Under Separate Cover – Council Report Attachments - 8 November 2022

Technical Studies and Supporting Documentation
Mater Dei/Wivenhoe Planning Proposal

1. Letter from Aspect Cobbitty
2. Annexure A Subject Land Holding
3. Annexure B Context Map
4. Annexure C Prevailing Landuse Planning Provisions
5. Annexure D Biodiversity Overview & Management Principles including Appendices 1 -6
6. Annexure E - European Heritage Assessment
7. Annexure F Aboriginal Heritage Report
8. Annexure G Bushfire Assessment
9. Annexure H Camden Airport Operational Risk Assessment
10. Annexure I - Wivenhoe PP Transport Assessment
11 Transport Assessment Addendum
12. Annexure J Camden Council Pre-Lodgement Advice
13. Annexure K Kirkham Rise & Wivenhoe Residential Precinct VPA (1)
14. Annexure L Camden Rural Lands Strategy
15. Annexure M Land Use Compatibility Overview

Aspect

Building 1, Level 2, 14 Aquatic Drive
Frenchs Forest NSW 2086
PO Box 361, Forestville NSW 2087

T 02 8977 8300
F 02 8977 8399
E simonking@autismspectrum.org.au
www.autismspectrum.org.au

ABN 12 000 637 267

31 May 2022

Greg O'Brien
Finance and Business Manager,
The Sisters of the Goodsamaritans
Po Box 1076
Glebe NSW 2037

Dear Greg,

Re: Autism Spectrum Australia (Aspect) Macarthur School Cobbitty

We refer to our ongoing discussions in relation to Aspect's school in Cobbitty.

As you are aware, Aspect have operated a successful school for at this location for a number of years.

Whilst no decision has been made by Aspect, nor have we obtained any necessary Aspect Board approvals, the opportunity to acquire the current landholding we currently lease is something that we would consider in the future. This 2 hectare land parcel is sufficient for the long term purposes of providing special education to our students in the region.

Please keep us updated on your current planning review.

Should you wish to discuss, please contact Simon King, Head of Property on 0412 259 245 or simonking@autismspectrum.org.au.

Yours faithfully,

[redacted]

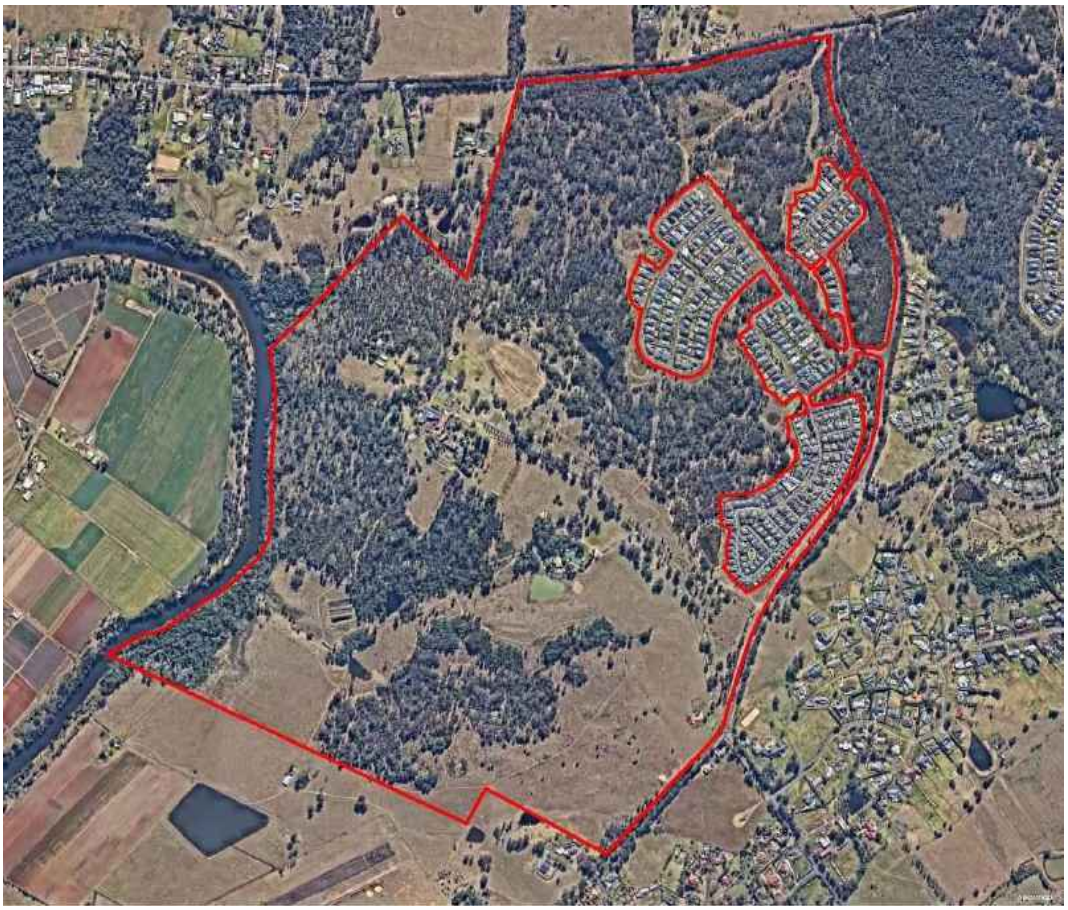
Simon King
Head of Property
Austism Spectrum Australia (Aspect)

Annex A

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

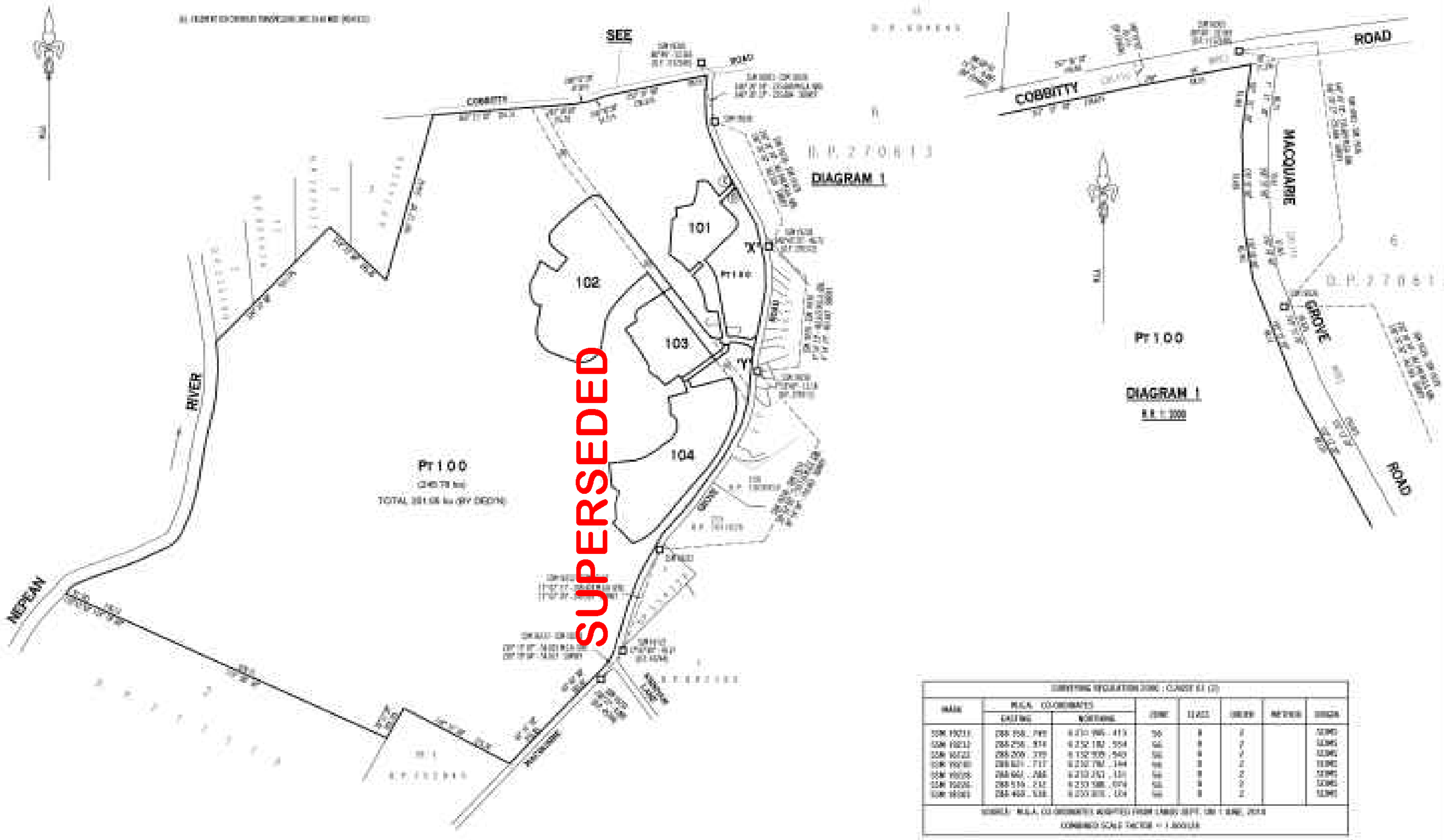
Volume 2
Annexure "A"
Subject Land Holding (Deposited Plan)

October 2021

PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

ePlan Sheet 1 of 1 sheet(s)



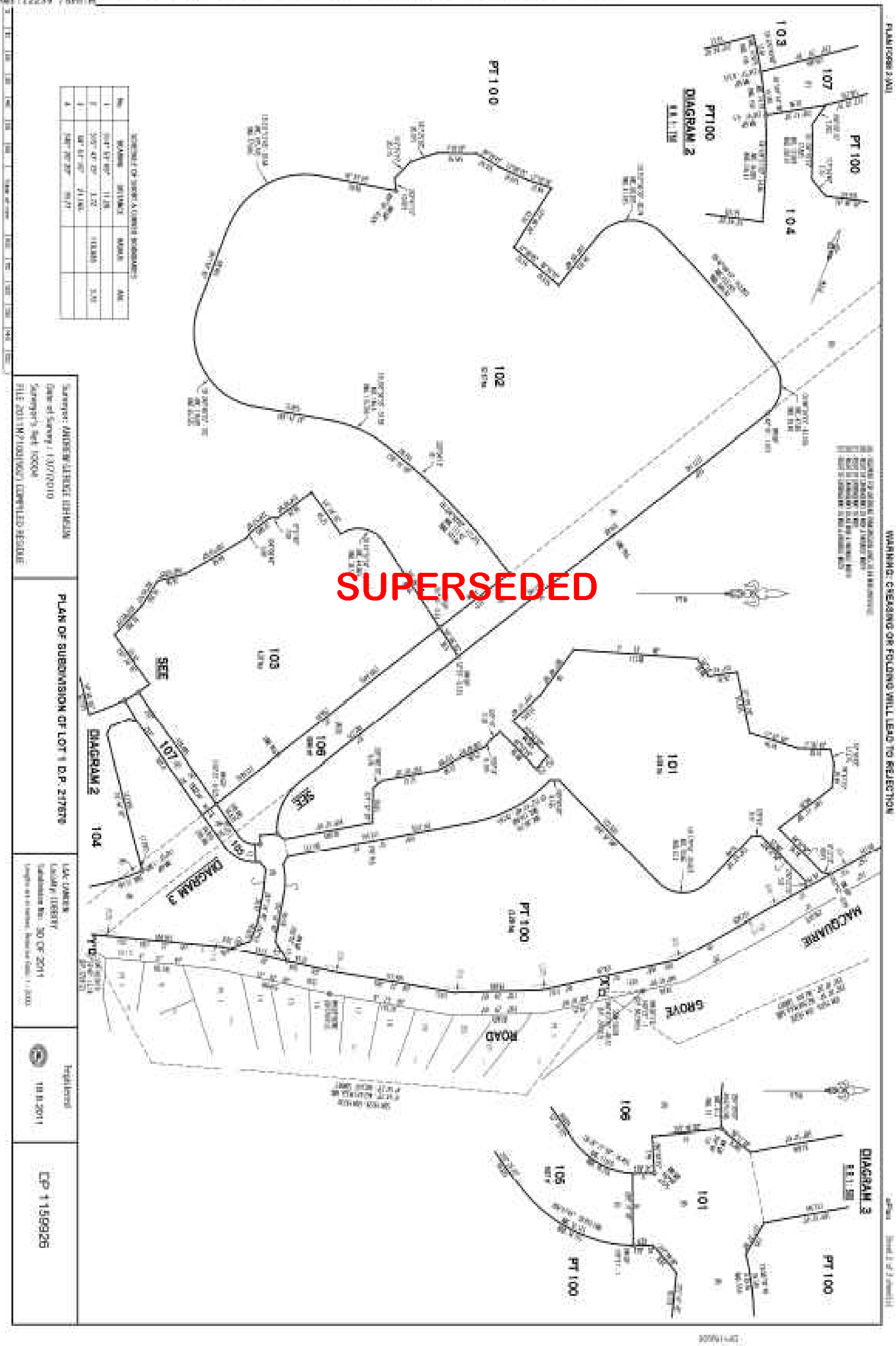
MARK	M.G.A. CO-ORDINATES		ZONE	CLASS	ORDER	METHOD	ORIGIN
	EASTING	NORTHING					
SSM 19211	288 956.791	6 233 995.413	56	B	2		SCIMS
SSM 19212	288 256.974	6 232 192.554	56	B	2		SCIMS
SSM 16122	288 209.379	6 232 935.543	56	B	2		SCIMS
SSM 19210	288 621.717	6 232 792.144	56	B	2		SCIMS
SSM 19226	288 661.786	6 233 251.101	56	B	2		SCIMS
SSM 19225	288 516.212	6 233 586.074	56	B	2		SCIMS
SSM 16161	288 460.538	6 233 805.124	56	B	2		SCIMS

SURVEYING REGULATION 2006 : CLAUSE 61 (3)

SOURCE: M.G.A. CO-ORDINATES ADOPTED FROM LANDS DEPT. ON 1 JUNE, 2010

COMBINED SCALE FACTOR = 1.000118

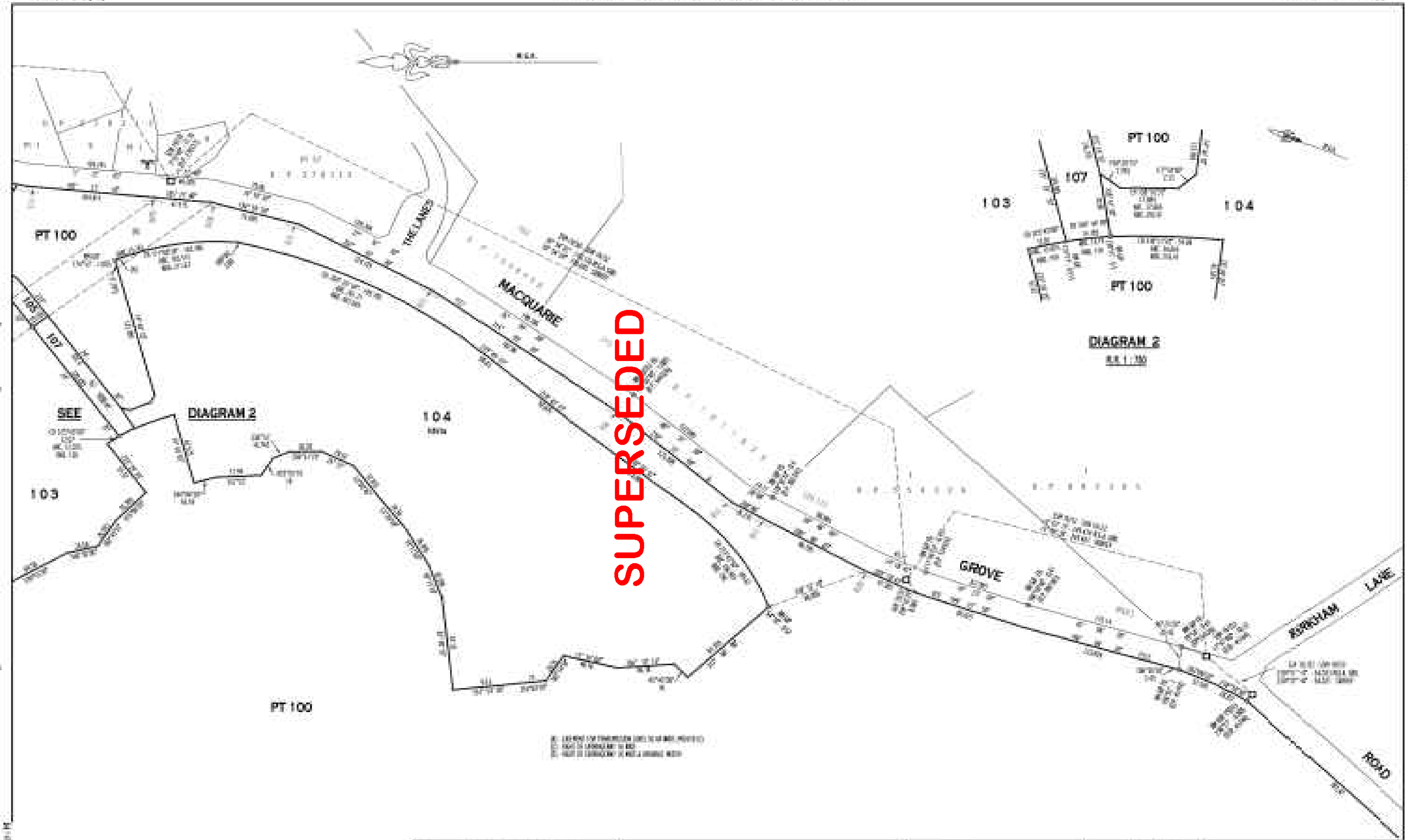
Surveyor: ANDREW GEORGE JOHNSON Date of Survey: 13/7/2010 Surveyor's Ref: 10004 File 2011M7100(902) COMPILED RESIDUE	PLAN OF SUBDIVISION OF LOT 1 D.P. 217576	LGA: CAMDEN Locality: COBBITTY Subdivision No: 30 OF 2011 Lengths are in metres. Reduction Ratio 1 : 8000	Registered 18.8.2011	DP 1159926


PLAN OF SUBDIVISION OF LOT 1 D.P. 217670
DP 1159926
WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION
DIAGRAM 2
DIAGRAM 3
MACQUARIE GROVE ROAD
PT 100
101
102
103
104
105
106
107

Req:R829317 /Doc:DP 1159926 P /Rev:18-Aug-2011 /Sts:SC.OK /Prt:26-Nov-2012 13:25 /Pgs:ALL /Seq:3 of 5
Ref:12239 /Src:M

PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION



Surveyor: ANDREW GEORGE JOHNSON Date of Survey: 13/7/2010 Surveyor's Ref: 10004 FILE 2011M7500(9021) COMPILED RESIDUE	PLAN OF SUBDIVISION OF LOT 1 D.P. 217570	LGA: CAMDEN Locality: COBBITTY Subdivision No: 30 OF 2011 Lengths are in metres. Reduction Ratio 1 : 2000	Registered 18.8.2011	DP 1159926

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 1 of 2 sheet(s)

*OFFICE USE ONLY

SIGNATURES, SEALS and STATEMENTS of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restriction on the use of land or positive covenants.

PURSUANT TO SECTION 88B OF THE CONVEYANCING ACT 1919 IT IS INTENDED TO CREATE : -

1. RIGHT OF CARRIAGEWAY 20 WIDE & VARIABLE WIDTH
2. RIGHT OF CARRIAGEWAY 16 WIDE
3. RIGHT OF CARRIAGEWAY 30.48 WIDE & VARIABLE WIDTH
4. RIGHT OF CARRIAGEWAY 16 WIDE & VARIABLE WIDTH
5. RESTRICTION ON THE USE OF LAND

Use PLAN FORM 6A
for additional certificates , signatures, seals and statements

Crown Lands NSW/Western Lands Office Approval

I,..... in approving this plan certify
(Authorised Officer)
that all necessary approvals in regard to the allocation of the land shown hereon have been given

Signature.....
Date.....
File Number.....
Office.....

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to:

the proposed SUBDIVISION set out herein
(insert 'subdivision' or 'new road')

[redacted]

* Authorised Person/~~General Manager~~/~~Accredited Certifier~~

Consent Authority: Camden Council
Date of Endorsement: 15th June 2011
Accreditation no:
Subdivision Certificate no: 31 of 2011
File no: 192/2008

* Delete whichever is inapplicable

DP1159926

Registered: 18.8.2011
Title System: TORRENS
Purpose: SUBDIVISION

PLAN OF SUBDIVISION OF LOT 1 D.P. 217570

LGA: CAMDEN
Locality: CAMDEN
Parish: NARELLAN
County: CUMBERLAND

Survey Certificate

I, ANDREW GEROGE JOHNSON
of, JOHNSON PROCTER SURVEYORS PTY. LTD.
390 PRINCES HIGHWAY, BOMADERRY 2541

a surveyor registered under the Surveying and Spatial Information Act 2002, certify that the survey represented in this plan is accurate, has been made in accordance with the Surveying and Spatial Information Regulation 2006 and was completed on: 13/7/2010

The survey relates to
LOTS 101 TO 107 & PART LOT 100 & CONNECTIONS

(specify the land actually surveyed or specify any land shown in the plan that is [redacted] ey)

Signature [redacted] Dated: 16/5/11
Surveyor registered under the Surveying and Spatial Information Act 2002

Datum Line: 'X' - 'Y' (MGA)
Type: Urban/Rural

Plans used in the preparation of survey/compilation

D.P. 217570
D.P. 270312
D.P. 45744
D.P. 882365
D.P. 554326
D.P. 1132349
D.P. 749346
D.P. 787577
D.P. 805436
D.P. 235180
D.P. 217570
D.P. 752045

(If insufficient space use Plan form 6A annexure sheet)

SURVEYOR'S REFERENCE: 10004 FILE 2011/M7100(902) COMPILED RESIDUE

PLAN FORM 6A WARNING: Creasing or folding will lead to rejection ePlan

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 2 of 2 Sheets

PLAN OF SUBDIVISION OF LOT 1 D.P. 217570

DP1159926

Registered: 18.8.2011

Subdivision Certificate No: 31 of 2011

Date of Endorsement: 15th June 2011

OFFICE USE ONLY

OWNER

[redacted]

Signature

CLARE CONDON PROVINCIAL

print name

[redacted]

Signature

PATRICIA FAWKNER MEMBER

print name

SUPERSEDED

[redacted]

Signature

VERONICA HOEY MEMBER

print name

Certified correct for the purposes of the Real Property Act 1900 by the person(s) named below who signed this instrument pursuant to the power of attorney specified

Signature of attorney:	[redacted]
Attorney's name:	JEFFREY BURKE
Attorney's position:	MANAGER
Signing on behalf of:	COMMONWEALTH BANK OF AUSTRALIA ABN 48 123 123 124
Power of attorney	Book: 4548 No: 494

I certify that the person(s) signing opposite, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this instrument in my presence.

