in a moderate to highly degraded state. Professionally planned and implemented weed control is needed to restore the health of the native vegetation, while avoiding the problems that are associated with the over-clearing of weeds (e.g. erosion, loss of native habitat, and the reinvasion of weeds). For these reasons, the methods of weed control section of the agreement (page 53) requires that all weed control activities be undertaken by, or under the direct supervision of, an appropriately qualified bush regenerator.

Level of effort

As described previously (Section 2.4), the site has been divided into 5 weed zones based upon the broad condition of the native vegetation. Profiles for these weed zones are included at Appendix B of this guide. The methods of weed control section of the agreement (page 53) specifies the level of effort (i.e. number of hours) and the broad weed control techniques that must be applied annually in each weed zone.

Work programs

The general approach to weed control at the site is to eliminate mature woody weeds and exotic vines, and reduce the density of groundcover weeds. However, a specific work program has been developed for each weed zone following consideration of factors including:

- the type and extent of weeds that are present,
- the resilience (recovery capacity) of the native vegetation, and
- the risk of erosion.

For example, the primary removal of heavy infestations of African Olive in Weed Zone 4 will be staged over a 10 year period to avoid problems associated with over-clearing. In areas with less dense infestations of woody weeds, primary weed control will either be completed in the first year (Weed Zones 1 and 5) or staged over two years (Weed Zones 2 and 3).

Mechanical weed removal

The agreement (page 55) allows primary woody weed control to be undertaken mechanically using a barrel mulcher within the largest stands of dense African Olive in Weed Zone 4 (i.e. Management Zones 6, 10 and 11). This technique is more cost-effective for dealing with heavy woody weed infestations than non-mechanical techniques. However, mechanical weed control is only permitted in accessible and less sensitive parts of Management Zones 6, 10 and 11 (i.e. low gradient slopes, > 2m from remnant trees, and >25 m from the river bank). In other parts of these management zones, and in all other parts of the site, manual bush regeneration techniques will be applied to control weeds.

Integration with fire management

Primary woody weed treatment should focus on the three proposed fire compartments identified in Map 9 as a priority (see Section 3.3.6) for the following reasons:

- to increase the fuel levels in burn compartments 1 and 2 prior to the planned burns in Years 2 and 6 respectively, and
- to allow regenerating vegetation in burn compartment 3 to be sufficiently established to enable a fire to occur in Year 10.

Performance measures

The weed management plan in the agreement also specifies performance measures for the weed control work in each weed zone after 5 and 10 years. These performance measures are included in Table 3.

3.2.3 Weed control monitoring

The weed control monitoring requirements of the agreement are described on page 56 of the weed management plan and explained below. An 'Annual Monitoring Proforma for Management Zones' (Appendix D) has been prepared to record the outcomes of this monitoring.

Qualifications

Monitoring of the results of the weed control activities must be undertaken by an appropriately qualified bush regenerator every 12 months. This will involve the formal monitoring of ground cover weeds in each management zone, as well as a field inspection to record the condition of each management subzone.

Formal monitoring and reporting of groundcover weed density

At the completion of each 12 month period, the percentage foliage cover of groundcover weeds in each management zone will be measured. The purpose of this monitoring is to measure progress against the performance measures that have been identified for each weed zone.

Table 3: Performance measures for weed control

Weed zone	5 year performance measures	10 year performance measures
Weed Zone 1	- No mature exotic vines, succulents or woody weeds present - Density of other weeds reduced to <30% foliage cover	- No mature exotic vines, succulents or woody weeds present - Density of other weeds reduced to <10% foliage cover
Weed Zone 2	- No mature exotic vines, succulents or woody weeds present - Density of other weeds maintained at <10% foliage cover	- No mature exotic vines, succulents or woody weeds present - Density of other weeds maintained at <10% foliage cover
Weed Zone 3	- No mature exotic vines, succulents or woody weeds present - Density of other weeds maintained at <10% foliage cover	- No mature exotic vines, succulents or woody weeds present - Density of other weeds maintained at <10% foliage cover
Weed Zone 4	- No mature exotic vines or succulents present - Primary treatment of woody weeds completed in 40% of the combined area of the zone - No mature woody weeds present in areas where primary treatment has occurred - Weed density maintained at <10% foliage cover in areas where primary treatment has occurred	- No mature exotic vines, succulents or woody weeds present - Weed density maintained at <10% foliage cover
Weed Zone 5	- No mature exotic vines, succulents or woody weeds present - Density of other weeds reduced to <30% foliage cover	- No mature exotic vines, succulents or woody weeds present - Density of other weeds reduced to <20% foliage cover

The percentage foliage cover of groundcover weeds will be assessed as follows:

- establish a 50 m transect through the most weed affected part of the management zone where weed control work has occurred.
- at 50 cm intervals along the transect (100 points in total) place a 1m high thin stick on the ground (upright) and record whether weed species or native species (or both) are in contact with the stick.
- at each point, score 1 if weed species only are in contact with the stick, score 0.5 if both native and weed species are in contact with the stick, or score 0 if there are no weed species in contact with the stick.
- record the percentage foliage cover as the sum of these values divided by 100.

For the purposes of this monitoring, all non-native species and native species that are outside of their natural range are counted as groundcover weeds if they are less than 1 m in height.

The results of this formal monitoring should be recorded on the 'Annual Monitoring Proforma for Management Zones' (Appendix D).

Visual inspections and reporting of completed works

A visual inspection of all management zones should be undertaken after each 12 month period, with the following information recorded:

- A summary of weed control activities works undertaken for the previous 12 months in the zone and a review of the success of these.
- A description of the current condition of the zone, including reference to the presence/absence of canopy, shrub and/or ground-layer regeneration and any

evidence of dieback, erosion etc. The presence of any threatened flora populations will also be noted.

- Before and after photographs of areas where substantial weed control works have been undertaken (e.g. the primary removal of woody weeds) until end of Year 10. This could include photos taken from permanent photo points (see Section 5.1)
- Descriptions of the type and locations of any significant new or remaining weed infestations. If no weed infestations are present in a zone, this should also be documented.
- Recommendations, if warranted, of any adaptations to the weed control techniques previously applied.

The results of this formal monitoring should be recorded on the 'Annual Monitoring Proforma for Management Zones' (Appendix D).

3.2.4 Review of the weed management plan

Timing and matters for consideration

The weed management plan in the agreement is required to be reviewed by the landowner every four to six years, commencing from July 2012. Item 2.2 (page 33) 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 plan must be undertaken by an appropriately qualified person that is independent of the project manager and bush regenerator working on the site. None the less, the review needs to be undertaken in consultation with the bush regenerator and project manager to ensure that the professionals working on the site have an opportunity to have their knowledge and ideas appropriately considered. This independent peer review is intended to ensure that the site obtains the best possible management outcomes.

3.2.5 Funding for weed control 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 project management budget), and
- funding to update the weed management plan every five years.

3.3 MANAGEMENT OF FIRE FOR CONSERVATION

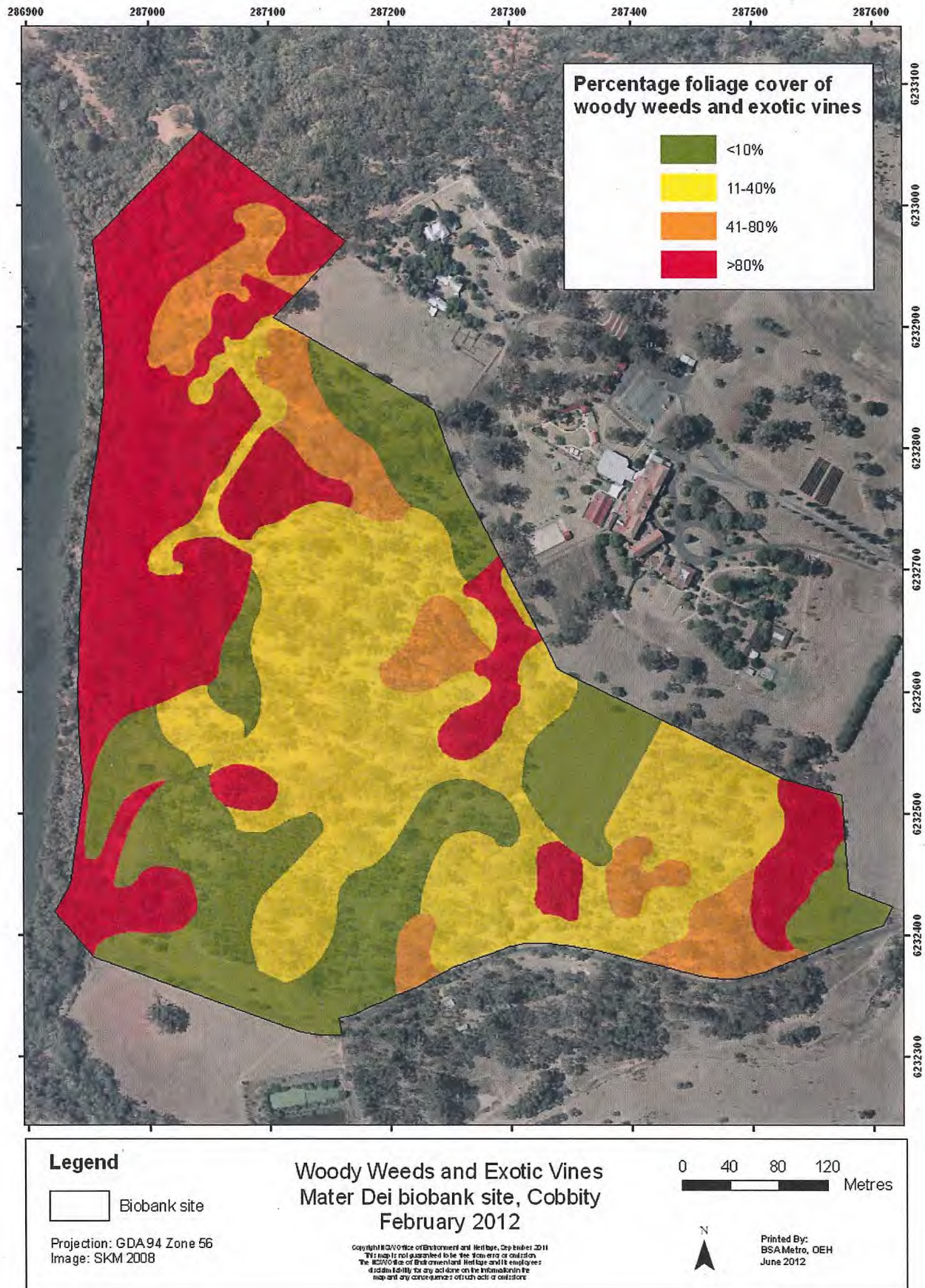
The fire management plan in the agreement (page 59) describes the ecological burn actions that must be undertaken on the site. This section of the guide provides context and justification for those actions, and guidance on how to effectively implement them.

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 a fire regime can alter the structure of bushland and its component species. The Biobanking agreement (pg 59, fire requirements for vegetation types and threatened species) describes the appropriate fire regimes for the two vegetation types that are present on the site. These requirements are included in Table 4 of this guide.

Map 6: Density of woody weeds and exotic vines



Map 7: Density of exotic forbs, grasses and climbers



Table 4: 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
Cumberland Shale Hills Woodland	5	12	Preferably August to January	Variable	Adjust frequency to ensure minimal interval is maintained if a wildfire or hazard reduction burn occurred.
Cumberland River Flat Forest	7	35	As above	As above	As above
Threatened plants	Minimum fire interval (year)	Maximum fire interval (years)	Time of year for burning	Fire intensity required	Adjustment required due to wildfires
No known threatened plant populations	N/A	N/A	N/A	N/A	N/A

Vegetation fire status

A 2012 vegetation fire status map (Map 8) has been prepared which classifies the vegetation of the site according to the interval since it was last burnt and the optimal fire thresholds for the vegetation type. There have been no known fires on the site in the past 35 years and consequently, all of the vegetation is classified as being underburnt.

3.3.2 Natural assetsThreatened species, populations and ecological communities

Table 6 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 (as described in Sections 2.2 and 2.3). 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 3.3.7 below).

Other values

The biobank site contains steep and erodible slopes. Fire on these slopes need to be managed to minimise erosion.

3.3.3 Cultural heritage assetsAboriginal heritage

A search of the Aboriginal Heritage Information Management System was made on 4 June 2012. No items of Aboriginal cultural heritage significance were 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

An old ropes course is located in the southern section of Management Zone 2 within the proposed fire compartment 2 (Map 9). The ropes course (covering approximately 0.5 ha) would need to be protected from the proposed burn if the landowner wanted to retain it. Fencing is the only other built asset within the biobank site.

Table 5: Hazard reduction conditions for threatened species, populations and ecological communities

Scientific name	Common Name	TSC Act	EPBC Act	Presence on 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	Confirmed (2012) – 20.1 ha of Cumberland Shale Hills Woodland (Map 3)	No fire more than once every 7 years	No slashing, trittering or tree removal
N/A	Sydney Coastal River Flat Forest (i.e. previous name for River Flat Eucalypt Forest)	Endangered	No	Confirmed (2012) – 5.6 ha mapped as Cumberland River Flat Forest (Map 3)	No fire more than once every 25 years	No slashing, trittering or tree removal
Threatened fauna species						
<i>Meridolum corneovirens</i>	Cumberland Land Snail	Endangered	No	Confirmed (2006)	None	No slashing, trittering or tree removal
<i>Pyrrholaemus sagittatus</i>	Speckled Warbler	Vulnerable	No	Confirmed (2006)	None	No slashing, trittering or tree removal
<i>Ninox strenua</i>	Powerful Owl	Vulnerable	No	Confirmed although no nesting sites identified (2006)	No burning around known nesting sites at any time	No slashing, trittering or tree removal of or around known nesting sites
<i>Melanodryas cucullata cucullata</i>	Hooded robin (southern form)	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
<i>Stagonopleura guttata</i>	Diamond Firetail	Vulnerable	No	Potential (2006)	None	No slashing, trittering or tree removal
<i>Pteropus poliocephalus</i>	Grey-headed Flyingfox	Vulnerable	Vulnerable	Confirmed (1996)	Avoid known roost sites	Avoid known roost sites
<i>Oxyura australis</i>	Blue-billed Duck	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
<i>Myotis adversus</i>	Large-footed Myotis	Vulnerable	No	Potential (2006)	No fire around known roost sites	No removal of trees
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Endangered	Potential (2006)	Species not listed	Species not listed
<i>Melithreptus gularis</i>	Black-chinned Honeyeater	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
<i>Mormopterus norfolkensis</i>	Eastern Freetail –bat	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
Threatened flora species						
<i>Cynanchum elegans</i>	White-flowered wax Plant	Endangered	Endangered	Potential (2012)	No fire	No slashing, trittering or tree removal
<i>Eucalyptus benthamii</i>	Camden White Gum	Vulnerable	Vulnerable	Potential (2012)	No fire more than once every 15 years	No slashing, trittering or tree removal
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>	Native Pear	Endangered population	No	Potential (2012)	Species not listed	Species not listed
<i>Pomaderris brunnea</i>	Brown Pomaderris	Vulnerable	Vulnerable	Potential (2012)	No fire more than once every 10 years	No slashing, trittering or tree removal
<i>Pimelea spicata</i>	Spiked Rice-flower	Endangered	Endangered	Potential (2012)	No fire more than once every 5 years	No slashing, trittering or tree removal

3.3.5 Ecological burn actions

Cumberland Shale Hills Woodland

The ecological burn actions contained in the fire management plan require that for Cumberland Shale Hills Woodland:

- the revegetation areas in Management Zones 1, 6 and 10 be protected from wildfires and planned fires as far as possible until the end of Year 12 (i.e. July 2024) to assist with the establishment of the plantings,
- at least three planned fires be undertaken in Cumberland Shale Hills Woodland by the end of Year 12 (i.e. July 2024),
- no more than 20% of Cumberland Shale Hills Woodland remains unburnt for more than 12 years from the start of Year 13 (i.e. July 2024), and
- any single planned fire is not to burn more than 50% of Shale Hills Woodland

River Flat Eucalypt Forest

The ecological burn actions contained in the fire management plan require that for River Flat Eucalypt Forest:

- at least one planned fire be undertaken by the end of Year 20 (i.e. July 2032),
- no more than 20% of River Flat Eucalypt Forest remains unburnt for more than 35 years from the start of Year 21 (i.e. July 2032), and
- any single planned fire is not to burn more than 50% of River Flat Eucalypt Forest.

3.3.6 Fire management strategy

Proposed burn compartments

As indicated in Map 8, all of the native vegetation on the site is currently underburnt. The strategic goal of the fire management plan is to return the vegetation to within its fire threshold as soon as is practical. The achievement of this objective however is tempered by the presence of dense stands of African Olive on large parts of the site. These areas will not carry a fire in their present state. Once primary weed control is completed, these areas can not be burnt until the regenerating and/or planted vegetation is sufficiently established.

Three proposed burn compartments (Map 9; Table 6) have been identified to enable the ecological burn actions (Section 3.3.5 above) to be effectively implemented for the first 12 years of the agreement.

The proposed burns will bring more than 80% of the Cumberland Shale Hills Woodland on the site to within its fire threshold by the end of Year 12, as required by the agreement. Subsequent prescribed burns every four years will be needed to keep 80% of Cumberland Shale Hills Woodland within threshold from Year 13 onward, and to bring 80% of Cumberland River Flat Forest to within threshold by Year 21.

It should be noted that Compartment 3 contains some areas of Management Zone 10. The fire management plan (page 60) states that Management Zone 10 should be protected from fire until the commencement of Year 13 in order to assist the revegetation. During the planning for the burning of Compartment 3 (proposed for Year 10 i.e. 2021-22), the parts of Management Zone 10 that are within the compartment will need to be assessed to determine whether planting has occurred in these areas and if so, whether the plantings are capable of withstanding a prescribed burn. If plantings are present and vulnerable to fire, these areas should be excluded from the compartment.

Burn season and intensity

The fire management plan (page 60: ecological burn actions) states that planned burns should preferably be undertaken between August and January. This period is the optimal fire season for many of Sydney's vegetation types (DEC 2005).

High intensity burns are preferable for native vegetation on the Cumberland Plain as they provide an opportunity for recruitment of a greater number of native plant species. The intensity of a burn is determined by multiple variables including fuel loads, slope and aspect, air temperature and humidity, wind speed and direction.

Current fuel levels are relatively low on the site even though it has not been burnt for over 30 years. Fuel loads in Cumberland Plain vegetation are markedly lower than those found on the surrounding sandstone areas of Sydney (DEC 2005). Burns may need to be undertaken in late spring or early summer when temperatures are high enough to support a burn.

Table 6: Proposed burns to Year 10

Compartment	Year	Date	Area (ha)	Cumberland Shale Hills Woodland (ha)	Cumberland River Flat Forest (ha)	% of SHW within in threshold
1	2	2013-14	6.4	4.9	1.5	24%
2	6	2017-18	5.4	5.4	-	51%
3	10	2021-22	5.8	5.8	-	80%

Variability

The greatest species diversity is likely to be maintained by using fire regimes that encourage variation. This includes variation in the length of inter-fire intervals (within thresholds), variation in the fire intensity and in the season of the burn (between August and January) (DEC 2005). Variability in the length of the inter-fire interval could be incorporated into the fire regime at Mater Dei in the long term by varying the size and shape of the burn compartments that are used.

Integration with weed management

Compartments 1 and 2 contain the better condition areas of Cumberland Shale Hills Woodland on the site i.e. areas with low to moderate infestations of African Olive. The primary removal of woody weeds in these areas should be completed as a priority so that the woody debris can be used as a fuel source.

Compartment 3 contains some larger areas of dense African Olive (MZ10). The parts of Management Zone 10 that occur within Compartment 3 should also be cleared as a priority. This will allow the regenerating vegetation within this area the best chance of becoming established by the time of the proposed burn (Year 10).

Prescribed burns can contribute to weed proliferation as a result of increased light conditions, particularly along the more disturbed edges of the site. The weed management program may need to be adjusted to provide for the adequate control of post-fire weed regrowth.

Integration with pest management

Consideration should also be given to integrating any pest management programs (if required) with the proposed burn program. Rabbit control should be considered prior to burning in areas where rabbit numbers are significant, as the post-fire regeneration will be susceptible to herbivory.

The reduced understorey that will be present after the 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. However, the reduced understorey will also increase visibility if a feral pest shooting program is required.

3.3.7 Burn approvals

Bush Fire Hazard Reduction Certificate

The proposed burns at the site can be undertaken as bush fire hazard reduction burns. To obtain approval for this, the landowner will need to submit an application⁵ for a Bush Fire Hazard Reduction Certificate to the Rural Fire Service (RFS) at least three months prior to each proposed burn. The application form should be sent to:

Community Safety Officer
Macarthur Zone
NSW Rural Fire Service
3-5 Alderney St
MINTO 2566
(02) 9603 7077

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.

Protection of the Environment Operations (Clean Air) Regulation 2010

An approval under the *Protection of the Environment Operations (Clean Air) Regulation 2010* is not required if the landowner has obtained a Bush Fire Hazard Reduction Certificate or if the burn is undertaken for agricultural purposes (refer to Clause 12 and Schedule 8 of the Regulation).

3.3.8 Implementation of planned burns

RFS assistance to undertake burns

Macarthur Zone RFS has indicated that it is available to plan and execute hazard reduction burns to manage fuel levels on the site. Burns proposed on the site will be programmed into the annual works program of the Macarthur Zone RFS and executed when weather and other priorities permit.

Fire containment lines

RFS requests that the landowner constructs fire control lines for the proposed burns so that the burns can be undertaken at short notice. The annual payments to the landowner from the Biobanking Trust Fund will include an allocation for the construction of control lines for each burn (i.e. every four years).

The RFS will determine the type and location of fire control lines that are required for each burn and advise the landowner of this when the Bush Fire Hazard Reduction Certificate is issued. The fire management plan (page 61) requires that the fire control lines be constructed, to the greatest extent possible, without disturbance to the soil surface (i.e. by avoiding scraping to mineral earth).

⁵ Available at http://www.rfs.nsw.gov.au/file_system/attachments/State/Attachment_20060131_0DAD2A76.pdf

Threatened species inspections

The fire management plan (page 62) requires that targeted surveys for threatened flora and the Cumberland Land Snail be conducted across each proposed burn compartment prior to burning. The threatened flora that is likely to occur on the site (see Section 2.3.1) and the Cumberland Land Snail can be detected at any time of the year.

The fire management plan (page 62) also requires that:

- the frequency of burns take into consideration the recommended fire frequencies of any threatened species that are present, and
- areas containing the Cumberland Land Snail be avoided when constructing fire control lines.

The annual payments to the landowner from the Biobanking Trust Fund will include an allocation for threatened species inspections prior to each burn (i.e. every four years).

3.3.9 Monitoring and review of the fire management plan

Review and updating the fire management plan

The fire management plan in the agreement is required to be reviewed by the landowner every four to six years, commencing from July 2012. Item 3.2 (page 35) 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 plan is to be undertaken by an appropriately qualified person that is independent of the project manager and bush regenerator working on the site. None the less, the review needs to be undertaken in consultation with the bush regenerator and project manager to ensure that the professionals working on the site have an opportunity to have their knowledge and ideas for future actions appropriately considered.

This independent peer review is intended to ensure that the site obtains the best management outcomes that are possible. The review is required to include monitoring of the outcomes of the burns that have occurred previously as described below.

Monitoring the outcomes of ecological burns

The fire management plan (page 61) 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:

- a general description of the vegetation structure and species composition within each zone (or group of zones),
- an interpretation of the ecological outcomes of previous fires (either planned or unplanned) within the zone, and
- a recommendation on the timing and location for future planned fires within the zone.

3.3.10 Funding for fire management activities

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

- funding⁶ to apply for a Bush Fire Hazard Reduction Certificate every four years commencing in Year 2,
- funding to inspect the proposed fire compartments for threatened species every four years commencing in Year 2,
- funding to establish fire control lines every four years from Year 2, and
- funding to monitor and update the fire management plan every five years.

3.4 MANAGEMENT OF HUMAN DISTURBANCE

Potential sources of human disturbance on the site include four wheel drives, mountain bikes, trail bikes, horse riding and rubbish dumping. These activities can damage or destroy native vegetation, promote weed invasion and displace native fauna. The prevention of these disturbances is required to maintain and improve the biodiversity values of the site.

3.4.1 General human disturbances

Item 4.1 (page 36) of the 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 (page 36) of the agreement for human activities that are listed as permissible activities under clause 3 (page 8) of the agreement. These are reproduced in Table 7 below.

Table 7: Permissible human activities on the biobank site

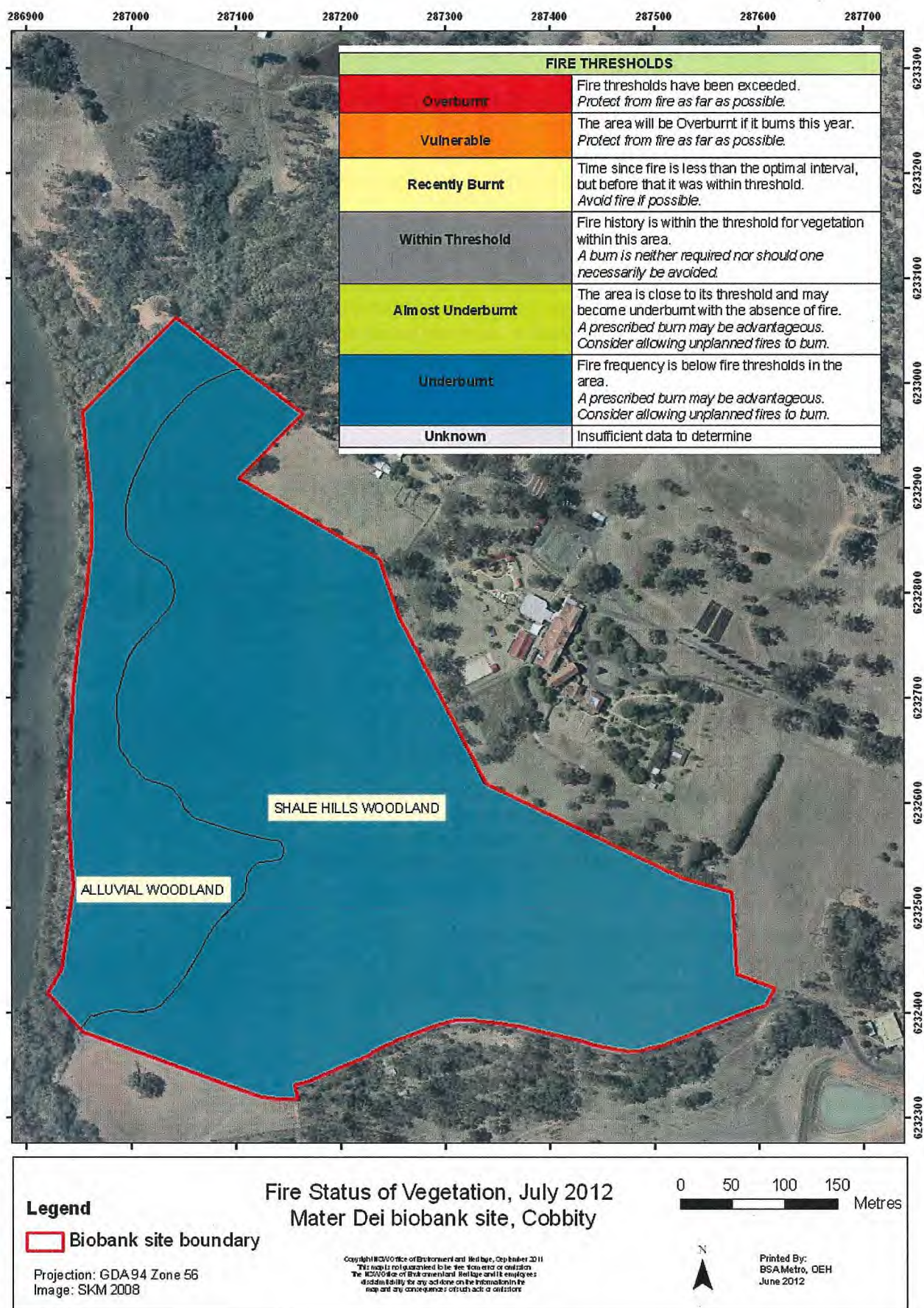
Description of human activities	Management zone/s
Passive recreation, with the exception of overnight stays and/or camp fires, is permissible on the land to the extent that the condition of vegetation on site is not degraded. Passive recreation can include but is not limited to activities such as walking and bird watching.	All zones
Recreational use of the existing ropes course.	MZ2
Vehicular access only for the purposes of undertaking management actions is permissible.	All zones

3.4.2 Waste dumping

Item 4.4 (page 36) 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 for the existing stockpile of gravel in MZ9 which may be retained and used for the purpose of future track maintenance.