[redacted]

Signature of witness:	
Name of witness:	SAMANTHA SCHUCROFT
Address of witness:	LEVEL 03, 799 PACIFIC HWY Chatswood NSW 2067

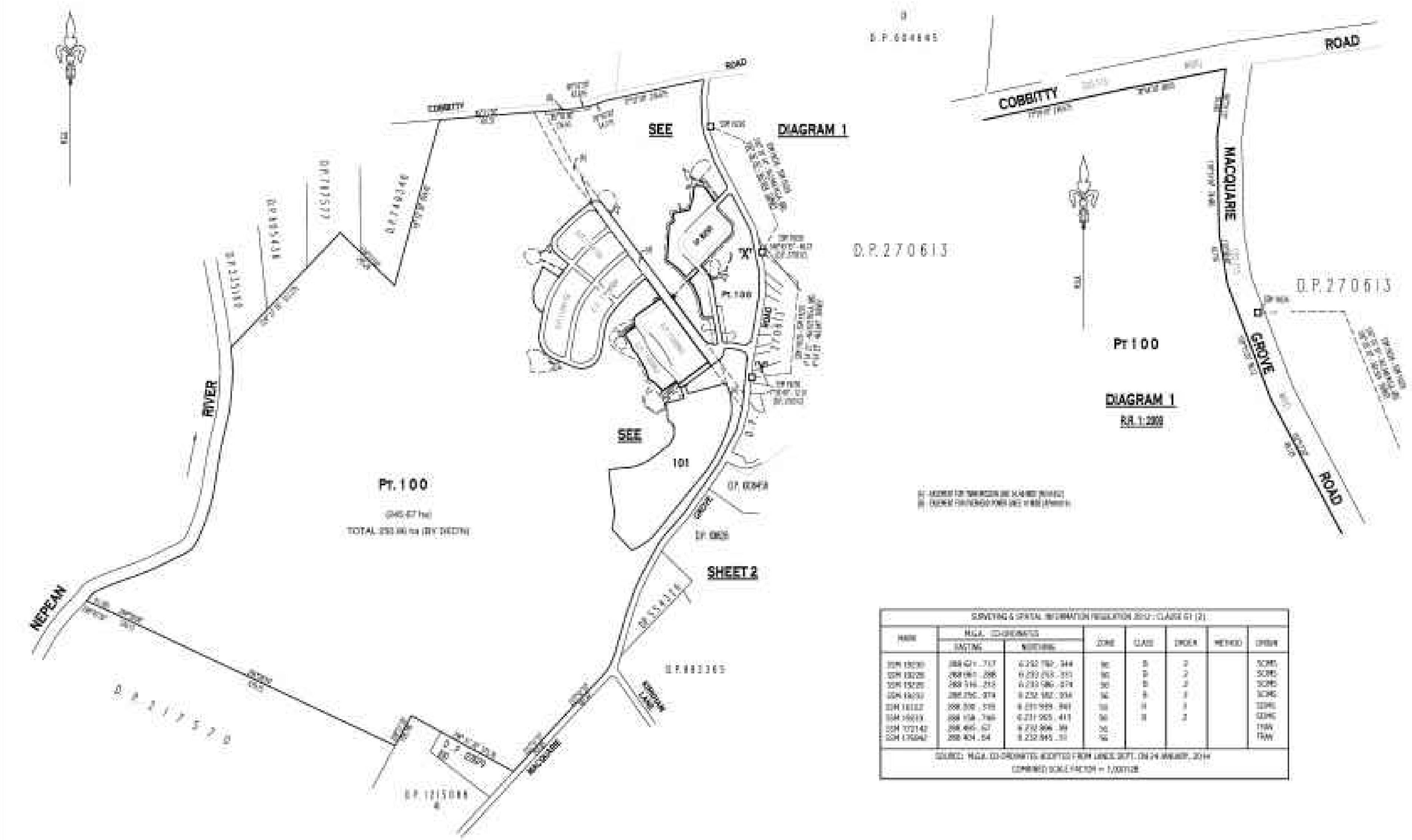
FILE 2011M7100L9027 COMPILED RESIDUE

SURVEYOR'S REFERENCE: 2014

PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Sheet 1 of 3 sheet(s)



SURVEYING & SPATIAL INFORMATION REGULATION 2012 : CLAUSE 61 (2)							
MARK	M.G.A. CO-ORDINATES		ZONE	CLASS	ORDER	METHOD	ORIGIN
	EASTING	NORTHING					
SSM 19230	288 421.717	6 232 782.344	56	B	2		SCIMS
SSM 19228	288 061.288	6 233 253.351	56	B	2		SCIMS
SSM 19235	288 516.213	6 233 586.274	56	B	2		SCIMS
SSM 19233	288 256.974	6 232 582.334	56	B	3		SCIMS
SSM 18112	288 330.519	6 231 959.961	56	B	3		SCIMS
SSM 19019	288 158.769	6 231 923.411	56	B	2		SCIMS
SSM 172142	288 465.67	6 232 866.99	56				TRAV
SSM 176042	288 404.54	6 232 845.31	56				TRAV
SOURCE: M.G.A. CO-ORDINATES ADOPTED FROM LANDS DEPT. ON 24 JANUARY, 2014 COMBINED SCALE FACTOR = 1.000128							

Surveyor: ANDREW GEORGE JOHNSON
Date of Survey: 9 SEPTEMBER, 2014
Surveyor's Ref: 10004(ADI1)

PLAN OF SUBDIVISION OF LOT 100 D.P.1159926 & LOT 104 D.P. 1159926

LGA: CAMDEN
Locality: COBBITTY
Subdivision No:
Lengths are in metres. Reduction Ratio 1 : 8000

Registered
1/03/2022

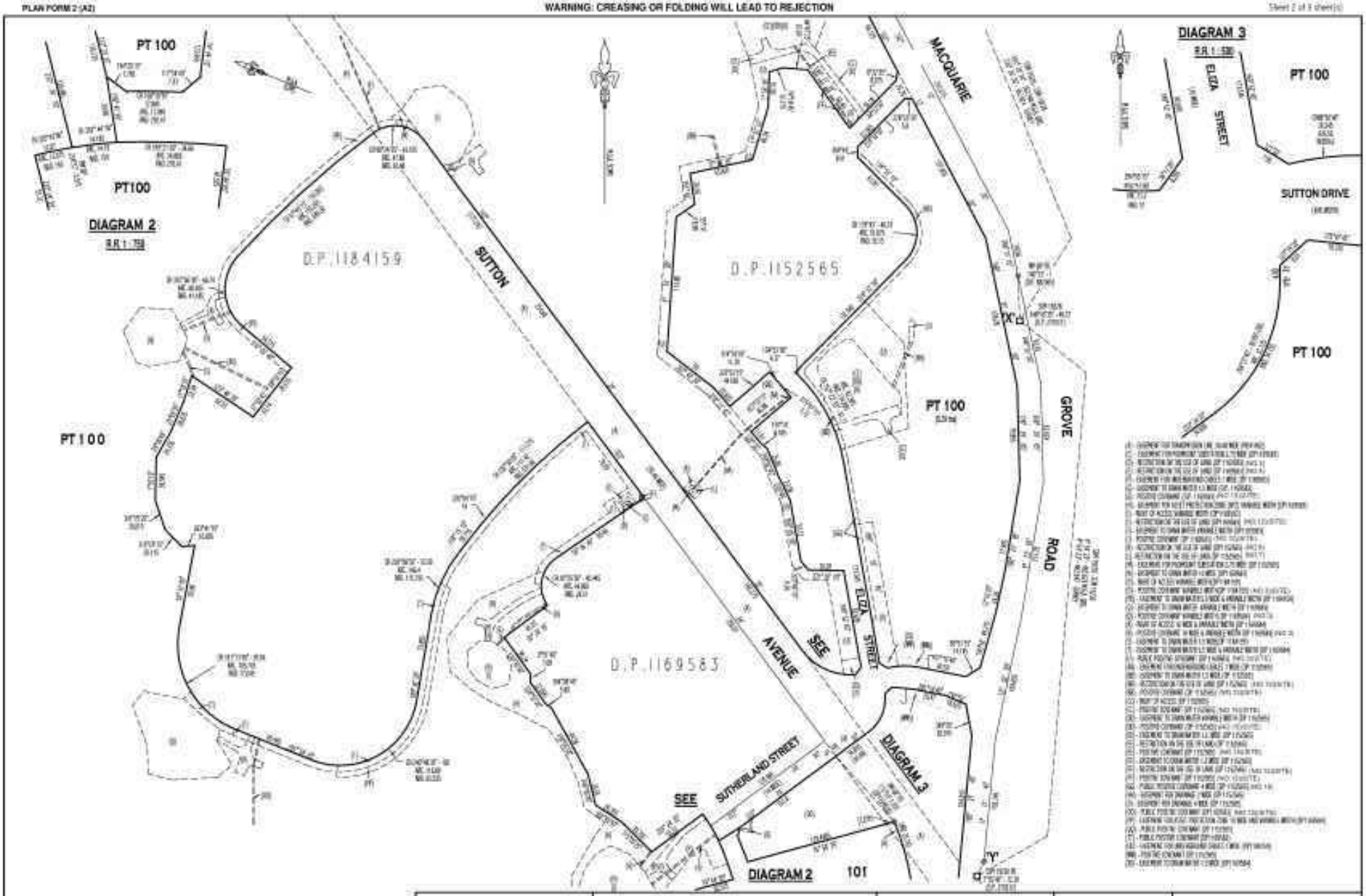
DP1230568

Table of mm

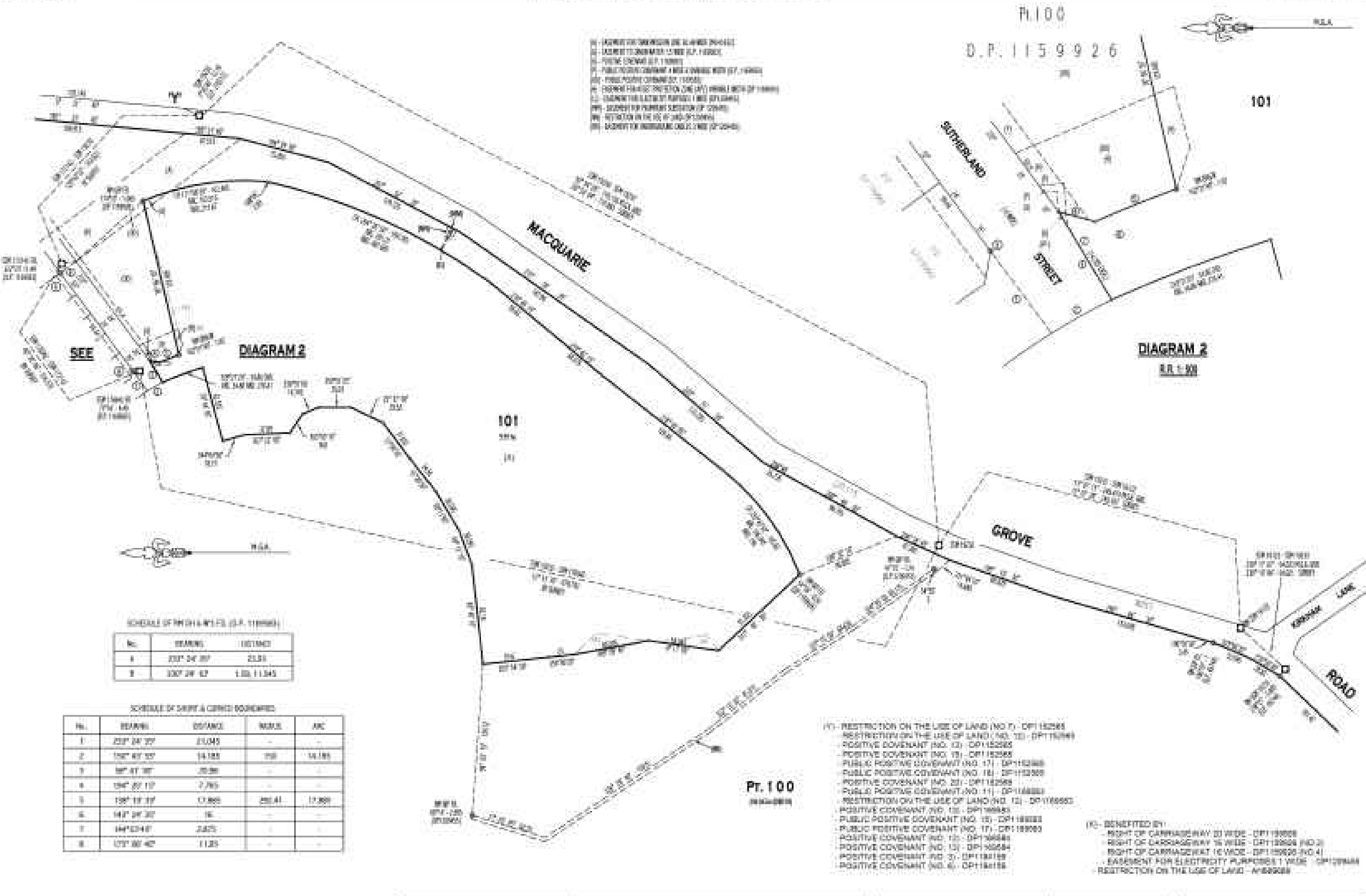
PLAN FORM 2 (A2)

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

Sheet 2 of 3 sheet(s)



Surveyor: ANDREW GEROGE JOHNSON Date of Survey : 9/9/2014 Surveyor's Ref.: 10004 (A01)	PLAN OF SUBDIVISION OF LOT 100 D.P. 1159926 & LOT 104 D.P. 1159925	LGA: CAMDEN Locality: COBBITY Subdivision No:	Registered 1/03/2022	DP1230568



SCHEDULE OF PM ... (D.P. 1159926)

No.	BEARING	DISTANCE
A	233° 24' 35"	23.51
B	330° 24' 6"	1.03, 11.545

SCHEDULE OF SHORT & CURVED BOUNDARIES

No.	BEARING	DISTANCE	RADIUS	ARC
1	233° 24' 35"	23.045	-	-
2	150° 43' 55"	14.185	150	14.185
3	98° 41' 30"	20.96	-	-
4	194° 20' 15"	7.765	-	-
5	138° 19' 19"	17.865	250.41	17.869
6	143° 24' 35"	16	-	-
7	144° 03' 40"	2.825	-	-
8	173° 00' 40"	11.25	-	-

(Y) - RESTRICTION ON THE USE OF LAND (NO.7) - DP1152565
- RESTRICTION ON THE USE OF LAND (NO. 10) - DP1152565
- POSITIVE COVENANT (NO. 13) - DP1152565
- POSITIVE COVENANT (NO. 15) - DP1152565
- PUBLIC POSITIVE COVENANT (NO. 17) - DP1152565
- PUBLIC POSITIVE COVENANT (NO. 18) - DP1152565
- POSITIVE COVENANT (NO. 20) - DP1152565
- PUBLIC POSITIVE COVENANT (NO. 11) - DP1168083
- RESTRICTION ON THE USE OF LAND (NO. 12) - DP1168083
- POSITIVE COVENANT (NO. 13) - DP1168083
- PUBLIC POSITIVE COVENANT (NO. 15) - DP1168083
- PUBLIC POSITIVE COVENANT (NO. 17) - DP1168083
- POSITIVE COVENANT (NO. 12) - DP1169684
- POSITIVE COVENANT (NO. 13) - DP1169684
- POSITIVE COVENANT (NO. 3) - DP1184159
- POSITIVE COVENANT (NO. 6) - DP1184159

(X) - BENEFITED BY:
- RIGHT OF CARRIAGEWAY 20 WIDE - DP1159926
- RIGHT OF CARRIAGEWAY 16 WIDE - DP1159926 (NO.3)
- RIGHT OF CARRIAGEWAY 16 WIDE - DP1159926 (NO.4)
- EASEMENT FOR ELECTRICITY PURPOSES 1 WIDE - DP1209446
- RESTRICTION ON THE USE OF LAND - AI689068

Surveyor: ANDREW GEORGE JOHNSON Date of Survey: 9 SEPTEMBER, 2014 Surveyor's Ref: 10004(AD01)	PLAN OF SUBDIVISION OF LOT 100 D.P.1159926 & LOT 104 D.P. 1159926	LGA: CAMDEN Locality: COBBITTY Subdivision No: Lengths are in metres. Reduction Ratio 1 : 2000	Registered 1/03/2022	DP1230568

PLAN FORM 6 WARNING: Creasing or folding will lead to rejection

DEPOSITED PLAN ADMINISTRATION SHEET

OFFICE USE ONLY

Registered: 1/03/2022

Title System: TORRENS

Purpose:

OFFICE USE ONLY

DP1230568

PLAN OF SUBDIVISION OF LOT 100 D.P. 1159926 AND LOT 104 D.P. 1159926

LGA: CAMDEN

Locality: COBBITY

Parish: NARELLAN AND CABRAMATTA

County: CUMBERLAND

Crown Lands NSW/Western Lands Office Approval

I, ... (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given.

Signature:

Date:

File Number:

Office:

Subdivision Certificate

I, Gregory Cattarin

*Authorised Person/~~*General Manager/*Accredited Certifier~~, certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to the proposed subdivision, [redacted]

Signature:

Accreditation no: ——

Consent Authority: CAMDEN COUNCIL

Date of Endorsement: 24.7.2018

Subdivision Certificate no: 14.2008.1956.6

File no: DA/2008/192

* Strike through if inapplicable.

Survey Certificate

I, ANDREW GEORGE JOHNSON

of JOHNSON PROCTER SURVEYORS PTY. LTD. 2/3 ELLIS AVENUE, NOWRA 2541

a surveyor registered under the Surveying and Spatial Information Act 2002, certify that:

~~*(a) The land shown in the plan was surveyed in accordance with the Surveying and Spatial Information Regulation 2012, is accurate and the survey was completed on ....~~

*(b) The part of the land shown in the plan (*being/*excluding*) ~~LOT~~ LOT 101 AND ~~...~~ NEW LOTS was surveyed in accordance with the Surveying and Spatial Information Regulation 2012, is accurate and the survey was completed on 11/9/2018, the part not surveyed was compiled in accordance with that regulation.

~~*(c) The land shown in this plan was compiled in accordance with the Surveying and Spatial Information Regulation 2012.~~

Signature: [redacted] Dated: 22/5/17 GB

Surveyor ID: 1372

Datum Line: 'X' - 'Y' (MGA)

Type: *Urban/~~*Rural~~

The terrain is *Level - Undulating / ~~*Steep - Mountainous~~.

* Strike through if inapplicable.

* Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.

STATEMENT of intention to dedicate public roads, public reserves and drainage reserves.

Plans used in the preparation of survey/compilation.

D.P. 1159926

D.P. 1159926

If space is insufficient use PLAN FORM 6A

Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A

SURVEYOR'S REFERENCE: 10004-0011

PLAN FORM 6A   WARNING: Creasing or folding will lead to rejection

DEPOSITED PLAN ADMINISTRATION SHEET

OFFICE USE ONLY

Registered: 10/3/2022

OFFICE USE ONLY

DP1230568

PLAN OF SUBDIVISION OF LOT 100 D.P. 1159926 AND LOT 104 D.P. 1159926

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60 (c) SSI Regulation 2012
- Statements of intention to create and release affecting interests in accordance with section 88B Conveyancing Act 1919
- Signatures and seals - see 195D Conveyancing Act 1919
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

Subdivision Certificate No: 14.2008.192.6

Date of Endorsement: 24.7.2019

SCHEDULE OF LOTS & ADDRESSES

LOT	ADDRESS
100	221 MACQUARIE GROVE ROAD COBBITTY
101	221A MACQUARIE GROVE ROAD COBBITTY

THE COMMON SEAL of the body corporate called TRUSTEES OF THE SISTERS OF THE GOOD SAMARITAN ABN 42 082 542 036 was affixed in the presence of the Superior and two other Members of the Body Corporate all of whom have signed below [illegible]

[redacted]

Signature of authorised person

Patricia (Patty) M. Fawkner

Name of authorised person (print)

Office held: Superior

[redacted]

Signature of authorised person

Catherine A. McCahill

Name of authorised person (print)

Office held: Member

[redacted]

Signature of authorised person

Magdalen M. Sattler

Name of authorised person (print)

Office held: Member

DATED this twentieth day of August in the year two thousand and eighteen

Execution by Camden Council

Signature: C. Cattan

Signed by: Gregory Cattanach

[illegible]

Authority of Officer: Acting Team Leader Engineering Cert

Witness Signature: [illegible]

Name of Witness: SUSANNA CARETT

Address of Witness: 70 CENTRAL AVENUE ORAN PARK

C. Cattan

Council Authorised Person

SURVEYOR'S REFERENCE: 2004.5(1)

PLAN FORM 6A WARNING: Creasing or folding will lead to rejection

DEPOSITED PLAN ADMINISTRATION SHEET

OFFICE USE ONLY

Registered [illegible] 1/03/2022

OFFICE USE ONLY

DP1230568

PLAN OF SUBDIVISION OF LOT 100 D.P. 1159928 AND LOT 104 D.P. 1159928

Subdivision Certificate No: 14.2008.172.6

Date of Endorsement:

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) SSI Regulation 2012
- Statements of intention to create and release affecting interests in accordance with section 88B Conveyancing Act 1919
- Signatures and seals - see 195D Conveyancing Act 1919
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

[illegible] AND ADELAIDE BANK LIMITED ABN 11 068 049 178 BY ITS APPOINTED ATTORNEY [redacted] [illegible] [illegible] POWER OF ATTORNEY No BOOK 4707 NO. 929 [redacted]	IN THE PRESENCE OF SIGNATURE OF WITNESS [redacted] FULL NAME OF WITNESS [illegible] ADDRESS OF WITNESS [illegible] PHONE No [illegible]

[redacted]

ALAN [illegible]
DIRECTOR - [illegible] PTY LTD
21 - 12 - 2021

[redacted]

JOHN [illegible]
DIRECTOR - [illegible] PTY LTD
21/12/2021

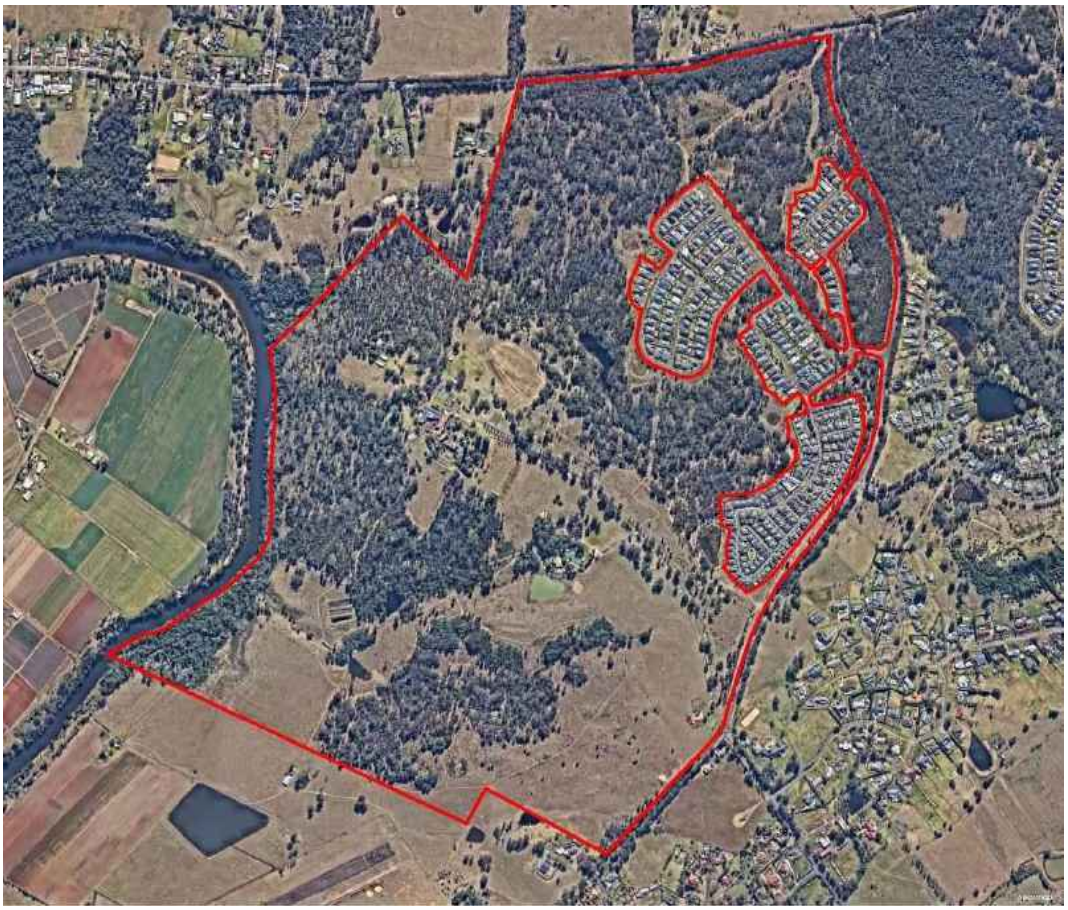
SURVEYOR'S REFERENCE: [illegible]

Annex B

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



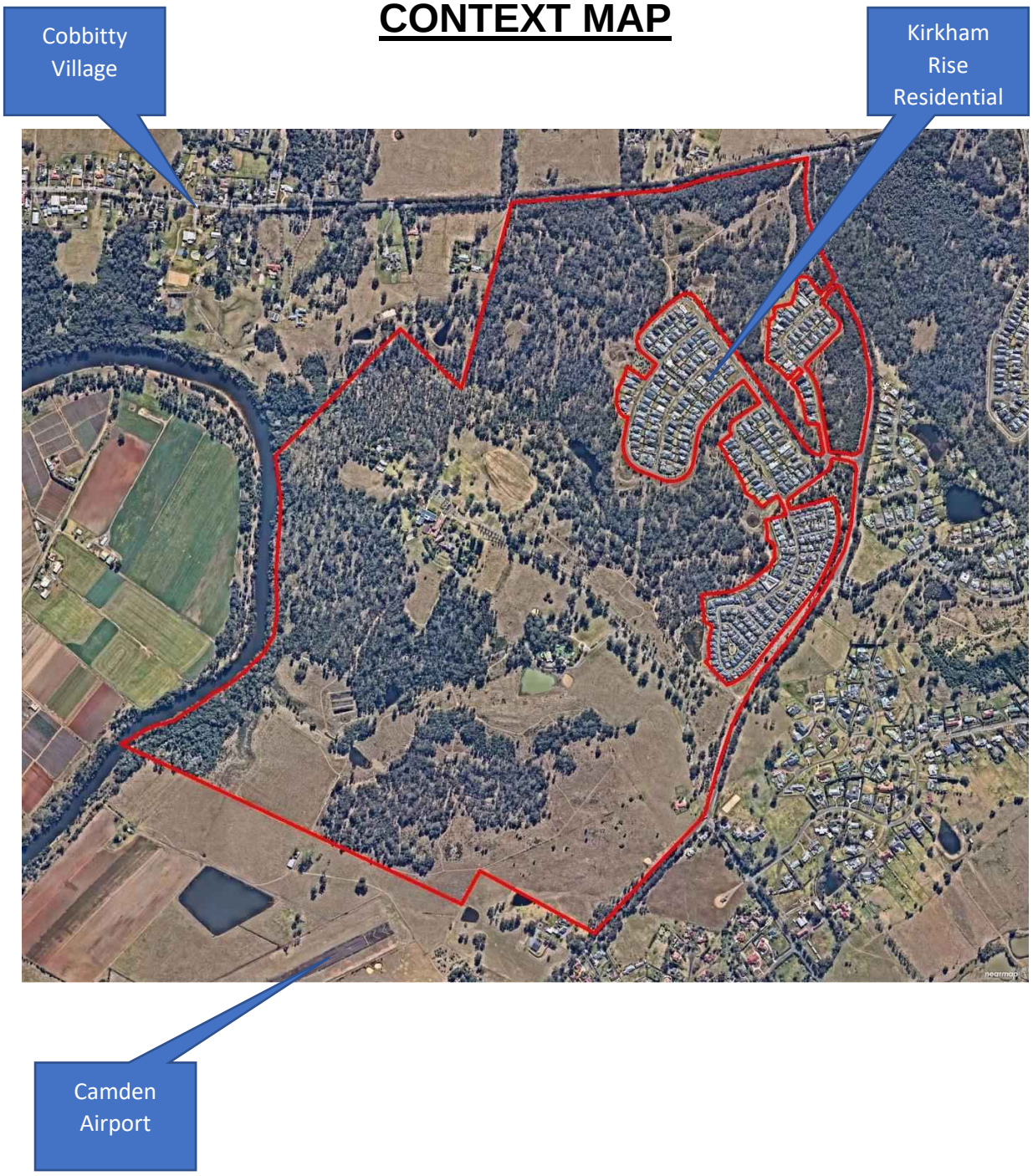
Prepared For:
Trustees of the Sisters
Of the Good Samaritan
Prepared By:

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "B"
Context Plan/Map

October 2021

CONTEXT MAP

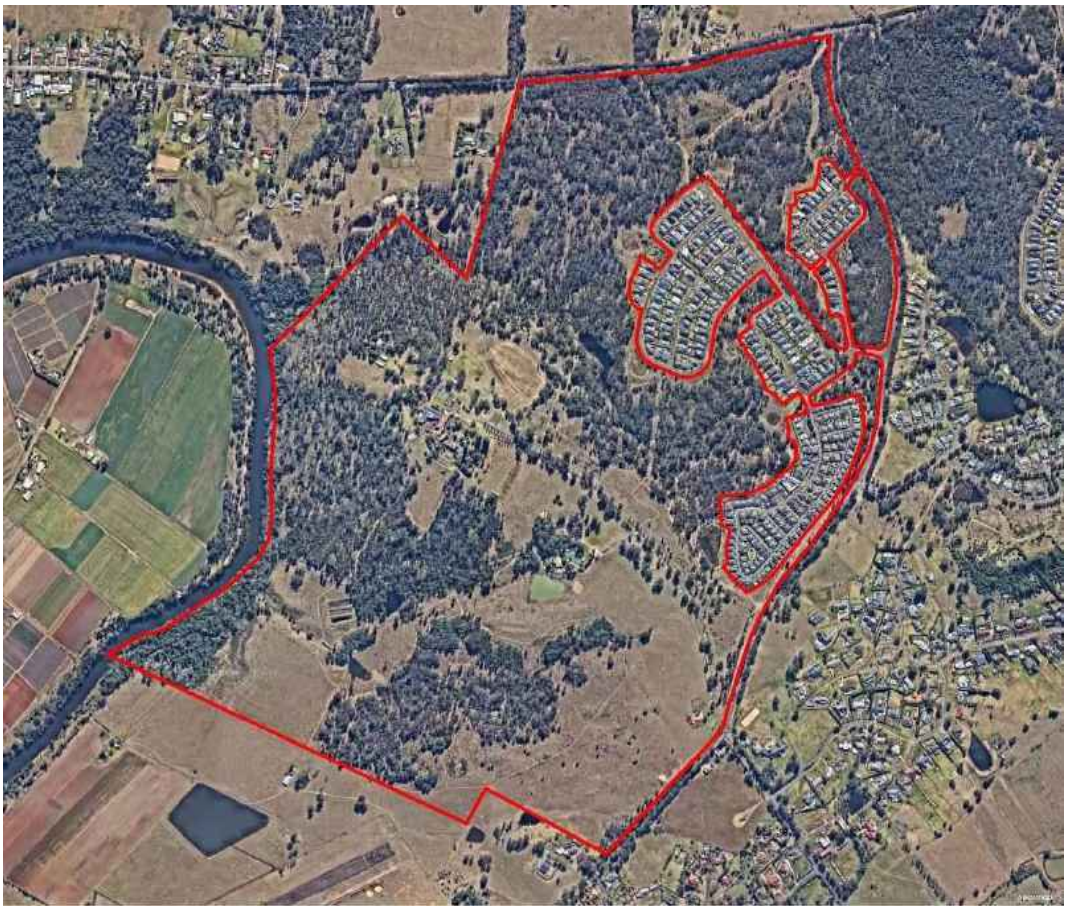

Cobbitty Village
Kirkham Rise Residential
Camden Airport

Annex C

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "C"
Prevailing Landuse Planning Provisions

October 2021

Zone RU1 Primary Production

1 Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To permit non-agricultural uses (including tourism-related uses) that are compatible with the agricultural, environmental and conservation values of the land.
- To maintain the rural landscape character of the land.

2 Permitted without consent

Extensive agriculture; Forestry; Home occupations

3 Permitted with consent

Aquaculture; Bed and breakfast accommodation; Cellar door premises; Dual occupancies (attached); Dwelling houses; Environmental protection works; Extractive industries; Farm buildings; Farm stay accommodation; Garden centres; Home-based child care; Home businesses; Home industries; Intensive livestock agriculture; Intensive plant agriculture; Open cut mining; Roads; Roadside stalls; Rural industries; Rural supplies; Rural workers' dwellings; Secondary dwellings; Any other development not specified in item 2 or 4

4 Prohibited

Amusement centres; Car parks; Commercial premises; Correctional centres;; Entertainment facilities; Exhibition homes; Exhibition villages; Freight transport facilities; Function centres; Health services facilities; Heavy industrial storage establishments; Home occupations (sex services); Industrial retail outlets; Industries; Information and education facilities; Port facilities; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Residential accommodation; Restricted premises; Service stations; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Vehicle body repair workshops; Vehicle repair stations; Warehouse or distribution centres; Wharf or boating facilities; Wholesale supplies

Zone R5 Large Lot Residential

1 Objectives of zone

- To provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality.
- To ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future.
- To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

2 Permitted without consent

Extensive agriculture; Home occupations

3 Permitted with consent

Bed and breakfast accommodation; Dual occupancies (attached); Dwelling houses; Home-based child care; Home businesses; Home industries; Oyster aquaculture; Pond-based aquaculture; Roads; Tank-based aquaculture; Any other development not specified in item 2 or 4

4 Prohibited

Advertising structures; Agriculture; Air transport facilities; Amusement centres; Animal boarding or training establishments; Boat building and repair facilities; Boat sheds; Camping grounds; Car parks; Caravan parks; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Electricity generating works; Entertainment facilities; Exhibition homes; Extractive industries; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Home occupations (sex services); Industrial retail outlets; Industries; Information and education facilities; Mortuaries; Neighbourhood shops; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Registered clubs; Research stations; Residential accommodation; Restricted premises; Rural industries; Service stations; Sewerage systems; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Waste or resource management facilities; Wharf or boating facilities; Wholesale supplies

Zone E2 Environmental Conservation

1 Objectives of zone

- To protect, manage and restore areas of high ecological, scientific, cultural or aesthetic values.
- To prevent development that could destroy, damage or otherwise have an adverse effect on those values.
- To protect and enhance the ecology, hydrology and scenic views of waterways, riparian land, groundwater resources and dependent ecosystems.

2 Permitted without consent

Nil

3 Permitted with consent

Environmental facilities; Environmental protection works; Flood mitigation works; Oyster aquaculture; Recreation areas; Roads; Water reticulation systems

4 Prohibited

Business premises; Hotel or motel accommodation; Industries; Multi dwelling housing; Pond-based aquaculture; Recreation facilities (major); Residential flat buildings; Restricted premises; Retail premises; Seniors housing; Service stations; Tank-based aquaculture; Warehouse or distribution centres; Any other development not specified in item 2 or 3

Zone SP2 Infrastructure

1 Objectives of zone

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

2 Permitted without consent

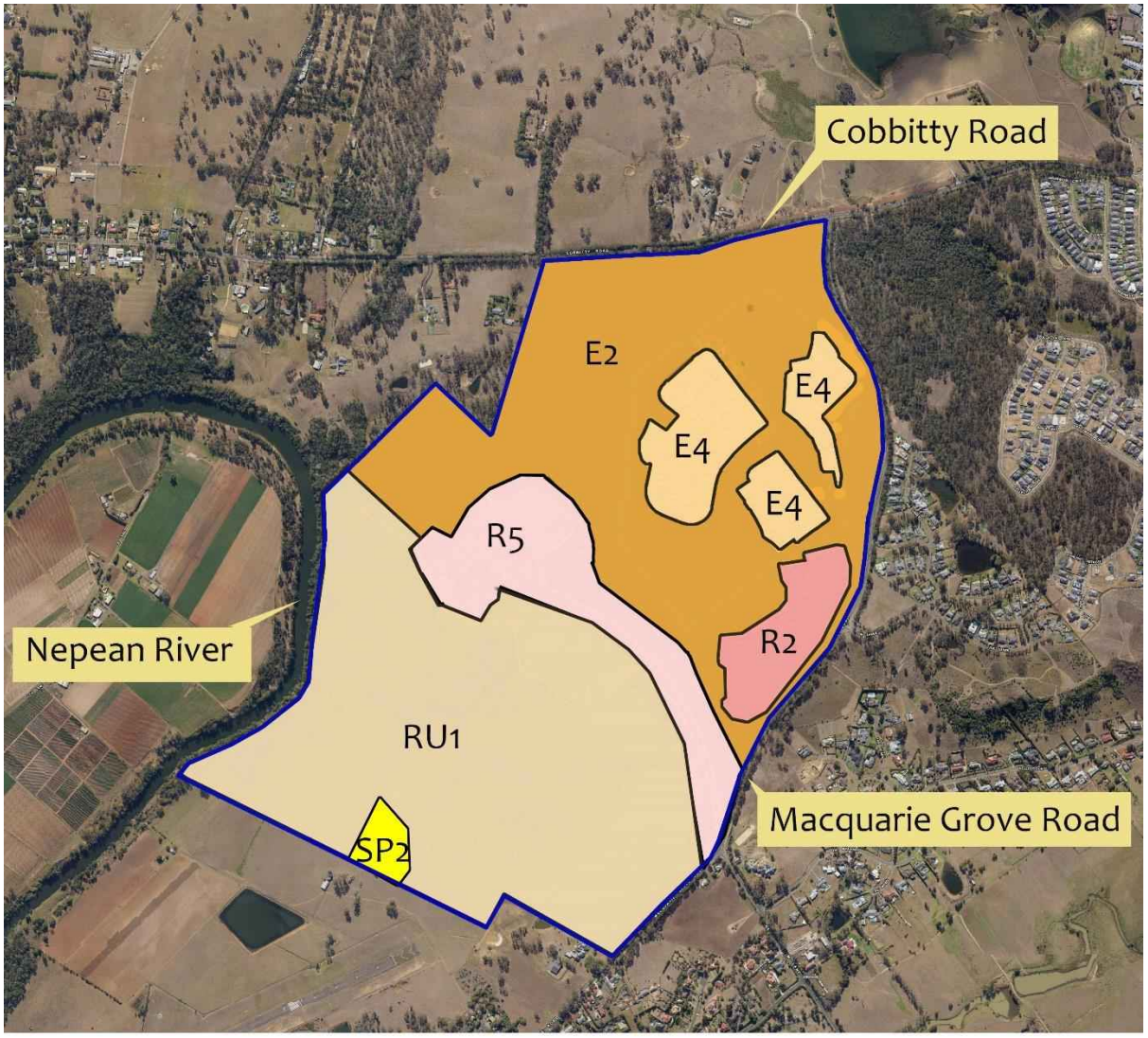
Nil

3 Permitted with consent

Aquaculture; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose; Community facilities; Environmental protection works; Flood mitigation works; Recreation areas; Roads

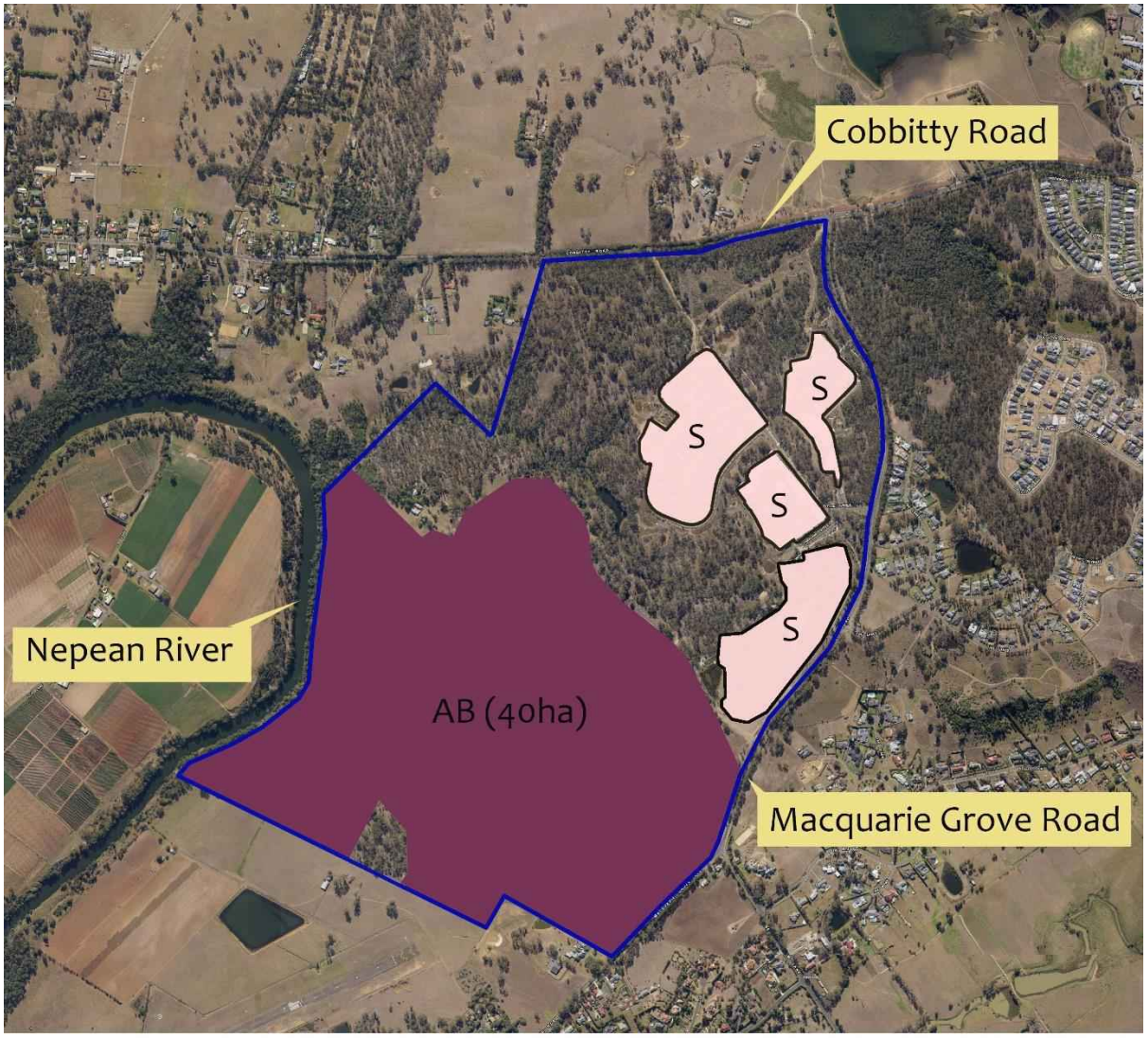
4 Prohibited

Any development not specified in item 2 or 3



EXISTING ZONING

- E2 Environmental Conservation
- E4 Environmental Living
- R2 Low Density Residental
- R5 Large Lot Residential
- RU1 Primary Production
- SP2 Air Transport Facility



EXISTING MINIMUM LOT SIZE

S (800 m²)

AB (40ha)

Not applicable (uncoloured area within the boundary outlined in blue)

Property Report

229 MACQUARIE GROVE ROAD COBBITTY 2570

Property Details

Address:	229 MACQUARIE GROVE ROAD COBBITTY 2570
Lot/Section /Plan No:	100/-/DP1159926
Council:	CAMDEN COUNCIL

Summary of planning controls

Planning controls held within the Planning Database are summarised below. The property may be affected by additional planning controls not outlined in this report. Please contact your council for more information.