⁶ included in project management payment

Map 8: Fire status of vegetation types



Map 9: Proposed burn compartments



3.4.3 Signage

Biobanking signs

Item 4.6 (page 36) of the agreement requires that a total of 20 standard Biobanking signs be installed around the perimeter of the site to deter human disturbance including waste dumping. The Biobanking signs are available from OEH and must be installed by the end of October 2012 (i.e. 4 months from the first payment date) in the following locations:

- on the five gates into the biobank site (see Map 5),
- on six metal star-pickets placed at regular intervals along the line identified in Map 5 as 'Biobanking signage – install on pickets', and
- on the perimeter fence at nine practical interface locations along the lines identified in Map 5 as "Existing fence – maintain" and "New fence – install".

Interpretation signs

Item 4.6 (page 36) of the agreement also requires that two interpretation signs be installed and maintained adjacent to the gates at the locations identified in Map 5 as 'Interpretation signage – install'. The purpose of these signs is to reduce human disturbance to the site by educating users of the site of the values being protected.

The interpretation sign should carry a brief description of the significance of the biobank site in protecting endangered and critically endangered vegetation, and threatened fauna habitat. The interpretation sign must be replaced if the writing or images on the sign are no longer clearly visible or are illegible.

3.4.4 Funding to manage human disturbance

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

- funds to purchase and install 20 Biobanking signs and six star-pickets in Year 1,
- funds to purchase and install two interpretation signs in Year 1, and
- funds to replace all signage and star-pickets every 10 years.

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 (page 38) of the agreement, native vegetation (whether remnant or regrowth) on the biobank site must not be cut down, felled, thinned, logged, killed, destroyed, poisoned, ringbarked, uprooted, burnt or otherwise removed, except in accordance with Item 5.2 (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 (page 8) 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 to obtain the benchmark stem densities for that vegetation type.

Item 5.2 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, clearing and grazing has resulted in the native vegetation on much of the site being modified from its natural state. Most of this disturbed native vegetation has moderate or high resilience (recovery capacity) and as such, will improve in condition with sympathetic management (e.g. stock exclusion, weed control, appropriate fire regimes, etc). Some 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 will be undertaken in these areas to assist the recovery of the native vegetation.

3.6.1 Revegetation requirements

A total of 1600 native trees, 2500 native shrubs, and 7560 native groundcovers are required to be planted in the biobank site in the first 10 years of the agreement. Details of the number and species that are to be planted, and the location and timing of the revegetation works, are described in the planting schedule in Item 6.6 (page 40) of the agreement. The planting schedule is reproduced in Table 8 of this guide. The plants are to be supplied in hiko trays i.e. plastic trays of 40 93 ml cells, 100 mm deep.

Modifications to the planting schedule (in terms of numbers, species and areas) can be made if strong natural regeneration is observed within a proposed revegetation area following primary weed removal. The landowner or project manager should discuss any proposed modifications to the planting schedule with OEH prior to implementing them.

Additional requirements for the revegetation works are described in Item 6.1 (page 38) and Item 6.5 (page 40) of the agreement and included below.

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 parcels in landholders' ownership.
- Any seed collected must be collected in accordance with the Florabank Guidelines⁷.
- Seed collection from any species individually listed under the *Threatened Species Conservation Act 1995* must not be undertaken, except any such species specified in Item 6.6.

General requirements for all plantings

- Appropriate site treatment (e.g. weed control) of each area of planting or seeding identified in the planting schedule must be undertaken prior to such planting.
- Planting should 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 for when it is best to undertake planting will be left to the bush regenerator in consultation with the project manager and landowner.
- Install a soil conditioner (e.g. Terraform or TerraCottem) in planting holes prior to planting.

⁷ Available at http://www.florabank.org.au/default.asp?V_DOC_ID=755

Table 8: Planting schedule

Species' common name	Species' scientific name	Management zone/s of planting	No. of plants per area	Planting method	Timing (months or Year)
Blue Box	<i>Eucalyptus baueriana</i>	MZ1	40	Hiko cell	Within 4 years of commencement
Narrow-leaved Ironbark	<i>Eucalyptus crebra</i>	MZ1	20	As above	As above
Grey Box	<i>Eucalyptus moluccana</i>	MZ1	140	As above	As above
Forest Red Gum	<i>Eucalyptus tereticornis</i>	MZ1	140	As above	As above
Black Wattle	<i>Acacia decurrens</i>	MZ1	50	As above	As above
Acacia falcata	<i>Acacia falcata</i>	MZ1	110	As above	As above
Hickory Wattle	<i>Acacia implexa</i>	MZ1	50	As above	As above
Parramatta Wattle	<i>Acacia parramattensis</i>	MZ1	50	As above	As above
Blackthorn	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	MZ1	50	As above	As above
Wedge-leaf Hop-bush	<i>Dodonaea viscosa</i> subsp. <i>cuneata</i>	MZ1	110	As above	As above
Australian Indigo	<i>Indigofera australis</i>	MZ1	100	As above	As above
Blue Box	<i>Eucalyptus baueriana</i>	MZ6, MZ10	40	As above	Within 24 months of primary weed treatment
Narrow-leaved Ironbark	<i>Eucalyptus crebra</i>	MZ6, MZ10	60	As above	As above
Grey Box	<i>Eucalyptus moluccana</i>	MZ6, MZ10	200	As above	As above
Forest Red Gum	<i>Eucalyptus tereticornis</i>	MZ6, MZ10	200	As above	As above
Black Wattle	<i>Acacia decurrens</i>	MZ6, MZ10	100	As above	As above
-	<i>Acacia falcata</i>	MZ6, MZ10	100	As above	As above
Hickory Wattle	<i>Acacia implexa</i>	MZ6, MZ10	100	As above	As above
Parramatta Wattle	<i>Acacia parramattensis</i>	MZ6, MZ10	100	As above	As above
Blackthorn	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	MZ6, MZ10	90	As above	As above
Wedge-leaf Hop-bush	<i>Dodonaea viscosa</i> subsp. <i>cuneata</i>	MZ6, MZ10	150	As above	As above
Australian Indigo	<i>Indigofera australis</i>	MZ6, MZ10	150	As above	As above
Austral Bugle	<i>Ajuga australis</i>	MZ6, MZ10	20	As above	As above
Purple Wiregrass	<i>Aristida ramosa</i>	MZ6, MZ10	20	As above	As above
Threeawn Speargrass	<i>Aristida vagans</i>	MZ6, MZ10	20	As above	As above
Narrow plantain	<i>Plantago gaudichaudii</i>	MZ6, MZ10	20	As above	As above
-	<i>Plantago varia</i>	MZ6, MZ10	20	As above	As above
Bordered Panic	<i>Entolasia marginata</i>	MZ6, MZ10	80	As above	As above
Wallaby Grass	<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	MZ6, MZ10	80	As above	As above
Smallflower Wallaby Grass	<i>Austrodanthonia setacea</i>	MZ6, MZ10	80	As above	As above
Red-leg Grass	<i>Bothriochloa decipiens</i> var. <i>decipiens</i>	MZ6, MZ10	80	As above	As above
Tall Sedge	<i>Carex appressa</i>	MZ6, MZ10	80	As above	As above
Tall Chloris	<i>Chloris ventricosa</i>	MZ6, MZ10	80	As above	As above
Barbed Wire Grass	<i>Cymbopogon refractus</i>	MZ6, MZ10	80	As above	As above

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Blue Flax-Lily	<i>Dianella longifolia</i>	MZ6, MZ10	80	As above	As above
Shorthair Plumegrass	<i>Dichelachne micrantha</i>	MZ6, MZ10	80	As above	As above
Fishweed	<i>Einadia trigonos</i> subsp. <i>trigonos</i>	MZ6, MZ10	80	As above	As above
Common Wheatgrass	<i>Elymus scaber</i> var. <i>scaber</i>	MZ6, MZ10	80	As above	As above
Paddock Lovegrass	<i>Eragrostis leptostachya</i>	MZ6, MZ10	80	As above	As above
Snowgrass	<i>Poa sieberiana</i> var. <i>sieberiana</i>	MZ6, MZ10	80	As above	As above
Slender Rat's Tail Grass	<i>Sporobolus creber</i>	MZ6, MZ10	80	As above	As above
Smooth-flower Wallaby Grass	<i>Austrodanthonia pilosa</i>	MZ6, MZ10	80	As above	As above
Wallaby Grass	<i>Austrodanthonia tenuior</i>	MZ6, MZ10	80	As above	As above
-	<i>Austrostipa rudis</i> subsp. <i>rudis</i>	MZ6, MZ10	80	As above	As above
Red-leg Grass	<i>Bothriochloa macra</i>	MZ6, MZ10	80	As above	As above
Windmill Grass	<i>Chloris truncata</i>	MZ6, MZ10	80	As above	As above
Blue Flax-Lily	<i>Dianella revoluta</i> var. <i>revoluta</i>	MZ6, MZ10	80	As above	As above
Tufted Hedgehog Grass	<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	MZ6, MZ10	80	As above	As above
Kangaroo Grass	<i>Themeda australis</i>	MZ6, MZ10	130	As above	As above
Tufted Hedgehog Grass	<i>Poa labillardieri</i> var. <i>labillardieri</i>	MZ6, MZ10	130	As above	As above
Weeping Grass	<i>Microlaena stipoides</i> var. <i>stipoides</i>	MZ6, MZ10	380	As above	As above
Berry Saltbush	<i>Einadia hastata</i>	MZ6, MZ10	300	As above	As above
Blady Grass	<i>Imperata cylindrica</i>	MZ6, MZ10	300	As above	As above
Rough-barked Apple	<i>Angophora floribunda</i>	MZ11	110	As above	As above
Broad-leaved Apple	<i>Angophora subvelutina</i>	MZ11	110	As above	As above
Camden White Gum	<i>Eucalyptus benthamii</i>	MZ11	60	As above	As above
Blue Box	<i>Eucalyptus baueriana</i>	MZ11	150	As above	As above
River Peppermint	<i>Eucalyptus elata</i>	MZ11	140	As above	As above
Forest Red Gum	<i>Eucalyptus tereticornis</i>	MZ11	140	As above	As above
-	<i>Melaleuca decora</i>	MZ11	50	As above	As above
Black Wattle	<i>Acacia decurrens</i>	MZ11	120	As above	As above
White Sally Wattle	<i>Acacia floribunda</i>	MZ11	120	As above	As above
Hickory Wattle	<i>Acacia implexa</i>	MZ11	120	As above	As above
Parramatta Wattle	<i>Acacia parramattensis</i>	MZ11	120	As above	As above
Blackthorn	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	MZ11	120	As above	As above
Large-leaf Hop-bush	<i>Dodonaea triquetra</i>	MZ11	250	As above	As above
Tick Bush	<i>Kunzea ambigua</i>	MZ11	200	As above	As above
Tree Violet	<i>Melicytus dentatus</i>	MZ11	140	As above	As above
Purple Wiregrass	<i>Aristida ramosa</i>	MZ11	80	As above	As above
Threeawn Speargrass	<i>Aristida vagans</i>	MZ11	80	As above	As above

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-	<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	MZ11	140	As above	As above
Tall Chloris	<i>Chloris ventricosa</i>	MZ11	140	As above	As above
Barbed Wire Grass	<i>Cymbopogon refractus</i>	MZ11	140	As above	As above
Shorthair Plumegrass	<i>Dichelachne micrantha</i>	MZ11	140	As above	As above
Forest Hedgehog Grass	<i>Echinopogon ovatus</i>	MZ11	140	As above	As above
Fishweed	<i>Einadia trigonos</i>	MZ11	140	As above	As above
Common Wheatgrass	<i>Elymus scaber</i> var. <i>scaber</i>	MZ11	140	As above	As above
Wiry Panic	<i>Entolasia stricta</i>	MZ11	140	As above	As above
Hairy Panic	<i>Panicum effusum</i>	MZ11	140	As above	As above
Scrubby Spurge	<i>Phyllanthus gunnii</i>	MZ11	140	As above	As above
Blue Flax-lily	<i>Dianella caerulea</i> var. <i>caerulea</i>	MZ11	140	As above	As above
Bordered Panic	<i>Entolasia marginata</i>	MZ11	140	As above	As above
Stout Bamboo Grass	<i>Austrostipa ramosissima</i>	MZ11	300	As above	As above
Berry Saltbush	<i>Einadia hastata</i>	MZ11	300	As above	As above
-	<i>Eragrostis benthamii</i>	MZ11	300	As above	As above
Paddock Lovegrass	<i>Eragrostis leptostachya</i>	MZ11	300	As above	As above
Spiny-headed Mat-rush	<i>Lomandra longifolia</i>	MZ11	300	As above	As above
Weeping Grass	<i>Microlaena stipoides</i> var. <i>stipoides</i>	MZ11	300	As above	As above
Kangaroo Grass	<i>Themeda australis</i>	MZ11	300	As above	As above
-	<i>Juncus usitatus</i>	MZ11	300	As above	As above
-	<i>Poa affinis</i>	MZ11	300	As above	As above

Specific requirements for planting trees and shrubs in MZ1

- Plant in a mosaic pattern to maintain a patchwork of open grassland areas
- Plant in 50% of the total area of the zone only
- Avoid planting within 10 m of existing canopy trees or areas where strong natural regeneration is occurring
- Plant trees at a rate of 400 trees/ha and shrubs at a rate of 625 shrubs/ha.
- Install tree guards around each plant and maintained for 3 years from the planting date.

Specific requirements for planting trees and shrubs in MZ6, MZ10 & MZ11

- Plant in 50% of the total area of the zone only
- Avoid planting within 10 m of existing canopy trees or areas where strong natural regeneration is occurring
- Plant trees at a rate of 400 trees/ha and shrubs at a rate of 625 shrubs/ha
- Undertake planting within 24 months of primary weed treatment in an area.
- Install tree guards around each plant and maintained for 3 years from the planting date.

Specific requirements for planting groundcovers in MZ6, MZ10 & MZ11

- Plant groundcovers in nodes covering one square metre and containing six plants
- Install 200 nodes per hectare targeting areas with the lowest capacity for natural regeneration
- Undertake planting within 24 months of primary weed treatment in an area.

3.6.2 Monitoring survival rates and supplementary planting

Item 6.3 (page 39) 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).

3.6.3 Funding for revegetation works

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

- 430 plants each year in Management Zone 1 in Years 2 and 3 (i.e. a total of 860 plants); and
- 1200 plants each year in Management Zones 6, 10 and 11 between Years 2 and 10 (i.e. a total of 10,800 plants).

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 micro-habitats 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 forage on.

Item 7.1 (page 44) of the 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, except for the existing large log piles in Management Zones 2, 3 and 7.

The large log piles in Management Zones 2, 3 and 7 are the result of previous mechanical weed control work on the site where African Olive trees were bulldozed into large piles. These piles are now too large to burn, have weeds growing through them, and are potentially habitat for feral animals.

Item 7.1 requires that large (>30 cm diameter) logs in these piles be redistributed across the site to improve access for weed control and to improve biodiversity values. It also requires that the log piles and their immediate surrounds be inspected for the presence of the Cumberland Land Snail prior to any disturbance. Areas containing the Cumberland Land Snail are to be left undisturbed.

Item 7.2 (page 44) of the agreement permits timber from outside the biobank site to be introduced to and placed on the biobank site to improve biodiversity values if certain record keeping requirements are met.

The payments to the landowner from the Biobanking Trust Fund will include funds to move the large logs from the log piles into nearby areas, and to inspect the log piles for Cumberland Land Snails prior to disturbing them.

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 (page 44) of the 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.

Item 8.1 also requires that the following erosion control measure be implemented during primary weed control work in MZ10 and MZ11:

- African Olive logs and branches will be strategically placed across steep slopes and gullies and fixed in place using wooden stakes.
- African Olive branches to be used are to be generally free from seed propagules.

The payments to the landowner from the Biobanking Trust Fund will include funds to undertake this erosion control work annually until the completion of primary weed control work in Year 10 of the agreement.

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 (page 45) 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') contained in the agreement (page 64) describes the management actions that must be undertaken on the site to control feral herbivores. This section of the guide provides context and justification for these actions, and guidance on how to effectively implement them.

3.10.1 Impact of herbivores

Herbivores have the potential to significantly affect the regeneration of native vegetation on the site. Over-grazing can result in the loss of plant species, erosion and habitat destruction. These species also compete for limited food and shelter with less abundant fauna species.

Four feral herbivore species have been identified as occurring or likely to occur at the site (Table 9). There are no overabundant native herbivores present. The current level of impact on vegetation from herbivores is considered to be negligible. Grazing by rabbits poses the greatest potential threat to regenerating vegetation on the site.

Table 9: Feral herbivores present or likely to be present

Name of feral herbivore	Description of extent	Management zone/s
Rabbits <i>Oryctolagus cuniculus</i>	Present in low numbers	All
Hares <i>Lepus europaeus</i>	Present in low numbers	All
Deer	Observed on adjacent property, may be present occasionally	All
Goats	No sightings, may be present occasionally	All

Efforts to control feral herbivores must be implemented if there is evidence of significant grazing pressure on the site. The control efforts should be prioritised to protect the parts of the site that are more sensitive to grazing pressures, such as revegetation areas or areas that are regenerating after fire.

3.10.2 Suitable control methods

The possible control methods for feral herbivores are described in Table 10 below.

Table 10: Feral herbivore control methods considered

Feral type	Name and description of program or method	Describe suitability
Rabbits/Hares	Pindone baiting	Pindone baiting is an effective means of controlling rabbits but is not appropriate in areas accessed by macropods, stock animals, domestic pets or children. It may however be suitable in future years if used in accordance with regulatory requirements and with appropriate safeguards (e.g. bait stations to exclude macropods).
Rabbits/Hares	Fumigation and destruction of burrows	Fumigation of active burrows with phosphine tablets and then collapsing the burrows is an effective control method as rabbits do not readily dig new burrows. This action could be undertaken in conjunction with the removal of surface shelter (e.g. weed thickets, rubbish) in areas where rabbits are active.
All	Temporary fencing	Temporary fencing (eg. plastic barrier mesh) could be used to protect revegetation areas if the proposed tree guards are determined to not be providing enough protection from herbivores. It may also be used to protect natural regeneration in areas that have been recently burnt.
All	Controlled shooting program	Shooting is suitable for multiple feral species, and may be appropriate if goats or deer are observed regularly on the biobank site. Shooting is species specific and considered humane. All appropriate licences and permits must be obtained by the shooting contractor.

The planning of feral herbivore control activities requires consideration of the specific threat to be managed, as well as the prospect of the management objective being achieved. For example, rabbit culling may potentially be warranted for a defined period of time to enable the re-establishment of native ground cover in actively regenerating areas. However, indiscriminate culling of widespread feral species within the site is only likely to have a short term effect in reducing impacts.

Factors to take into consideration when determining the type, frequency and timing of feral herbivore control activities include the type and abundance of feral pests present, their level of impact on regenerating vegetation in different parts of the site,

and the feral pest control budget. The feral herbivore management plan establishes an annual monitoring and inspections program to assist in making these decisions (see Section 3.10.3 below).

The suitable control methods for feral herbivores (as identified in the feral herbivore management plan) are described in Table 11 below. Decisions regarding the type, frequency and timing of feral herbivore control activities on the site must be made by a suitably qualified bush regenerator or ecologist, in consultation with the project manager or landowner. It is envisaged that the bush regenerator undertaking the weed control works at the site will be the person making these decisions.

Table 11: Required feral herbivore control methods

Management zone/s	Feral type	Method of control	Frequency and timing
All	Rabbits/Hares	<u>Temporary fencing of re-vegetation areas</u> 1.1 Temporary fencing is to be installed around the planted vegetation if there is evidence of significant grazing pressure on the plantings in these zones. It may also be used elsewhere on the site if there is evidence of significant grazing pressure on natural regeneration in areas that have been recently burnt.	To be determined by a suitably qualified bush regenerator or ecologist, in consultation with the project manager or landowner.
All	All	<u>Fumigation and destruction of burrows</u> <u>Note:</u> The 'Monitoring and Inspections' section of the management plan requires that each year the number of active rabbit burrows on the site are to be qualitatively recorded as being either Negligible (N), Minimal (Min), Moderate (Mod) or High (H). 2.1 If the annual monitoring identifies that the number of active rabbit burrows on the site is either Moderate or High then the following actions are to be undertaken within 12 months of the next payment date: a. <u>Identification of priority areas for treatment</u> A suitably qualified bush regenerator or ecologist is to identify priority areas for the treatment of burrows (that is, the fumigation and destruction of burrows) and/or for a shooting program. The priority areas are to be identified based on a consideration of the information obtained from the annual monitoring. b. <u>Identification of the level of effort required</u> A suitably qualified bush regenerator or ecologist is to identify the number of person days to be applied to the treatment of burrows in the priority areas and/or for a shooting program. A 'person day' is equivalent to the effort of one person working for 8 hours. The number of person days applied within the 12 month period is to be adequate to address the threat to native vegetation and equal to or less than the 'surplus	To be determined by a suitably qualified bush regenerator or ecologist, in consultation with the project manager or landowner.

		person days' available. The number of 'surplus person days' available is as identified in the annual monitoring (refer to the Monitoring and Inspections section). c. <u>Treatment of burrows</u> Active rabbit burrows, as determined by fresh diggings or scats, are to be fumigated and destroyed within the priority areas identified in subclause a) above. The number of burrows treated is to be the number capable of being treated by the number of person days identified in subclause b) above. The person days of effort applied to the treatment of burrows may also be applied to the removal of surface rubbish that may provide shelter for rabbits within the priority areas identified in subclause a).	
All	All	<u>Shooting program</u> 3.1 A shooting program may be implemented as an alternative to the fumigation and destruction of burrows if: d. goats or deer have been observed within the site, or e. a shooting program is demonstrated to be a more effective method of control. 3.2 If a shooting program is to replace the fumigation and destruction of burrows in any given year, then the number of person days applied to the treatment of burrows is to be replaced with an equivalent number of person nights of shooting.	To be determined by a suitably qualified bush regenerator or ecologist, in consultation with the project manager or landowner.

3.10.3 Monitoring and inspections

The monitoring and inspection section of the feral herbivore management plan (page 66) establishes an annual program to monitor the impacts of feral herbivores on the site, and the level of effort that has been spent on feral herbivore control. This section of the plan is reproduced in Table 12 below.

It is envisaged that the monitoring will be undertaken by the project manager or the bush regeneration contractor working on the site. Observations of active rabbit burrows and other evidence of feral pests should be recorded on the 'Annual Monitoring Proforma for Management Zones' (Appendix D).

Table 12: Monitoring and inspections of feral herbivores

Management zone/s	Feral type/s	Method of monitoring	Date/s required
All	All	All monitoring is to be undertaken by a suitably qualified bush regenerator or ecologist	Annually, at the completion of each year from the first payment date, or more often as required.
All	All	<u>1. Observations of active rabbit burrows</u> A record is to be maintained and updated regularly on any active rabbit burrows on the site. An 'active rabbit burrow' is as determined by fresh diggings or scats adjacent to a burrow. The record is to qualitatively identify the number of active rabbit burrows within each management zone as being either Negligible (N), Minimal (Min), Moderate (Mod) or High (H). The monitoring must involve consultation with the bush regeneration team working at the site to document any active rabbit burrows that they may have seen.	As above
All	All	<u>2. Observations of feral pests</u> A record is to be maintained and updated regularly on any traces or sightings of feral pests on the site. The record is to identify the species observed and a qualitative indication of the number of occurrences of the species as being either Negligible (N), Minimal (Min), Moderate (Mod) or High (H). The monitoring must involve consultation with the bush regeneration team working at the site to document any observations of vertebrate pests that they may have seen.	As above
		<u>3. Reporting on no. of active rabbit burrows treated</u> Reporting will be provided on the number of active burrows treated since: a) the date of the last reporting, and b) the first payment date as a cumulative total.	As above
		<u>4. Reporting on no. of person days applied to the treatment of burrows</u> Reporting will be provided on the number of person days applied to the treatment of burrows, and/or the number of person nights applied to shooting programs, since: a) the date of the last reporting, and b) the first payment date as a cumulative total.	As above
		<u>5. Reporting on the no. of surplus person days available for future treatment of burrows</u> Reporting is required to be provided on the number of surplus person days available for the future treatment of burrows. This number of 'surplus person days' is determined by the following formula: (Number of 'surplus person days') = [(2 person days per year) x (number of payment dates that have occurred)] – [number of person days applied to the treatment of burrows since the first payment date]	As above

Reporting on the feral pest control work that has been undertaken at the site, and the priorities for future control should be recorded on the 'Annual Reporting Proforma for Feral Pests'⁸ (Appendix E).

3.10.4 Review of the feral herbivore management plan

Timing and matters for consideration

The feral herbivore management plan in the agreement is required to be reviewed by the landowner every four to six years, commencing from July 2012. Item 10.2 (page 46) 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 plan must be undertaken by an appropriately qualified person that is independent of the project manager and bush regenerator working on the site. None the less, the review needs to be undertaken in consultation with the bush regenerator and project manager to ensure that the professionals working on the site have an opportunity to have their knowledge and ideas appropriately considered. This independent peer review is intended to ensure that the site obtains the best possible management outcomes.

3.10.5 Funding for feral herbivore control

The payments to the landowner from the Biobanking Trust Fund will include funds to undertake feral pest control, including both feral herbivore and vertebrate pest control activities. It is envisaged that if this funding is not required in any one year, it will be allowed to accumulate so that sufficient funds will be available if a significant threat from feral pests arises at the site in future years.

3.11 VERTEBRATE PEST MANAGEMENT

The vertebrate pest management plan (page 70) contained in the agreement describes the management actions that must be undertaken on the site to control vertebrate pests. This section of the guide is intended 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 the unique and fragile native fauna and flora.

Threats caused by vertebrate pests to biodiversity values 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 species that has been identified at the site and which is considered likely to occur persistently (Table 13). Feral cats may also be present infrequently.

⁸ The proforma requires information on the actual funds spent on feral pest control while the Biobanking agreement requires information on the 'no. of person days' spent on feral pest control. Reporting on the actual funds spent is more useful and can easily be converted to 'no. of person days' if required. For the purposes of this reporting, feral herbivore activities and vertebrate pest control activities have been combined as 'feral pest' control activities.

Table 13: Vertebrate pests present or likely to be present

Vertebrate pests		
Name of Pest	Description of extent	Management zone/s
Fox <i>Vulpes vulpes</i>	Likely to be present	All
Cat <i>Felis catus</i>	Possibly present infrequently	All

Foxes are likely to predate on a broad range of fauna species at the site. However, none of the threatened fauna species known to occur on the site (see section 2.3.3) are identified in the NSW Red Fox Threat Abatement Plan (TAP) as a priority threatened species for fox control.

3.11.2 Suitable control methods

The options available for the control of foxes and cats are identified in Table 14. The table also provides comments on the appropriateness of use of the different control methods at the site. Previous expert advice at a site in a similar semi urban setting identified that the most effective method for controlling vertebrate pests is a controlled shooting program.

A decision to undertake a controlled shooting program is to be made if there is evidence of a significant threat to threatened fauna or flora at the biobank site from vertebrate pests. Decisions on the frequency and timing of the shooting program are to be made by the landowner, in consultation with the project manager and feral animal control contractor.

Vertebrate pests are wide ranging and require coordinated management across land tenure. Ideally, any vertebrate pest control program implemented at the site will be part of a coordinated program across neighbouring properties.

3.11.3 Monitoring of vertebrate pests

The monitoring and inspection section of the vertebrate pest management plan (page 71) requires that monitoring of vertebrate pests be undertaken annually as part of the 'Monitoring of feral pests' component of the feral herbivore management plan.