Local Environmental Plans	Camden Local Environmental Plan 2010 (pub. 20-8-2021)
Land Zoning	E2 - Environmental Conservation: (pub. 16-11-2012)
	E4 - Environmental Living: (pub. 18-1-2013)
	R5 - Large Lot Residential: (pub. 3-9-2010)
	RU1 - Primary Production: (pub. 20-8-2021)
	SP2 - Infrastructure: (pub. 3-9-2010)
Height Of Building	9.5 m
Floor Space Ratio	NA
Minimum Lot Size	40 ha
	800 m²
Heritage	Wivenhoe Significance: Local
Land Reservation Acquisition	NA
Foreshore Building Line	NA
Local Provisions	13 km
	30 km
Obstacle Limitation Surface	230.5-230.5
Scenic Protection Land	Local significance
Urban Release Area	Urban Release Area

Detailed planning information

State Environmental Planning Policies which apply to this property

State Environmental Planning Policies can specify planning controls for certain areas and/or types of development. They can also identify the development assessment system that applies and the type of environmental assessment that is required.

- State Environmental Planning Policy (Affordable Rental Housing) 2009: Land Application (pub. 31-7-2009)
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application (pub. 25-6-2004)
- State Environmental Planning Policy (Concurrences and Consents) 2018: Land Application (pub. 21-12-2018)
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017: Land Application (pub. 1-9-2017)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004: Land Application (pub. 31-3-2004)
- State Environmental Planning Policy (Infrastructure) 2007: Land Application (pub. 21-12-2007)
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007: Land Application (pub. 16-2-2007)
- State Environmental Planning Policy (Primary Production and Rural Development) 2019: Land Application (pub. 28-2-2019)
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017: Subject Land (pub. 25-8-2017)
- State Environmental Planning Policy No 19—Bushland in Urban Areas: Land Application (pub. 24-10-1986)
- State Environmental Planning Policy No 21—Caravan Parks: Land Application (pub. 24-4-1992)
- State Environmental Planning Policy No 33—Hazardous and Offensive Development: Land Application (pub. 13-3-1992)
- State Environmental Planning Policy No 36—Manufactured Home Estates: Land Application (pub. 16-7-1993)
- State Environmental Planning Policy No 50—Canal Estate Development: Land Application (pub. 10-11-1997)
- State Environmental Planning Policy No 55—Remediation of Land: Land Application (pub. 28-8-1998)
- State Environmental Planning Policy No 64—Advertising and Signage: Land Application (pub. 16-3-2001)
- State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application (pub. 26-7-2002)
- State Environmental Planning Policy No 70—Affordable Housing (Revised Schemes): Land Application (pub. 31-5-2002)
- Sydney Regional Environmental Plan No 20—Hawkesbury-Nepean River (No 2—1997): Land Application (pub. 7-11-1997)
- Sydney Regional Environmental Plan No 20—Hawkesbury-Nepean River (No 2—1997): Sub Catchment Boundaries (pub. 7-11-1997)

Other matters affecting the property

Information held in the Planning Database about other matters affecting the property appears below. The property may also be affected by additional planning controls not outlined in this report. Please speak to your council for more information

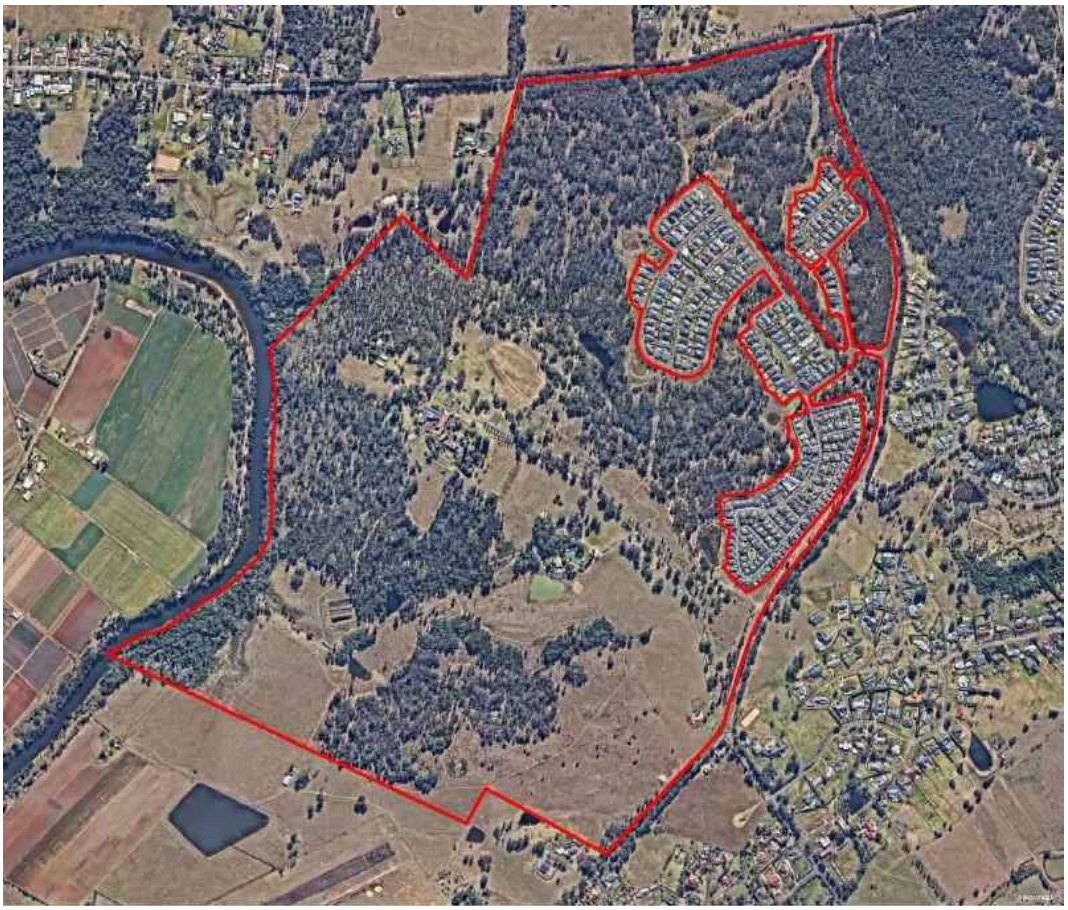
Bushfire Prone Land	Vegetation Buffer
	Vegetation Category
Local Aboriginal Land Council	THARAWAL
Regional Plan Boundary	Greater Sydney
Special Infrastructure Contributions	Western Sydney Growth Centres SIC

Annex D

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

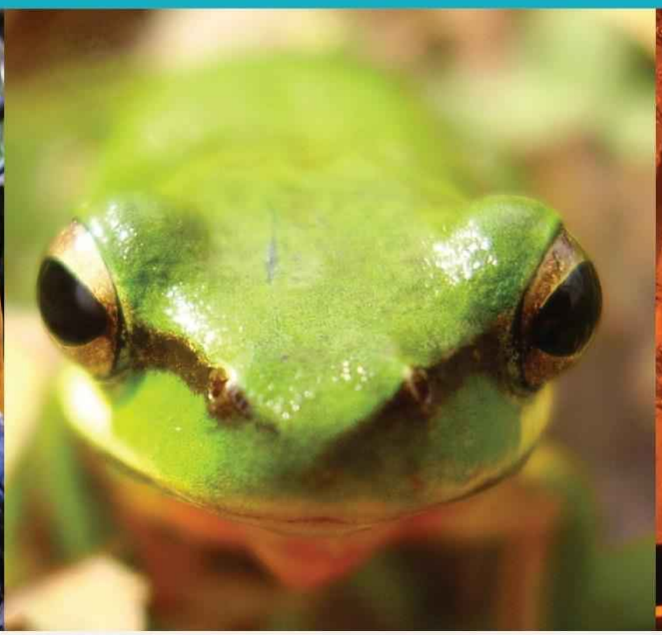
PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "D"
Biodiversity Overview and
Management Principles
(Travers Bushfire & Ecological)

October 2021 (Amended July 2022)

TRAVERS BUSHFIRE & ECOLOGY

A TBE ENVIRONMENTAL COMPANY


BIODIVERSITY OVERVIEW (INCLUDING CONSERVATION INITIATIVES) REPORT

Planning Proposal Request to Facilitate Future Super Lot Subdivision and Land-use Rationalisation

Lot 100, DP 1159926

229 Macquarie Grove Road

Cobbitty

8 August 2022

(REF: 21PPS02)

BIODIVERSITY OVERVIEW (INCLUDING CONSERVATION INITIATIVES) REPORT

Planning Proposal Request to Facilitate Future Super Lot Subdivision and Land-use Rationalisation

Lot 100, DP 1159926, 229 Macquarie Grove Road, Cobbitty

Report authors:	Lindsay Holmes B. Sc. – Senior Botanist – Accredited Assessor no. BAAS17032 Geoff Coates B. Sci (Hons.), B. Zool – Fauna Ecologist
Flora survey:	Lindsay Holmes B. Sc. – Senior Botanist – Accredited Assessor no. BAAS17032
Fauna survey:	Geoff Coates B. Sci (Hons.), B. Zool – Fauna Ecologist
Plans prepared:	Sandy Cardow B. Sc. Angelene Wright B. Sc.
Approved by:	Lindsay Holmes (Accredited Assessor no. BAAS17032)
Date:	8/08/22
File:	21PPS02

Disclaimer:

This report has been prepared to provide advice to the client on matters pertaining to the particular and specific development proposal as advised by the client and / or their authorised representatives. This report can be used by the client only for its intended purpose and for that purpose only. Should any other use of the advice be made by any person, including the client, then this firm advises that the advice should not be relied upon. The report and its attachments should be read as a whole and no individual part of the report or its attachments should be interpreted without reference to the entire report.

The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

LIST OF ABBREVIATIONS

APZ	asset protection zone
BAM	Biodiversity Assessment Method
BAR	Biodiversity Assessment Report
BC Act	*Biodiversity Conservation Act (2016)*
BC Reg	*Biodiversity Conservation Regulation (2017)*
BCAR	Biodiversity Certification Assessment Report
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
BPA	bushfire protection assessment
BSSAR	Biodiversity Stewardship Site Assessment Report
CEEC	Critically endangered ecological community
CM Act	*Coastal Management Act 2016*
DAWE	Department of Agriculture, Water and the Environment.
DCP	development control plan
DEC	NSW Department of Environment and Conservation (superseded by DECC from April 2007)
DECC	NSW Department of Environment and Climate Change (superseded by DECCW from October 2009)
DECCW	NSW Department of Environment, Climate Change and Water (superseded by OEH from April 2011)
DEWHA	Commonwealth Department of Environment, Water, Heritage & the Arts (superseded by SEWPAC)
DOEE	Commonwealth Department of Environment & Energy (superseded by DAWE)
DPIE	NSW Department of Planning, Industry and Environment
EEC	endangered ecological community
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act (1979)*
EPBC Act	*Environment Protection and Biodiversity Conservation Act (1999)*
FM Act	*Fisheries Management Act*
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	local environmental plan
LGA	local government area
LLS Act	*Local Land Services Act (2013*)
NES	national environmental significance
NPW Act	*National Parks and Wildlife Act (1974)*
NRAR	Natural Resources Access Regulator (NSW)
NSW DPI	NSW Department of Industry and Investment
OEH	Office of Environment and Heritage (superseded by DPIE from August 2019)
PCT	plant community type
PFC	projected foliage cover
PPR	planning proposal request
RFS	NSW Rural Fire Service
SAII	Serious And Irreversible Impacts
SEPP	State Environmental Planning Policy
SEWPAC	Commonwealth Dept. of Sustainability, Environment, Water, Population & Communities (superseded by DOEE)
SIS	species impact statement
TEC	threatened ecological community
TPZ	tree preservation zone
TSC Act	*Threatened Species Conservation Act (1995) – Superseded by the Biodiversity Conservation Act (2016)*
VMP	vegetation management plan

TABLE OF CONTENTS

Figures

Tables

Appendices

1. BACKGROUND

Travers bushfire & ecology has been engaged to undertake a biodiversity constraints assessment within Lot 100, DP 1159926, at 229 Macquarie Grove Road, Cobbitty, within Camden Council local government area (LGA).

This report has been undertaken to support a Planning Proposal Request (PPR) to facilitate future super lot subdivision and land-use rationalisation. It also seeks to provide an overview of the current conservation initiatives and long-term conservation opportunities.

An aerial appraisal of the site is shown in Figure 1-1. The focal study area for this assessment was primarily within those parts of the Lot proposed for rezoning to SP2 and RU2 as shown on Figure 1-3.

The PPR shall be assessed under the provisions and guidance of the *Biodiversity Conservation Act* (*BC Act*), 2016.

Figure 1-1 – Aerial appraisal

1.1 Planning proposal request

The proposal seeks to amend the prevailing planning framework by rationalising the zoning regime and amending the minimum subdivision lot size provision. It is proposed to undertake a future super lot subdivision creating four (4) super lots as an initial development stage. The

current zoning and minimum lot size are shown on Figure 1-2 and Figure 1-4. The proposed zoning and minimum lot size maps are shown on Figure 1-3 and Figure 1-5.

As identified in Figure 1-2, the site is currently zoned a combination of E2, RU1, R5 and SP1, with a large portion of the RU1 area comprised of native vegetation managed under an in-perpetuity conservation agreement.

The zoning rationalisation includes the rezoning of a large tract of RU1 land to E2 land in a manner consistent with the adjoining land which is currently the subject of a biobanking conservation agreement.

Considerable effort has gone into ensuring that the relevant areas aligned with the current land uses and the proposed boundaries for the most part follow the existing fence lines. It is considered that all land of biodiversity value has been encapsulated in the proposed E2 zone.

The current E2 zone was established to align with a Voluntary Planning Agreement (VPA) with Camden Council which accompanied the development of the Kirkham Rise residential estate. Central to the VPA is a “Bushland Conservation Management Plan” (CMP) that was developed in 2008 by EcoLogical Australia and Mbark (developer). The CMP is attached as Appendix 7.

Land proposed to be zoned SP2 is land of particularly poor ecological/biodiversity quality. Indeed, the limited vegetation comprises largely an exotic garden setting, with very few native trees and many invasive woody weeds; it being noted to be the product of a century of European landscape and farming practices. Some areas of ‘grassland’ have a moderate level of native grasses and forbs in them but not of high importance for maintaining corridor linkages or piecing together fragments. The amount of moderate-good quality Cumberland Plain Woodland in this area is less than 1.5 ha and has been impacted by weeds or previous clearing.

By contrast the reduction in R5 land and increase in proposed E2 land is ~13 ha and importantly, is contiguous with E2 land which is the subject of the CMP. The retention of the farm workers cottage and stables in a precinct that is managed by the custodian of the SP2 land and heritage items/landscapes is considered to be the most appropriate and sustainable long-term strategy.

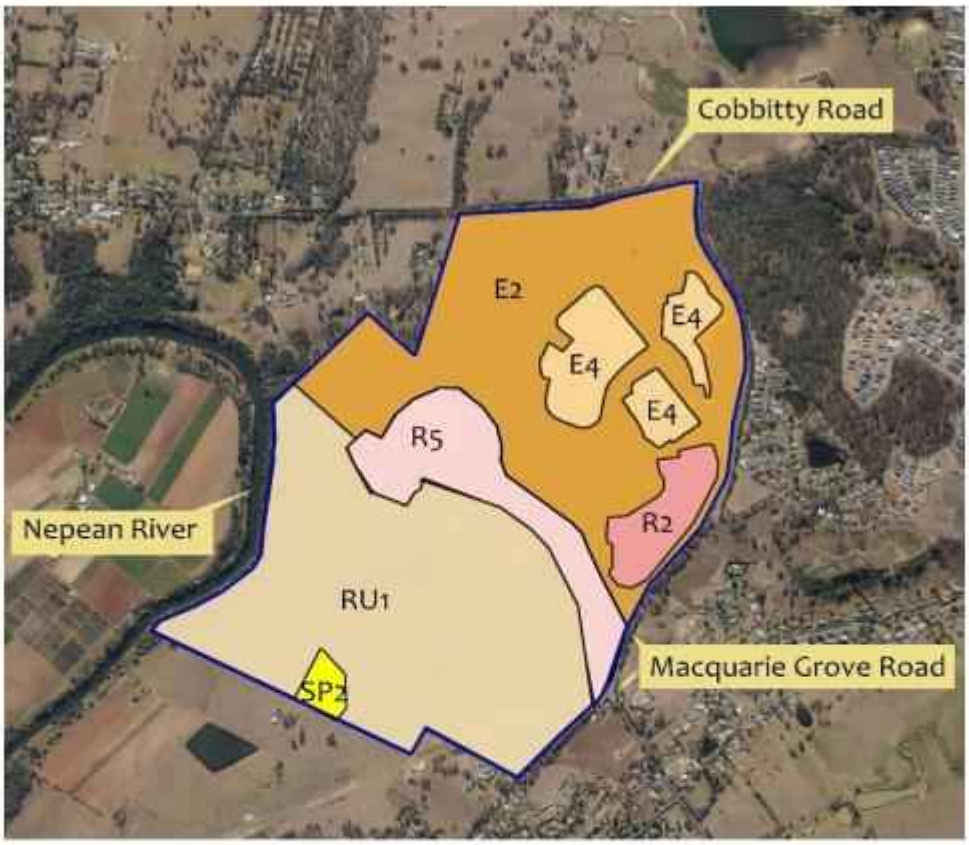


Figure 1-2 – Current zoning of the study area

(Source: NSW Planning Portal 2021)

More than 50% of the RU1 lands form the Mater Dei Stage 2 Biobanking site that protects the critically endangered ecological community, Cumberland Plain Woodland. There is also some River-flat Eucalypt Forest on Coastal Floodplains located on the Nepean River embankment and lower slopes, another endangered ecological community which is listed under the *BC Act.* The PPR seeks to rezone a large portion of the RU1 lands as E2, environmental protection.

Considerable effort has gone into ensuring that the relevant areas aligned with the current land uses and the proposed boundaries for the most part follow the existing fence lines. It is

considered that the land with biodiversity value worthy of protection has been encapsulated in the proposed E2 zone.

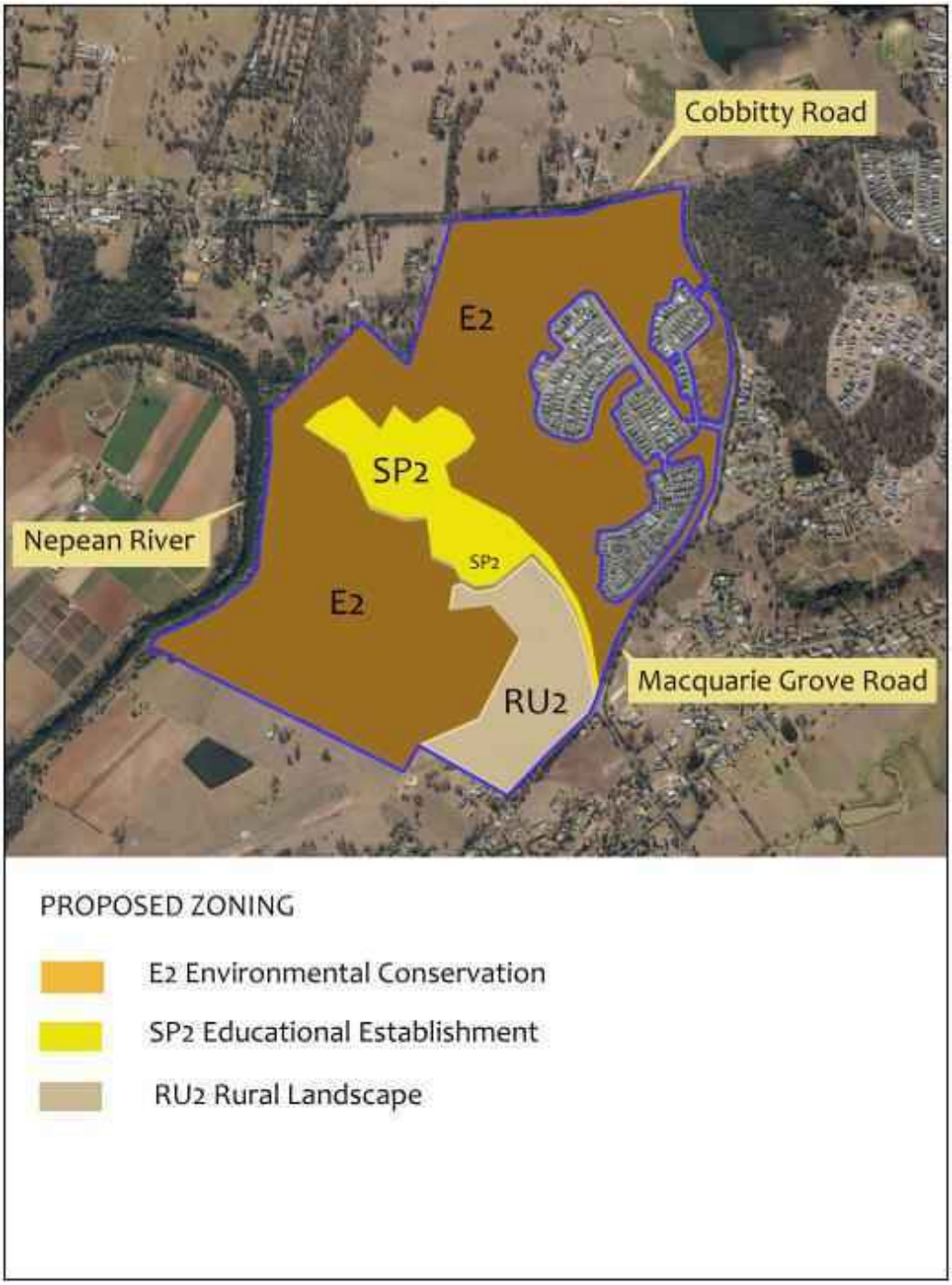


Figure 1-3 – Proposed zoning

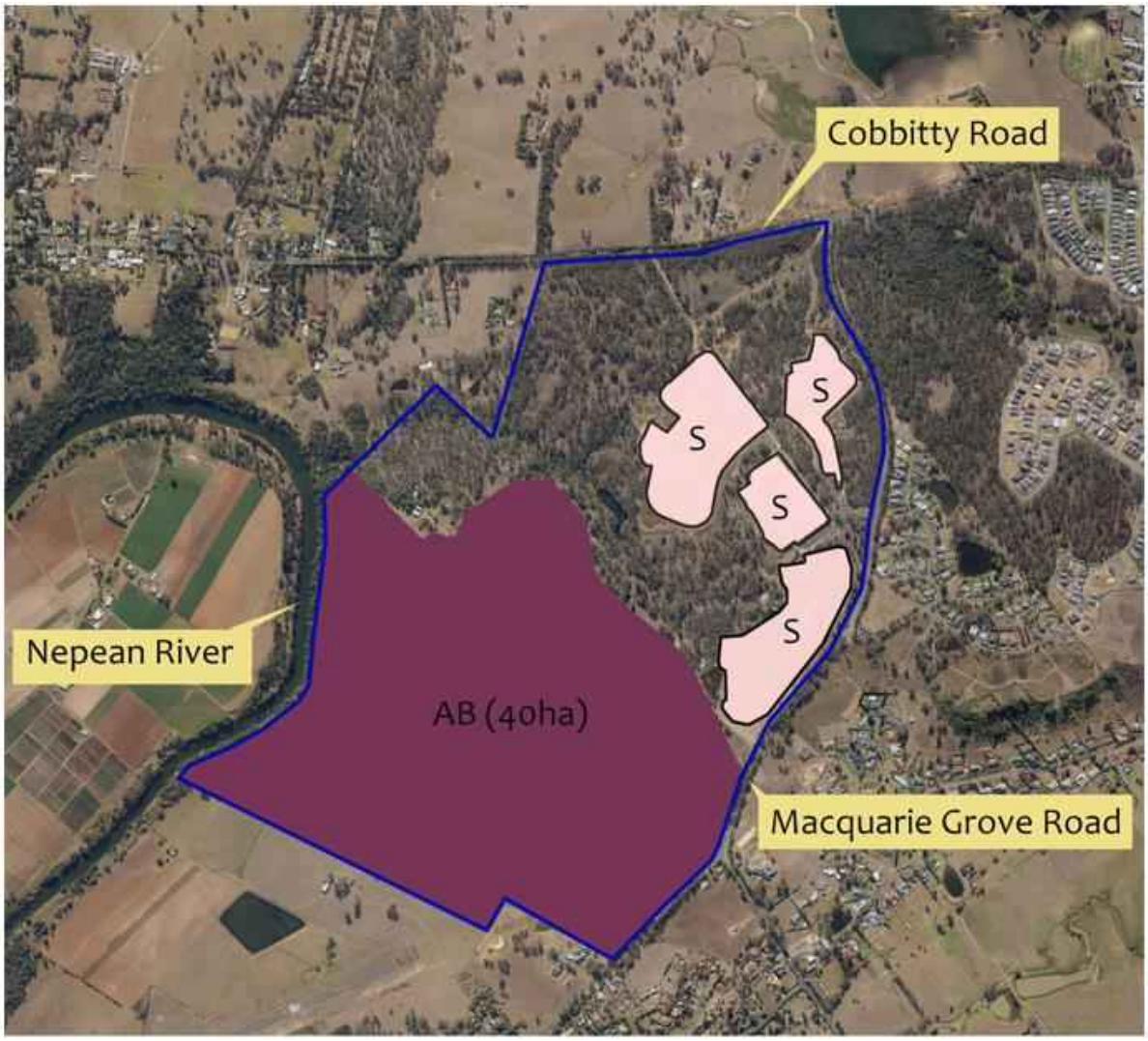


Figure 1-4 – Existing minimum lot sizes

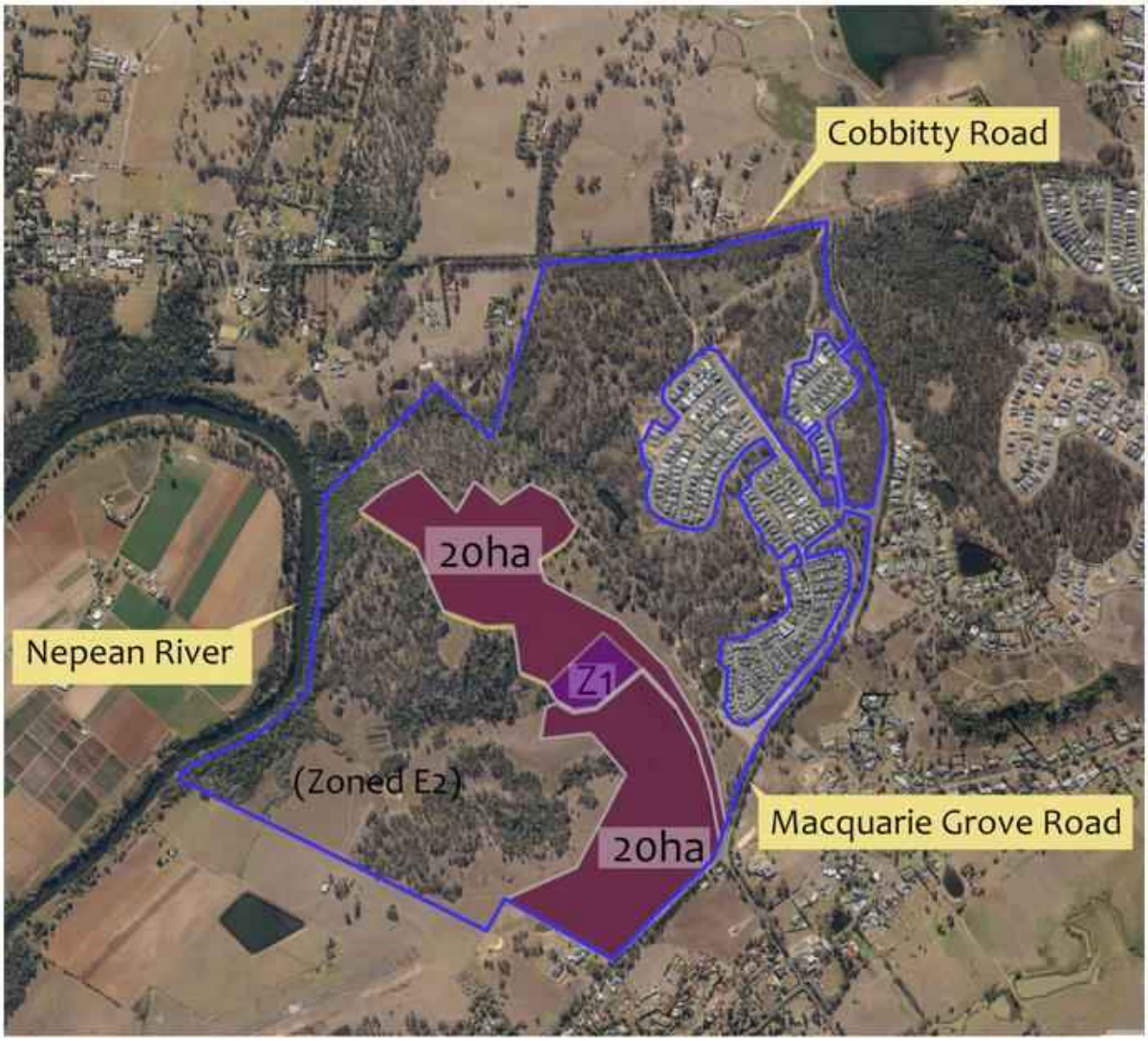


Figure 1-5 – Proposed minimum lot sizes

1.2 Site description

The subject property comprises approximately 250 ha, a substantial portion of which has significant biodiversity values as reflected in the Biodiversity Values Map (DPIE) (refer to Figure 5-1) and addressed further in this assessment.

Table 1-1 provides a summary of the planning, cadastral, topographical, and disturbance details of the development footprint.

Table 1-1 – Site features

Location	229 Macquarie Grove Road Cobbitty, Lot 100, DP 1159926)
Area	Approximately 245.49 ha
Local government area	Camden Council
Zoning	E2 – Environmental Conservation R5 – Large Lot Residential RU1 – Primary Production SP2 – Infrastructure – Proposed
Grid reference	287500E 6232700N MGA-56
Elevation	Approximately 55-100m AHD
Topography	The main investigation area shown on Figure 1-5 is 0-5 degrees. Slopes leading to watercourses outside of the main investigation area are mostly 5-15 degrees.
Geology and soils	Geology: Bringelly Shale, Wianamatta Group—shale, carbonaceous claystone, laminite, fine to medium-grained lithic sandstone, rare coal and tuff. Approximately 4.6 ha of quartz and lithic "fluvial" sand, silt, and clay on the most westerly portion of the site. Soils: With the exception of the Nepean River terrace, all soils within the study area part of the Blacktown Soil Landscape.
Catchment, drainage and stream order	There are 3 creek catchments on site which all drain into the Nepean River to the west. These are all first order streams and would require a minimum 10 m setback from top of bank for protection if there was any future development within those areas.
Existing land use	The majority of the land within the site area is currently maintained and managed under conservation agreements. There are two schools on site – Mater Dei and Aspect – as well as the Wivenhoe Residential Village.
Connectivity features	The site comprises critical Cumberland Plain Woodland habitat within the locality. Expansive connectivity exists from the Nepean River in the west, to a vegetation patch of approx. 189 ha that extends for approximately 4.5 km to the east of the site.

1.3 Existing “Conservation Status”

The property is the subject of several biodiversity initiatives, namely, two Biodiversity Agreements, management strategy documents and a Bushland Conservation Management Plan (CMP), see Appendices 3-7. Figure 1-6 shows the location of the conservation areas within the site.

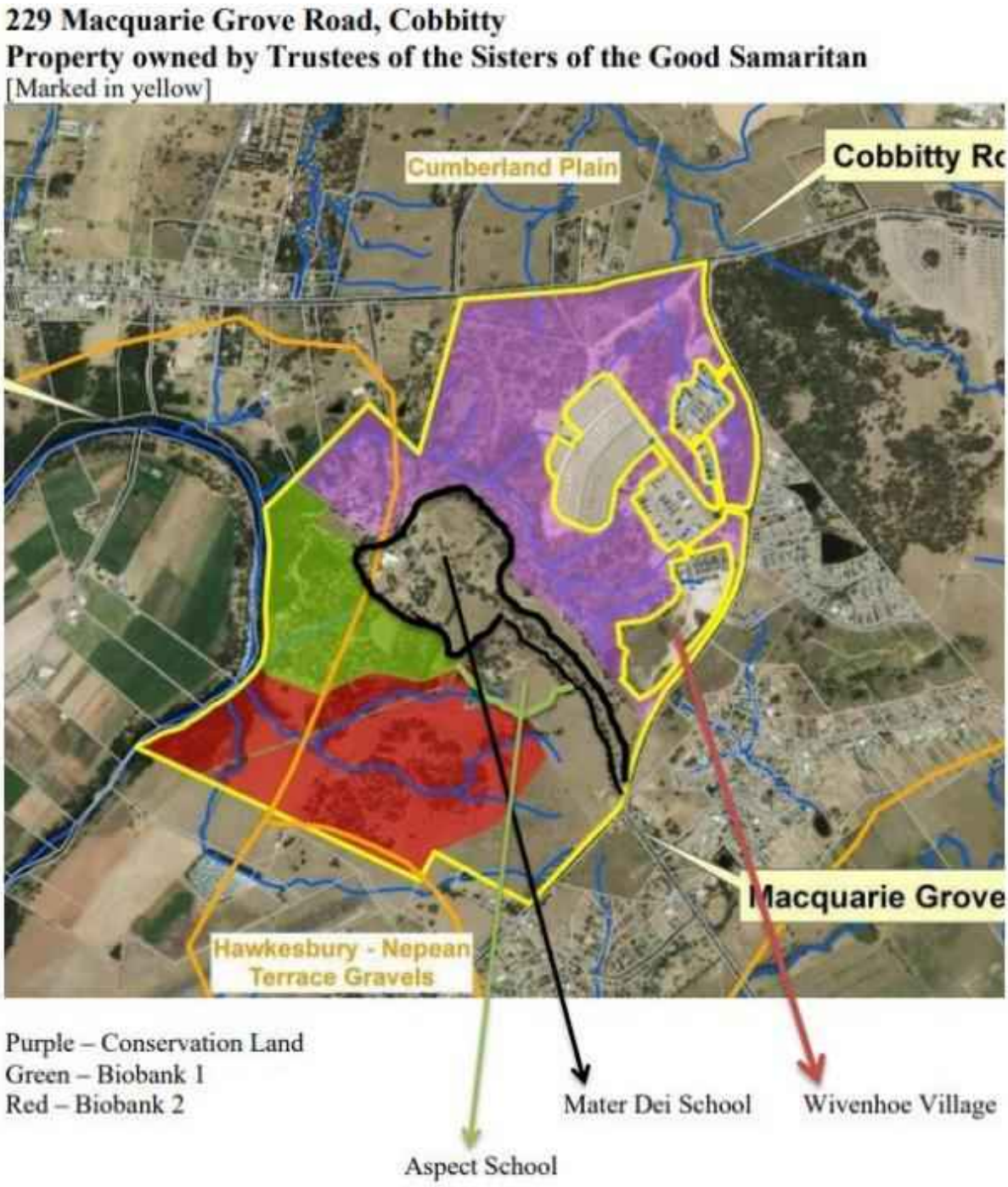


Figure 1-6 – Biodiversity conservation precincts

2. FLORA

2.1 Survey

A botanical survey was undertaken on 19 August 2021 over a time frame of approximately 8 hrs.

A botanical survey included a random meander in accordance with Cropper (1993) to gain a full species list of the plants within the site (remnant native species and weeds, but not planted specimens), and then five (5) BAM plots were undertaken at selected locations on site to assist in determining vegetation types and status. A review of the Atlas of NSW Wildlife (DPIE 2021) was undertaken prior to the site visit to determine threatened species previously recorded within 10 km of the development footprint, and relevant target searches were undertaken as suited in proximity to remnant vegetation in the main investigation area.

All naturally occurring species were identified to species level where possible, and are listed in Appendix 1.

2.2 Vegetation communities

The Remnant Vegetation of the western Cumberland subregion Plain West (VIS_ID 4207) maps the vegetation within the site as:

- PCT 849 - Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion
- PCT 850 - Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion
- PCT 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion

The vegetation mapping of the site and surrounds is shown on Figure 2-1.

Ground-truthing of the vegetation status has been undertaken, however it is very difficult to distinguish between PCT 849 and 850. Both are representative of the critically endangered ecological community, Cumberland Plain Woodland. One of the key differences is the presence of a mid-storey or lower canopy of *Acacia implexa.* Given the mid-storey is virtually absent across the entire investigation area, it is very difficult to distinguish between the two (2) PCTs which form the critically endangered ecological community, Cumberland Plain Woodland. For the botanical work undertaken in the study area, the plots undertaken are adequate in determining that Cumberland Plain Woodland is present.

PCT 835 occurs downslope from the study area in association with the riparian vegetation along the Nepean River and the tributaries, but do not occur within the study area.

Figure 2-1 – Remnant Vegetation of western Cumberland subregion (2013)

Field verification of the study area shows all native vegetation is commensurate with the *BC Act* listing for Cumberland Plain Woodland. It can be broken down into the following categories based on structure:

- Mod-good
- Regrowth
- Remnant Canopy
- Native Pasture

Mod-good

This describes vegetation within the study area that has retained vegetation including canopy species at near natural densities, moderate quality ground layer and potential contains a disturbed or partly managed mid-storey.

Eucalyptus tereticornis and *Eucalyptus moluccana* are the dominant canopy species with a canopy cover of mostly 15-40% and a height of 15-23m.

The mid-storey where present usually consists of *Bursaria spinosa* 1-3.5m tall. Some areas have been infested with exotic species including African Olive and African Boxthorn.

Common groundcovers include *Dichondra repens, Microlaena stipoides, Einadia* spp., *Themeda triandra, Glycine clandestina, Centella asiatica, Cyperus gracilis, Chloris truncata, Lobelia purpurascens* and *Oxalis perennans.*

Photo 1 – Remnant vegetation where BAM plot 2 was undertaken

Photo 2 - Remnant vegetation adjacent to the Aspect Macarthur School

Photo 3 – Remnant younger bushland in the far south-west corner of the study area

Regrowth

Areas of *Bursaria* with predominately native groundcovers.

Photo 4 – Native pasture with young scattered Bursaria shrubs

Remnant Canopy

Scattered canopy trees at lower densities than remnant bushland with a managed understorey. There is no mid-storey and the ground layer is slashed with variable proportions of natives and exotics. In most fragments of mapped vegetation, the cover of native species is 30% or greater.

Photo 5 – Remnant canopy trees in BAM plot 1

Photo 6 – Canopy trees to the north-west of the Mater Dei school

Native Pasture

Most of the southern paddocks have been fully cleared in the past. It appears that the areas are not heavily grazed in recent years and native grasses comprise 50% or more of the ground layer which means they meet the criteria for 'derived native grassland' which is also considered to be Cumberland Plain Woodland in this instance. Common groundcovers include *Rytidospermum* sp., *Themeda triandra, Cynodon dactylon, Dichondra repens, Microlaena stipoides* and *Glycine clandestina.*

Other Vegetation – Non-native

The vegetation around the Mater Dei school is planted. No specific botanical survey was undertaken in this area and species were not included in the inventory.

Photo 7 – Planted vegetation around the Mater Dei school entrance

Photo 8 – Planted trees and shrubs around ancillary buildings in the far north

Photos 9 and 10 depicting planted vegetation within the proposed SP2 lands with managed lawns (non-native)

Notes

Around the northern edge of the study area, *Angophora subvelutina* is a common canopy species, and *Pteridium esculentum* (Bracken Fern) is common in the ground layer. These species are much more common in Elderslie Banksia Scrub Woodland on sandy tertiary alluvium deposits which are known to occur on site and nearby to the south at Elderslie and

Spring Farm. *Banksia integrifolia* was not observed and in BAM plot 5, only 3 of the native species were listed in the final determinations for Elderslie Banksia Scrub Woodland.

Photo 9 – Sandy soil deposits just outside of the study area where vegetation appears to be a varied form Cumberland Plain Woodland with some resemblance to Elderslie Banksia Scrub Woodland.

2.3 Threatened flora species

The *BC Act* – A search of the Atlas of NSW Wildlife (DPIE, 2021) indicated a list of species that have been recorded within a 10 km radius of the study area. These species are listed in Table 2. Further species information and determination is provided in Appendix 2.

The *EPBC Act* – A review of the schedules of the *EPBC Act* indicated the potential for a list of threatened flora species to occur within a 10 km radius of the study area. These species have also been listed in Appendix 2 for consideration of potential to occur.

Based on the habitat assessment within Appendix 2 it is considered that the study area provides potential habitat for the following threatened flora species which are summarised in Table 2-1.

Table 2-1 – Threatened flora species with suitable habitat present

Scientific name	*BC Act*	*EPBC Act*	Potential to occur
Cynanchum elegans	E1	E	No likely suitable habitat within the study area.
Epacris purpurascens var. *purpurascens*	V		Prepares soils related to Shale-Sandstone Transition Forest at the headwalls of first order streams. No likely suitable habitat within the study area.
Eucalyptus benthamii	V	V	No likely suitable habitat within the study area. Potential to occur downslope on Nepean River embankment.
Melaleuca biconvexa	V	V	No likely suitable habitat within the study area.
Pimelea spicata	E1	E	Potential habitat within non-grazed vegetation. No specimens sighted during this survey.
Pomaderris brunnea	E1	V	No likely suitable habitat within the study area. Potential to occur downslope on Nepean River embankment.
Pultenaea pedunculata	E1		Potential habitat within non-grazed vegetation. No specimens sighted during this survey.
Rhodamnia rubescens	E4A		No likely suitable habitat within the study area.
Syzygium paniculatum	E1	V	No likely suitable habitat within the study area.
Thesium australe	V	V	No likely suitable habitat within the study area.

Additional species arising from the *EPBC Act* coordinate search (National) found further species considered to have habitat within a 10 km radius.

- *Acacia bynoeana, Acacia pubescens, Allocasuarina glareicola, Genoplesium baueri, Haloragis exalata* subsp. *exalata, Melaleuca deanei, Persicaria elatior, Persoonia bargoensis, Persoonia hirsuta, Pterostylis saxicola, Rhizanthella slateri* and *Thelymitra kangaloonica.*

The habitat attributes in the study area are unlikely to be suitable for most of the above species as they are not known to occur in Cumberland Plain Woodland, there are geographic limitations of the species, degradation or lack of sandstone influence. None of the above-listed species have been previously recorded within a 10 km radius of the study area.

2.4 Endangered flora populations

Endangered flora populations known in the Camden LGA are:

- Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas.

There are less than ten (10) records of the endangered populations within a 10 km radius of the site and they are all located at the Camden Golf Course in Narellan, approximately 3.5 km to the south-east.

There is limited intact vegetation within the main study area therefore reducing the likelihood of occurrence. No specimens of *Marsdenia viridiflora* subsp. *viridiflora* were observed within the main study area during the brief flora survey although further surveys for any future DA may be required for survey compliance.