It is envisaged that the monitoring will be undertaken by the project manager or the bush regeneration contractor working on the site. The monitoring will involve walking through the site and recording any evidence of vertebrate pests (sightings or traces) on the 'Annual Monitoring Proforma for Management Zones' (Appendix D).

A summary of vertebrate pest observations on the site must then be recorded on the 'Annual Reporting Proforma for Feral Pests' (Appendix E). The summary should include a description of vertebrate feral pests that have been observed (traces or sightings) on the biobank site during the previous year, and a qualitative indication of the number of occurrences as being either Negligible (N), Minimal (Min), Moderate (Mod) or High (H). The summary should be prepared in consultation with the people that have spent the most time on site during the year.

A summary of the vertebrate pest control work that has been undertaken at the site, and the priorities for future control is also required to be recorded on the 'Annual Reporting Proforma for Feral Pests'

Table 14: Vertebrate pest control methods considered

Feral Type	Method of Control	Suitability of control method
Fox / Cats	1080 Fox Bait	Baiting is not considered to be effective for this site as it needs to be undertaken across properties at the landscape scale to be effective. Baiting also has the potential to impact on non-targeted species such as native carnivores, domestic dogs and cats.
Fox / Cats	Leg Hold Trapping	Leg hold trapping is a suitable method for catching foxes and cats but it is time consuming and therefore costly.
Fox	Den Fumigation	No obvious dens were identified within the biobank site however this method could be undertaken if required.
Fox / Cats	Pest Control by Shooting	Shooting has benefits of being suitable for multiple feral species, is species specific and considered humane. A multi species approach is likely to be the most cost effective means to control feral animals at the site. Indiscriminate culling of widespread feral species within the site is likely to have only a short term effect in reducing impacts. This is particularly the case as these pest species are wide ranging and require coordinated management across land tenure.

3.11.4 Review of the vertebrate pest management plan

Timing and matters for consideration

The vertebrate pest management plan in the agreement is required to be reviewed by the landowner every four to six years, commencing from July 2012. Item 11.2 (page 48) 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 plan must be undertaken by an appropriately qualified person that is independent of the project manager and bush regenerator working on the site. None the less, the review needs to be undertaken in consultation with the bush regenerator and project manager to ensure that the professionals working on the site have an opportunity to have their knowledge and ideas appropriately considered. This independent peer review is intended to ensure that the site obtains the best possible management outcomes.

3.11.5 Funding for vertebrate pest control

The payments to the landowner from the Biobanking Trust Fund will include funds to undertake feral pest control, including both feral herbivore and vertebrate pest control activities. It is envisaged that if this funding is not required in any one year, it will be allowed to accumulate so that sufficient funds will be available if a significant threat from feral pests arises at the site in future years.

4. Minor Alterations to Management Actions

Item A5 (page 31) of the 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.

5. Monitoring, Reporting and Record Keeping

Annexure D (page 73) of the agreement describes the monitoring, reporting and record keeping requirements of the biobank site. They include the following:

- Annual photographs taken from fixed photo-points,
- 6 and 12 monthly inspections of the site, and
- Preparation of an annual report.

These requirements are described below and are additional to the monitoring and reporting requirements for weed management (Section 3.2.3), fire management (Section 3.3.9), supplementary planting (Section 3.6.2), feral herbivores (Section 3.10.3) and vertebrate pests (Section 3.11.3) described previously in this guide.

The payments to the landowner from the Biobanking Trust Fund will include funds to undertake these monitoring and reporting activities.

5.1 PHOTO-MONITORING

Photographs must be taken from photo-points at each of the locations and in the directions identified in Appendix F of this guide 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 5.2 below)

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.

Photographs that were taken at each of the photo-points in March 2011 are included in Appendix G. The locations of the photo-points are marked in the field with a metal star-picket.

5.2 SITE INSPECTIONS

An inspection of the biobank site must be undertaken by, or on behalf of, the landowner for the purposes specified in column A of Table 15 (below) and at the relevant intervals specified in column B. The inspections are to occur at the intervals indicated starting from the commencement date of the agreement (i.e. 9 May 2012).

The results of the inspections should be recorded on the 'Inspection Checklist' provided at Appendix H of this guide. Please note that the 'Inspection Checklist' does not include a column to record native ground cover for the purposes of Item 1.1 (i.e. strategic grazing). No strategic grazing is proposed for the site and consequently, this monitoring is not required.

Table 15: Site inspection and monitoring schedule

Site inspection and monitoring schedule	
A. Purpose	B. Interval
The percentage of ground cover present on the biobank site for the purposes of item 1.1 of Section 1 of Annexure C.	Every 12 months
Number of stock and date/s when stock have entered the management zones on the biobank site.	Every 6 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 1 of 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

5.3 ANNUAL REPORT

The landowner must submit an annual report using the annual reporting template provided in Appendix I 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 (4 July 2012) and every subsequent period of 12 months.

The reporting template at Appendix I has been modified from the template in the Biobanking agreement to remove reference to the following management actions:

- 12. Nutrient control
- 13. Control of exotic fishes, and
- 14. Maintenance or reintroduction of natural flow regimes.

This is because these three management actions do not form part of the agreement.

6. References

NSW Department of Environment and Conservation (2005) *Recovering bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland*. Hurstville

<http://www.environment.nsw.gov.au/resources/nature/RecoveringCumberlandPlain.pdf>

DECCW (2011) *Cumberland Plain Recovery Plan*. Department of Environment, Climate Change and Water (NSW), Sydney.

<http://www.environment.nsw.gov.au/resources/threatenedspecies/20100501CumberlandPlain.pdf>

Tozer M.G., Turner K., Keith D.A., Tindall D., Pennay C., Simpson C., MacKenzie B., Beukers P. and Cox S. (2010) Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands. *Cunninghamia* 11(3): 359-406

http://www.rbgsyd.nsw.gov.au/data/assets/pdf_file/0014/106214/Cun113Toz359.pdf

APPENDIX A:

Native plants recorded from the site

The following flora species were recorded from the Mater Dei biobank site between August 2011 and January 2012.

Cumberland Shale Hills Woodland	Cumberland River Flat Forest
<i>Ajuga australis</i>	<i>Acacia decurrens</i>
<i>Amyema miquelii</i>	<i>Aristida ramosa</i>
<i>Aristida ramosa</i>	<i>Aristida vagans</i>
<i>Aristida vagans</i>	<i>Arthropodium milleflorum</i>
<i>Asperula conferta</i>	<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>
<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	<i>Austrostipa ramosissima</i>
<i>Austrodanthonia setacea</i>	<i>Brunoniella australis</i>
<i>Bothriochloa decipiens</i> var. <i>decipiens</i>	<i>Bursaria spinosa</i> subsp. <i>spinosa</i>
<i>Brunoniella australis</i>	<i>Carex appressa</i>
<i>Bursaria spinosa</i> subsp. <i>spinosa</i>	<i>Carex breviculmis</i>
<i>Carex appressa</i>	<i>Carex longebrachiata</i>
<i>Carex breviculmis</i>	<i>Cheilanthes austrotenuifolia</i>
<i>Carex gaudichaudiana</i>	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>
<i>Carex inversa</i>	<i>Chloris ventricosa</i>
<i>Carex longebrachiata</i>	<i>Commelina cyanea</i>
<i>Cayratia clematidea</i>	<i>Convolvulus erubescens</i>
<i>Cheilanthes austrotenuifolia</i>	<i>Cymbopogon refractus</i>
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	<i>Cynodon dactylon</i>
<i>Chloris ventricosa</i>	<i>Cyperus imbecillis</i>
<i>Commelina cyanea</i>	<i>Desmodium varians</i>
<i>Cotula australis</i>	<i>Dichondra repens</i>
<i>Crassula sieberiana</i> subsp. <i>sieberiana</i>	<i>Einadia hastata</i>
<i>Cymbonotus lawsonianus</i>	<i>Einadia nutans</i> subsp. <i>nutans</i>
<i>Cymbopogon refractus</i>	<i>Elymus scaber</i> var. <i>scaber</i>
<i>Cynodon dactylon</i>	<i>Entolasia stricta</i>
<i>Cyperus enervis</i>	<i>Eragrostis brownii</i>
<i>Cyperus gracilis</i>	<i>Eragrostis leptostachya</i>
<i>Cyperus imbecillis</i>	<i>Eucalyptus baueriana</i>
<i>Daucus glochidiatus</i>	<i>Eucalyptus elata</i>
<i>Desmodium brachypodium</i>	<i>Eucalyptus tereticornis</i>
<i>Desmodium varians</i>	<i>Glycine clandestina</i>
<i>Dianella longifolia</i>	<i>Glycine tabacina</i>
<i>Dichelachne micrantha</i>	<i>Hibbertia diffusa</i>
<i>Dichondra repens</i>	<i>Hypericum gramineum</i>
<i>Einadia nutans</i> subsp. <i>linifolia</i>	<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>
<i>Einadia nutans</i> subsp. <i>nutans</i>	<i>Microlaena stipoides</i> var. <i>stipoides</i>
<i>Einadia trigonos</i> subsp. <i>trigonos</i>	<i>Opercularia diphylla</i>
<i>Elymus scaber</i> var. <i>scaber</i>	<i>Oplismenus aemulus</i>
<i>Eragrostis leptostachya</i>	<i>Oplismenus imbecillis</i>
<i>Eucalyptus baueriana</i>	<i>Oxalis perennans</i>
<i>Eucalyptus moluccana</i>	<i>Pandorea pandorana</i> subsp. <i>pandorana</i>
<i>Eucalyptus tereticornis</i>	<i>Panicum effusum</i>
<i>Euchiton sphaericus</i>	<i>Phyllanthus gunnii</i>
<i>Fimbristylis dichotoma</i>	<i>Phyllanthus hirtellus</i>

Part 1: Site Description and Management Actions, July 2012

Cumberland Shale Hills Woodland	Cumberland River Flat Forest
<i>Galium migrans</i>	<i>Pratia purpurascens</i>
<i>Galium propinquum</i>	<i>Pseuderanthemum variabile</i>
<i>Geranium potentilloides</i> var. <i>potentilloides</i>	<i>Solanum prinophyllum</i>
<i>Geranium solanderi</i> var. <i>solanderi</i>	<i>Themeda australis</i>
<i>Glossocardia bidens</i>	<i>Tricoryne elatior</i>
<i>Glycine clandestina</i>	<i>Vernonia cinerea</i> var. <i>cinerea</i>
<i>Glycine tabacina</i>	<i>Veronica calycina</i>
<i>Hypericum japonicum</i>	<i>Wahlenbergia gracilis</i>
<i>Lagenophora gracilis</i>	
<i>Lagenophora gracilis</i>	
<i>Lomandra confertifolia</i> subsp. <i>rubiginosa</i>	
<i>Melaleuca decora</i>	
<i>Mentha satyroides</i>	
<i>Microlaena stipoides</i> var. <i>stipoides</i>	
<i>Opercularia diphylla</i>	
<i>Oplismenus imbecillis</i>	
<i>Oxalis perennans</i>	
<i>Pellaea falcata</i>	
<i>Phyllanthus virgatus</i>	
<i>Plantago gaudichaudii</i>	
<i>Plantago varia</i>	
<i>Poa labillardieri</i> var. <i>labillardieri</i>	
<i>Poa sieberiana</i> var. <i>sieberiana</i>	
<i>Ranunculus sessiliflorus</i> var. <i>sessiliflorus</i>	
<i>Rhodanthe anthemoides</i>	
<i>Schoenus paludosus</i>	
<i>Senecio quadridentatus</i>	
<i>Sida corrugata</i>	
<i>Solanum campanulatum</i>	
<i>Solanum prinophyllum</i>	
<i>Solenogyne dominii</i>	
<i>Sporobolus creber</i>	
<i>Themeda australis</i>	
<i>Vernonia cinerea</i> var. <i>cinerea</i>	
<i>Veronica calycina</i>	
<i>Veronica plebeia</i>	
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	
<i>Wahlenbergia gracilis</i>	
<i>Wahlenbergia multicaulis</i>	
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	
<i>Zornia dyctiocarpa</i> var. <i>dyctiocarpa</i>	

APPENDIX B:

Weed Zone profiles

Weed Zone 1

Description	Three discrete areas of derived grassland in the southern section of the site, includes the road that runs along the southern boundary of the site.
Total area (ha)	1.97 ha
Management Zones	- MZ1_SHW_NO CANOPY_REVEG (1.68 ha) - MZ9_EASEMENT (0.29 ha)
Vegetation type	Shale Hills Woodland
Woody weeds and exotic vines	African Olive (very occasional)
Other weeds	- Patchy dense growth of African Love Grass and <i>Briza subaristata</i>. Also present are Paspalum, Purpletop, Cobblers Pegs, Fireweed, Veined Verbena, Fleabane, Paddy's Lucerne. 11-40% foliage cover in western section of MZ1; 41-80% cover in other areas
Management objective	- Establish a native canopy and shrub layer where natural regeneration is not occurring - Eliminate any exotic vines, succulents and woody weeds and prevent their re-establishment - Reduce the percentage foliage cover of groundcover weeds to moderate levels by Year 5 and low levels by Year 10.
Proposed works (Years 1-5)	<u>Revegetation using tree and shrub species (MZ1 only)</u> - Supplementary planting of tree and shrub species within 48 months of commencement. - See attached planting schedule for details of the numbers and species to be planted. - Plant trees at a rate of 400 trees/ha over approximately 50% of MZ1 (i.e. total of 340 trees) - Plant shrubs at a rate of 625 shrubs/ha over approximately 50% of MZ1 (i.e. total of 520 shrubs) - Avoid planting within 10 m of existing canopy trees - Install tree guards around each plant and maintain for 3 years from planting date - Plant in a mosaic pattern to maintain a patchwork of open grassland areas within the zone. - Undertake on-going maintenance of plantings to achieve a minimum 85% survival rate. <u>Weed control</u> - Targeted treatment of all exotic vines, succulents and woody weeds at least three times p.a. - Slashing, spot spraying and/or hand weeding of other weeds at least three times p.a. to reduce weed biomass and assist the establishment and spread of native species.
5 year performance measures	520 native shrubs and 330 native trees established across zone - No mature exotic vines and woody weeds present - Groundcover weed density reduced to <10% foliage cover in western section of MZ1 - Groundcover weed density reduced to <30% foliage cover elsewhere in MZ1 and MZ9
Proposed works (Year 6 onwards)	<u>Weed control</u> - Targeted treatment of all exotic vines, succulents and woody weeds at least three times p.a. - Slashing, spot spraying and/or hand weeding of other weeds at least three times p.a. to reduce weed biomass and assist the establishment and spread of native species.
10 year performance measures	- No mature exotic vines or woody weeds present - Groundcover weed density at <10% foliage cover across MZ1 and MZ9



Weed Zone 2

Description	Core area of woodland with lower levels of weed infestation.
Total area (ha)	13.20 ha
Management Zones	- MZ2_SHW_LOW WEED (11.43 ha) - MZ7_RFF_LOW WEED (1.77 ha)
Vegetation type	Shale Hills Woodland in MZ2, River Flat Forest in MZ7.
Woody weeds and exotic vines	- African Olive, African Boxthorn, Lantana, Bridal Creeper, Moth Vine - Variable but <40% foliage cover
Other weeds	- African Love Grass, Paspalum, Paddies Lucerne, Blackberry Nightshade, Purpletop, Fleabane, Catsear, Lambs Tongue, Cobblers Pegs, Fireweed, Thistle - Variable but <10% foliage cover
Management objective	- Eliminate all exotic vines, succulents and woody weeds and prevent their re-establishment - Reduce and maintain the cover of other weeds to low levels by Year 5 - Redistribute the large log piles that occur across the zone
Proposed works (Years 1-5)	<u>Weed control</u> - Staged primary weed treatment of approximately 50% of zone p.a. - Use cut/paint, scrape/paint, drill/poison, hand-weeding, slashing and spot-spraying techniques as appropriate - Pile woody debris as per RFS standards for burn piles. - Undertake follow up weeding of all areas previously worked at least three times p.a. - Prioritise mature individuals for treatment at all times. <u>Other</u> - For the existing large log piles within the zone: - Redistribute large logs (>30 cm diameter) across nearby areas using a positrack bobcat under supervision of qualified ecologist or bush regenerator
5 year performance measures	- No mature exotic vines, succulents or woody weeds present - Groundcover weed density maintained at <10% foliage cover throughout zone - Large logs from piles distributed across nearby areas - Any burn piles present are consistent with RFS standards for burn piles
Proposed works (Year 6 onwards)	<u>Weed control</u> Undertake follow up weeding of all areas at least three times p.a.
10 year performance measures	- No mature exotic vines, succulents or woody weeds present - Groundcover weed density maintained at <10% foliage cover



Weed Zone 3

Description	Six discrete areas of degraded woodland with high levels of woody weed infestation.
Total area (ha)	2.72 ha
Management Zones	MZ3_SHW_MODERATE WW
Vegetation type	Shale Hills Woodland
Woody weeds and exotic vines	- African Olive, African Boxthorn, Lantana, Jerusalem Cherry, Bridal Creeper, Moth Vine 41-80% foliage cover
Other weeds	- Paspalum, Purpletop, Panic Veldt Grass, Fireweed, Blackberry Nightshade, Thistle, Fleabane, Paddies lucerne, African Love Grass, , Catsear, Lambs Tongue, Cobblers Pegs, - Variable but <10% foliage cover
Management objective	- Eliminate all exotic vines, succulents and woody weeds and prevent their re-establishment - Reduce and maintain the cover of other weeds at low levels - Redistribute the large log piles that occur across the zone
Proposed works (Years 1-5)	<u>Weed control</u> - Staged primary weed treatment of approximately 50% of zone p.a. - Use drill and poison or basal bark spray methods on very large woody weeds (>300 mm DBH), use cut and poison method on smaller individuals. Use a combination of slashing, spot spraying and hand weeding on other weeds - Pile woody debris as per RFS standards for burn piles. - Prioritise mature individuals for treatment at all times. - Undertake follow up weeding at least three times p.a. in all areas previously worked <u>Other</u> - For the existing large log piles within the zone: - Redistribute large logs (>30 cm diameter) across nearby areas using a positrack bobcat under supervision of qualified ecologist or bush regenerator
5 year performance measures	- No mature exotic vines, succulents or woody weeds present - Groundcover weed density maintained at <10% foliage cover throughout
Proposed works (Year 6 onwards)	<u>Weed control</u> Undertake follow up weeding at least three times p.a.
10 year performance measures	- No mature exotic vines, succulents or woody weeds present - Groundcover weed density maintained at <10% foliage cover



Weed Zone 4

Description	Six discrete areas of degraded woodland with very high levels of woody weed infestation.
Total area (ha)	7.80 ha
Management Zones	- MZ5_SHW_DENSE WW (1.32 ha) - MZ6_SHW_LOW CONDITION_REVEG (0.51 ha) - MZ8_RFF_DENSE WW (0.16 ha) - MZ10_SHW_DENSE WW_REVEG (2.12 ha) - MZ11_RFF_DENSE WW_REVEG (3.69 ha)
Vegetation type	Shale Hills Woodland in MZ5, MZ6 and MZ10, River Flat Forest in MZ8 and MZ11
Woody weeds and exotic vines	- African Olive, Small Leaved Privet, Large Leaved Privet, Honey Locust, African Boxthorn, Lantana, Jerusalem Cherry, Bridal Creeper, Moth Vine, Madeira Vine. >80% foliage cover
Other weeds	- Wandering Jew, Panic Veldt Grass, African Love Grass, Blackberry Nightshade, Paspalum, Purpletop, Fireweed, Thistle, Fleabane, Paddies Lucerne, Catsear, Lambs Tongue, Cobblers Pegs, - Variable but <10% foliage cover
Management objective	- Gradually eliminate all exotic vines, succulents and woody weeds and prevent their re-establishment - Maintain the cover of other weeds at low levels - Prevent erosion - Assist the establishment of a dense native understorey and a native mid-storey and canopy where required through supplementary planting
Proposed works (Years 1-5)	<u>Weed control (all zones)</u> - Targeted treatment of exotic vines and succulents within 12 months of commencement. - Staged primary weed treatment of approx. 20% of the combined area of the zones every two years - Progress primary work from the edges of adjacent better condition areas to facilitate / maximise native species regeneration and minimise erosion on slopes. - Use drill and poison or basal bark spray methods on very large woody weeds (>300 mm DBH), use cut and poison method on smaller individuals. Use a combination of slashing, spot spraying and hand weeding on other weeds - Pile woody debris as per RFS standards for burn piles. - Undertake follow up weeding in all areas previously worked at least four times p.a. <u>Additional weed control actions for MZ6, MZ10 & MZ11</u> - Mechanical primary treatment of African Olive can be undertaken on accessible low gradient slopes. Use a barrel mulcher and manually re-cut and poison woody weed stumps immediately after mulching. - In more sensitive areas (i.e. steep slopes, within 2m of remnant trees, and within 25 m of river), use cut/poison, drill/poison and basal bark spray technique as appropriate. <u>Erosion control</u> - Strategically place African Olive logs and branches across steep slopes and gullies in MZ10 and MZ11 and fix them in place using wooden stakes - Ensure sufficient native plant cover is present within previously cleared areas prior to continuing primary weed treatment in that area. <u>Revegetation using tree and shrub species (for MZ6, MZ10 & MZ11 only)</u> - Supplementary planting of tree and shrub species within 24 months of primary weed treatment. - See attached planting schedule for details of the numbers and species to be planted. - Plant trees at a rate of 400 trees/ha over approximately 50% of each zone (i.e. total of 1260 trees over 10 years) - Plant shrubs at a rate of 625 shrubs/ha over approximately 50% of each zone (i.e. total of 1980 shrubs over 10 years)

Part 1: Site Description and Management Actions, July 2012

Proposed works (Years 1-5) continued	• Avoid planting within 10 m of existing canopy trees or where strong natural regeneration is occurring • Install tree guards around each plant and maintain for 3 years from planting date • Undertake on-going maintenance of plantings to achieve a minimum 85% survival rate. <u>Revegetation of groundcover species (for MZ6, MZ10 & MZ11 only)</u> • Supplementary planting of fast-establishing provenance grass / groundcover within 24 months of primary weed treatment in order to accelerate the establishment of native species cover - Plant groundcovers in nodes covering one square metre and containing six plants - Install 200 nodes per hectare targeting areas with the lowest capacity for natural regeneration (i.e. a total of 7560 plants over 10 years) • Ongoing maintenance of plantings to achieve a minimum 85% survival rate
5 year performance measures	• No mature exotic vines present • Primary weed treatment completed for at least 40% of the zone • Groundcover weed density maintained at <10% foliage cover in all areas previously treated • 170 native trees/ha and 250 native shrubs/ha established in areas that have been treated for >3 years • >20% foliage cover of native groundcovers in areas that have been treated for >4 years
Proposed works (Year 6 onwards)	<u>Weed control</u> • Continued staged primary weed treatment of approx. 20% of the combined area of the zones every two years (as for Years 1 to 5) • Undertake follow up weeding in all areas previously worked at least four times p.a. <u>Additional weed control actions in MZ6, MZ10 & MZ11</u> • as for Years 1 to 5 <u>Erosion control</u> • as for Years 1 to 5 <u>Revegetation using tree and shrub species (for MZ6, MZ10 & MZ11 only)</u> • as for Years 1 to 5 <u>Revegetation of groundcover species (for MZ6, MZ10 & MZ11 only)</u> • as for Years 1 to 5
10 year performance measures	• No mature exotic vines or woody weeds present • Groundcover weed density maintained at <10% foliage cover throughout • 170 native trees/ha and 250 native shrubs/ha established in areas that have been treated for >3 years • >20% foliage cover of native groundcovers in areas that have been treated for >4 years



Weed Zone 5

Description	Narrow highly degraded strip along eastern boundary that is dominated by understorey weeds
Total area (ha)	0.40 ha
Management Zones	MZ4_SHW_DENSE GW
Vegetation type	Shale Hills Woodland
Woody weeds and exotic vines	- African Olive, African Boxthorn, Lantana, Jerusalem Cherry, Bridal Creeper, Moth Vine 11-30% foliage cover
Other weeds	- Rhodes Grass, African Love Grass, Paspalum, Purpletop, Fireweed, Thistle, Fleabane, Paddies Lucerne, Catsear, Lambs Tongue, Cobblers Pegs >80% foliage cover
Management objective	- Eliminate all exotic vines, succulents and woody weeds and prevent their re-establishment - Reduce the cover of other weeds to moderate levels by Year 5 and low levels by Year 10
Proposed works (Years 1-5)	<u>Weed control</u> - Target weeding of exotic vines and woody weeds within 6 months of commencement - Slashing, spot-spraying and/or handweeding at least four times p.a. to reduce weed cover and assist the establishment and spread of native groundcovers.
5 year performance measures	- No mature exotic vines, succulents or woody weeds present - Groundcover weed density reduced to <30% foliage cover
Proposed works (Year 6 onwards)	<u>Weed control</u> Slashing, spot-spraying and/or handweeding four times p.a. to reduce weed cover and assist the establishment of native ground covers
10 year performance measures	- No mature exotic vines, succulents or woody weeds present - Groundcover weed density reduced to <20% foliage cover



APPENDIX C:

Exotic plants recorded from the site

Part 1: Site Description and Management Actions, July 2012

Weed	Common name of target weed	Scientific name of target weed	Description of infestation (eg intensity (% cover) & location within zone)	Management zone/s
Woody weed	Green Cestrum	<i>Cestrum parqui</i>	Scattered individuals in disturbed riparian zone	MZ11
Woody weed	Honey Locust	<i>Gleditsia triacanthos</i>	Scattered individuals throughout site	ALL
Woody weed	Lantana	<i>Lantana camara</i>	Minor infestations in CSHW and CRFF, large infestation dominates MZ8	ALL
Woody weed	Large Leaved Privet	<i>Ligustrum lucidum</i>	Scattered individuals in highly disturbed areas of CSHW and CRFF	MZ5; MZ10; MZ11
Woody weed	Small Leaved Privet	<i>Ligustrum sinense</i>	Significant infestations in highly disturbed areas of CSHW and CRFF	MZ5; MZ10; MZ11
Woody weed	African Olive	<i>Olea europaea ssp.cuspidata</i>	Widespread across site, with significant infestations in highly disturbed areas of CSHW and CRFF	ALL
Woody weed	African Boxthorn	<i>Lycium ferocissimum</i>	Scattered individuals and minor infestations in most SHW zones	MZ2; MZ3; MZ4, MZ5
Succulent	Common Prickly Pear	<i>Opuntia stricta</i>	Scattered individuals throughout site	ALL
Succulent	Wandering Jew	<i>Tradescantia fluminensis</i>	Minor infestations in disturbed riparian zone	MZ12
Exotic vine	Madeira Vine	<i>Anredera cordifolia</i>	Large infestation near northern boundary of site	MZ10
Exotic vine	Moth Vine	<i>Araujia sericifera</i>	Scattered individuals throughout site	ALL
Exotic vine	Bridal Creeper	<i>Asparagus asparagoides</i>	Scattered individuals throughout site	ALL
Exotic vine	Honeysuckle	<i>Lonicera sp</i>	Minor infestations in disturbed riparian zone	MZ8
Exotic grass	Carpet Grass	<i>Axonopus fissifolius</i>	Minor infestation throughout site	ALL
Exotic grass	Chilean Quaking Grass	<i>Briza subaristata</i>	Minor infestations in areas of SHW, significant infestations in areas without canopy.	MZ1; MZ2; MZ3; MZ4; MZ5
Exotic grass	Ehrharta	<i>Ehrharta erecta</i>	Minor infestations throughout site	ALL
Exotic grass	African Love Grass	<i>Eragrostis curvula</i>	Minor infestations throughout site	ALL
Exotic grass	Common Paspalum	<i>Paspalum dilatatum</i>	Minor infestations throughout site, significant infestations in areas without canopy.	ALL
Exotic grass	Kikuyu	<i>Pennisetum clandestinum</i>	Minor infestations in more open parts of SHW	MZ1; MZ2; MZ4
Exotic grass	Pidgeon Grass	<i>Setaria gracilis</i>	Minor infestations in more open parts of SHW	MZ1; MZ2; MZ4