2.5 Threatened ecological communities

The vegetation on site is recognised as the critically endangered ecological community, Cumberland Plain Woodland under the *BC Act.*

The proposal to consolidate areas of bushland currently within an RU1 zoning into an E2 zoning for protection is appropriate and supported.

The portion of the study area along the spine road and schools only contains remnant scattered trees of Cumberland Plain Woodland origin. The majority of trees appear to be in relatively good condition, although there is no regeneration occurring underneath due to the ongoing slashing of the ground layer. Given the lack of regeneration potential and low native species diversity, rezoning the R5 lands to SP2 should be supported.

Existing paddocks are occasionally used for grazing by animals, although only a small number of cows were noted at the time of inspection. The paddocks in the southern section of the study area are currently zoned RU1 and contain mostly native grasses but with a very low native species diversity. There are clumps of regenerating *Bursaria spinosa* which is a very common mid-storey species in Cumberland Plain Woodland. These grassland areas with occasional regrowth are also recognised as the critically endangered ecological community. There should be no reason why those paddocks could not be used in the same manner as present under an RU2 zoning.

With respect to the *EPBC Act*, Cumberland Plain Woodland may form part of the Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest which is listed as critically endangered. For recognition under the *EPBC Act* definition, the vegetation remnant must meet selected criteria as shown in the flowcharts on the following pages.

Figure 2-2 shows the scenario for areas of remnant canopy. Native vegetation occurs in the ground layer in patches and may be a little lower than 30% to qualify for recognition under the *EPBC Act* although overall would likely sit above 30% for the patch in its entirety. In BAM plot 1, *Cynodon dactylon* (Common Couch) occupied approximately 70% of the ground layer (not a constituent species of the TEC, however listed as a native species), with approximately 5% more cover made up of other locally occurring native grasses and forbs.

Figure 2-3 shows the scenario for areas of regrowth and native pasture. As there is no canopy layer, this is not recognised as the TEC under the *EPBC Act.*

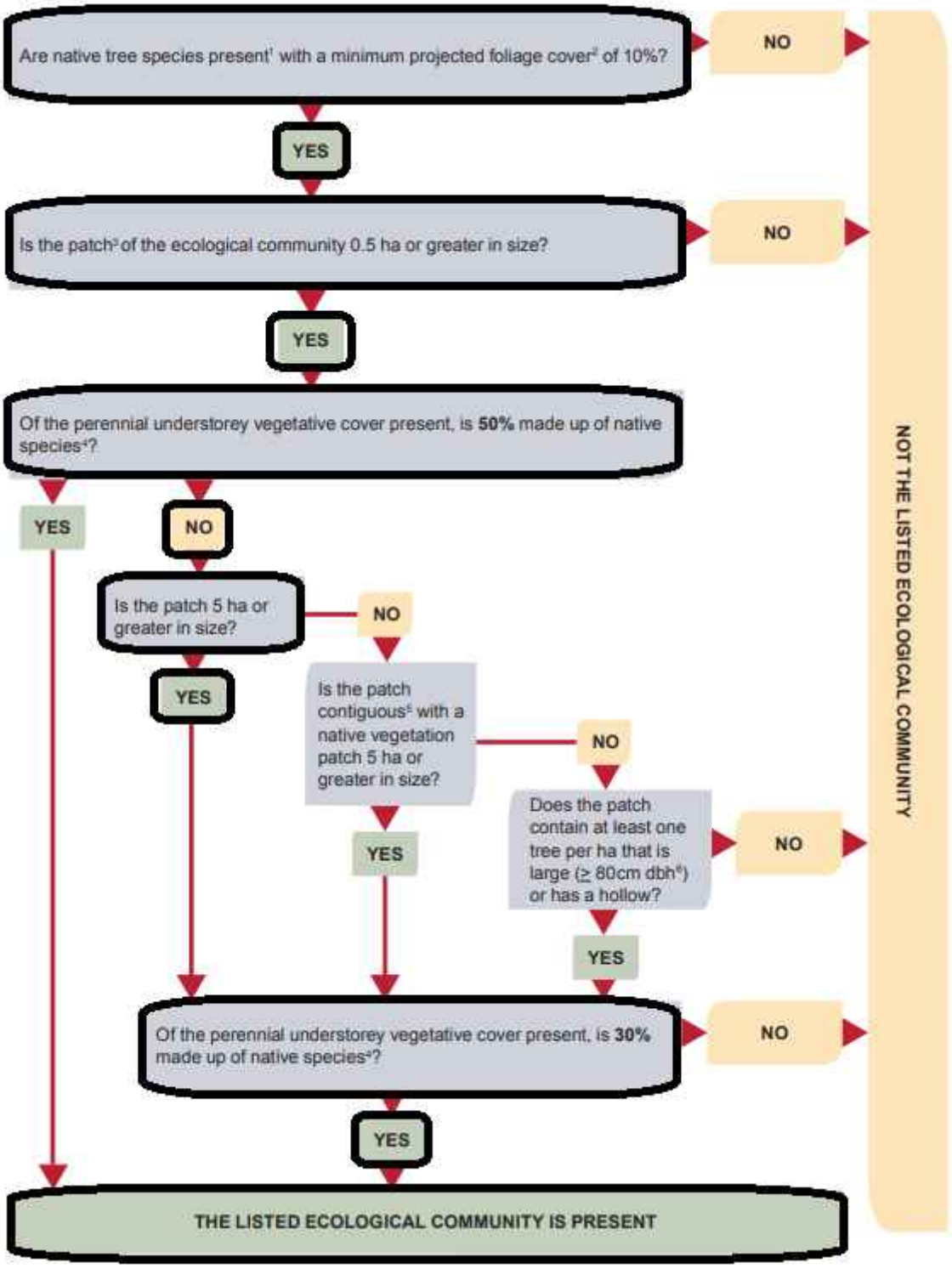


Figure 2-2 – EPBC flow path for remnant canopy areas

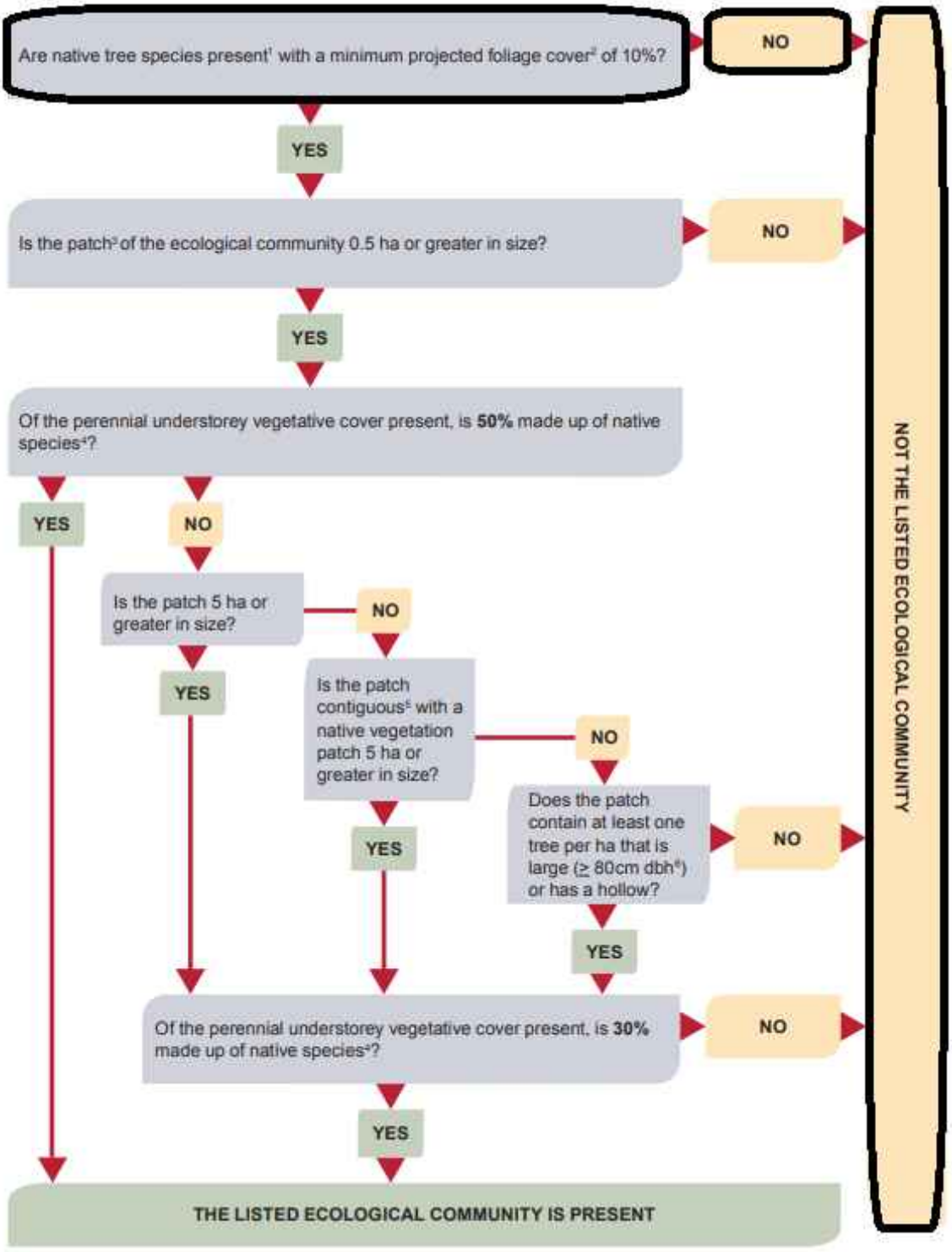


Figure 2-3 – EPBC flow path for regrowth and native pasture vegetation

3. FAUNA

3.1 Survey / Habitat assessment

3.1.1 Office of Environment and Heritage, 2016

The fauna survey methods used were based on those developed by the NSW National Parks and Wildlife Service (NPWS) Biodiversity Survey Coordination Unit (NPWS 1997).

Field surveys were mainly undertaken between 7 and 15 April 2016, although remote cameras were left on the Mater Dei property until 12 May 2016. An opportunistic survey was undertaken on 9 June 2016 to detect any additional species, particularly since heavy rains fell subsequent to the main autumn survey period.

Only weather conditions during the main autumn survey were provided. Weather conditions were fine and unseasonably warm leading up to and during the main part of the survey, with some rain recorded in the lead-up and calm conditions and sunny weather generally recorded during the main survey.

All incidental observations of fauna and signs of fauna in the Mater Dei property, seen while moving through the property and while undertaking surveys, were recorded.

Diurnal Survey

Diurnal bird surveys comprised approximately 20-minute observation and listening searches within a 2-hectare (100 metre x 200 metre) area at nine sites. Surveys were undertaken during the early morning in conditions of reasonable detectability (e.g. calm, low wind conditions). All bird species seen or heard were recorded.

10 motion-activated cameras, trained on hair tubes baited with either a mixture of rolled oats, peanut butter and honey, or a mixture of rolled oats, peanut butter, honey and tinned sardines, were established at 11 sites. A honey and water mixture was also used in conjunction with the baits, and was sprayed liberally around the vicinity of the hair tubes. One camera, at site 3, was moved from one site to another [site 11] following disturbance to this camera at the first site.

Remote cameras were set over a period of two days (7 and 8 April 2016), with the camera at site 3 relocated to site 11 on 21 April 2016 when it was found knocked to the ground by stock. Nine cameras were configured to take a single shot and a five-second video, while one camera (at site 10) was configured to take five rapid-fire single shots on detecting movement. Cameras were left undisturbed for 34 to 35 nights.

Reptile searches comprised approximately 30-minute active searches for reptiles amongst leaf litter and under debris at seven sites. Surveys occurred during afternoon hours in conditions of reasonable detectability (e.g. calm and sunny) to maximise detection. All species of reptile seen and their abundance were recorded.

Nocturnal Survey

Spotlighting surveys comprised searching for arboreal mammals and nocturnal birds using 50-watt spotlights along 200-metre transects over approximately 15-minute intervals at six sites. Spotlight surveys involved scans of trees with the spotlights to detect reflected eye shine, with surveyors also listening intently for fauna calls during survey periods.

Call playback surveys involved broadcasting the calls of three owl species and one mammal at three sites. The owl species were powerful owl (*Ninox strenua*), masked owl (*Tyto novaehollandiae*), and barking owl (*Ninox connivens*), while the mammal species was koala (*Phascolarctos cinereus*). Calls were pre-recorded and were amplified through a megaphone. Calls were broadcast for approximately five minutes.

Prior to broadcasts, the surrounding area was searched by spotlight for five minutes to detect any fauna in the immediate vicinity. A 10-minute listening period for calls followed broadcasts.

Microbats were surveyed using Anabat detectors equipped with recording devices, which were housed in plastic boxes and plastic snap-lock bags for weather protection, with microphones mounted approximately 1 metre off the ground by way of an extension cable. Anabat detectors were left at seven sites for four nights per site (although stock interfered with the Anabat unit at site 3 on the first night so this was moved to site 11 for three nights, and only three nights were recorded at site 2), and were set to record from 1800 hours to 0600 hours.

Anabat calls were downloaded and analysed by Dr Martin Shultz (independent bat call analysis expert and fauna specialist). Analysis assigned bat calls to four levels of confidence: definite, probable, possible, and unknown, based on Martin's previous experience in analysing data, use of reference calls, and discussion with other field workers.

Nocturnal frog surveys comprised approximately 30-minute listening surveys at two suitable wetlands (mostly standing water bodies).

3.1.2 Travers bushfire and ecology (2021)

A fauna survey, including diurnal and nocturnal survey and threatened species habitat assessment, was undertaken within the school grounds and nearby surrounds on 6 July 2021.

The fauna survey included:

- Opportunistic diurnal fauna call and activity survey surrounding the school grounds
- Nocturnal spotlighting surrounding the school grounds
- Call playback targeting Powerful Owl (*Ninox* strenua) and Koala (*Phascolarctos cinereus*)
- Frog call identification,
- Ultrasonic microbat recording (x1 passive recording station)

Weather conditions at the time of diurnal survey were 0-1/8 cloud, no wind, no rain, 10-15°C between 15:00 – 17:00.

Weather conditions at the time of nocturnal survey were 0-1/8 cloud, no wind, no rain, waning crescent moon, 6-10°C between 17:00 – 18:45.

Specific survey effort locations are shown on Figure 3-1. All fauna species recorded during survey within the development footprint and nearby surrounds are listed in Appendix 2.

A review of the Atlas of NSW Wildlife (DPIE 2021) was undertaken prior to the site visit to determine threatened species previously recorded within 10 km of the development footprint.

3.2 Habitat features

The following notable habitat features were observed present:

- Year-round nectar producing tree species, principally Eucalyptus sp.

- Ephemeral drainage lines in the south-western portion of the site in the proposed RU2 zone.
- Dense mid and upper-storey foliage areas on the periphery of the study area.
- Abandoned residential and rural buildings.

The proposed development layout enables retention of all recorded hollow-bearing trees.

3.3 Threatened fauna species

The *BC Act* – A search of the Atlas of NSW Wildlife (DPIE, 2021) provided a list of threatened fauna species previously recorded within a 10 km radius of the development footprint. These species are listed in Appendix 2 and are considered for potential habitat within the study area.

The *EPBC Act* – A review of the schedules of the *EPBC Act* identified a list of threatened fauna species or species habitat likely to occur within a 10 km radius of the development footprint. These species have also been listed in Appendix 2.

In accordance with Appendix 2, the following state and nationally listed threatened fauna species are considered to have suitable habitat with varying potential to occur within the study area. These are summarised in Table 3-1 below. Those denoted as being recorded are all from the OEH study of 2016.

Table 3-1 – Threatened fauna species with suitable habitat present

Common name	*BC Act*	*EPBC Act*	Potential to occur
White-bellied Sea Eagle	V	-	Recorded
Little Lorikeet	V	-	Recorded
Powerful Owl	V	-	Recorded
Speckled Warbler	V	-	Recorded
Varied Sittella	V	-	Recorded
Dusky Woodswallow	V	-	Recorded
Eastern Coastal Free-tailed Bat	V	-	Recorded
Large-eared Pied Bat	V	V	Recorded
Little Bent-winged Bat	V	-	Recorded (with possible certainty)
Large Bent-winged Bat	V	-	Recorded
Cumberland Plain Land Snail	E	-	Recorded (with possible certainty)
Freckled Duck	V	-	Y
Little Eagle	V	-	Y
Gang-gang Cockatoo	V	-	Y
Swift Parrot	E	E	Y
Brown Treecreeper	V	-	Y
Scarlet Robin	V	-	Y
Koala	V	V	Y
Grey-headed Flying-fox	V	V	Y
Yellow-bellied Sheathtail-bat	V	-	Y

Common name	*BC Act*	*EPBC Act*	Potential to occur
Eastern False Pipistrelle	V	-	Y
Southern Myotis	V	-	Y
Greater Broad-nosed Bat	V	-	Y
Green and Golden Bell Frog	E	V	Low
Blue-billed Duck	V	-	Low
Australasian Bittern	E	E	Low
Square-tailed Kite	V	-	Low
Red Knot	-	E	Low
Turquoise Parrot	V	-	Low
Regent Honeyeater	E4A	CE	Low
Hooded Robin	V	-	Low
Flame Robin	V	-	Low
Diamond Firetail	V	-	Low
Dural Land Snail	E	E	Low
Southern Bell Frog	E	V	Unlikely
Eastern Osprey	V	-	Unlikely
Barking Owl	V	-	Unlikely
Masked Owl	V	-	Unlikely
White-throated Needletail	-	V	Unlikely
Painted Honeyeater	V	V	Unlikely
Black-chinned Honeyeater	V	-	Unlikely
Spotted-tailed Quoll	V	E	Unlikely
Squirrel Glider	V	-	Unlikely

Fisheries Management Act (*FM Act*) – No habitats suitable for threatened aquatic species were observed within the study area and as such the provisions of this act do not require any further consideration.

3.4 Protected migratory species (National)

The *EPBC Act* Protected Matters Report provides additionally listed terrestrial, wetland and marine migratory species of national significance likely to occur, or with habitat for these species likely to occur, within a 10 km radius of the development footprint. The habitat potential of migratory species is considered in Appendix 2. The habitat potential of threatened migratory species are instead considered with other threatened species in Appendix 2.

One (1) nationally protected migratory bird species, Rufous Fantail, was recorded present within the study area during OEH'S 2016 survey.

3.5 Endangered fauna populations

There are no endangered fauna populations within the Camden Council LGA.

3.6 State Environmental Planning Policy (Koala Habitat Protection) 2021

State Environmental Planning Policy (Koala Habitat Protection) 2021 (Koala SEPP 2021) applies to land within LGAs listed under Schedule 1 of the Policy. We note that Camden Council is not actually listed under the LGAs to which SEPP 2021 applies. However, it is listed on the DPIE website (as of 17 September 2021) to be considered under the Central Coast Koala Area of Management. Any future development would require confirmation from the Council as to which state legislative document should be considered in terms of Koala Management.

Land to which this policy applies in accordance with Clause 6 of the SEPP 2021 is as follows:

(1) This Policy applies to each local government area listed in Schedule 1.

(2) The whole of each local government area is—

(a) in the koala management area specified in Schedule 1 opposite the local government area, or

(b) if more than 1 koala management area is specified, in each of those koala management areas.

(3) Despite subclause (1), this Policy does not apply to—

(a) land dedicated or reserved under the National Parks and Wildlife Act 1974, or acquired under Part 11 of that Act, or

(b) land dedicated under the Forestry Act 2012 as a State forest or a flora reserve, or

(c) land on which biodiversity certification has been conferred, and is in force, under Part 8 of the Biodiversity Conservation Act 2016, or Land use zone Permitted land uses RU1 Primary Production Primary production, including agriculture and a diverse range of primary industry enterprises RU2 Rural Landscape Compatible rural land uses, including extensive agriculture RU3 Forestry Forestry land uses and other development compatible with forestry land uses

*(d) land in the following land use zones, or an equivalent land use zone, unless the zone is in a local government area marked with an * in Schedule 1—*

(i) Zone RU1 Primary Production,

(ii) Zone RU2 Rural Landscape,

(iii) Zone RU3 Forestry.

The study area currently has land zoned as RU1, with the current proposed rezoning to alter much of this to E2 and RU2. Please Note that SEPP 2020 applies in lands zoned as RU1, RU2 and RU3 in accordance with SEPP 2020, unless the zone is in an LGA marked with an * in Schedule 1. We note that the marked LGAs in Schedule 1 all comprise the Greater Sydney area. Therefore, it is anticipated that should SEPP 2021 apply to Camden Council, it would join the list of LGAs marked with an * in Schedule 1, and that SEPP 2021 would apply to this site regardless of land zoning.

There is currently no approved Koala Plan of Management (KPoM) for the LGA that this site is located in. Therefore, before Council may grant consent to a development application for consent to carry out development on the land, the Council must assess whether the development is likely to have any impact on Koalas or Koala habitat.

If the Council is satisfied that a development is likely to have low or no impact on koalas or Koala habitat, the Council may grant consent to the development application. If the Council is satisfied that the development is likely to have a higher level of impact on Koalas or Koala habitat, the Council must, in deciding whether to grant consent to the development application, take into account a Koala assessment report for the development.

As of September 2021, the nearest Koala record to the study area was in 2013 along Cobbitty Road to the north. A record from 2013 also exists in the Camden township to the south. High-density Koala records are recorded in the City of Campbelltown LGA to the south-east, with remote records existing throughout a 10 km radius within the last 18 years, the maximum expected life-expectancy for wild Koalas.

Under the DPIE website, Camden City falls within the Central Coast Koala Management Area. Eight (8) tree species were recorded in the study area which are considered to be Koala use tree species within this Management Area. Of these species, four (4) are considered high preferred use (*Eucalyptus microcorys, E. moluccana, E. tereticornis* and *E. robusta*), two (2) are considered significant use (*Angophora costata and Corymbia eximia*) and two (2) are considered occasional use (*C. maculata* and *E. eugenioides*).

No evidence of Koala activity was recorded during fauna survey. Despite this, given the prominence of Koala use trees and recent records, it is considered that this study area comprises Potential Koala Habitat, with the possibility of future upgrading to Core Koala Habitat following appropriate biodiversity management practices.

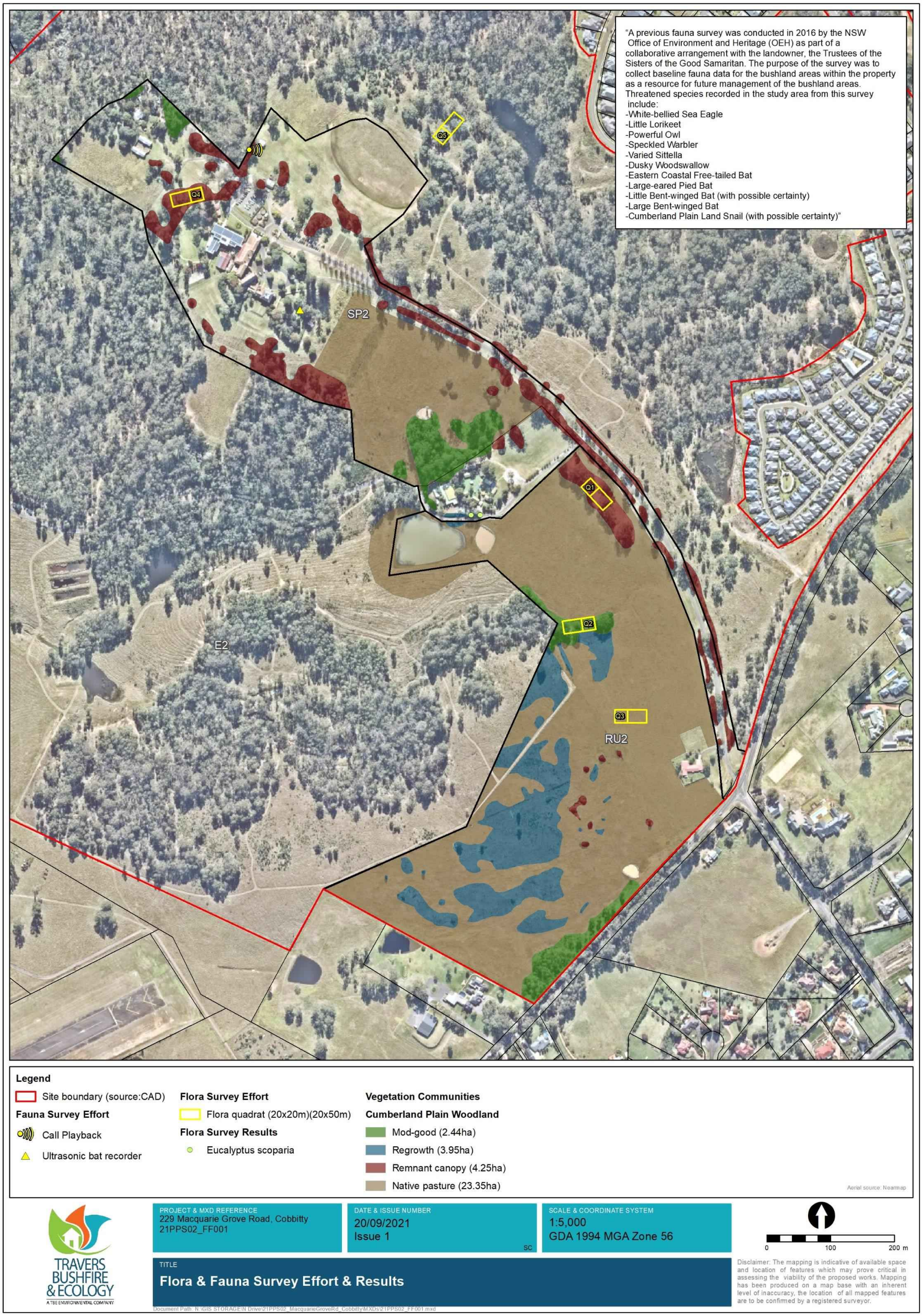


Figure 3-1 - Flora & fauna survey effort & results

3.7 Connectivity

The Nepean River lies directly to the west of the study area, providing riparian habitat linkages within at least a 10 km radius. The woodland on site is part of a vegetation patch of approx. 189 ha that extends for approximately 4.5 km to the east of the site. The site comprises critical Cumberland Plain Woodland habitat, the biodiversity value of which is magnified when considering the fragmented vegetation of the wider locality from urban sprawl and primary production.

The remnant has been classified as very important and Biobanking agreements are now protecting a large tract of the vegetation within the site.

The proposed SP2 and RU2 areas as indicated in red on Figure 3-2 below contain limited native vegetation that is not part of any primary corridor for fauna movement.

Figure 3-2 – Local connectivity

4. WATERCOURSES & WETLANDS

4.1 Endangered wetland communities

A number of wetland communities have been listed as an 'endangered ecological community' under the NSW *BC Act*.

Impacts on wetland communities must be assessed under the *BC Act* and if present the management of wetland communities must be given due consideration in accordance with the objectives and principles of management as contained within the NSW Wetlands Policy (2010), and appropriate management as determined by NSW DPIE - Office of Water in their general terms of approval. This may include but not limited to the provision of buffers, management of stormwater runoff and maintenance of natural inflows or runoff into those wetland communities.

- Artesian springs ecological community
- Castlereagh Swamp Woodland Community
- Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner bioregions
- Coastal Upland Swamp in the Sydney Basin bioregion
- Coolibah–Black Box woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands bioregions
- Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions
- Kurri sand swamp woodland in the Sydney Basin Bioregion
- Lagunaria swamp forest on Lord Howe Island
- Maroota Sands swamp forest
- Newnes Plateau Shrub Swamp in the Sydney Basin Bioregion
- Swamp oak floodplain forest of the NSW North Coast, Sydney Basin and South East Corner bioregions
- Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions
- The shorebird community occurring on the relict tidal delta sands at Taren Point
- Upland wetlands of the drainage divide of the New England Tableland Bioregion
- Wingecarribee Swamp

No endangered wetland communities were present within the study area. A referral to NRAR may be required for any potential future DA that occurs on waterfront land.

4.2 Groundwater dependent ecosystems (GDEs)

Groundwater dependent ecosystems (GDEs) are communities of plants, animals and other organisms whose extent and life processes are dependent on groundwater. Some examples of ecosystems which depend on groundwater are:

- wetlands;
- red gum forests, vegetation on coastal sand dunes and other terrestrial vegetation;
- ecosystems in streams fed by groundwater;
- limestone cave systems;
- springs; and
- hanging valleys and swamps.

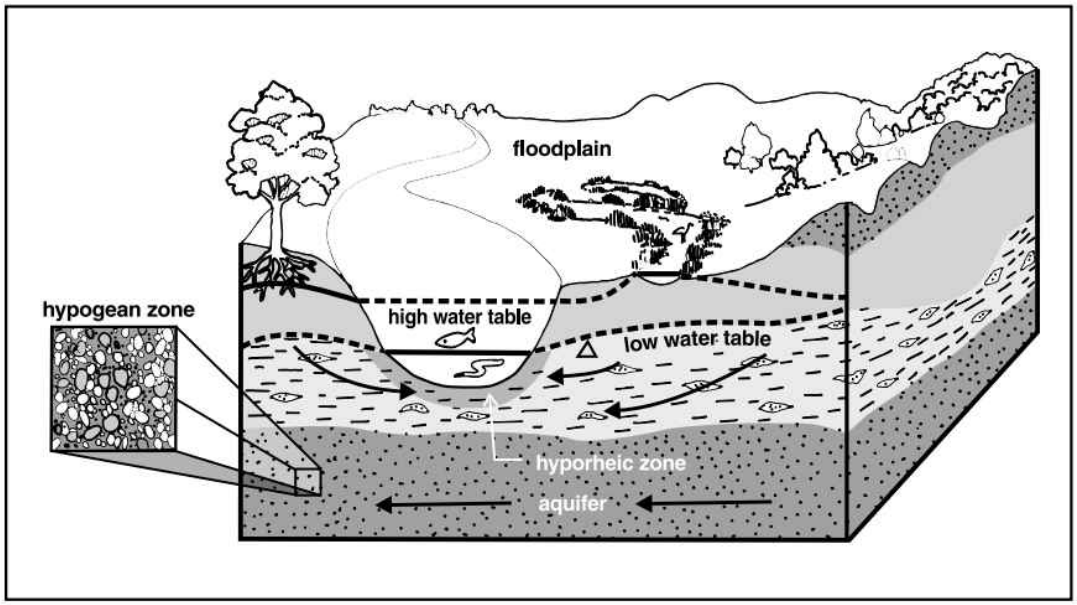


Figure 4-1 – Alluvial groundwater system discharging into a river

Groundwater dependent ecosystems are therefore ecosystems which have their species composition and their natural ecological processes determined by groundwater (NSW State Groundwater Dependent Ecosystems Policy April 2002).

Groundwater Dependent Ecosystems (GDEs) were not observed within the study area however they would occur on the lands downslope as they grade into River-flat Eucalypt Forest on Coastal Floodplains.

4.3 Watercourse assessment

Six Maps shows first order streams in the south-western portion of the study area. These are all ephemeral with no water present at the time of botanical survey in August 2021.

If there is future development within the RU2 zone where the drainages occur, a 10 m setback from the top of bank would need to be applied as a minimum for riparian protection.

4.4 Coastal Management SEPP

The NSW DPE *Coastal Wetlands and Littoral Rainforests Area Map*

(http://webmap.environment.nsw.gov.au/PlanningHtml5Viewer/?viewer=SEPP_CoastalManagement) identifies an area within the wetland as “coastal wetlands”, and a buffer area surrounding the margin of the wetland as “proximity area for coastal wetlands”.

As stated in the *State Environmental Planning Policy (Coastal Management) 2018*, development consent is required for any development within these areas and must not be given unless the consent authority is satisfied that sufficient measures have been, or will be, taken to protect, and where possible enhance, the biophysical, hydrological and ecological integrity of the coastal wetland. Additionally, within the “proximity area for coastal wetlands” area, development consent must not be given unless the consent authority is satisfied that the proposed development will not significantly impact on the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland.

No parts of the Nepean River are mapped as coastal wetlands. The nearest mapped wetland occurs approximately 9.5 km to the east north-east within a tributary of Bunbury Curran Creek on private property just to the north of Raby Road.

5. BC ACT AND POTENTIAL ASSESSMENTS

5.1 Biodiversity Offsets Scheme (BOS)

The *BC Act* repeals the *Threatened Species Conservation Act 1995*, the *Nature Conservation Trust Act 2001* and the animal and plant provisions of the *National Parks and Wildlife Act 1974*. Together with the *Biodiversity Conservation Regulation 2017*, the *BC Act* establishes a new regulatory framework for assessing and offsetting biodiversity impacts on proposed developments and clearing. It establishes a framework to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offsets Scheme (BOS). Where development consent is granted, the authority may impose as a condition of consent an obligation to retire a number and type of biodiversity credits determined under the Biodiversity Assessment Method (BAM).

Where development consent is granted, the authority may impose as a condition of consent an obligation to retire a number and type of biodiversity credits determined under the BAM.

The Biodiversity Offsets Scheme applies to:

- local development (assessed under Part 4 of the *Environmental Planning and Assessment Act 1979*) that triggers the Biodiversity Offsets Scheme Threshold or is likely to significantly affect threatened species based on the test of significance in section 7.3 of the *Biodiversity Conservation Act 2016*
- state significant development and state significant infrastructure projects, unless the Secretary of the Department of Planning, Industry and Environment and the environment agency head determine that the project is not likely to have a significant impact
- biodiversity certification proposals
- clearing of native vegetation in urban areas and areas zoned for environmental conservation that exceeds the Biodiversity Offsets Scheme threshold and does not require development consent
- clearing of native vegetation that requires approval by the Native Vegetation Panel under the *Local Land Services Act 2013*
- activities assessed and determined under Part 5 of the *Environmental Planning and Assessment Act 1979* (generally, proposals by government entities) if proponents choose to 'opt in' to the Scheme.

Proponents will need to supply evidence relating to the triggers for the Biodiversity Offsets Scheme Threshold and the test of significance (where relevant) when submitting their application to the consent authority.

5.2 Threshold assessment

The BOS includes three (3) elements to the threshold test – an area trigger, a Biodiversity Values Land Map trigger and the Test of Significance. If impacts exceed at least one of these triggers, the Biodiversity Offset Scheme applies to the proposed clearing.

5.2.1 Biodiversity Values Land Map

Biodiversity Values Land have been mapped within the study area – an offset is required under this trigger if future development is undertaken in an area identified as being purple on the figure below. Note, the biodiversity values mapping is regularly updated and should be consulted prior to any future DA. The figure shows the extent of the site and the study area (in blue) which is drawn approximately (not accurate).

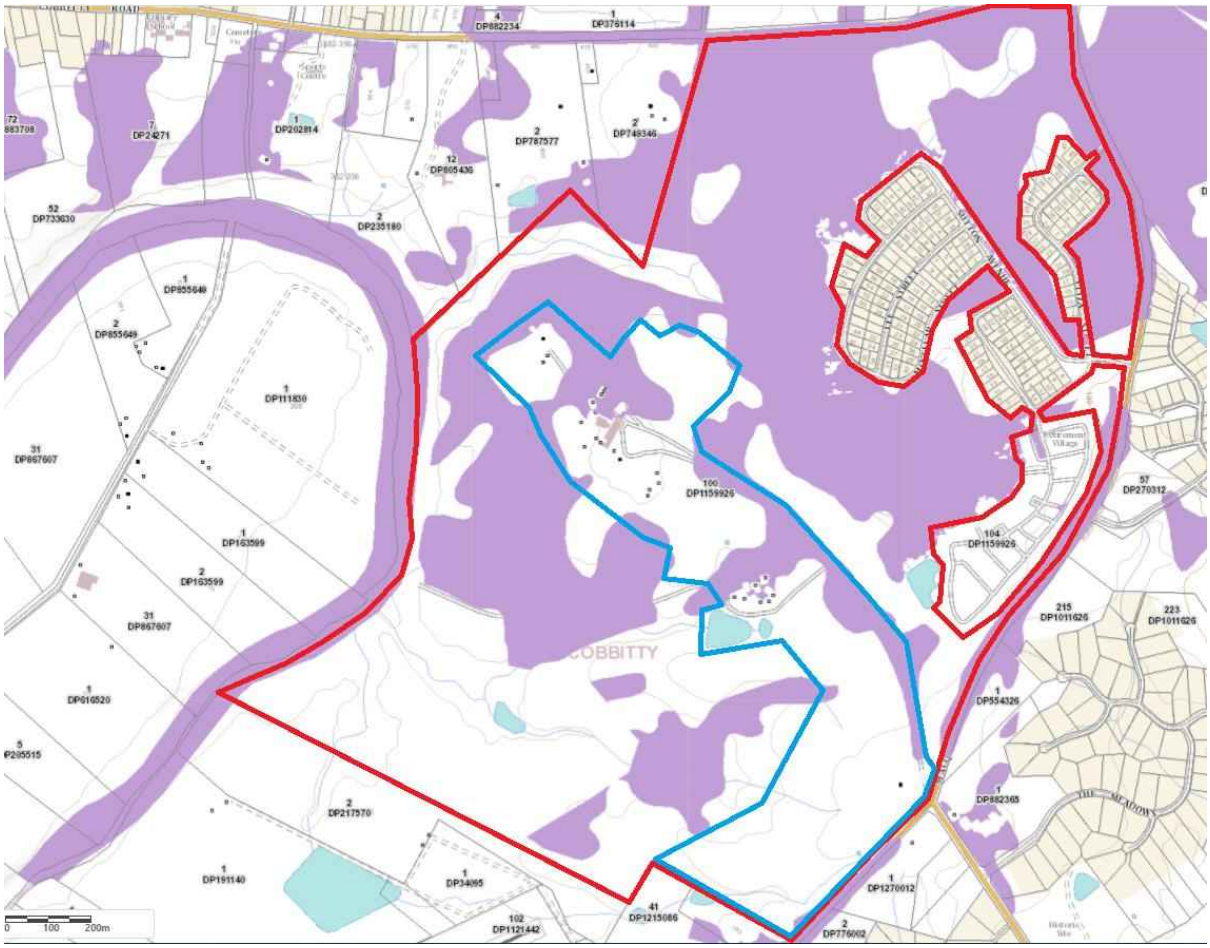


Figure 5-1 – Biodiversity values land (purple) relative to the study area (blue)

(Source: DPIE – Biodiversity Values Map – September 2021)

5.2.2 Area clearing threshold

The area threshold varies depending on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan (LEP)), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).

Table 5-1 – BOS Entry Threshold Report

Date of Calculation	20/09/2021 11:51 AM		**BDAR Required***
Total Digitised Area	1.03	ha	
Minimum Lot Size Method	LEP		
Minimum Lot Size	40	ha	
Area Clearing Threshold	1	ha	
Area clearing trigger Area of native vegetation cleared	Unknown #		Unknown #
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	yes		yes
Date of the 90 day Expiry	N/A		

Table 5-1 – BOS Entry Threshold Report identifies the minimum lot size of the site is 40 ha, and the area clearing threshold for which the BOS applies is 1 ha. Clearing of 'native vegetation' that exceeds 1 ha will require a biodiversity offset to be obtained. Note that 'native vegetation' includes planted native species. If the PPR is accepted and the minimum lot size is changed to 20 ha, the area clearing threshold would be reduced to 0.5 ha.

5.2.3 Test of Significance

As there is no DA, a test of significance is not required. A test of significance may be required for a future DA if the proposal impacts native vegetation or fauna habitat but below the thresholds or outside of biodiversity values land as previously described.

6. SUMMARY

6.1 Ecological overview

Ecological survey and constraints analysis has been undertaken in accordance with relevant legislation including the *Environmental Planning and Assessment Act 1979*, the *Biodiversity Conservation Act 2016*, the commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the *Fisheries Management Act 1994*.

In respect of matters required to be considered under the *Environmental Planning and Assessment Act 1979* and relating to the species and provisions of the *Biodiversity Conservation Act 2016*, no threatened fauna species, no threatened flora species and one (1) TEC were recorded within the study area, Cumberland Plain Woodland.

It should be recognised that these surveys fall short of compliance with the requirements under the BAM for the purposes of a DA. Based on the vegetation type and quality, there is potential habitat for *Pimelea spicata* and *Pultenaea pedunculata* within parts of the study area that have not been severely impacted by previous clearing and continuing understorey management. Some searches have been undertaken in areas of suitable habitat but not comprehensively across the entire study area. No specimens were recorded during the August 2021 survey.

Fauna survey was only conducted over a 1 day / evening time frame with no repeat surveys. The Anabats that were deployed did not record any threatened microbat species and being surveyed in winter is when they are much less active. It would be considered highly likely that some would utilise the study area from time to time. Threatened woodland birds such as Little Lorikeet, Speckled Warbler, Varied Sittella and Dusky Woodswallow would likely utilise parts of the study area on occasion for foraging. Cumberland Plain Woodland Snail was not identified during the survey although much of the remnant habitat within the study area lacks sufficient logs and leaf little for protective habitat. The more comprehensive surveys undertaken in 2016 did identify a number of threatened species within the site, although specific locations were not noted. The recorded species include White-bellied Sea-Eagle, Little Lorikeet, Powerful Owl, Speckled Warbler, Varied Sittella, Dusky Woodswallow, Eastern Coastal Free-tailed Bat, Large-eared Pied Bat, Little Bent-winged Bat (with possible certainty), Large Bent-winged Bat and Cumberland Plain Land Snail (with possible certainty).

Supplementary impacts from the provision of asset protection zones (APZs) must also be considered. Figure 6-1 shows the potential APZs for the area of the site zoned for future development. The degree of native vegetation in these areas is limited or absent. The existing access road out to Macquarie Grove is lined sparely with mostly Eucalyptus tree and a mown understorey. The vegetation in the north-west corner is managed landscaping trees with occasional remnant tree, reminiscent of Cumberland Plain Woodland. There is no mature vegetation in the southern portion of the potential APZ, only grazed paddocks with occasional stands of juvenile regrowth. The level of impact the potential APZs will have on the site's ecology is very minor and throughout most of its extent, will require largely maintenance of the grassy ground layer and very little removal of canopy trees.

Figure 6-1 – Extract from the bushfire report (APZs)

With respect to the areas of potential impact from APZ management, the bushfire report indicates two (2) types of APZ, one for residential purposes and the larger one for special fire protection purposes (SFPP). The estimated breakdown and impact calculations for each possible APZ type and zone are shown below. It should be noted that the impacts on regrowth, remnant canopy and native pasture vegetation will be minimal. Impacts on remnant mod-good vegetation will likely require a different and stricter regime for maintenance where the impacts are harder felt, although this only represents a small proportion of the vegetation located within potential APZs.

Table 6-1 – Estimates of APZ impacts

Veg	SFPP APZ (ha)	Residential APZ (ha)
Remnant canopy	2.67	1.08
Regrowth	0.87	0.19
Native pasture	7.66	2.05
Mod-good	1.12	0.24
TOTAL (ha)	12.32	3.56

For the PPR, a test of significance or a BDAR is not required. Comment is made primarily on the suitability of the proposed land zone change to better reflect current and future land-use of nominated parts of the site and a potential future super lot subdivision. If there was a future DA within the study area (proposed RU2 and SP2 zoned lands), Section 5 details the current thresholds for when the BOS is triggered. Most vegetated areas are mapped as containing biodiversity values. The current 40 ha lot minimum size means a 1 ha native vegetation threshold impact if mapped biodiversity values land is not triggered. If the biodiversity land values map or area of impact threshold triggered.

There are no endangered wetland communities or GDEs within the study area. The first order streams in the south-western corner of the study area would require a minimum 10 m from top of bank protection buffer for any future DA in the proposed RU2 zone.

In respect of matters required to be considered under the *Environment Protection and Biodiversity Conservation Act 1999*, no threatened fauna species, no threatened flora species and one (1) TEC were recorded within the study area; namely, Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest. Only parts of the state-listed Cumberland Plain Woodland are commensurate with the national listen. Areas of regrowth without a canopy and areas of nature pasture do not meet the criteria. Any future DA would need to consider its presence and undertake a separate assessment upon matters of NES.