Part 1: Site Description and Management Actions, July 2012

Weed	Common name of target weed	Scientific name of target weed	Description of infestation (eg intensity (% cover) & location within zone)	Management zone/s
Exotic grass	Parramatta Grass	<i>Sporobolus africanus</i>	Scattered individuals in most SHW zones	MZ1; MZ2; MZ3; MZ4
Exotic grass	Squirrel Tail Fescue	<i>Vulpia myuros</i>	Minor infestations in parts of SHW without canopy	MZ1
Exotic forb	Pimpernel	<i>Anagallis arvensis</i>	Scattered individuals in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Climbing Asparagus	<i>Asparagus aethiopicus</i>	Minor infestations in more disturbed parts of site	MZ3; MZ5; MZ11
Exotic forb	Cobblers Peg	<i>Bidens spp</i>	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Fat Hen	<i>Chenopodium album</i>	Scattered individuals in SHW	MZ2
Exotic forb	Spear Thistle	<i>Cirsium vulgare</i>	Scattered individuals in SHW	MZ2; MZ3; MZ4
Exotic forb	Slender Celery	<i>Cyclospermum leptophyllum</i>	Scattered individuals in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Fleabane	<i>Conyza sp.</i>	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Gomphrena Weed	<i>Gomphrena celosioides</i>	Scattered individuals in SHW	MZ2
Exotic forb	Flatweed	<i>Hypochaeris spp</i>	Scattered individuals throughout site	ALL
Exotic forb	Slender Birds-foot Trefoil	<i>Lotus angustissimus</i>	Minor infestations in parts of SHW without canopy	MZ1
Exotic forb	Medics	<i>Medicago spp</i>	Scattered individuals in SHW	MZ2
Exotic forb	Brazilian Whitlow	<i>Paronychia brasiliiana</i>	Scattered individuals throughout site	ALL
Exotic forb	Lamb's Tongue	<i>Plantago lanceolata</i>	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Mexican Clover	<i>Richardia brasiliensis</i>	Scattered individuals throughout site	ALL
Exotic forb	Fireweed	<i>Senecio madagascariensis</i>	Scattered individuals throughout site	All
Exotic forb	Paddy Lucerne	<i>Sida rhombifolia</i>	Scattered individuals throughout site	ALL
Exotic forb	Black Nightshade	<i>Solanum nigrum</i>	Scattered individuals throughout site	ALL
Exotic forb	Sowthistle	<i>Sonchus spp</i>	Scattered individuals throughout site	ALL
Exotic forb	Stinking Roger	<i>Tagetes minuta</i>	Scattered individuals in SHW	MZ2
Exotic forb	Clover	<i>Trifolium spp</i>	Scattered individuals and minor infestations in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Purpletop	<i>Verbena spp</i>	Scattered individuals throughout site	ALL

APPENDIX D:

Annual Monitoring Proforma for Management Zones

Provide details of any threatened species observed:

Management Zone:

Date:

Completed by:

SECTION B (to be completed in the office)

Weed Control Summary

Provide a brief summary of the weed control works undertaken in this previous 12 months:

Provide a brief assessment of whether the weed control techniques used were succesful :

Provide recommendations for next year's weed control works in this management zone:

Other comments

Provide any other comments on the condition or proposed works in this management zone:

APPENDIX E:

Annual Reporting Proforma for Feral Pests

MATER DEI BIOBANK SITE: ANNUAL REPORTING PROFORMA FOR FERAL PESTS

Date:

Completed by:

Management sub-zone	Number of active rabbit burrows treated in previous year (record as N/A if no treatment has occurred)	Extent of active rabbit burrows remaining (record as negligible, minimal, moderate or high - refer to annual monitoring proforma for management zones)	Priority for future treatment (priorities are to be numbered from 1 upward, with 1 being the highest priority, or N/A if not applicable)
MSZ 1a			
MSZ 1b			
MSZ 1c			
MSZ 2a			
MSZ 3a			
MSZ 3b			
MSZ 3c			
MSZ 3d			
MSZ 3e			
MSZ 3f			
MSZ 4a			
MSZ 5a			
MSZ 5b			
MSZ 5c			
MSZ 6a			
MSZ 7a			
MSZ 8a			
MSZ 9a			
MSZ 10a			
MSZ 11a			
Total			

Observations of other feral pests in previous year

Include description of other feral pests observed (traces or sightings) and a qualitative indication of the number of occurrences as being either Negligible (N), Minimal (Min), Moderate (Mod) or High (H)

Other feral pest control activities completed in previous year

Include description of any feral pests activities other than rabbit burrow treatment implemented in previous year

Priorities for feral pest control in the next year

Include discussion of whether control of other feral pests is greater than the priorities for rabbit burrow treatment indicated overleaf but note that rabbit burrow treatment must be undertaken if the number of active rabbit burrows is recorded as being moderate or high in the annual monitoring proforma for management zones

Summary for previous year

a) Total funds available for feral pest control at start of year	
b) Funds spent on treatment of rabbit burrows during year	
c) Funds spent on other feral pest control during year	
d) Total funds spent on feral pest control during year (b+c)	
e) Remaining funds for feral pest control (a-d)	

Cumulative totals since commencement of agreement (refer to previous reports)

Total funds received from OEH for feral pest control to date	
Total funds spent on feral pest control to date	

APPENDIX F:

Photo-monitoring locations

Locations of photo points			
Projected coordinate system: GDA 94 Zone 56			
Photo point reference	Easting	Northing	Direction of photo (magnetic degrees)
MD_01	287052	6232494	110
MD_02	287074	6232866	50
MD_03	287431	6232485	184
MD_04	287164	6232396	210
MD_05	286970	6232965	45
MD_06	287376	6232554	200
MD_07	287103	6232795	160
MD_08	286962	6232431	60
MD_09	287039	6232671	205
MD_10	287522	6232444	40

APPENDIX G:

Photo-points in March 2011

MD_01



MD_04



MD_02



MD_05



MD_03



MD_06



MD_07



MD_09



MD_08



MD_10 (no photo)

APPENDIX H:

Inspection Checklist

MATER DEI BIOBANK SITE: INSPECTION CHECKLIST

SECTION A (to be completed every 6 months in December and June)

Completed by:

Date:

Is there evidence of livestock being present on the biobank site in the last six months? (YES / NO)

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

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.

SECTION B (to be completed annually in June)

Completed by:

Date:

Are the fences & gates capable of preventing livestock from entering the biobank site? (YES / NO)

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

Is one legible BioBanking sign attached to each of the five gates into the biobank site? (YES / NO)

If No, describe the location of the sign/s that need replacing or mark location on a map

Are 15 legible BioBanking signs attached to starpickets along the boundary of biobank site? (YES / NO)

If No, describe the location of the sign/s that need replacing or mark location on a map

Are there two legible interpretation signs on the boundary of the biobank site? (YES / NO)

If No, describe the location of the sign/s that need replacing or mark location on a map

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

Photo point	Easting	Northing	Direction (magnetic)	Date taken
MD_01	287052	6232494	110°	
MD_02	287074	6232866	50°	
MD_03	287431	6232485	184°	
MD_04	287164	6232396	210°	
MD_05	286970	6232965	45°	
MD_06	287376	6232554	200°	
MD_07	287103	6232795	160°	
MD_08	286962	6232431	60°	
MD_09	287039	6232671	205°	
MD_10	287522	6232444	40°	

APPENDIX I:

Annual Report Template

Biobank site annual report

Location details

Biobanking agreement ID: 81 Reporting date: 4 July		Name of landowner/s: Trustees of the Sisters of the Good Samaritan Property address: 229 Macquarie Grove Road, Cobbitty, NSW, 2570			
Records of management actions undertaken					
Management action	Required completion time and frequency	Action completed (Yes/No)	Actual completion date/s	Description of actions undertaken including where undertaken (including reference to management zones), any variations and the reasons for variation)	Visual observations and other comments (including reasons for non completion)
1 Management of grazing for conservation					
2 Weed control					
3 Management of fire for conservation					
4 Management of human disturbance					
5 Retention of native vegetation					
6 Planting or seeding					
7 Retention of dead timber					
8 Erosion control					

9	Retention of rocks					
10	Control of feral and overabundant native herbivores					
11	Vertebrate pest management					
Incident or event that has adverse effect on biodiversity values on biobank site						
Incident or event including adverse impacts (e.g. natural events)				Action taken and proposed recommended actions		
Records submitted with this report						
☐ Photographs taken at the photo points set in the biobanking agreement.						
☐ Results of the inspections required to be conducted in item 1.2 of Annexure D to the biobanking agreement.						
☐ Results of any monitoring, inspections or surveys required in Annexures C and D to the biobanking agreement.						
Signature and certification						
I hereby declare that the information supplied in this report is accurate and complies with the reporting requirements under item 2 of the Annexure D to the biobanking agreement. Note: If the land that forms the biobank site is owned by multiple persons, each landowner must sign this annual report.						
Signed				Signed		
Date				Date		

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.

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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

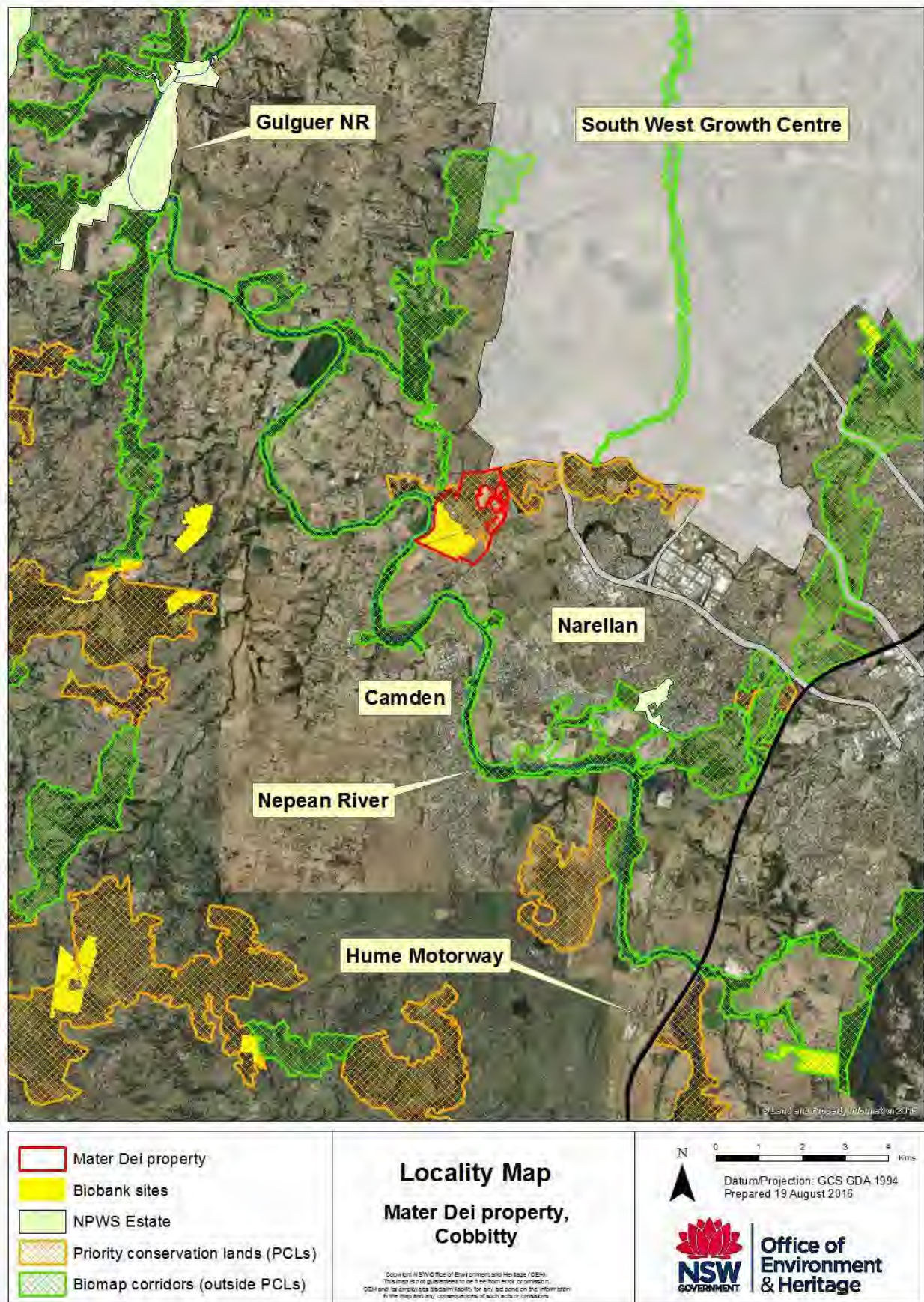
The Stage 2 biobank site is located in the southern part of the Mater Dei property and directly adjoins both the Nepean River and the Stage 1 biobank site (Map 2). It contains remnant woodland and derived grasslands that are currently grazed by cattle. Highly degraded riparian forest is present on the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

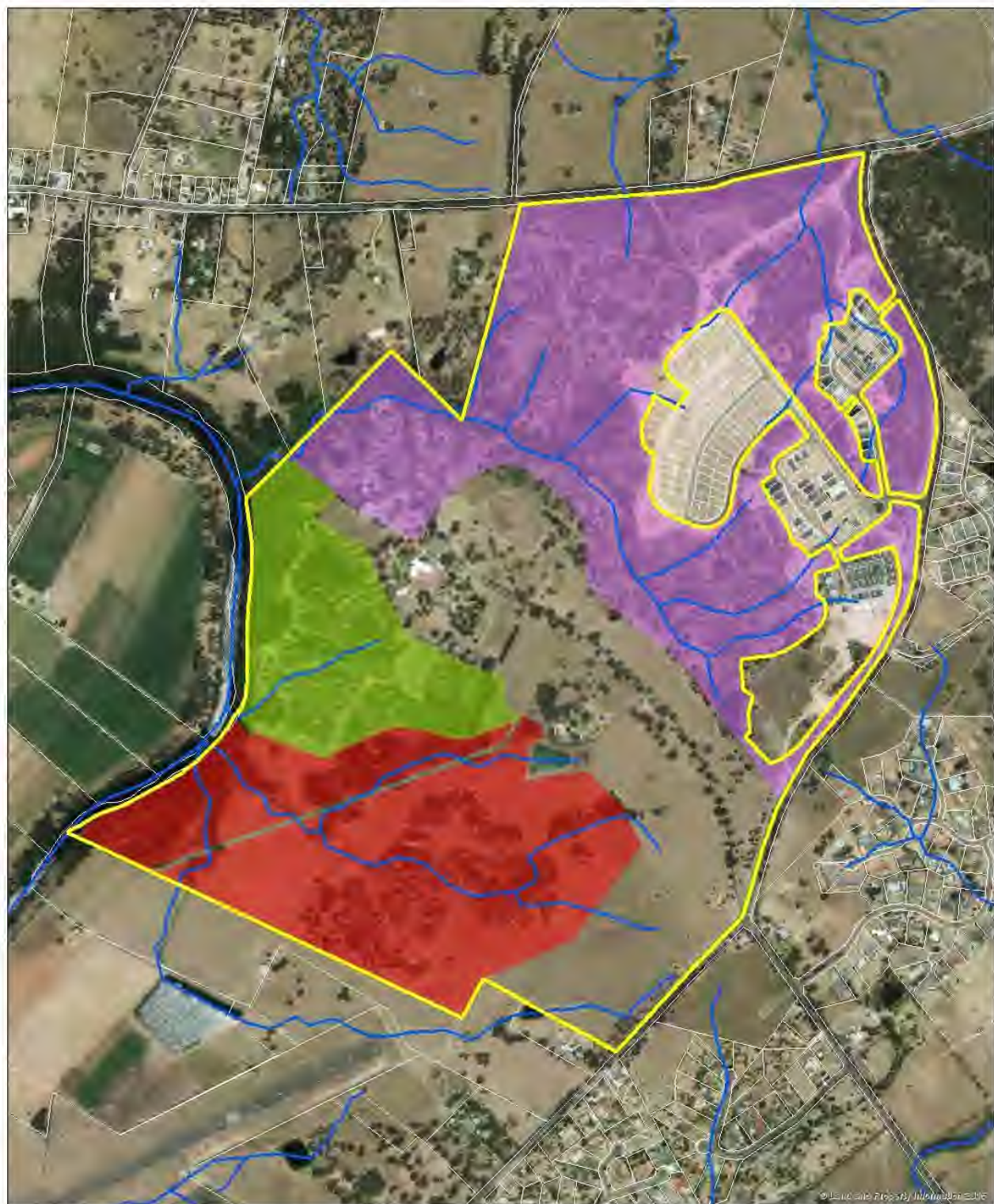
- water treatment pond enclosure (Management Zone 7),
- picnic area (Management Zone 8),
- farm dams (Management Zone 9), and
- access road (Management Zone 10).

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



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**

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This map is not guaranteed to be free from error or omission.
OEH and its employees disclaim liability for any loss or damage arising from the information
in the map and any consequences of such loss or damage.

N
0 100 200 300 400 Metres
Datum/Projection: GCS GDA 1994
Prepared 19 August 2016



**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 Types¹ (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 longibrachiata*).

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 and shrub 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>

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- 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*).

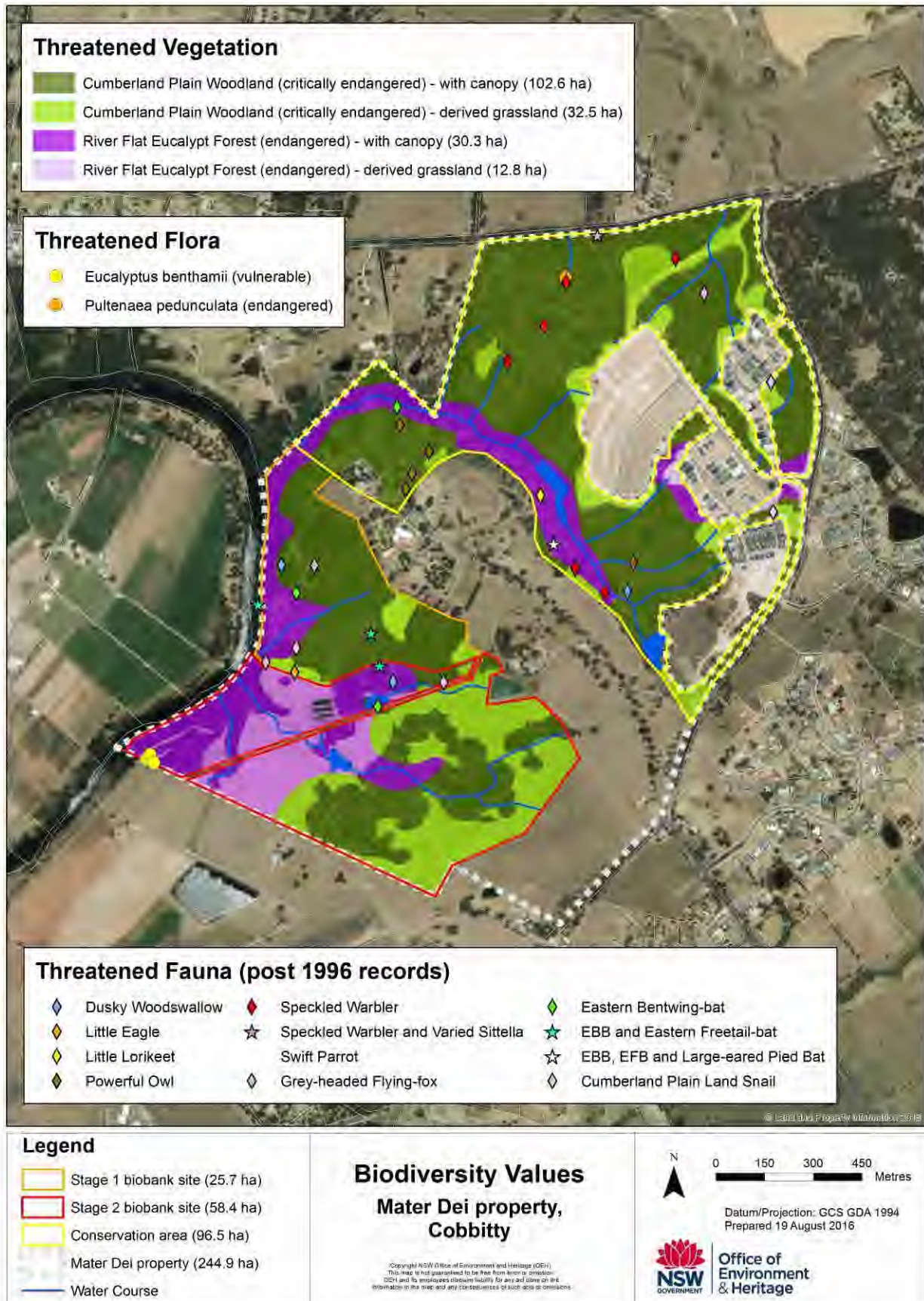
Two of these species (Eastern Bentwing-bat and East Coast Freetail-bat) were recorded on the Stage 2 biobank site, although all three species are likely to be present on the site.

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.

Part 1: Site Description and Management Actions

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

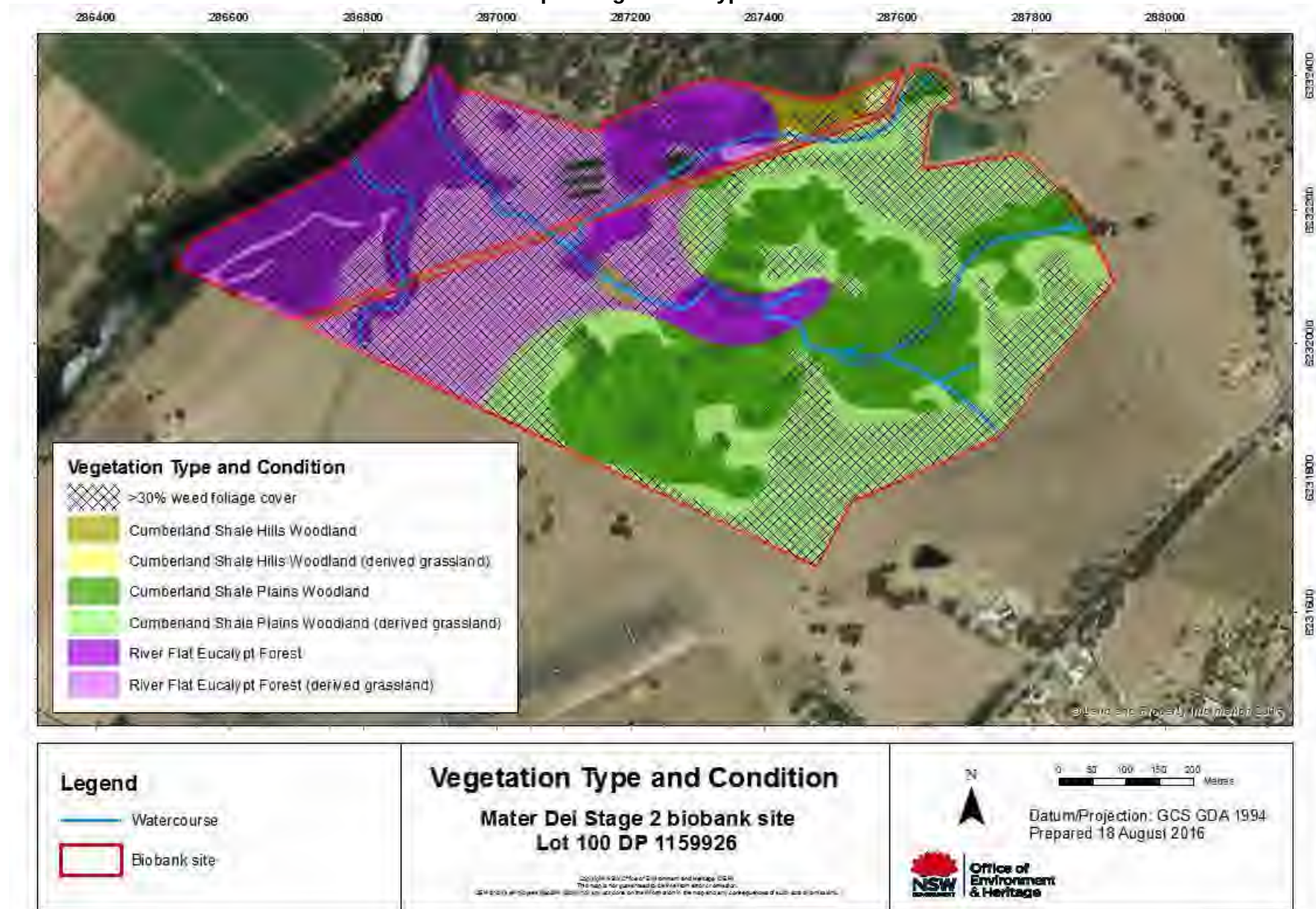
This section contains an overview of the management actions that are required to be implemented under the agreement. The management actions can be either passive or active. Passive management actions have little or no cost and include refraining from doing something, such as not removing fallen logs 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.

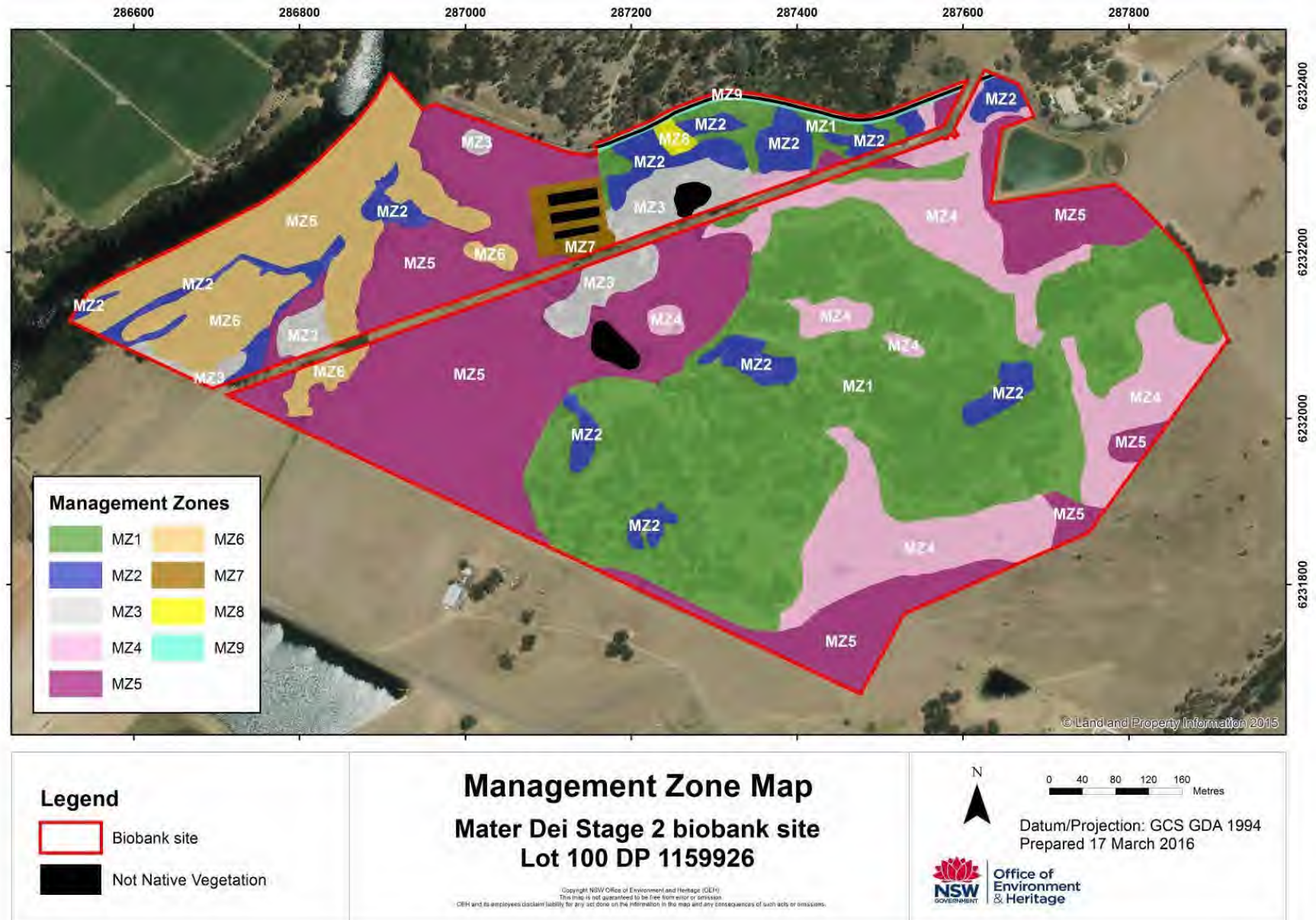
Part 2 of this guide contains a timetable for implementing the management actions during the first five years of the agreement, and describes the costs and performance measures associated with these.

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

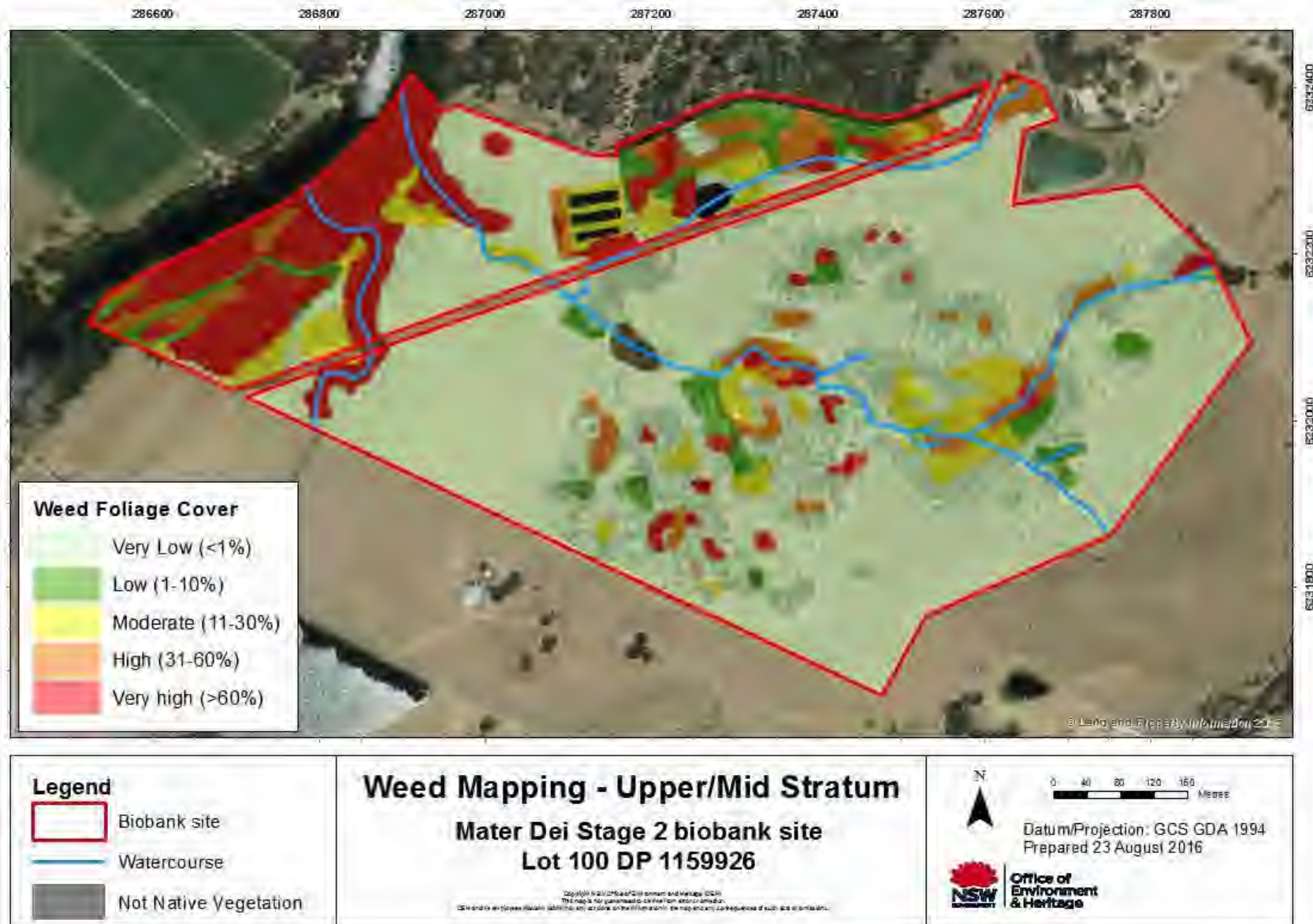
Weed type	Common name	Scientific name
Woody weed	African Boxthorn	<i>Lycium ferocissimum</i>
Woody weed	African Olive	<i>Olea europaea ssp.cuspidata</i>
Woody weed	Blackberry	Rubus sp.
Woody weed	Prickly Pear	<i>Opuntia stricta</i>
Woody weed	Hackberry	<i>Celtis occidentalis</i>
Woody weed	Green Cestrum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

Part 1: Site Description and Management Actions

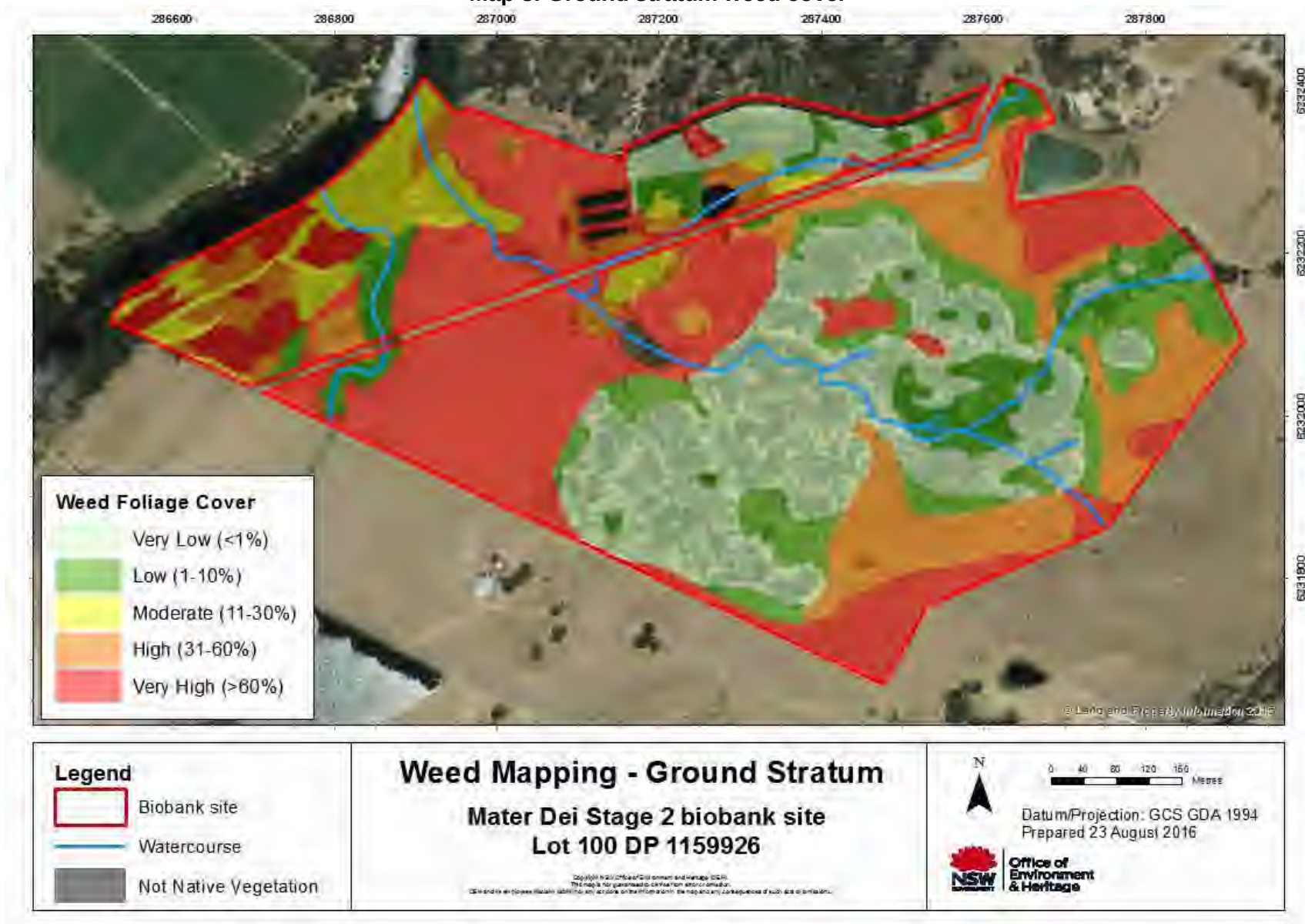
Map 6: Property Management Actions



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 standards⁴.

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
<i>Eucalyptus benthamii</i>	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 <i>E. benthamii</i> 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 <i>Eucalyptus benthamii</i>	- No prescribed burning will be undertaken within 25 metres of <i>Eucalyptus benthamii</i> plantings or regenerating saplings until at least 30 years following planting or germination. - Remove debris build up at the base of <i>Eucalyptus benthamii</i> trees to reduce fire duration and intensity. - Ensure that any prescribed burn in <i>Eucalyptus benthamii</i> 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.	-
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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 application⁵ 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 needed 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)

Planting of trees and shrubs

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

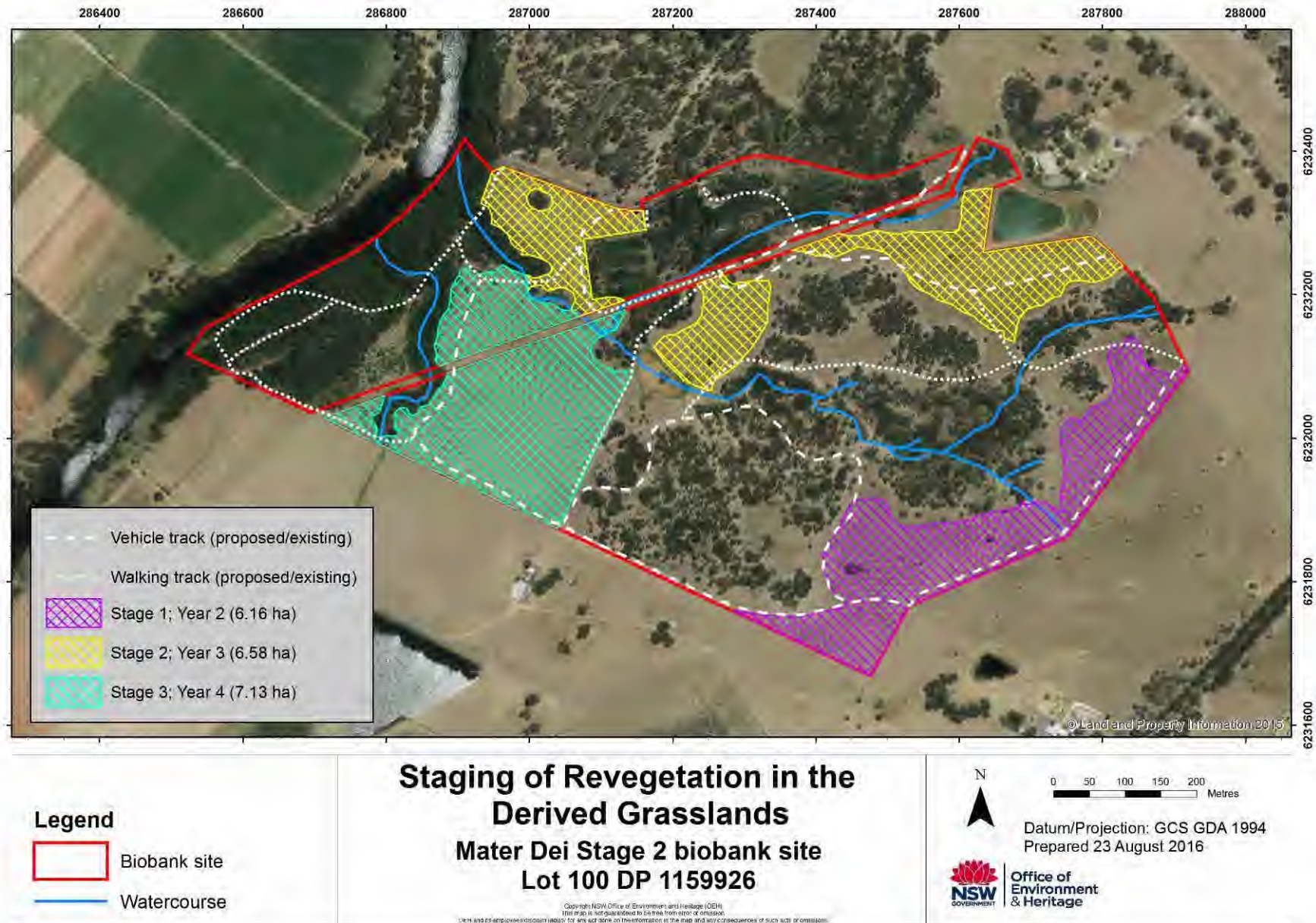


Table 12: Revegetation summary

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 <i>Eucalyptus benthamii</i> ; RFEF - 45 trees; 145 shrubs; 300 g/covers	-	40 <i>Eucalyptus benthamii</i> ; 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 from 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

Mgmt 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 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

Mgmt 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	<u>Monitoring of rabbit activity</u> 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	<u>Observations of other feral herbivores</u> 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 preys 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

Mgmt 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

Mgmt zone/s	Vertebrate pest	Method of monitoring	Date/s required
All	Fox	<u>Qualifications</u> 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	<u>Diary template for feral pest management</u> 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	<u>Observations of vertebrate pests</u> 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 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 1 of 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 of 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
<i>Bromus catharticus</i> *	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0
<i>Bromus molliformis</i> *	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0
<i>Brunoniella australis</i>	3	0	1	0	0	0	2	0	3	0	0	0	0	0	0	0	0
<i>Brunoniella pumilio</i>	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
<i>Bursaria spinosa</i>	5	2	2	2	2	0	5	5	5	0	0	3	6	0	3	0	1
<i>Cardiospermum grandiflorum</i> *	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	4	1
<i>Carex breviculmis</i>	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0
<i>Carex inversa</i>	0	0	0	0	0	0	0	0	1	0	3	2	0	0	4	2	0
<i>Carex longebrachiata</i>	0	0	0	1	0	0	1	0	0	1	1	6	1	0	1	0	2
<i>Carex</i> spp.?	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
<i>Celtis</i> spp.*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
<i>Centella asiatica</i>	0	0	0	2	0	0	0	0	0	0	0	4	0	0	2	0	0
<i>Centaurium</i> spp.*	0	0	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0
<i>Centaurium erythraea</i> *	0	0	0	0	4	0	0	0	0	0	0	2	0	0	0	0	0
<i>Centaurium tenuiflorum</i> *	0	0	0	0	0	0	0	0	1	0	3	4	0	0	0	0	0
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	2	1	2	0	0	0	2	2	3	0	0	0	2	2	0	0	0
<i>Chloris gayana</i> *	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
<i>Chloris ventricosa</i>	2	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0
<i>Cirsium vulgare</i> *	1	0	0	1	0	0	0	0	0	2	2	3	1	0	0	0	0
<i>Convolvulus erubescens</i>	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>Conyza</i> spp.*	1	0	0	2	1	0	1	1	0	2	0	4	0	0	0	0	0
<i>Cyclospermum leptophyllum</i> *	0	0	0	0	3	0	0	0	0	0	3	3	0	0	1	0	0
<i>Cymbonotus lawsonianus</i>	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
<i>Cymbopogon refractus</i>	0	0	2	0	0	0	0	3	2	0	0	0	0	0	0	0	0
<i>Cynodon dactylon</i>	4	3	0	1	0	3	0	0	1	2	6	5	0	0	4	0	0
<i>Cyperus imbecillis</i>	0	0	0	0	0	0	0	2	0	0	0	0	0	2	0	0	0
<i>Daucus glochidiatus</i>	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0
<i>Desmodium varians</i>	3	2	2	3	0	0	2	0	2	0	0	0	4	0	3	0	0
<i>Dianella longifolia</i> var. <i>longifolia</i>	1	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0
<i>Dichelachne micrantha</i>	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
<i>Solanum prinophyllum</i>	1	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0
<i>Solanum pseudocapsicum</i> *	1	0	0	0	0	0	1	0	0	0	0	0	6	0	0	0	0
<i>Solenogyne bellioides</i>	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
<i>Solenogyne dominii</i>	0	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0
<i>Sporobolus africanus</i> *	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
<i>Sporobolus creber</i>	0	3	2	0	0	1	2	0	0	0	2	0	0	0	0	0	0
<i>Sporobolus elongatus</i>	0	0	0	1	2	0	0	0	0	0	0	2	0	0	0	0	0
<i>Stackhousia muricata</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
<i>Stackhousia viminea</i>	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0
<i>Stellaria flaccida</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
<i>Stellaria media</i> *	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
<i>Taraxacum officinale</i> *	1	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0
<i>Themeda triandra</i>	2	5	6	7	6	6	5	5	5	4	3	5	1	0	3	0	0
<i>Tradescantia fluminensis</i> *	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	5
<i>Tricoryne elatior</i>	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
<i>Trifolium</i> spp.*	0	3	0	0	0	0	0	0	0	0	4	2	0	0	2	0	0
<i>Verbena bonariensis</i> *	0	1	1	2	1	0	1	0	0	2	0	2	0	0	0	0	0
<i>Verbena</i> spp.*	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
<i>Verbena rigida</i> var. <i>rigida</i> *	0	0	0	1	0	1	0	0	0	0	2	0	0	0	0	0	0
<i>Veronica plebeia</i>	1	0	0	0	0	0	1	0	1	0	0	1	4	0	0	0	1
<i>Vicia</i> spp.*	1	0	0	0	0	0	0	0	0	2	2	3	0	0	0	0	0
<i>Wahlenbergia gracilis</i>	1	2	2	0	3	0	2	0	1	0	0	0	0	0	1	0	0
<i>Wahlenbergia stricta</i>	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
<i>Zornia dyctiocarpa</i> var. <i>dyctiocarpa</i>	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:
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Completed by:	For month/year:
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[illegible]

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 longibrachiata	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 longibrachiata	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



P7



P8



P9



P10

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	<u>TASKS</u> - 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	<u>PERFORMANCE MEASURES - CONDITION</u> 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	<u>PERFORMANCE MEASURES – EFFORT</u> 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	<u>TASKS</u> - 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	<u>PERFORMANCE MEASURES - CONDITION</u> (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	<u>PERFORMANCE MEASURES - EFFORT</u> 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	<u>TASKS</u> - 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	<u>PERFORMANCE MEASURES - CONDITION</u> 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	<u>PERFORMANCE MEASURES - EFFORT</u> 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	<u>PERFORMANCE MEASURES - EFFORT</u> 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	<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.	Ongoing, from [insert first payment date]	
Weed management plan	MZ7, MZ8, MZ9, MZ10	<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 5	
Weed management plan	MZ7, MZ8, MZ9, MZ10	<u>PERFORMANCE MEASURES - EFFORT</u> 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	<u>Special requirements for <i>Eucalyptus benthamii</i></u> - No prescribed burning will be undertaken within 25 metres of <i>Eucalyptus benthamii</i> plantings or regenerating saplings until at least 30 years following planting or germination. - Remove debris build up at the base of <i>Eucalyptus benthamii</i> trees to reduce fire duration and intensity. - Ensure that any prescribed burn in <i>Eucalyptus benthamii</i> 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:

Appendix 7. Bushland Conservation Management Plan

Wivenhoe Conservation Management Plan & Bushfire Management Plan



(Project No. 082-005)

Report prepared for:
Mbark Pty Ltd

January 2008

Document Tracking

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Terms & Abbreviations

APZ – Asset Protection Zone

CMP – Conservation Management Plan and Bushfire Management Plan

CMS – Conservation Management Strategy

Conservation land – comprises all land identified as conservation management zones

DA – Development Application

Development land – comprises development areas (e.g. residential, commercial) and transport corridors

ELA – Eco Logical Australia Pty Ltd

IPA – Inner Protection Area

LMZ – Land Management Zone

Local provenance – refers to plant material collected from within a range of the site that natural genetic exchange is likely to occur

Management area – on-ground area to be managed as a single unit

Management region – classification of future environmental conditions i.e. Riparian Region, Woodland Region, Open Woodland Region, Grassland Region, Playing Fields (ELA 2005)

Management zone – classification of existing environmental conditions i.e.

- Sustainable grassland
- Degraded grassland
- Sustainable grassy open woodland
- Degraded grassy open woodland
- Sustainable woodland
- Degraded woodland
- Sustainable riparian
- Degraded riparian

OPA – Outer Protection Area

RFS – Rural Fire Service

SFAZ – Strategic Fire Advantage Zone

Executive Summary

This combined Conservation and Bushfire Management Plan, addresses the ongoing management requirements of the Wivenhoe Conservation Lands, owned by the Sisters of the Good Samaritan, to be protected as part of the Wivenhoe Residential Development Project.

This plan provide a background of the site and existing ecological condition, with specific detail regarding management zones, monitoring requirements, bushfire management, costs and task schedules for the first 5 years and in-perpetuity.

Based on adaptive management models the conservation area has been broken into three major management zones with the management tasks geared towards ensuring that the areas be restored to sustainable ecosystems within the first 5 years of plan implementation. This plan will need to integrated with the requirements for the conservation of existing European and Aboriginal Heritage values throughout the Wivenhoe Property.

The Sisters of the Good Samaritan will retain ownership of the conservation lands, and in accordance with a Voluntary Planning Agreement with Camden Council, Mbark will contribute \$4 million and be responsible for management and maintenance of the conservation lands within the first 5 years. The Wivenhoe Environment Trust, will then be set up to *'fund ongoing environmental management of the Wivenhoe Conservation Lands to meet the performance criteria of the Conservation Management Plan'*.

PART A – INTRODUCTION



1. Context

The Sisters of the Good Samaritan (the 'sisters') own the land known as 'Wivenhoe' in Sydney's south-west. The land subject to this plan has a total area of approximately 150 ha. Wivenhoe has been rezoned, enabling approximately 30 ha for residential use, approximately 80 ha for conservation and the remaining area to be maintained for heritage protection.

Development of Wivenhoe is subject to a Planning Agreement between the sisters and Camden Council. The Planning Agreement and Camden Local Environmental Plan No.139 require conservation land to be managed in accordance with a Conservation and Bushfire Management Plan (CMP).

Mbark Pty Ltd is developing Wivenhoe in conjunction with the sisters and will implement the CMP on the Sisters behalf. The CMP will be implemented over five years under the Planning Agreement. After completion of the CMP program, responsibility for managing the conservation land will transfer to:

- Camden Council for land that becomes public reserves
- The Sisters through a fully funded environmental trust covering the remaining conservation lands

Mbark will endeavour to progress the conservation lands to sustainable ecosystems within the five year timeframe so that long term conservation management costs are based on maintenance of a sustainable ecosystem, rather than reconstruction of degraded ecosystems.

Camden Natural Assets Policy

The CNAP provides a classification of environmentally significant lands and identifies minimum offset ratios should there be potential impacts on such lands.

During the Local Environment Study undertaken for the site, it was recognised that the native grasslands on the site were of moderate ecological value and are relatively quick and easy to reconstruct. As such it was not desirable for them to be lumped with woodland on the site in the category of 'Regional Core'. In accordance with Clause 1.5 of the policy, CNAP offset multipliers were applied to the woodland on site with the result being a surplus of 24 hectares as indicated in Table 3. This offset result indicates that the land which is being set aside for protection within the conservation zone, will provide 24Ha more than that required by the CNAP (82Ha) to offset the loss of vegetation due to proposed development.

Recognising the potential to integrate native grassland with heritage curtilages, a substantial area of the 5A zoned land is to be reinstated as native grasslands to offset the loss of grassland within the development precincts.

Offset calculations contained in Table 3 are based on the development footprint (lots, roads and residential parks), the conservation lands and restoration of native

grassland within the heritage zoned lands that are not required for ongoing or future school operations.

Table 1 Application of CNAP multipliers

CNAP CSA	Multiplier	Development (including parklands)	Heritage	Required Offset	Conservation	Heritage Grassland Reconstruction	Difference
Regional Core	6.00	10.75		64.51	78.72		14.20
Support Core	4.00		3.67	14.66			-11.00
Other Native Vegetation	3.00		0.63	1.90			-1.27
Native Grassland		18.87		0.00	9.22		9.22
Open Water		0.01		0.00	1.07		
Cleared		3.47	11.85	0.00	3.56	9.78	13.34
Total		33.10	16.15		92.56	9.78	24.49

2. Report structure

The CMP is to be read in conjunction with other plans and studies, including the:

- Ecological Assessment (ELA 2004)
- Conservation Management Strategy (ELA 2005)
- Landscape Master Plan (Hassell 2007)
- Precinct Plans (Hassell 2007)
- Ecological Impact Assessment (ELA 2008)
- Statements of Environmental Effects (APP 2007)

Part B of the CMP provides the framework for management of conservation land at Wivenhoe. It outlines the planning and development context, including relevant planning history and current land use zones. The methodology used to categorise conservation land and determine a suitable management regime is described. Monitoring and record-keeping requirements and performance indicators are identified, and costs estimated.

Part C of the CMP describes the tasks to be undertaken. It focuses on bushfire management, and measures to protect or improve environmental conditions across the conservation land. It refers to activities in the development land that may affect the conservation land.

Species lists and a detailed timetable of tasks to be implemented in each management zone of the conservation land are appended.

PART B – MANAGEMENT FRAMEWORK



3. Background

3.1 Location

The Wivenhoe development site has an area of approximately 150 hectares. The site is bound by Cobbitty Road to the north and the Mater Dei School access driveway to the west. The eastern boundary is defined by Macquarie Grove Road and Harrington Grove West. The site and its immediate surrounds are illustrated in Figure 1.

3.2 Land use planning

3.2.1 Land use history

Prior to European settlement of the district in the 1800s, the Camden area was characterised by River-flat Forests along the Nepean River and South Creek, and Cumberland Plain Woodlands (Benson & Howell 1990). Much of the native vegetation was cleared to create pasture for sheep and cattle. The municipality retains its rural character although there has been extensive urban development in recent years (Clive Lucas, Stapleton and Partners 2004).

3.2.2 Planning history

Wivenhoe is being developed by Mbark Pty Ltd in conjunction with the Sisters of the Good Samaritan. Mbark, Camden Council and NSW government agencies have negotiated a strategic land use plan that balances residential development with environmental conservation objectives. Highlights of the planning history include:

- Approval of a Natural Assets Policy by Camden Council in 2003
- Detailed investigations that were undertaken in 2004 for a Local Environmental Study, including an ecological assessment by ELA
- Gazettal of the Camden Local Environment Plan (LEP) No.139 – Mater Dei following preparation of precinct plans and a Conservation Management Strategy (CMS) (ELA 2005). The CMS identified five management regions within Wivenhoe based on landscape character. These regions are jointly referred to as conservation land, and the remainder of Wivenhoe is development land (Figure 1)
- Development Applications (DAs) submitted to Council for Precincts A, B, C and D include Ecological Impact Assessments, Bushfire Assessment and this Conservation Management Plan (CMP). Locations of each precinct are depicted in Figure 1
- A trust that will be established with an in-perpetuity management fund to manage the conservation lands that will be retained by the sisters.



Figure 1 Study area and precincts

3.2.3 Land use zones

Camden LEP No. 139 land use zoning map is shown as Figure 1. The LEP defines suitable land uses for Wivenhoe. These include:

- Environmentally sensitive land that aims to conserve biodiversity
- Eco residential development
- Cultural landscape

The CMP reflects the LEP's objectives and requirements for conservation land.

Table 2 Land use zones for precincts in Wivenhoe

Precinct	LEP zone
Precinct A	7(d4) Environmental Protection (Eco Residential)
Precinct B	7(d4) Environmental Protection (Eco Residential)
Precinct C	7(d4) Environmental Protection (Eco Residential)
Precinct D	7(d4) Environmental Protection (Eco Residential)
Conservation Lands	7(a) Environmental Sensitive Land
Heritage Curtilage	5(a) Cultural Landscape

3.3 Need for CMP

A CMP is needed to guide the detailed conservation and restoration activities within the conservation land of Wivenhoe. The CMP builds on the CMS (ELA 2005) and aims to satisfy the broader conservation objectives of the LEP and the Natural Assets Policy (Camden Council 2003). The environmental character that the CMP will aim to achieve are summarised in Table 3. Benchmark conditions for these attributes can be observed at Gundangarra Reserve, Mount Annan.

Table 3 Future attributes of management regions (ELA 2005)

Management Region	Future character
Woodland Region	Native groundcovers, grasses, shrubs and canopy species
Grassy Open Woodland Region	Native groundcovers and grasses, and canopy trees widely spaced to prevent overlapping canopies
Native Grassland Region	Native grasslands dominate, with isolated trees
Riparian Region	Character of the riparian region will reflect that of the underlying region
Development Region	Retain existing native trees where possible; landscaping works to utilise local provenance native species

3.4 Adaptive management approach

An adaptive management approach will be taken in applying the CMP because of the size of the site, the complexity of the ecosystems present and the changing conditions. The CMP therefore includes a description of the methodology that was used (Section 4) to determine the most ecologically and economically efficient tasks to be applied given current understanding of the site conditions and development proposal. The methodology can be reapplied as site conditions change over time and the development proceeds. Implementation of the CMP is a long-term undertaking and this report represents the first stage in this process.

The adaptive management approach places an emphasis on encouraging the natural resilience of the site and integration with natural processes to restore the ecological values of the site. In this manner, direct planting will be minimised and only implemented where natural resilience is low, or environment/land use requires immediate responses (e.g. on steep slopes).

3.5 Scope of CMP

3.5.1 Ecology

The CMP indicates how the strategic objectives for each management region within the conservation land will be achieved on-ground. It examines how to:

- Protect remnant vegetation
- Restore highly disturbed and weed infested areas
- Rehabilitate cleared areas
- Use fire as an ecological management tool
- Ensure fuel loads are kept within controllable levels
- Control feral animals
- Use local provenance native species in landscaping
- Integrate biodiversity management with heritage features, visual amenity and community involvement
- Ensure development areas do not become a source for weed invasion
- Monitor against performance criteria
- Minimise costs, especially in the long term

3.5.2 Landscaping

Ecological constraints and objectives identified by Hassell (2007) in the Landscape Master Plan (full reference to be update for final report) are based on the CMS (ELA 2005). The objectives are to:

- Reinforce and enhance the conservation areas
- Reinstatement of indigenous flora species and enhance fauna habitat
- Maximise recreation use and connections in non-core conservation areas
- Establish low impact walking trails and implement a program of education and interpretation
- Conserve and enhance existing landscape elements and heritage curtilage zones with appropriate landscape treatment

Parklands and recreational facilities for Wivenhoe are shown in Figure 2 and include:

- Local pocket parks
- Informal recreation zones (areas of low to moderate conservation significance that allow for example bush walking, mountain bike riding, casual play activities; sensitive habitat areas will be protected from access)
- Conservation areas (areas of high natural and cultural conservation significance to be conserved and enhanced, and allow only low impact recreation and interpretation activities)

Other features of the Landscape Master Plan (Hassell 2007) of relevance to the conservation land include:

- Native plant species, preferably of local provenance, will be used in landscaping at entries and along street edges
- A network of cycleways and footpaths has been designed to 'activate spaces within parklands, tie in with low impact recreational activities in conservation areas and generate activity on park boundaries'

Appendix A lists species that are suitable for landscaping in the conservation land and development land.

3.5.3 Engineering

Roads, stormwater, water, sewer and telecommunications infrastructure will also pass through the conservation land. These have been designed by Maunsell and Michael Bell & Partners, and are indicated in DA documentation. Where possible, these services will be located in the road easement or existing disturbed/cleared areas. Where impacts to the conservation lands are unavoidable, remediation works will take place following construction.

The principles for sighting footpaths, cycleways and roads through the conservation area focus on avoiding and minimising construction and operational environmental impact. Such principles include;

- Avoid hollow bearing trees
- Avoid threatened species locations
- Avoid areas of steep slopes
- Avoid areas of Aboriginal or European heritage value
- Restrict high use routes to least sensitive areas (e.g. disturbed areas)

It is recommended that materials to be used for access through the conservation zone reflect their respective uses and immediate environment, e.g. high use tracks through steep slopes will need to be well stabilised to prevent erosion and be well defined to prevent track widening. Where possible, materials should be of eco-sensitive design and be sourced on site e.g. wood from trees removed within the residential development footprint.

Management of stormwater quality and quantity is of particular relevance to the CMP because of the potential ecological impacts. Any water structures located in the conservation land need to be consistent with conservation objectives. The

stormwater management strategies by Maunsell adopt the principles of total catchment management and water sensitive urban design (WSUD).

Following development of Wivenhoe, the peak stormwater runoff will not exceed pre-development levels and there will be no decline of water quality in the creek system. To achieve this, the stormwater management strategy adopts a best management practice treatment train for stormwater:

- Rainwater tank to be installed at each lot for internal and external water reuse
- Gross pollutant traps (GPTs)
- Grass lined dry detention sediment basins
- Bioretention systems downstream of GPTs and sediment basins

The locations of swales, dual use detention basin/wetlands and gross pollutant traps are indicated in Maunsell's reports accompanying the DA. These structures will:

- Store flood waters temporarily during storm events to reduce the impact of flooding as a result of the proposed development
- Treat polluted stormwater runoff from proposed development areas to acceptable water quality targets
- Provide habitat for native species
- Provide recreation for the nearby community
- Educate the community about flooding and water quality issues

Technical specifications are given in the DA documents by Maunsell.

In accordance with the *NSW Rivers and Foreshores Improvement Act 1948*, a detailed Vegetation Management Plan (VMP) will be prepared for locations where infrastructure is planned within 40 m of a protected waterway. The VMP will support a Part 3A permit application.

In general all drainage facilities traversing the conservation areas should;

- Be located outside core riparian zones, or at least no closer than 20m from the top of bank of a watercourse if they do not compromise the integrity of the corridor.
- Be offline from existing watercourses.
- Be constructed according to relevant Department of Water and Energy Guidelines.
- Not impact upon
 - Large hollow bearing trees
 - Threatened flora or fauna
 - Areas of Aboriginal or European heritage significance
 - Soil stability

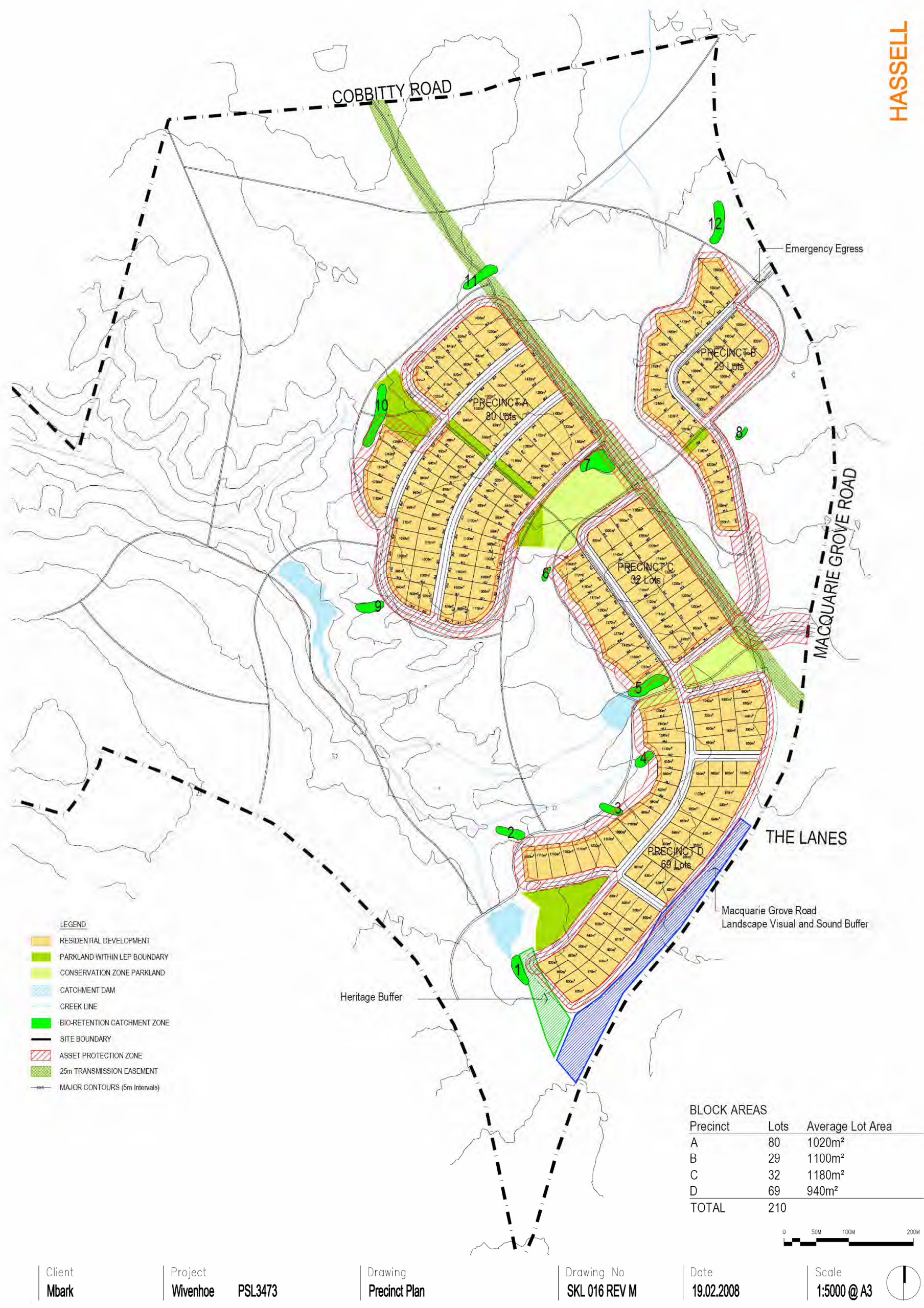


Figure 2 Precinct Plan (Hassell 2007)

4. Methodology

This section outlines the methodology used to prepare and implement the CMP. These steps can be repeated in the future, as required.

4.1 Existing condition

Conditions at Wivenhoe vary from highly degraded to sustainable indigenous ecosystems. Vegetation resilience maps prepared by ELA (2005) were reviewed in the field during October 2007 and used to classify the condition of vegetation across Wivenhoe. The following definitions were applied:

- Degraded – a significant presence of weed species, most species not appropriate to the designated management region. Also includes substantial areas of regrowth where vegetation structure needs to be modified to achieve desired outcome (e.g. areas of dense *Eucalyptus* regrowth)
- Sustainable – the majority of species are appropriate to the designated management region

4.2 Management zones

The five management regions identified in the CMS (ELA 2005) were combined with information about the condition of vegetation to classify land. The resultant three management zones within conservation lands are listed below:

- Degraded grassland
- Sustainable woodland (1=good, 2=moderate condition)
- Degraded woodland (1=poor, 2=very poor condition)

This process was applied to vegetation within Wivenhoe in 2007 and the results are mapped in Figure 3.

An additional category was mapped to reflect the future location of water infrastructure within the conservation land.

4.3 Tasks schedule

Field conditions and the tasks presented in Part C of the CMP were reviewed to determine suitable tasks to improve or maintain conditions for each mapped area. The results are summarised in Appendix B as a matrix of management areas, tasks and implementation timeframes.

4.4 Work plans and approvals

A detailed work plan will be prepared and implemented for each management area. Each work plan will identify:

- the area to which it applies
- a recent description of site conditions (baseline monitoring – see Section 6.3)
- contact details for personnel involved in the work
- the tasks to be undertaken
- a timetable for those tasks
- monitoring requirements (Section 6)
- a safe work method statement
- financial details
- record of work done
- comparison to performance criteria
- photographic records

4.4.1 First five years

Mbark will be responsible for preparing and implementing work plans in the first five years following development approval, in accordance with the Heads of Agreement with Council. As discussed in Section 6, Mbark will submit regular monitoring reports to Council. If the monitoring reports indicate that the task schedule needs to be revised, this will be done by agreement between Council and Mbark.

4.4.2 After five years

In the long term, Council will take control of public reserves and the CMP will no longer apply to these areas. A Plan of Management under the NSW *Local Government Act* 1993 will be required for public reserves. Council will be responsible for preparing, implementing and monitoring this process.

Responsibility for other conservation land will transfer from Mbark to the trust scheme. A committee from the trust will be responsible for ongoing implementation of the CMP in accordance with a management statement.

4.5 Monitoring and reporting

Requirements for monitoring and reporting performance are provided in Section 6.



Figure 3 CMP Management Zones

5. Timetable

5.1 Development staging

It is anticipated that infrastructure in the conservation and development lands at Wivenhoe will be constructed over five years. The planned location of infrastructure within the conservation land needs to be surveyed and pegged prior to implementation of CMP tasks (e.g. bush regeneration). By identifying the planned location of infrastructure in advance, CMP tasks can proceed without concern that efforts (and costs) may be wasted when infrastructure development occurs at a later date.

5.2 Schedule of CMP tasks

In overview, the timetable involves removing stock and stabilising active erosion in the short term, weed removal and establishing native plants in the medium term, and ongoing weed control and prescribed burns in the long term. Implementation of some CMP tasks should commence immediately (e.g. seed collection) to allow for the long lead time required for plant propagation and growth. Where possible, the conservation tasks will be implemented over a broad area to achieve economies of scale (e.g. mechanical weed control) rather than be limited to areas adjacent development precincts.

The timing of each CMP task at each site is shown in Appendix B as yearly milestones.

Monitoring schedules are discussed in Section 5.

The conservation works will be deemed complete upon the issue of a report to that effect by a suitably qualified practising ecological consultant appointed by the developer and approved by Council.

6. Measuring performance

6.1 Objectives

It will not be possible to achieve the environmental benchmarks set in Section 3.3 for all parts of the conservation land within the five year timeframe of this CMP. However, substantial environmental improvements toward these benchmarks are required to satisfy Council of the effectiveness of the CMP and minimise long term environmental management costs.

A comprehensive monitoring program will gauge the effectiveness of the CMP and, in accordance with the adaptive management approach, identify if the program of tasks needs to be adjusted. Incremental improvements are expected at each monitoring stage after implementing CMP tasks (unless a site is deemed sustainable, in which case it needs to be maintained). If monitoring indicates that the CMP tasks are not resulting in ecological improvement or maintenance, the task program will be revised.

In addition to changes that may be needed in response to monitoring, new techniques for performing CMP tasks may become available and should be considered as part of the adaptive management approach.

6.2 Performance criteria

The following performance criteria have been assigned to the different management zones across the site. They include a combination of qualitative and quantitative measures. The quantitative measures, which relate to removal of threats, particularly exotic species, need to be firm criteria, however flexibility must be provided to allow for the impact of uncontrollable climatic conditions (e.g. drought), natural disasters (e.g. wildfire, flooding) and pestilence. In these situations it may not be possible to achieve the quantitative targets for native species cover, in which case the target should be revised and at the very least require progressive improvement in native species cover and certainly no increase in exotic species cover. Any modifications to performance criteria as a result of the conditions above are to be negotiated in good faith by Council and Mbark.

Table 4 Performance criteria for CMP

Management zone	Performance criteria
Sustainable grassland	1. Management tasks implemented according to schedule 2. Year 1 – 5 : <10% exotic cover
Degraded grassland	1. Management tasks implemented according to schedule 2. Year 1: <70% exotic cover 3. Year 2: <60% exotic cover 4. Year 3: <40% exotic cover 5. Year 4: <20% exotic cover 6. Year 5: <10% exotic cover
Sustainable woodland	1. Management tasks implemented according to schedule 2. Year 1: 100% treatment of seeding woody weeds 3. Year 5: Increase in native species diversity
Degraded woodland	1. Management tasks implemented according to schedule

Management zone	Performance criteria
	2. Year 1: <70% exotic cover 100% treatment of seeding woody weeds 3. Year 2: <60% exotic cover 4. Year 3: <40% exotic cover 5. Year 4: <20% exotic cover 6. Year 5: <10% exotic cover
Water bodies & immediate surrounds	1. Management tasks implemented according to schedule 2. Removal of all litter from water body and surrounds within two weeks of rainfall event 3. Year 1: Remove all weeds 4. Year 2: Successful establishment of seedlings 5. Year 3: Increase native species diversity 6. Year 4 & 5: < 10% weed presence

* 'Exotic cover' refers to the proportion of native versus exotic species in the dominant sub-canopy stratum. Random 2 metre wide quadrats used to determine cover, minimum 5 per unit.

An area will be deemed to be sustainable if it satisfies the biometric benchmarks (Gibbon *et al* 2005) relevant to its vegetation type (Table 5). The rate at which different areas reach sustainability will vary across the site, depending on initial conditions, effectiveness of CMP works, and on-going maintenance and management. Once sustainability is reached, maintenance will be required to prevent degradation from external factors (e.g. rubbish, weeds).

Table 5 Biometric benchmarks

Variable	Method (plot or transect type)	Vegetation Type	
		Cumberland Shale Hills Woodland	Cumberland Shale Plains Woodland
Native plant richness	20 x 20 m plot	29	29
Native over-storey	At 10 points along a 50 m transect	19-24	21-26
Native mid-storey	At 10 points along a 50 m transect, or 20 x 20 m plot	20-30	26-31
Native ground cover (grasses)	At 50 points along a 50 m transect, or 20 x 20 m plot	23-31	27-31
Native ground cover (shrubs)	At 50 points along a 50 m transect, or 20 x 20 m plot	0-5	0-5
Native ground cover (other)	At 50 points along a 50 m transect, or 20 x 20 m plot	12-20	15-19
Number of trees with hollows	50 x 20 m plot	1	1
Total length of fallen logs	50 x 20 m plot (log at least 0.1 m diameter and 0.5 m long)	5	5

Source: Gibbon *et al* (2005)

6.3 Monitoring program

The CMP task program was developed in response to field data (e.g. primary weed removal is needed where weeds are present). To assess if these tasks are appropriate and effective, conditions at each management zone will be monitored to identify changes over time. The first step is therefore to record baseline conditions **prior to implementing CMP improvements**.

Baseline conditions in each management zone will be defined by:

- One full floristic vegetation quadrat (20 m x 20 m) with photo monitoring points
- One, 30 minute diurnal bird survey site (undertaken within two hours of sunrise, temperature range between 20°C and 25°C)
- One anabat recording site (one hour recording immediately after sunset. Temperature to be between 25°C and 30°C)

The above sites will overlap and be located by GPS/map for ongoing reference. A marker will be installed in the south-west corner of each monitoring site. Photographs will be taken looking from the south-west corner to the north-east corner.

After baseline conditions have been established, sites will be monitored using the same methodology at the following intervals:

- Six monthly for the first two years
- Annually in late November/early December every year after

6.4 Log books

Monthly log books will record all work relating to implementation of the CMP (e.g. weeding, plant propagation, bushfire) and are to be completed by the CMP project manager. The log books will be retained permanently by Mbark then the Wivenhoe Trust (or Council for areas that become public reserves) as a record of environmental change. The log books will be made available to Council on request.

6.5 Monitoring report

A monitoring report will be submitted to Council four weeks after monitoring has finished. The report will be structured to address:

- What environmental threats have been reduced?
- What environmental improvements have been achieved?
- What tasks have been successful?
- What has not been successful?
- What measures, if any, have been taken to rectify problems?
- What issues need to be addressed?
- What are the outcomes of the management activities?
- Recommendations for revising the task program, if necessary

Any issues that affect the program of tasks need to be resolved within three weeks of the CMP manager submitting a copy of the monitoring report to Council. Unresolved issues will be dealt with under the dispute resolution clause of the Planning Agreement.

6.6 Bushfire Monitoring

Any fires will be mapped and the date of burn and approximate intensity of the fire will be recorded. Interfire periods are to be analysed annually to identify those areas that are close to or have exceeded thresholds, and identify priority areas for future burns.

6.7 Auditing

An independent qualified environmental practitioner will audit the monitoring program every two years. The results of this audit will be supplied to Council.

7. Cost estimates and responsibilities

7.1 Costs

Costs for implementing this CMP over the first five years (excluding GST) and ongoing in-perpetuity costs have been estimated and are shown in Table 6. Project management and monitoring costs are included in the overall estimate.

Table 6 Cost estimates

		Rates (\$/Ha)					
Vegetation Condition	Area (ha)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 (ongoing)
good	14.6	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$1,500
moderate	61.2	\$10,000	\$5,000	\$5,000	\$4,000	\$4,000	\$2,000
native grassland - reconstruction	13.3	\$20,000	\$10,000	\$5,000	\$5,000	\$5,000	\$0*
poor	17	\$20,000	\$10,000	\$10,000	\$5,000	\$5,000	\$2,500
very poor	3.9	\$30,000	\$10,000	\$10,000	\$10,000	\$10,000	\$3,000
Grand Total	110.5						

		Cost (\$)					
Vegetation Condition	Area (ha)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6 (ongoing)
good	14.6	\$43,800	\$43,800	\$43,800	\$43,800	\$43,800	\$21,900
moderate	61.2	\$612,000	\$306,000	\$306,000	\$244,800	\$244,800	\$122,400
native grassland - reconstruction	13.3	\$266,000	\$133,000	\$66,500	\$66,500	\$66,500	\$0*
poor	17	\$340,000	\$170,000	\$170,000	\$85,000	\$85,000	\$42,500
very poor	3.9	\$117,000	\$39,000	\$39,000	\$39,000	\$39,000	\$11,700
Grand Total	110.5	\$1,378,800	\$691,800	\$625,300	\$479,100	\$479,100	\$198,500

* Seed collection from the native grasslands will pay for ongoing management costs in this area.

In addition to the figures above a contingency amount of \$350,000 is required for additional access, signage and maintenance works to be spent in the 5th year of the program.

The above costs exclude the construction of fencing, path & trails, landscaping works or installation of irrigation systems.

7.2 Responsibilities

A working group comprising representatives from The Sisters of the Good Samaritan, Mbark, APP, Hassell and Eco Logical Australia has met regularly to plan and design the Wivenhoe development. It is anticipated that many members of the working group will continue to be involved in construction and implementation of the CMP. This will assist the integration of conservation works with development activities. Organisations with responsibility for implementing the CMP are identified in Table 7.

An environmental induction will be held for any contractors working on Wivenhoe.

Penalties will apply if organisations or individuals do not adequately fulfil their responsibilities. These will be linked to contractual agreements. Additional penalties can apply through legislative regulation (e.g. *NSW Environmental Offences and Penalties Act 1996*).

Table 7 Responsibilities

Organisation	Role
Mbark Pty Ltd	Manage development & implement CMP in initial five years
Sisters of the Good Samaritan and Wivenhoe Environment Trust	Manage CMP activities after five years on land owned by the Sisters using funds from the trust
Camden Council	DA approvals & review monitoring
Department of Environment and Climate Change	Statutory approvals
Department of Planning	Statutory approvals
Bush regenerators	Bush regeneration & monitoring
Engineers	Design & construct roads, drainage, community facilities
Builders	Construct dwellings
University of Western Sydney and/or Wollongong	Research

7.3 Wivenhoe Environmental Trust

The Wivenhoe Environmental Trust (WET) will be the funding mechanism by which the long term management (from year 6) of the Conservation Lands will be payed for. Details of how the trust will be funded are identified in the Voluntary Planning Agreement.

The WET Trustees will comprise of representatives of the Sisters of the Good Samaritan. The sole aim of the trust is to:

'fund ongoing environmental management of the Wivenhoe Conservation Lands to meet the performance criteria of the Conservation Management Plan'

A management committee will direct how the Trust funds should be spent to meet the above aim. The management committee will comprise of;

- A representative of the Sisters of the Good Samaritan
- A representative of Camden Council
- A representative of the Wivenhoe development (initially MBark)

The deed of trust will outline governance and management requirements, further detail on the deed of trust is contained in the Voluntary Planning Agreement.

PART C - TASKS



8. Bushfire Management

Bushfire management will be undertaken for the primary purpose of ecological management. Where possible, Asset Protection Zones (APZs) have been located within the development footprint, principally within road easements, perimeter trails and front yard setbacks where necessary. In the limited instances where APZs extend outside these areas, some manual maintenance will need to be undertaken. Sufficient protection will therefore be afforded to the development without the need to undertake extensive hazard reduction programs across the conservation lands.

8.1 Ecological Management

Ecological management can be divided into:

- Stimulation of seedbank and treatment of weeds for ecological restoration
- Maintenance of ecological interfire periods
- Use of fire regimes to achieve desired management character

Fire is a key ecological process in many Australian ecosystems, stimulating seedbanks, reducing senescence and encouraging ecological diversity. The main elements of fire are seasonality, frequency and intensity. These factors influence species differently and can be used as a management tool to favour certain species or habitat types. A detailed review of fire regimes and the likely impacts on Cumberland Plain ecosystems has been undertaken, and a summary of the key elements in relation to desired management outcomes is provided below.

Cumberland Land Snail (*Meridolum corneovirens*) is the only threatened species known to occur on the site that has a specific bushfire related recovery action:

- *Implement appropriate fire regimes (ones that allow build up of grass and litter layers).*

8.1.1 Fire Frequency

Fire frequency is usually presented as interfire periods. The minimum interfire period is the minimum amount of time between fires that will enable sufficient recruitment and recharge of seedbanks. Maximum interfire period refers to the maximum amount of time between fires before senescence may begin.

Short interfire periods encourage species that have short lifecycles (e.g. annuals and grasses) over species that take longer to reach reproductive stages (e.g. trees and many shrubs). Short interfire periods are therefore preferable where a predominantly grassy/herbaceous understorey is desirable.

In Cumberland Plain Woodland the following is generally observed:

- Short interfire periods – results in grassy understorey, often dominated by *Themeda australis*
- Long interfire periods – often results in dominance by *Bursaria spinosa* and lower diversity/abundance of ground cover species

A variety of differing opinions are available on interfire periods, the most relevant to this site and their preferred periods are identified in DEC (2005).

Table 8 Interfire Periods

Source	Type	Grasslands	Grassy Open Woodlands	Woodlands
Recovering Bushland on the Cumberland Plain (DEC 2005)	Cumberland Plain Woodland	NA	4 – 12 years	4 -12 years
Bushfire Environmental Assessment Code (RFS 2006)	Cumberland Plain Woodland	NA	No fire more than once every 7 years	No fire more than once every 7 years
	Strategic Fire Advantage Zone (SFAZ)	Minimum interval of 2 years	Minimum interval of 5 years	Minimum interval of 5 years
	Land Management Zone (LMZ)	Minimum interval of 3 years	Minimum interval of 8 years	Minimum interval of 8 years

8.1.2 Fire Seasonality

Fire seasonality needs to integrate with the lifecycles of native species, and preferably be counter to the requirements of exotic species. As such ecological burns are recommended between the periods of August and January to coincide with native plant life cycles (DEC 2005). However, due to bushfire danger periods it may not be practical to burn over the summer months, hence the window of opportunity narrows to August – November. Occasional Autumn burns may also be implemented.

Burning may also be complemented with slashing of grasses, preferably immediately prior to flowering of exotic annual grasses.

8.1.3 Fire Intensity

Hotter burns are preferable as they may encourage native species over exotic species. However, this will be significantly limited by the amount of fuel available for burning and constraints on burning during the warmer months. More moderate burns are recommended for steeper slopes to reduce the potential for exposure of mineral earth and subsequent erosion.

8.1.4 Implementation Principles

The following principles will be considered when implementing fire management works:

- LMZ Grassy open woodland areas to have an interfire period of 4 – 8 years
- Woodland areas to have an interfire period of 4 – 12 years
- All fires are to be monitored, mapped and progress towards interfire thresholds identified annually
- No more than 20% of the site is to be burnt in any one year
- Burns generally to be implemented between August - November

- Hotter burns are preferable except on steep slopes
- Interfire periods across the site are to be mosaiced spatially and temporally

8.2 Bushfire Management Zones

Consistent with the guidelines for Bushfire Risk Management Plans, the site has been divided into the following bushfire management zones;

- Asset Protection Zones (APZ)
- Land Management Zones (LMZ)

Analysis of fuel accumulation in Cumberland Plains Woodland by Watson (2005) indicates that fuel loads peak at around 9 tonnes per hectare at a time approximately 10 years after fire. This low fuel loading significantly reduces the maximum fire intensity likely across the site and allows for greater integration of bushfire and ecological objectives in close proximity to development areas.

Strategic Fire Advantage Zones (SFAZ) are not considered to be required across the site, as the natural fuel load of Cumberland Plains Woodland falls within the required guidelines for these zones.

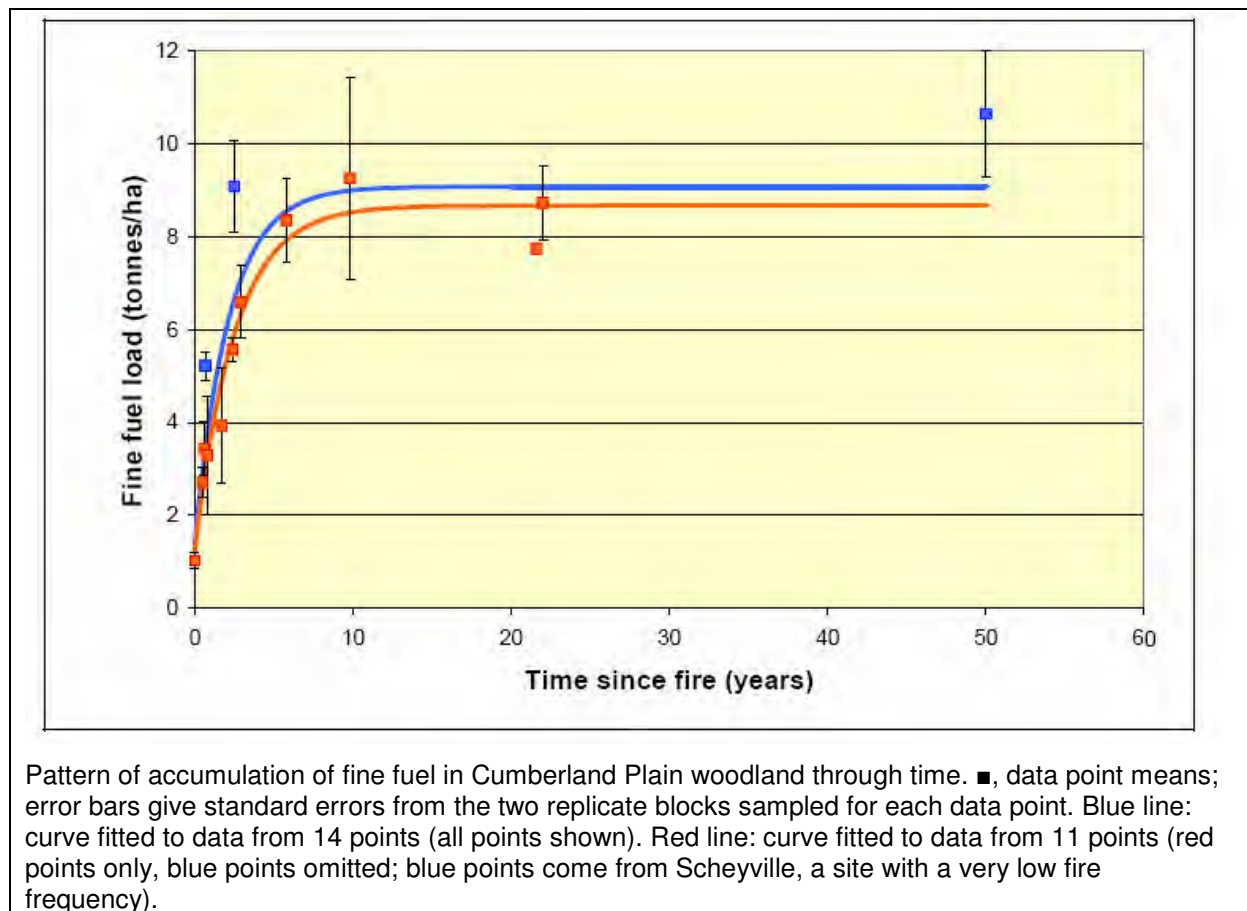


Figure 4 Fuel Accumulation (Watson 2005)

8.2.1 Asset Protection Zone (APZ)

The majority of APZs are located within the development footprint, principally road easements, perimeter trails and front yard setbacks. However, where APZs extend into conservation land, or land management regimes within the conservation area are consistent with APZ objectives (e.g. recreation parks), such areas may be utilised for the purposes of asset protection.

Description

- Area surrounding a development and managed to reduce bush fire hazard
- Only has inner protection area (IPA)
- APZ widths and fuel reduction treatment determined by slope and nature of assets
- APZs generally located within the development boundary, however some parkland areas and areas neighbouring development within the conservation zone are utilised as APZs
- Reduction techniques will include:
 - Mowing, raking and slashing
 - Bush regeneration, involving initial weed removal and long term weed management. This method should be combined with hand removal of ground fuels and manual removal of shrub and middle storey layers

Aims

- To protect human life and property
- To protect assets

Prescriptions

Inner Protection Area (IPA)

IPA's will generally be subject to a management regime of regular mowing and slashing. According to the NSW RFS (2001), the performance of the IPA must be such that:

- There is minimal fine fuel at ground level which could be set alight by a bushfire (grasses must be kept below 10cm in height); and
- Any vegetation in the IPA does not provide a path for the transfer of fire to the development – that is, the fuels are discontinuous, vertically and horizontally.
- The presence of a few shrubs or trees in the IPA is acceptable provided that they:
 - do not touch or overhang the building;
 - are well spread out and do not form a continuous canopy;
 - are not species that retain dead material or deposit excessive quantities of ground fuel in a short period or in a danger period; and
 - are located far enough away from the house so that they will not ignite the house by direct flame contact or radiant heat emission.
- Woodpiles, wooden sheds, combustible material storage areas, large areas/quantities of garden mulch, stacked flammable building materials etc should not be permitted in the IPA.

Figure 5 Typical APZ cross section



TYPICAL 20m APZ LANDSCAPE TREATMENT

Source: Hassell & Associates

8.2.2 Land Management Zone (LMZ)

LMZs are principally managed for biodiversity conservation and comprise the bulk of the conservation lands on the site.

Description

- Broader areas of the landscape, managed for the purpose of biodiversity conservation
- If required reduction techniques will include:
 - burning
 - weed control

Aims

- Protection of natural and cultural heritage values
- Maintenance of ecological processes

Prescription

- Maintenance of ecological processes
- Fire management to meet conservation objectives for species, habitats, populations and cultural heritage values, including:
 - to control breaches in minimum fire thresholds and address maintenance of fire age (vegetation age) mosaic, including maximum fire thresholds
 - to provide a mosaic of interfire periods across the site

8.3 Access Trails

Perimeter roads and trails are a key component of the development and will be located both within the development areas and conservation lands. Perimeter roads will be built according to the specifications contained in *Planning for Bushfire Protection (NSW RFS, 2006)*.

Perimeter/fire/walking trails are proposed throughout Wivenhoe (figure 7). These trails will be integrated walking trails that are suitable for fire truck access i.e. a 4m wide all weather fire trail with a 2m wide concrete path with 1m of gravel along both sides. In addition to access/egress improvement, the perimeter trails will serve as part of the APZ for adjacent lots. The trails must be maintained in a serviceable condition and remain accessible to fire fighters at all times.

8.4 Provision of Water

Development precincts will include fire hydrants meeting the requirements of AS2419.1 – 1994 Fire Hydrant Installations.

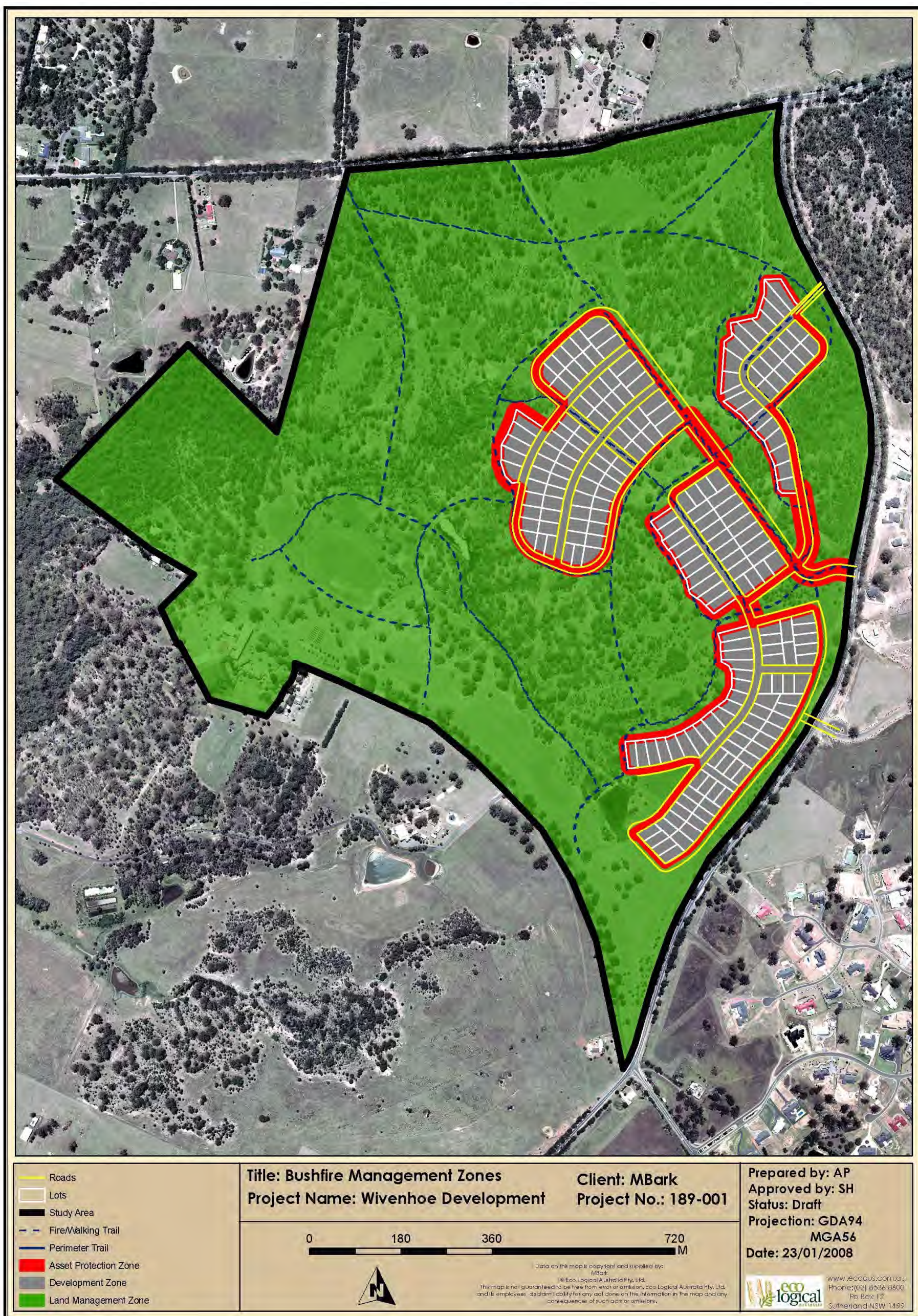


Figure 6 Bushfire management zones

8.5 Bushfire Management Schedules

Consistent with RFS requirements as part of the Bushfire Safety Authority for the site, the following bushfire management schedules are provided.

Administration			
Contact Person	TBA	TBA	Longer-term, the contact person will become the manager of the community scheme

APZ Construction Schedule and Maintenance Schedule						
	Location	Establishment Timing	Establishment Works	Establishment Certification	Maintenance Works	Maintenance Monitoring
Standard APZ	Within road reserve, perimeter tail and front yard setbacks. Some areas extend into conservation lands.	To be established prior to occupation commencing	Construction of roads and trails, landscaping of road verges and front yards, and manual mowing, raking and slashing consistent with IPA specifications	To be certified by an experienced bushfire professional or RFS officer	Regular mowing of grass, annual maintenance of trees	Six – monthly monitoring reports prepared for community scheme by an experienced bushfire professional or RFS officer

Bushland Management Schedule						
	Approach	Establishment Timing	Establishment Works	Establishment Certification	Maintenance Works	Maintenance Monitoring
Remnant Bushland Management	To be implemented according to the ecological management regime	Nil	Nil	Nil	Management of ecological fire regimes, primarily through conducting environmental burns	Annual monitoring and reporting of fuel accumulation, interfire period, potential hazards and management responses to be prepared by a qualified bushfire and ecological professional

Access Schedule			
Road/trail	Description/specification	Management	Monitoring
Perimeter and internal Roads	Sealed roads within the development precinct owned by Council	Council	Council
Perimeter/fire/walking trails	4m wide all weather fire trails with a 2m wide concrete path with 1m of gravel along both sides	TBA	TBA

Review and Update Schedule	
Review Period	The Conservation and Bushfire Management Plan is to be reviewed every 5 years
Changes to Contact Details	Any changes to contact details are to be noted in the quarterly monitoring reports

9. Conservation management task descriptions

Appendix B indicates the tasks required in each area or management unit at Wivenhoe. A timetable for implementation is also provided. Each task listed in Appendix B is described in detail below to assist with implementation of the CMP.

9.1 Fire

9.1.1 *Fire trial*

The response of the vegetation to bushfire and the potential for regeneration from the soil seed bank at the site is unknown at this stage. A series of small bushfire trials, including ecological pile burns will be conducted to measure:

- The rate of vegetative response
- Changes in native plant biodiversity
- Response from the soil seed bank
- Effects on weed populations
- Effects on soil stability and erosion

Initial trials will be conducted in areas of sustainable vegetation in combination with weed control works. If the vegetation responds positively, programmed ecological burns will be implemented on a wider scale to assist with regeneration.

9.1.2 *Pile burns*

In degraded areas, fire will be used on a smaller scale in the form of small burn piles to determine if a native soil seed bank is present and can be encouraged to germinate. Pile burns would make use of debris from woody weed control works piled and burnt on selected sites.

9.1.3 *Programmed ecological burns*

Ecological burns will be implemented across the site to encourage higher biodiversity by varying fire regimes, assist in achieving desirable management characters and to ascertain their effectiveness in stimulating regrowth in degraded areas. Principles for implementation of ecological burns have been provided in Section 5.

9.2 Livestock grazing

9.2.1 *Exclusion of livestock*

The removal of livestock from areas of high resilience vegetation, gullies, ephemeral creek lines and steep slopes is the highest priority task for the site. This can be achieved using existing fence lines and installing additional temporary fencing where required. Highly degraded areas dominated by introduced pasture grasses, primarily couch (*Cynodon dactylon*), can remain stocked in the short term at low stocking rates until they are to be developed or regeneration works are scheduled to begin. The retention of stock in these areas will keep weed biomass down and prevent the spread of weeds into other areas.

9.2.2 Strictly controlled livestock grazing

Intermittent grazing of livestock in selected areas of grassland and grassy open woodland within the conservation zone will be considered in the long term as a management tool. Livestock can be used to maintain grassland ecosystem functions (Whalley 2005). Grazing livestock in these areas can assist in management by reducing biomass of weed grasses to reduce seed set and fire hazard and by reducing the biomass of native dominant species such as *Themeda australis* which declines due to self-shading if the biomass is not removed (p45 DEC 2005). The use of livestock will complement the use of fire and mechanical slashing.

Stock movement will be strictly controlled and off line water points provided away from dams and ephemeral creek lines. Livestock movements will be managed so they do not facilitate the spread of weed seed.

9.3 Fencing

Fencing will be required throughout the site to protect and delineate the conservation zone. Temporary erosion control fencing will be installed along the conservation/development interface prior to construction and removed once construction is complete.

Any temporary fencing installed must:

- be fire resistant
- allow passage of, and not be a risk to, macropods and other fauna
- exclude trail bikes and other vehicles
- be aesthetically appealing
- be regularly maintained

Metal post and thick wire cable fencing is considered a suitable option as it satisfies the above criteria. The use of timber post and rail fences should only be used in areas where the use of fire is not recommended as a management option. Temporary strained 3-wire fences should be installed immediately on the perimeter of areas to be developed to prevent incursions into the conservation zone during development. Existing stock fences throughout the conservation zone will be retained to allow for the management of potential livestock pulse grazing in the future. Temporary electric fencing can also be used to retain stock in future development areas prior to development.

9.4 Log, brush matting and topsoil recovery

This task is limited to areas within the development land that have a high proportion of native species. Existing trees will be retained for inclusion in the urban landscape where possible. Other elements of the native vegetation will be recovered for use in the conservation land.

Features that are suitable for recovery and reuse include logs, seed bearing native vegetation for brush matting and topsoil. These will be used to provide habitat and contribute to regeneration within the conservation lands. Areas within the development land with a high proportion of native species and are suitable for these

works will have to be more closely identifying prior to development works commencing. Areas of groundcover with potential for topsoil recovery will be given time to regenerate from the history of grazing to determine which areas are suitable where possible.

9.4.1 Log recovery

Large trees which will not be retained can be harvested and milled for possible resale as dressed timbers to future residents. Other trees will be felled and other logs and woody debris will be strategically relocated into the conservation land as habitat and to assist in erosion control and regeneration.

9.4.2 Brush matting recovery

Brush matting consists of branches cut from trees and shrubs (particularly *Bursaria spinosa*) that are seed bearing. Spreading these cut branches in selected areas is an efficient method of reintroducing seed of native species into an area and creates rough mulch that reflects the litter layer of intact ecosystems. The harvesting of brush matting will be timed so harvested branches and shrubs contain viable seed.

9.4.3 Topsoil recovery

Topsoil recovery will be undertaken in areas that have a high proportion of native vegetation and few weeds in the ground layer of vegetation. Topsoil is harvested to salvage the native soil seed bank and reintroduce seed bank back into areas of the conservation land where it has been depleted by past land use such as intensive grazing.

The method of topsoil recovery involves removing all plants and leaf litter then stripping the topsoil to a depth of approximately 20 mm using earthmoving machinery. The topsoil is relocated immediately to a site within the conservation zone where the native soil seed bank has been depleted. These areas can be identified by the dominance of weed species. The site receiving the topsoil has its topsoil including the weed growth stripped and disposed of. The relocated topsoil is spread evenly and mulched lightly using the vegetation and leaf litter removed from the source site.

9.5 Weed control

Weed control will be undertaken as a component of overall bush regeneration activities to encourage natural resilience. The objective of weed control works is to replace weed species with native vegetation and address the cause of the initial weed infestation.

The stages of weed control - primary, follow up and maintenance - are outlined below. The time allowed for each stage will depend on the degree of weed infestation and the response of native species once the weeds are removed. The costs and resources required for weed control are expected to decrease over time as native vegetation establishes. Regular, long-term monitoring and maintenance of all weed control works will help prevent re-infestation and ensure long-term success.

Areas of high resilience native vegetation will be given priority in weed control works. Large seed producing weeds will be immediately targeted to prevent their further spread. Following from this, areas with a high density of mature seed producing weeds will be given high priority in order to reduce the production of weed seed over the site and prevent their spread.

Weeds will be treated using standard bush regeneration techniques (Buchanan 1989). These include manual removal (e.g. hand weeding, slashing and chainsaw work) and herbicide spraying. The use of herbicides will be minimised and less toxic chemicals (as determined by their chemical schedule) will be used in preference. Herbicide use in sensitive areas such as riparian zones and adjacent water bodies will be minimised.

Techniques such as mechanical mulching using an excavator will be used in highly degraded areas where woody weeds are dominant. Fire will also be used to control weed growth. The appropriate use of these techniques will reduce overall labour costs while encouraging healthy native vegetation communities.

9.5.1 Primary weed control

The aim of primary weed control is to reduce the weed biomass in highly degraded areas targeting mostly woody weeds such as African olive (*Olea europaea subsp. cuspidata*), African boxthorn (*Lycium ferocissimum*), and large-leafed privet (*Ligustrum lucidum*). Primary weed control works will minimise disturbance to any native species and the soil. Works will be staged to ensure that resources are available for follow up and so that previously treated areas are not neglected. Techniques that minimise secondary weed growth will be used thus reducing time required for follow up treatment.

Woody weed control in higher resilience areas with low densities of woody weeds will consist primarily of the cut and paint (with herbicide) treatment and the drill and inject (with herbicide) technique where felling them will disturb surrounding native vegetation. Where weed trees are felled, the logs and branches, if free of seeds, will be left on site and used as erosion control where possible by placing them across slopes and in areas being eroded such as steep slopes or gullies. Seed bearing branches will be piled where practical with any subsequent seed growth treated.

9.5.2 Mechanical primary weed control

Mechanical primary weed control will be undertaken mostly on large stands of dense Privet and African Olive. Large thickets of African boxthorn will also be mulched to prevent any piles of treated debris becoming habitat for feral hares. The method of mechanical primary weed control for African olive and privet involves:

- Mechanical mulching using an excavator with a mulching head attached, with mulch left in situ
- Remaining stumps will be recut with a chainsaw as low as possible and treated with herbicide using the cut stump method
- Where the mulching machine cannot access due to slope or other obstacles, olives will be felled using chainsaws and treated with herbicide using the cut

and paint method. Large logs will be left in situ and smaller branches trimmed and dragged to a point where they can be mulched

- After treatment of large olives any seedlings remaining will be sprayed with herbicide within two weeks
- Areas will be closely monitored after treatment and any re-shooting stumps or seedlings will be retreated
- Where olives are among *Bursaria* thickets or if *Bursaria* is limiting access, both species will be mulched but only the olive will be treated with herbicide (the *Bursaria* will readily re-shoot)
- Follow up treatment will control regrowth of olive and any subsequent weed regrowth

Note: the choice of herbicide will have to be considered carefully. 600g/L Triclopyr (eg Garlon™) is registered for use on olive with a diesel solvent; however this is a soil active herbicide and will not be used in the vicinity of native vegetation including trees. This is particularly relevant if the basal bark treatment is being used. 360g/L Glyphosate (eg Roundup™) will be used to treat olives when they are actively growing/flowering in autumn.

9.5.3 Follow up weed control

Follow up weed control follows primary measures and controls weeds that grow from the increase in available resources (e.g. light, moisture and nutrients) following the removal of large woody weeds. Follow up control involves treatment of weeds whilst ensuring the regeneration of native species is not inhibited or negatively effected. Techniques include:

- Selective hand removal
- Selective herbicide spraying
- Cutting and painting with herbicide woody weeds and other persistent weeds with hand tools and chainsaws
- Slashing herbaceous weeds using brush cutters or lawn mowers to prevent seed set
- Collection of all weed material which has set seed or is able to propagate vegetatively and removal to central areas where it is contained and composted on site

9.5.4 Maintenance weed control

Weed control has been included as a task in the areas of vegetation mapped as sustainable condition type. The time required within these areas will be minimal, but regular monitoring and follow up will be necessary to control new weed incursions and prevent their spread. This will be particularly important after any disturbances including programmed ecological burns.

Maintenance weeding will be required on an on-going basis to prevent reinfestation of previously treated areas. It is expected that the amount of maintenance weeding required will decrease once the native plants become established.

The most cost effective method of minimising the amount of maintenance weed control required is by maintaining healthy native vegetation communities and preventing the introduction of new weed sources. This is achieved by avoiding:

- Unplanned soil disturbance
- Importing contaminated soil to the site
- Sudden physical changes to native vegetation (e.g. clearing)
- Growing plants with weed potential in neighbourhood gardens that can be dispersed by garden refuse dumping, animals (especially birds), wind and water
- Stormwater impacts (stormwater can change soil moisture and nutrients, and can carry weed propagules and seeds).

9.5.5 Fire as weed control

Appropriate fire regimes will help maintain a healthy native vegetation community and has been shown to control certain weed species. It is anticipated that in the large areas of sustainable woodland, the programmed ecological burns will assist in the control of African olive with a stem diameter less than 20 mm (von Richter et al. 2005). Large olives will be treated manually (cut and paint method). The control of African olive will be a long-term maintenance requirement, as recruitment of young olives will continue as seed is brought onto the site from surrounding infestations by birds and other animals. Using fire will reduce the amount of labour required to maintain these areas.

Careful follow up of burnt areas will be required to ensure that the growth of any opportunistic weeds is controlled. It is vital that all forms of disturbance to burnt areas is avoided and access is strictly controlled following all programmed ecological burns to avoid unnecessary soil disturbance which will encourage weed growth.

Fire will be avoided on steep slopes due to the potential to increase erosion hazards.

9.5.6 Weed control on site boundaries

Allowance has to be made for weed control in the adjacent road corridors surrounding the site. Neglecting to control these weeds will result in reinfestation of treated areas within the site. Control in these areas will be coordinated with the appropriate authorities.

9.5.7 Grassland weed control

Areas of degraded grassland have considerable potential for regeneration once grazing pressure from livestock is removed. Currently these areas are grazed to stubble and identification of the grass species present is difficult. These areas will be allowed time for the ground layer to grow once grazing is removed before final decisions are made regarding management. Sufficient time will allow more accurate identification of the proportion of native species already present within the ground layer. This will influence the management techniques adopted and the extent of works required.

Slashing, burning or grazing to prevent seed set will control weedy annual grasses. This will be undertaken in early spring to allow the growth and seed set of summer dominant perennial native grasses. Trials with the addition of carbon in the form of sugar or sawdust to reduce available nitrates will also suppress weedy annual grasses and reduce competition on native perennial grass species which are tolerant of lower nitrate levels (Prober and Thiele 2005).

Perennial weed grasses particularly couch (*Cynodon dactylon*) are more persistent. Control of couch will focus on over planting with vigorous native tussock grasses such as *Themeda australis* and *Poa labillardieri* to out compete and replace it. Slashing, burning or grazing to prevent seed set and herbicide spraying to kill large tussocks will also be used to control perennial weed grasses.

9.6 Seed collection

Seed collection will be undertaken in accordance with the Australian Florabank Guidelines (2000). Collected seed will be dried, sorted, packaged, labelled and stored in a controlled environment. Records of the original seed provenance, collection habitat, date collected, storage conditions and history will be kept in a database for all collected and purchased seeds. Germination testing will be conducted records kept.

The use of seed of local provenance will be strictly adhered to. Species that occur commonly on the site will be collected primarily from within the site. Species that are infrequent or not present on the site but may have originally occurred on site will be collected from nearby areas with ranges to be determined according to the Florabank guidelines. When collecting seed off site the habitat of the area to be planted will be matched as closely as possible by the collection habitat.

Collection of seed from existing native grasslands both on and off site will be minimised to prevent any negative impacts from over harvesting on these areas. Seed orchards will be established to provide seed required for direct seeding and revegetation.

Seed will not be collected in any area burnt within the past two years.

9.6.1 Seed orchards

Seed orchards will be established as a high priority task in order to provide seed required for direct seeding and revegetation works on the site. Seed orchards will primarily focus on the production of the dominant, quick growing grass species *Themeda australis*. Other grass species will be used to a lesser extent; these include *Microlaena stipoides*, *Chloris* sp., *Danthonia* sp. and *Poa labillardieri*. Small shrub orchards will also be established forming small thickets of shrubbery within the grassland areas. These will include *Acacia* sp., Fabaceae species and *Lomandra longifolia*. Once the seed requirements of the site are met the seed produced in these areas can be sold off site.

Seed orchards will be located in areas with a low proportion of native species (<10% cover). Orchards will be situated and planned so the natural growth habit and

habitat of the species being grown is reflected in the orchards design. For example *Lomandra longifolia* orchards will be grown in low lying, moist areas near creek lines. Larger orchards will be restricted to species that naturally grow in dense large clumps or near monocultures, for example *Themeda australis*. Shrub orchards will be small thickets of the one species distributed through grassland areas. The orchards will be designed to fit into the natural landscape with straight, square perimeter boundaries and straight rows avoided.

Grass orchards will be intensively planted and drip irrigated to maximise seed production. Irrigation will use existing site dams or constructed stormwater wetlands. Orchards will be planted mechanically where possible or established by direct seeding, various direct seeding trials will be undertaken as part of these establishment of the orchards. Grass orchards will be harvested mechanically where possible.

Existing areas of good native grass cover, particularly within the development land will be managed like the seed orchards and irrigated to maximise seed production before the areas are cleared.

Strict records will be kept of the provenance of the plants grown in the orchards, with plants of different provenance kept in distinct areas.

Seed of less common grassland herbs which are less suited to mass cultivation in the field will be grown for seed production. Techniques will follow those being developed by The Grassy Groundcover Research Project (The Grassy Groundcover Research Project 2006). Seed harvested from these will be used in direct seeding trials or grown on to reintroduce these species into areas of degraded grassland and grassy open woodland. Plants which will form the parent stock will be grown from seed collected on site or plants recovered from within the development footprint and transferred to the nursery for seed production.

9.7 Soil remediation

Highly degraded areas with a history of intense grazing may require some soil remediation works to improve soil structure to facilitate regeneration. Soil remediation may include deep ripping to alleviate soil compaction and to increase water infiltration and reduce surface run off. Before any remediation works that will further disturb the soil, grazing will be removed and the grass sward allowed time to recover and minimise any areas of bare soil.

In areas of low resilience, particularly those on slopes, minor earthworks may also be used to create shallow swales to divert or retain surface run off and allow it to infiltrate. This task will be undertaken in association with revegetation or direct seeding works.

9.8 Direct seeding

Direct seeding is a technique of re-establishing native vegetation by sowing seed directly into the field without the need to plant tube stock. Mechanical direct seeding will be undertaken over large areas using equipment such as the Rodden tree and shrub seeder while direct seeding by hand will be used for smaller areas.

Direct seeding will be undertaken in moderately disturbed areas that already contain components of the native vegetation particularly in areas adjacent high quality remnant vegetation.

9.8.1 Site preparation

Site preparation is required to improve the success of direct seeding works. Site preparation will be dependent on the species and the site conditions. Preparation may include slashing and spraying of the ground layer vegetation to remove biomass and reduce initial competition with germinating seeds. Minor soil disturbance may also be beneficial to create a suitable seedbed for germination. Site preparation may also include the retention of ground layer vegetation as this may provide protection to young seedlings.

In areas where native groundcover species are prevalent, site preparation will be limited to slashing. Areas dominated by groundcover weeds may be sprayed with herbicide prior to direct seeding. Minor soil disturbance to the topsoil through raking will create more favourable conditions for seed germination but will be restricted to smaller areas where follow up weed control of these disturbed areas will be undertaken.

The techniques of site preparation described above including removal of biomass and soil disturbance will also be used to create conditions to allow naturally dispersed seed to establish and to encourage germination from the soil seed bank. These works will be undertaken on a smaller scale in areas such as below remnant canopy trees where ground layer vegetation is dominated by weeds. These techniques will be used along with pile burns to attempt to encourage regeneration from the soil seed bank.

9.8.2 Timing and irrigation

Direct seeding works will be timed to mimic natural seed fall patterns and to take advantage of seasonal rain to increase the chances of survival of sown seed. Where a water source such as an existing dam or stormwater detention wetland is readily available, irrigation of direct seeded areas will improve the chances of germination and survival of seedlings.

9.8.3 Maintenance

Maintenance of direct seeded areas is vital to ensure success and will include weed control, irrigation and pest and feral animal control.

9.8.4 Mechanical direct seeding

Mechanical direct seeding will be undertaken with the Rodden tree and shrub seeder. Mechanical direct seeding is more cost effective than planting however the results are less certain. Mechanical direct seeding is suited to a limited range of commonly occurring species as it requires a large quantity of seed. Mechanical direct seeding will be coordinated with large-scale revegetation to achieve desired species diversity.

Mechanical direct seeding will also be used in areas where there is potential for natural regeneration but the quick establishment of perennial native species such as *Acacia* sp. is beneficial. This includes erosion prone areas with a high proportion of existing native groundcovers.

Pre-treatment of seed prior to sowing will increase chances of success. Pre-treatment will include heat treatment for species with hard seed coats such as *Acacia*, Fabaceae species and *Dodonaea* sp. and cold stratification for *Bursaria*. Site preparation is usually limited to slashing of groundcover vegetation when using mechanical direct seeders.

9.8.5 Hand direct seeding

Hand direct seeding will be undertaken on a smaller scale with smaller quantities of seed than mechanical direct seeding. This technique will be used in small disturbed areas surrounded by higher quality vegetation. It will facilitate the natural spread of seed and increase the rate of colonisation of native plants into these disturbed areas. Hand direct seeding will utilise seed collected from the immediate vicinity of the site to be seeded and spread soon after collection. Site preparation will include slashing of weedy vegetation and raking of the soil surface to create conditions suitable for germination. In exposed areas seed will be sown within plant protectors (otherwise known as grow bags which consist of a small plastic sleeve held in place with 3 stakes). These will provide a suitable microclimate and protect germinating seeds.

The seed of less common grassland herbs which are to be grown intensively and will be used in hand direct seeding works.

As with all other works, records will be kept to monitor the success of all hand direct seeding works.

9.8.6 Native grass direct seeding

During the establishment of the grass seed orchards, direct seeding techniques will be used to establish the *Themeda australis* orchards. These techniques include the use of seed bearing hay and direct seeding using unprocessed seed heads (Cole and Lunt, 2005). The seed produced in the seed orchards will be used to direct seed existing areas of degraded grassy open woodland. *Themeda* will be the dominant species and other grass species will be used as well as the less common grassland herbs as described above.

9.9 Brush matting

Brush matting will be used to introduce seed of woody vegetation to areas of degraded woodland and grassy open woodland. Site preparation required is similar to that described for direct seeding. Brush matting is particularly useful in areas subject to erosion, as the added rough mulch will help protect the soil and provide protection to any seeds that germinate. Areas prone to erosion include slopes and ephemeral creek lines. As described in section 9.4, brush matting will be collected from areas within the development land which are to be cleared and will consist of seed bearing tree braches and the tops of shrubs with ripe fruit. This material will be spread on the prepared site on the same day as it is harvested and not stockpiled.

9.10 Spreading recovered topsoil

The techniques involved in topsoil recovery are described in section 9.4.3. Sites suitable to receive salvaged topsoil will be open degraded areas with a low proportion (<10%) of native species. The sites will be flat and preferably adjacent to an existing water source such as a dam or stormwater wetland to allow the site to be irrigated.

9.11 Planting

Encouraging the site's natural resilience through bush regeneration techniques and direct seeding will be used in preference to planting. Planting will be restricted to areas where natural regeneration is unlikely or will be slow due to past disturbances. These areas include areas currently dominated by introduced pasture grasses, areas that are too far removed from remnant vegetation to receive input of propagules or areas that have been heavily degraded by past land use and will immediately benefit from increased vegetation cover. This includes riparian zones and headwater catchments.

9.11.1 Species selection and densities

Species that are suitable for planting are listed in Appendix A according to the type of management region (e.g. grassland). In deciding what species will be planted, consideration will also be given to the adjacent vegetation community, species present on site in the same mapped vegetation community and species known to occur in that community as described by NSW NPWS (2002).

Some areas will be planted as thickets to mimic the natural distribution of certain species. These thickets will act as seed sources for future revegetation on site as described in section 9.6.1 and may be used as a seed source for upcoming regional revegetation projects.

9.11.2 Landscape planting

Some landscape plantings are proposed within the conservation zone. Provenance local indigenous species are to be used where possible. Where other native species are used, their effect on the ecology of the surrounding conservation zone must be considered. For example, large flowering hybrid Grevilleas provide an abundant food source for common and native miner birds and large native wattlebirds which are aggressive and drive away small native birds.

9.11.3 Plant propagation

It is recommended that an on-site nursery be established to propagate any plants required for revegetation works. The nursery will include areas for all weather propagation and hardening off.

9.11.4 Irrigation

Newly planted stock will be irrigated where possible depending on rainfall. Additional irrigation will be required for replacement tube stock. Existing dams will be retained as a source for irrigation until no longer required. Alternatively, tanks or tanker trucks will be used for irrigation.

Irrigation can also be used as a trigger technique in areas of regeneration. Note that revegetation and direct seeding will be deferred until rain where irrigation is not possible.

9.11.5 Maintenance

Irrigation, weeding, rubbish removal, pest and disease control and replanting will be undertaken until the plants are established and weed growth is minimal.

9.11.6 Mechanical planting

For large areas of highly degraded low resilience land, mechanical planting is an efficient way to increase the ecological value of the area. The Treeliner mechanical planter will be used. Planting rows will be made as sinuous as possible to disguise the appearance of the rows as much as possible. On steeper slopes rows will be on contour. The rows will be located as close to each other as the machine will allow, leaving enough space for a slasher. The area between rows will be mechanically slashed on a regular basis to reduce competition from groundcover weeds. Grow-bags may be used to protect seedlings if deemed to be necessary.

9.11.7 Hand planting

Hand planting will be used in smaller areas with fewer plants. Hand planting may also be required on slopes too steep for mechanical planting. During hand planting all holes will be dug with an auger to increase efficiency.

9.12 Thinning of Eucalypt regrowth

To achieve a vegetation structure consistent with grassy open woodland, areas of dense *Eucalyptus* regrowth will be thinned so that the plant density does not restrict the growth rate and limit the size of mature trees. Thinning will involve removal of selected trees that have a diameter at breast height (dbh) of less than 20 cm, the weakest tree with the lowest dbh will be removed preferentially. Trees will be cut with a chainsaw as close to the ground as practical. The objective is to space trees so that their centres are approximately 5 to 10 m apart for sustainable woodland.

Logs and branches will be left in situ within the area they are felled to provide habitat and return woody debris to the woodland ecosystem which has historically been cleared as a part of the sites management for grazing. The resulting coverage by

woody debris following thinning operations will be less than 30%. Excess logs and branches will be relocated into adjacent open areas as brush matting.

Programmed ecological burns are likely to kill some of the younger eucalypt saplings. Where an area is proposed to be burnt, thinning will be deferred till 2-3 years after the burn. Thinning will be undertaken out of the breeding season of native fauna. Each plant will be checked for nests prior to removal.

9.13 Erosion and sediment control

Gully erosion is advanced in some ephemeral creek lines. Some minor earthworks and stabilisation are required in these degraded gullies. These earthworks will aim to recreate the original natural geomorphology of the gullies. This geomorphology includes shallow depressions containing *Juncus usitatus* and is still present in the headwaters of gullies on site.

Head wall erosion will be addressed by revegetating cleared riparian areas in the headwaters of these creek lines. Some of the creek lines within the woodland areas have good canopy cover yet the gully sidewalls are still denuded. These gullies will be resnagged with woody debris from thinning of regrowth works. Resnagging will involve placing logs and smaller branches along the length of the gully across the flow path, to capture sediment and help create niches for plant establishment within the creek base on gully sidewalls.

Areas of earthworks in gullies will be immediately revegetated. Where native vegetation has re-established in these gullies no earthworks will be undertaken which will disturb this vegetation.

9.14 Feral animal control

Feral cats and foxes predate native fauna, and rabbits cause erosion by their burrows and by consuming ground cover vegetation. These species will be targeted for eradication from the site in consultation with the Rural Lands Protection Board.

Options to control the plague mosquito-fish (*Gambusia holbrooki*) will be explored if they persist in any remaining water bodies.

9.15 Litter

Litter includes paper and plastic rubbish, and dumped garden waste and soil. It is aesthetically unpleasing and can negatively impact the ecosystems by:

- Smothering vegetation
- Increasing nutrient levels in bushland and waterways
- Spreading weed propagules
- Killing fauna

Litter will be managed by regular inspections, especially after storms, and regular cleaning of litter traps.

Future littering and dumping will be reduced through the provision of adequate fencing and supply of bins in passive recreation areas.

9.16 Community involvement

The Landscape Master Plan describes the types and locations of interpretive signs and walking trails. These aim to encourage community interaction with the natural and cultural environment.

Bushcare groups will provide a forum for the community to actively participate in caring for their local bushland. Opportunities will be provided for the involvement of community members in activities such as planting and seed collection.

Landowners will be advised on species appropriate for their private gardens. This will contribute to the ecological value of the site and minimise risk of undesirable species, including weeds.

9.17 Research

The University of Western Sydney and University of Wollongong will be invited to conduct scientific studies of ecological processes within Wivenhoe. Information resulting from these studies may be incorporated in performance reports.

9.18 Approvals

According to the *Camden Local Environmental Plan No.139 –Mater Dei*, no development approvals are required for tasks identified in this CMP.

Approvals for ecological burns are not required from the RFS, however approvals for hazard reduction works require assessment under the *Bushfire Environmental Assessment Code (NSW RFS 2006)*.

Approvals associated with infrastructure development are mainly dealt with under the *NSW Environmental Planning and Assessment Act 1979* and are not discussed here.

9.19 Environmental management in development land

Environmental management in development land includes:

- Opportunities to take natural resources from the development land during construction and use them in the conservation land (e.g. brush matting, seed collection, topsoil reuse) (discussed previously in Section 8)
- Managing conditions in the development land prior to construction so that adverse impacts to the conservation land are avoided
- Managing environmental conditions in the development land in the short and long term

Statements of Environmental Effects for Wivenhoe (APP 2008 – to be completed) describe how the environmental qualities of development land will be managed during construction and in the long term as urban land use. These cover issues such

as site preparation (e.g. broad area weed removal and erosion control along drainage lines), soil and erosion control during construction, and post construction environmental management and monitoring.

Economies of scale and environmental benefits can be gained by integrating environmental management of the development land with CMP tasks. Prior to construction commencing at each precinct, the CMP schedule will be reviewed so that environmental management of the conservation and development regions can be integrated, where possible.

The community will be responsible for environmental conditions of their neighbourhood in the long term, including impacts from urban land use on the conservation land. This will be managed by community education, involvement in environmental management and regulation. Mechanisms for achieving this will be included in the Trust Scheme.

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Appendix A. Flora species list

Family Name	Species Name	Type
Acanthaceae	<i>Brunoniella australis</i>	Herb
Acanthaceae	<i>Brunoniella pumilio</i>	Herb
Adiantaceae	<i>Cheilanthes sieberi</i>	Herb
Adiantaceae	<i>Pellaea falcata</i>	Herb
Amaranthaceae	<i>Alternanthera denticulata</i>	Herb
Amaranthaceae	<i>Alternanthera nana</i>	Herb
Amaranthaceae	<i>Alternanthera</i> spp.	Herb
Anthericaceae	<i>Arthropodium minus</i>	Herb
Anthericaceae	<i>Caesia vittata</i>	Herb
Anthericaceae	<i>Dichopogon fimbriatus</i>	Herb
Anthericaceae	<i>Tricoryne elatior</i>	Herb
Apocynaceae	<i>Parsonia straminea</i>	vine
Asphodelaceae	<i>Bulbine bulbosa</i>	Herb
Asteraceae	<i>Calotis cuneifolia</i>	Herb
Asteraceae	<i>Calotis dentex</i>	Herb
Asteraceae	<i>Calotis lappulacea</i>	Herb
Asteraceae	<i>Cotula coronopifolia</i>	Herb
Asteraceae	<i>Cymbonotus lawsonianus</i>	Herb
Asteraceae	<i>Olearia viscidula</i>	Shrub
Asteraceae	<i>Senecio hispidulus</i>	Herb
Asteraceae	<i>Senecio quadridentatus</i>	Herb
Asteraceae	<i>Vernonia cinerea</i>	Herb
Asteraceae	<i>Solenogyne dominii</i>	Herb
Asteraceae	<i>Solenogyne bellioides</i>	Herb
Asteraceae	<i>Ozothamnus diosmifolius</i>	Shrub
Asteraceae	<i>Chrysocephalum apiculatum</i>	Herb
Asteraceae	<i>Chrysocephalum semipapposum</i>	Herb
Asteraceae	<i>Glossogyne tannensis</i>	Herb
Asteraceae	<i>Brachycome angustifolia</i> var <i>angustifolia</i>	Herb
Asteraceae	<i>Cassinia</i> spp.	Herb
Azollaceae	<i>Azolla pinnata</i>	Aquatic
Campanulaceae	<i>Wahlenbergia communis</i>	Herb
Campanulaceae	<i>Wahlenbergia gracilentia</i>	Herb
Campanulaceae	<i>Wahlenbergia gracilis</i>	Herb
Campanulaceae	<i>Wahlenbergia</i> spp.	Herb
Casuarinaceae	<i>Casuarina cunninghamiana</i>	Tree
Casuarinaceae	<i>Casuarina glauca</i>	Tree
Casuarinaceae	<i>Allocasuarina</i> spp.	Tree
Chenopodiaceae	<i>Atriplex semibaccata</i>	Herb
Chenopodiaceae	<i>Chenopodium pumilio</i>	Herb
Chenopodiaceae	<i>Einadia hastata</i>	Herb
Chenopodiaceae	<i>Einadia nutans</i>	Herb
Clusiaceae	<i>Hypericum gramineum</i>	Herb
Colchicaceae	<i>Wurmbea biglandulosa</i>	Herb

Family Name	Species Name	Type
Commelinaceae	<i>Commelina cyanea</i>	Herb
Convolvulaceae	<i>Dichondra micrantha</i>	Herb
Convolvulaceae	<i>Dichondra repens</i>	Herb
Crassulaceae	<i>Crassula sieberiana</i>	Herb
Cyperaceae	<i>Carex appressa</i>	Sedge
Cyperaceae	<i>Carex inversa</i>	Sedge
Cyperaceae	<i>Eleocharis acuta</i>	Sedge
Cyperaceae	<i>Lepidosperma laterale</i>	Sedge
Cyperaceae	<i>Eleocharis sphacelata</i>	Sedge
Cyperaceae	<i>Fimbristylis dichotoma</i>	Sedge
Cyperaceae	<i>Eleocharis spp.</i>	Sedge
Dilleniaceae	<i>Hibbertia diffusa</i>	Shrub
Epacridaceae	<i>Lissanthe strigosa</i>	Shrub
Euphorbiaceae	<i>Poranthera corymbosa</i>	Herb
Euphorbiaceae	<i>Phyllanthus virgatus</i>	Herb
Euphorbiaceae	<i>Poranthera microphylla</i>	Herb
Euphorbiaceae	<i>Chamaesyce drummondii</i>	Herb
Fabaceae (Faboideae)	<i>Daviesia ulicifolia</i>	Shrub
Fabaceae (Faboideae)	<i>Desmodium rhytidophyllum</i>	Herb
Fabaceae (Faboideae)	<i>Desmodium varians</i>	Herb
Fabaceae (Faboideae)	<i>Glycine clandestina</i>	Herb
Fabaceae (Faboideae)	<i>Glycine tabacina</i>	Herb
Fabaceae (Faboideae)	<i>Hardenbergia violacea</i>	vine
Fabaceae (Faboideae)	<i>Glycine microphylla</i>	Herb
Fabaceae (Faboideae)	<i>Dillwynia juniperina</i>	Shrub
Fabaceae (Faboideae)	<i>Desmodium spp.</i>	Herb
Fabaceae (Mimosoideae)	<i>Acacia binervia</i>	Small Tree
Fabaceae (Mimosoideae)	<i>Acacia decurrens</i>	Small Tree
Fabaceae (Mimosoideae)	<i>Acacia floribunda</i>	Small Tree
Fabaceae (Mimosoideae)	<i>Acacia longifolia</i>	Shrub
Fabaceae (Mimosoideae)	<i>Acacia parramattensis</i>	Small Tree
Fabaceae (Mimosoideae)	<i>Acacia spp.</i>	Shrub
Geraniaceae	<i>Geranium solanderi</i>	Herb
Goodeniaceae	<i>Brunonia australis</i>	Herb
Goodeniaceae	<i>Goodenia hederacea</i>	Herb
Goodeniaceae	<i>Goodenia heteromera</i>	Herb
Haloragaceae	<i>Myriophyllum spp.</i>	Herb
Hypoxidaceae	<i>Hypoxis hygrometrica</i>	Herb
Juncaceae	<i>Juncus usitatus</i>	Sedge
Juncaginaceae	<i>Triglochin procera</i>	Aquatic
Juncaginaceae	<i>Triglochin procerum</i>	Aquatic
Lamiaceae	<i>Ajuga australis</i>	Herb
Linaceae	<i>Linum marginale</i>	Herb
Lobeliaceae	<i>Pratia purpurascens</i>	Herb
Lomandraceae	<i>Lomandra filiformis</i>	Herb
Lomandraceae	<i>Lomandra longifolia</i>	Herb

Family Name	Species Name	Type
Lomandraceae	<i>Lomandra multiflora</i>	Herb
Lomandraceae	<i>Lomandra spp.</i>	Herb
Loranthaceae	<i>Amyema cambagei</i>	Mistletoe
Loranthaceae	<i>Amyema miquelii</i>	Mistletoe
Loranthaceae	<i>Amyema pendulum ssp pendulum</i>	Mistletoe
Malvaceae	<i>Sida corrugata</i>	Herb
Marsileaceae	<i>Marsilea mutica</i>	Fern
Myoporaceae	<i>Myoporum debile</i>	Herb
Myoporaceae	<i>Eremophila debilis</i>	Herb
Myrtaceae	<i>Angophora floribunda</i>	Tree
Myrtaceae	<i>Angophora subvelutina</i>	Tree
Myrtaceae	<i>Eucalyptus amplifolia</i>	Tree
Myrtaceae	<i>Eucalyptus eugenioides</i>	Tree
Myrtaceae	<i>Eucalyptus moluccana</i>	Tree
Myrtaceae	<i>Eucalyptus tereticornis</i>	Tree
Myrtaceae	<i>Kunzea ambigua</i>	Shrub
Myrtaceae	<i>Melaleuca linariifolia</i>	Tree
Myrtaceae	<i>Eucalyptus baueriana</i>	Tree
Myrtaceae	<i>Angophora floribunda subvelutina intergrades</i>	Tree
Onagraceae	<i>Ludwigia peploides</i>	Aquatic
Orchidaceae	<i>Eriochilus autumnalis</i>	Orchid
Oxalidaceae	<i>Oxalis perennans</i>	Herb
Phormiaceae	<i>Dianella longifolia</i>	Herb
Phormiaceae	<i>Dianella spp.</i>	Herb
Pittosporaceae	<i>Bursaria spinosa var spinosa</i>	Shrub
Pittosporaceae	<i>Bursaria spinosa</i>	Shrub
Poaceae	<i>Austrostipa scabra</i>	Tussock Grass
Poaceae	<i>Austrodanthonia racemosa</i>	Tussock Grass
Poaceae	<i>Austrodanthonia bipartita</i>	Tussock Grass
Poaceae	<i>Agrostis avenacea</i>	Tussock Grass
Poaceae	<i>Aristida ramosa</i>	Tussock Grass
Poaceae	<i>Aristida vagans</i>	Tussock Grass
Poaceae	<i>Bothriochloa macra</i>	Tussock Grass
Poaceae	<i>Chloris truncata</i>	Tussock Grass
Poaceae	<i>Chloris ventricosa</i>	Tussock Grass
Poaceae	<i>Cymbopogon refractus</i>	Tussock Grass
Poaceae	<i>Danthonia caespitosa</i>	Tussock Grass
Poaceae	<i>Danthonia linkii</i>	Tussock Grass
Poaceae	<i>Danthonia pilosa</i>	Tussock Grass
Poaceae	<i>Danthonia racemosa</i>	Tussock Grass
Poaceae	<i>Danthonia tenuior</i>	Tussock Grass
Poaceae	<i>Dichelachne micrantha</i>	Tussock Grass
Poaceae	<i>Echinopogon caespitosus</i>	Tussock Grass
Poaceae	<i>Echinopogon ovatus</i>	Tussock Grass
Poaceae	<i>Entolasia marginata</i>	Tussock Grass
Poaceae	<i>Microlaena stipoides</i>	Tussock Grass

Family Name	Species Name	Type
Poaceae	<i>Oplismenus aemulus</i>	Tussock Grass
Poaceae	<i>Panicum simile</i>	Tussock Grass
Poaceae	<i>Phragmites australis</i>	Tussock Grass
Poaceae	<i>Themeda australis</i>	Tussock Grass
Poaceae	<i>Cynodon dactylon</i>	Grass
Poaceae	<i>Danthonia linkii</i> var <i>linkii</i>	Tussock Grass
Poaceae	<i>Chloris virgata</i>	Tussock Grass
Poaceae	<i>Danthonia racemosa</i> var <i>racemosa</i>	Tussock Grass
Poaceae	<i>Echinopogon caespitosus</i> var <i>caespitosus</i>	Tussock Grass
Poaceae	<i>Microlaena stipoides</i> var <i>stipoides</i>	
Poaceae	<i>Imperata cylindrica</i> var <i>major</i>	Tussock Grass
Poaceae	<i>Elymus scaber</i>	Tussock Grass
Poaceae	<i>Aristida</i> spp.	Tussock Grass
Poaceae	<i>Austrodanthonia</i> spp.	Tussock Grass
Poaceae	<i>Danthonia</i> spp.	Tussock Grass
Poaceae	<i>Echinochloa</i> spp.	Tussock Grass
Polygonaceae	<i>Rumex brownii</i>	Herb
Polygonaceae	<i>Persicaria decipiens</i>	Herb
Portulacaceae	<i>Portulaca oleracea</i>	Herb
Potamogetonaceae	<i>Potamogeton tricarlinatus</i>	Aquatic
Ranunculaceae	<i>Clematis aristata</i>	Vine
Ranunculaceae	<i>Clematis glycinoides</i>	Vine
Ranunculaceae	<i>Ranunculus lappaceus</i>	Herb
Rosaceae	<i>Rubus parvifolius</i>	Herb
Rubiaceae	<i>Asperula conferta</i>	Herb
Rubiaceae	<i>Opercularia aspera</i>	Herb
Rubiaceae	<i>Opercularia diphylla</i>	Herb
Rubiaceae	<i>Richardia stellaris</i>	Herb
Rubiaceae	<i>Opercularia</i> spp.	Herb
Santalaceae	<i>Exocarpos cupressiformis</i>	Small Tree
Sapindaceae	<i>Dodonaea viscosa</i> ssp <i>cuneata</i>	Shrub
Sapindaceae	<i>Dodonaea viscosa</i> ssp <i>spatulata</i>	Shrub
Scrophulariaceae	<i>Veronica</i> spp.	Herb
Solanaceae	<i>Solanum prinophyllum</i>	Herb
Solanaceae	<i>Solanum pseudocapsicum</i>	Herb
Stackhousiaceae	<i>Stackhousia viminea</i>	Herb
Sterculiaceae	<i>Brachychiton populneus</i>	Tree
Typhaceae	<i>Typha orientalis</i>	Semi-Aquatic
Typhaceae	<i>Typha</i> spp.	Aquatic
Violaceae	<i>Viola hederacea</i>	Herb

Appendix B. Wivenhoe Conservation Area site tasks and timetable

Location	Area (ha)	Tasks (refer to Section 9 of CMP)	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
TOTAL	111.81						
Sustainable Woodland	75.15						
Sw1		Exclusion of livestock	x				
		Primary weed control	x				
		Fire to be excluded	x	x		x	x
		Reintroduction of woody debris in eroded gullies	x				
		Seed collection	x	x	x	x	x
		Maintenance weed control	x	x	x	x	x
Sw2		Exclusion of livestock	x				
		Seed collection	x	x	x	x	x
		Primary weed control	x				
		Follow up weed control		x			
		Reintroduction of woody debris in eroded gullies	x				
		Programmed ecological burns			x		
		Maintenance weed control	x	x	x	x	x
Degraded woodland	21.52						
Dw1		Fencing to protect from exotic garden sp.	x				
		Primary weed control	x				
		Follow up weed control		x			
		Spreading recovered topsoil	x				
		Brush matting	x				

		Erosion and sediment control - Minor earthworks in open degraded gullies to restore geomorphology	x					
		Hand planting (only after monitoring period)				x		
		Maintenance weed control					x	x
Dw2		Exclusion of livestock	x					
		Primary weed control	x					
		Follow up weed control			x			
		Brush matting	x					
		Hand direct seeding			x			
		Maintenance weed control				x	x	x
		Erosion and sediment control - Minor earthworks in open degraded gullies to restore geomorphology	x					
Degraded grasslands	15.14							
G1		Strictly controlled livestock grazing	x					
		Grassland weed control			x		x	x
		Soil remediation				x		
		Hand planting to supplement natural regeneration of native grasses			x			
		Seed orchards	x					
		Retain dam for irrigation						
		Maintenance weed control				x	x	x