Pimelea spicata is the only potential threatened flora species with habitat in the study area and it has not been observed.

Of the threatened fauna recorded in the 2016, those listed under the *EPBC Act* include the Large-eared Pied Bat. The White-bellied Sea-Eagle is listed as a protected marine species under this Act.

6.2 Suitability of the proposed rezoning

The proposal seeks to rezone parts of the site to a more appropriate land-use zoning. The schools are located on land proposed to be rezoned from R5 Large Lot Residential to SP2 Educational Establishment, parts of the RU1 Primary Production zoned land will be rezoned as RU2 Rural Landscape which other parts where there are significant areas of bushland and conservation works, these will be rezoned as E2 Environmental Conservation.

We fully support the protection of remnant vegetation as being rezoned to E2. These areas form part of an extensive area of native bushland containing threatened ecological communities and threatened species.

RU1 and RU2 zoning are quite similar, although RU2 would be potentially a more appropriate zone for the land in question, where the land is not being used for intensive agricultural pursuits and the landscape character of open rural land dominates. It appears that quite a large portion of the RU1 lands have been vacant or only intermittently used as denoted by the regrowth of extensive patches of *Bursaria spinosa.* Given the subtle differences in zoning and consideration of the rural landscape and level of protection on flora and fauna, there is no disadvantage ecologically if the zoning is changed to RU2.

The lands zoned R5 are proposed to be zoned SP2 Educational Establishment. Further, the Wivenhoe Homestead is listed as a heritage item in Schedule 5 of the Camden Council LEP 2010. The specific heritage conservation control at clause 5.10 are still in place with a change to the SP2 zoning. Given the location is adjacent to the airport, the SP2 zone appears to be a reasonable zoning for the lands containing the schools. There is very little habitat and remnant vegetation in this area, it being noted to largely comprise scattered trees within a park-like

landscape. From an ecological perspective a proposed SP2 zoning on these lands will not disadvantage the local ecology and could be supported.

The proposed super lot subdivision element of the proposal is considered to be compatible with the ecological sensitivities of the site.

All future development applications should, however, be accompanied by relevant biodiversity assessments in accordance with the prevailing biodiversity legislation.

Table 6-2 – Comparison of zones RU1 and RU2

RU1 zoning – Primary production	RU2 zoning – Rural landscape
1 Objectives of zone • To encourage sustainable primary industry production by maintaining and enhancing the natural resource base. • To encourage diversity in primary industry enterprises and systems appropriate for the area. • To minimise the fragmentation and alienation of resource lands. • To minimise conflict between land uses within this zone and land uses within adjoining zones. • To permit non-agricultural uses (including tourism-related uses) that are compatible with the agricultural, environmental and conservation values of the land. • To maintain the rural landscape character of the land. **2 Permitted without consent** Extensive agriculture; Forestry; Home occupations **3 Permitted with consent** Aquaculture; Bed and breakfast accommodation; Cellar door premises; Dual occupancies (attached); Dwelling houses; Environmental protection works; Extractive industries; Farm buildings; Farm stay accommodation; Garden centres; Home-based child care; Home businesses; Home industries; Intensive livestock agriculture; Intensive plant agriculture; Open cut mining; Roads; Roadside stalls; Rural industries; Rural supplies; Rural workers' dwellings; Secondary dwellings; Any other development not specified in item 2 or 4 **4 Prohibited** Amusement centres; Car parks; Commercial premises; Correctional centres;; Entertainment facilities; Exhibition homes; Exhibition villages; Freight transport facilities; Function centres; Health services facilities; Heavy industrial storage establishments; Home occupations (sex services); Industrial retail outlets; Industries; Information and education facilities; Port facilities;	**1 Objectives of zone** • To encourage sustainable primary industry production by maintaining and enhancing the natural resource base. • To maintain the rural landscape character of the land. • To provide for a range of compatible land uses, including extensive agriculture. • To protect and enhance areas of scenic value by minimising development and providing visual contrast to nearby urban development. • To maintain the visual amenity of prominent ridgelines. • To permit non-agricultural uses (including tourism-related uses) that are compatible with the agricultural, environmental and conservation values of the land. **2 Permitted without consent** Extensive agriculture; Home occupations **3 Permitted with consent** Agricultural produce industries; Aquaculture; Bed and breakfast accommodation; Cellar door premises; Dual occupancies (attached); Dwelling houses; Environmental protection works; Farm buildings; Farm stay accommodation; Home-based child care; Home businesses; Home industries; Intensive plant agriculture; Roads; Rural workers' dwellings; Sawmill or log processing industries; Secondary dwellings; Any other development not specified in item 2 or 4 **4 Prohibited** Advertising structures; Agriculture; Air transport facilities; Amusement centres; Camping grounds; Car parks; Caravan parks; Commercial premises; Correctional centres; Crematoria;; Entertainment facilities; Exhibition homes; Exhibition villages; Extractive industries; Freight transport facilities; Function centres; Health services facilities; Heavy industrial storage establishments; Home occupations (sex services); Industrial retail outlets; Industries; Information and education

RU1 zoning – Primary production	RU2 zoning – Rural landscape
Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Residential accommodation; Restricted premises; Service stations; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Vehicle body repair workshops; Vehicle repair stations; Warehouse or distribution centres; Wharf or boating facilities; Wholesale supplies	facilities; Mortuaries; Port facilities; Recreation facilities (indoor); Recreation facilities (major); Residential accommodation; Restricted premises; Rural industries; Service stations; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Warehouse or distribution centres; Wharf or boating facilities; Wholesale supplies

Table 6-3 - Comparison of zones R5 and SP2

R5 zoning – Large lot residential	RU2 zoning – Rural landscape
Zone R5 Large Lot Residential **1 Objectives of zone** • To provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality. • To ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future. • To ensure that development in the area does not unreasonably increase the demand for public services or public facilities. • To minimise conflict between land uses within this zone and land uses within adjoining zones. **2 Permitted without consent** Extensive agriculture; Home occupations **3 Permitted with consent** Bed and breakfast accommodation; Dual occupancies (attached); Dwelling houses; Home-based child care; Home businesses; Home industries; Oyster aquaculture; Pond-based aquaculture; Roads; Tank-based aquaculture; Any other development not specified in item 2 or 4 **4 Prohibited** Advertising structures; Agriculture; Air transport facilities; Amusement centres; Animal boarding or training establishments; Boat building and repair facilities; Boat sheds; Camping grounds; Car parks; Caravan parks; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Electricity generating works; Entertainment facilities; Exhibition homes; Extractive industries; Forestry; Freight transport facilities; Function centres; Heavy industrial	**Zone SP2 Infrastructure** **1 Objectives of zone** • To provide for infrastructure and related uses. • To prevent development that is not compatible with or that may detract from the provision of infrastructure. **2 Permitted without consent** Nil **3 Permitted with consent** Aquaculture; The purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose; Community facilities; Environmental protection works; Flood mitigation works; Recreation areas; Roads **4 Prohibited** Any development not specified in item 2 or 3

R5 zoning – Large lot residential	RU2 zoning – Rural landscape
storage establishments; Home occupations (sex services); Industrial retail outlets; Industries; Information and education facilities; Mortuaries; Neighbourhood shops; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Registered clubs; Research stations; Residential accommodation; Restricted premises; Rural industries; Service stations; Sewerage systems; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Waste or resource management facilities; Wharf or boating facilities; Wholesale supplies	

6.3 Conservation initiatives

A substantial portion of the site has significant biodiversity values as reflected in the Biodiversity Values Map (DPIE) and addressed in this assessment and summarised previously.

Further, these lands are subject to currently Biobanking Agreements and Bushland Conservation Initiatives, pursuant to the attached conservation strategy documents or Bushland Conservation Management Plan (CMP), forming commitments in a Planning Agreement relating to the land.

It is understood that extensive bushland conservation works have been undertaken in accordance with the subject agreements and plans and appear to have established a framework for the conservation of these sensitive lands and potentially a sustainable future.

7. CONCLUSION

The ecological investigation undertaken, and overview of conservation initiatives and commitments have established that proposed zoning rationalization and super lot subdivision pose no major threats to the unique ecological values of the site. Further, the commitment to on-going conservation initiatives is supported and encouraged.

It is noted, however, that and future development application beyond the super lot subdivision proposal should be accompanied by appropriate ecological investigations in accordance with the relevant biodiversity legislation at that time. Such limited development opportunities on the proposed RU2 and SP2 lands are importantly on the least ecologically sensitive lands comprising the property.

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)

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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "D"
Appendices 1 & 2
Biodiversity Overview and Management Principles
(Travers Ecological)

October 2021

Appendix 1. Flora & Fauna Species Lists

Flora species recorded

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

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

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

Family	Scientific name	Common name
Verbenaceae	*Verbena bonariensis**	Purpletop
Verbenaceae	*Verbena rigida**	Veined Verbena
Plantaginaceae	*Veronica plebeia*	Creeping Speedwell
Agavaceae	*Yucca aloifolia**	Yucca
VINES		
Basellaceae	*Anredera cordifolia**	Madeira Vine
Apocnyaceae	*Araujia sericifera**	Mothvine
Ranunculaceae	*Clematis aristata*	Old Man's Beard
Fabaceae	*Glycine clandestina*	Twining Glycine
Fabaceae	*Hardenbergia violacea*	False Sarsparilla
Bignoniaceae	*Pandorea pandorana*	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	*Tachybaptus novaehollandiae*	Not given	
Australasian Darter	*Anhinga novaehollandiae*	Not given	
Australian Hobby	*Falco longipennis*	Not given	
Australian King Parrot	*Alisterus scapularis*	Not given	
Australian Magpie	*Cracticus tibicen*	Not given	OW
Australian Owlet-nightjar	*Aegotheles cristatus*	Not given	
Australian Raven	*Corvus coronoides*	Not given	OW
Australian White Ibis	*Threskiornis molucca*	Not given	
Australian Wood Duck	*Chenonetta jubata*	Not given	O
Azure Kingfisher	*Ceyx azureus*	Not given	
Bar-shouldered Dove	*Geopelia humeralis*	Not given	
Bell Miner	*Manorina melanophrys*	Not given	W
Black-faced Cuckoo-shrike	*Coracina novaehollandiae*	Not given	
Brown Cuckoo-Dove	*Macropygia amboinensis*	Not given	
Brown Gerygone	*Gerygone mouki*	Not given	
Brown Goshawk	*Accipiter fasciatus*	Not given	
Brown Thornbill	*Acanthiza pusilla*	Not given	
Brown-headed Honeyeater	*Melithreptus validirostris*	Not given	
Common Bronzewing	*Phaps chalcoptera*	Not given	
Common Myna *	*Sturnus tristis*	Not given	
Common Starling *	*Sturnus vulgaris*	Not given	
Crested Pigeon	*Ocyphaps lophotes*	Not given	OW
Crested Shrike-tit	*Falcunculus frontatus*	Not given	
Crimson Rosella	*Platycercus elegans*	Not given	
Double-barred Finch	*Taeniopygia bichenovii*	Not given	
Dusky Moorhen	*Gallinula tenebrosa*	Not given	

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

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

Common name	Scientific name	Method observed	
Large Bent-winged Bat[TS]	*Miniopterus orianae oceanensis*	U	
Large-eared Pied Bat [TS]	*Chalinolobus dwyeri*	U	
Large Forest Bat	*Vespadelus darlingtoni*	U[PO]	
Little Bent-winged Bat [TS]	*Miniopterus australis*	U[PO]	
Little Forest Bat	*Vespadelus vulturnus*	U	
Long-eared Bat	*Nyctophilus* sp.	U	
Rabbit *	*Oryctolagus cuniculus*	Not given	
Ride's Freetail-bat	*Ozimops ridei*	U	
Short-beaked Echidna	*Tachyglossus aculeatus*	Not given	
Sugar Glider	*Petaurus breviceps*	Not given	
Swamp Wallaby	*Wallabia bicolor*	Not given	
White-striped Mastiff-bat	*Austronomus australis*	U	
Reptiles			
Bar-sided Skink	*Eulamprus tenius*	Not given	
Blackish Blind Snake	*Anilios nigrescens*	Not given	
Delicate Skink	*Lampropholis delicata*	Not given	
Eastern Blue Tongue Lizard	*Tiliqua scincoides*	Not given	
Eastern Long-necked Turtle	*Chelodina longicollis*	Not given	
Eastern Water Dragon	*Intellagama lesueurii*	Not given	
Eastern Water Skink	*Eulamprus quoyii*	Not given	
Elegant Snake-eyed Skink	*Cryptoblepharus pulcher*	Not given	
Grass Skink	*Lampropholis guichenoti*	Not given	
Red-bellied Black Snake	*Pseudechis porphyriacus*	Not given	
Three-toed Skink	*Saiphos equalis*	Not given	
Amphibians			
Bleating Tree Frog	*Litoria dentata*	Not given	
Common Eastern Froglet	*Crinia signifera*	Not given	W
Dwarf Tree Frog	*Litoria fallax*	Not given	
Eastern Banjo Frog	*Limnodynastes dumerilii*	Not given	
Peron's Tree Frog	*Litoria peronii*	Not given	
Striped Marsh Frog	*Limnodynastes peronii*	Not given	
Verreaux's Frog	*Litoria verreauxii*	Not given	W
Mollusc			
Cumberland Plain Land Snail [TS]	*Meridolum corneovirens*	Not given[PO]	
Brown Garden Snail *	*Cornu aspersum*	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

Appendix 2. Threatened Flora & Fauna 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
Acacia bynoeana 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. *Distribution limits N-Newcastle S-Berrima.*	no	no	n/a	n/a	no
Acacia pubescens EPBC	V	V	Spreading shrub 1-4 m high open sclerophyll growing in open forest and woodlands on clay soils. *Distribution limits N-Bilpin S-Georges River.*	no	marginal	no	n/a	no
Allocasuarina glareicola EPBC	E1	E	Small shrub 1-2 m high growing in open sclerophyll forest on lateritic soils derived from tertiary alluviums. *Distribution limits Castlereagh NR region.*	no	no	n/a	n/a	no
Cynanchum elegans DPIE EPBC	E1	E	Climber or twiner to 1m. Grows in rainforest gullies, scrub & scree slopes. *Distribution limits N-Gloucester S-Wollongong.*	no	no	n/a	n/a	no
Epacris purpurascens var. purpurascens DPIE	V	-	Erect shrub to 1.5 m high growing in sclerophyll forest and scrub and near creeks and swamps on sandstone. *Distribution limits N-Gosford S-Blue Mountains.*	no	no	n/a	n/a	no
Eucalyptus benthamii DPIE EPBC	V	V	Blue gum to 40 m high. Wet forest on sandy alluvial soils. *Distribution limits N-Yarramundi S-Bents Basin.*	no	Outside of study area along Nepean River embankment	yes	yes	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
Genoplesium baueri EPBC	E1	E	A terrestrial orchid that grows in sparse sclerophyll forest and moss gardens over sandstone. Flowers Feb–Mar. *Distribution limits N – Hunter Valley S – Nowra.*	no	no	n/a	n/a	no
Haloragis exalata subsp. exalata EPBC	V	V	Shrub to 1.5 m high. Grows in damp places near watercourses. *Disjunctly distributed in the Central Coast, South Coast and North Western Slopes botanical subdivisions of NSW.*	no	no	n/a	n/a	no
Melaleuca biconvexa 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. *Distribution limits N-Port Macquarie S-Jervis Bay.*	no	no	n/a	n/a	no
Melaleuca deanei EPBC	V	V	Shrub to 3 m high. Grows in heath on sandstone. *Distribution limits N-Gosford S-Nowra.*	no	no	n/a	n/a	no
Persicaria elatior 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. *Varied distribution from SE NSW to QLD.*	no	no	n/a	n/a	no
Persoonia bargoensis EPBC	E1	V	Erect shrub to 1 m high. Grows in woodland to Dry sclerophyll forest, on sandstone and laterite. *Restricted to the Bargo area.*	no	no	n/a	n/a	no
Persoonia hirsuta EPBC	E1	E	Erect to decumbent shrub. Grows in dry sclerophyll forest and woodland on Hawkesbury sandstone with infrequent fire histories. *Distribution limits N-Glen Davis S-Hill Top.*	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
Pimelea spicata DPIE EPBC	E1	E	Decumbent or erect shrub to 0.5 m high. Occurs principally in woodland on soils derived from Wianamatta Shales. *Distribution limits N-Lansdowne S-Shellharbour.*	no	yes	Many records 3-4km south-east	yes	yes
Pomaderris brunnea 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
Pterostylis saxicola EPBC	E1	E	Terrestrial orchid. Grows in shallow sandy soil above rock shelves, usually near Wianamatta / Hawkesbury transition. *Distribution limits N-Hawkesbury River S-Campbelltown.*	no	no	n/a	n/a	no
Pultenaea pedunculata DPIE	E1	-	Prostrate shrub. Grows in dry sclerophyll forest and disturbed sites. *Confined to Prestons and Villawood in NSW.*	no	yes	yes	yes	yes
Rhizanthella slateri 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
Rhodamnia rubescens 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. Distribution limits N-Tweed Heads S-Batemans Bay.	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
Syzygium paniculatum DPIE EPBC	V	V	Small tree. Subtropical and littoral rainforest on sandy soil. *Distribution limits N-Forster S-Jervis Bay.*	no	no	n/a	n/a	no
Thelymitra sp. 'Kangaloon' *(Thelymitra kangaloonica)* EPBC	E4A	CE	A terrestrial orchid with dark blue flowers, presented in mid-late spring. *Only known from the Robertson area in the Southern Highlands.* Often in association with the endangered ecological community *Temperate Highland Peat Swamps on Sandstone.*	no	no	n/a	n/a	no
Thesium australe DPIE EPBC	V	V	Erect herb to 0.4 m high. Root parasite. Themeda grassland or woodland often damp. *Distribution limits N-Tweed Heads S-south of Eden.*	no	unlikely	1 record within 10km	Record from 1803	no

DPIE	- Denotes species listed within 10km of the development footprint on the *Atlas of NSW Wildlife*
EPBC	- Denotes species listed within 10km of the development footprint in the *EPBC Act* 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 *Atlas of NSW Wildlife* 3. 'nearby' or 'recent' records are species specific accounting for home range, dispersal ability and life cycle

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) *Notes 1,2 & 3*	Record(s) from recent years (y/n) *Notes 1,2 & 3*	Potential to occur
Giant Burrowing Frog *Heleioporus australiacus* DPIE EPBC	V	V	Inhabits open forests and riparian forests along non-perennial streams, digging burrows into sandy creek banks. *Distribution limit: N-Near Singleton S-South of Eden.*	N	N	N	N	Not likely
Green and Golden Bell Frog *Litoria aurea* DPIE EPBC	E	V	Prefers the edges of permanent water, streams, swamps, creeks, lagoons, farm dams and ornamental ponds. Often found under debris. *Distribution limit: N-Byron Bay S-South of Eden.*	N	Y	N	Y	Low
Southern Bell Frog *Litoria raniformis* EPBC	E	V	Prefers the edges of permanent water, streams, swamps, creeks, lagoons, farm dams and ornamental ponds. Often found under debris. *Distribution limit: N-ACT Bay. S-Albury.*	N	Y	N	N	Unlikely
Broad-headed Snake *Hoplocephalus bungaroides* EPBC	E	V	Sandstone outcrops, exfoliated rock slabs and tree hollows in coastal and near coastal areas. *Distribution limit: N-Mudgee Park. S-Nowra.*	N	N	N	N	Not likely
Blue-billed Duck *Oxyura australis* 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. *Distribution limit: N-Tenterfield. S-Albury*.	N	Y	Y	N	Low
Freckled Duck *Stictonetta naevosa* 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. *Distribution limit: N- Tenterfield. S-Albury*.	Y	Y	Y	Y	Y
Black-necked Stork *Ephippiorhynchus asiaticus*	E	-	Occurs in tropical to warm temperate terrestrial wetlands, estuarine and littoral habitats such as mangroves, tidal mudflats, floodplains, open woodlands, irrigated lands, bore drains, sub-artesian pools, farm dams and sewerage ponds. *Distribution limit: N-Tweed Heads. S-Nowra.*	N	Y	N	N	Not likely

DPIE								
Australasian Bittern *Botaurus poiciloptilus* 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. *Distribution limit: N-North of Lismore. S- Eden.*	N	Y	Y	N	Low
White-bellied Sea Eagle (*Haliaeetus leucogaster*) DPIE EPBC	V	-	Occupies coasts, islands, estuaries, inlets, large rivers, inland lakes and reservoirs. *Sedentary; dispersive. N-Tweed Heads. S-South of Eden.*	Y (OEH 2016)	Y	Y	Y	Y
Little Eagle *Hieraaetus morphnoides* DPIE	V	-	Utilises plains, foothills, open forests, woodlands and scrublands; river red gums on watercourses and lakes. *Distribution limit - N-Tweed Heads. S-South of Eden.*	Y (OEH 2016)	Y	Y	Y	Y
Square-tailed Kite *Lophoictinia isura* 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. *Distribution limit: N-Goondiwindi. S-South of Eden.*	N	Y	N	Y	Low
Eastern Osprey *Pandion cristatus* EPBC	V	-	Utilises waterbodies including coastal waters, inlets, lakes, estuaries and offshore islands with a dead tree for perching and feeding. *Distribution limit: N-Tweed Heads. S-South of Eden.*	N	Y	N	N	Unlikely
Grey Falcon *Falco hypoleucos* EPBC	V	-	Occurs over mainly inland drainage systems of open plains and lightly timbered country including the acacia scrub, spinifex and tussock grasslands. *Distribution limit: N-Mullumbimby. S-Bega.*	N	Y	N	N	Not likely
Red Knot *Calidris canutus* 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 are occasionally seen on terrestrial saline wetlands near the coast and on sewage ponds and saltworks	N	Y	Y	N	Low
Gang-gang Cockatoo *Callocephalon fimbriatum* 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. *Distribution limit: mid north coast of NSW to western Victoria.*	N	Y	Y	Y	Y

Glossy Black-Cockatoo *Calyptorhynchus lathami* DPIE	V	-	Open forests with *Allocasuarina* species and hollows for nesting. *Distribution limit: N-Tweed Heads. S-South of Eden.*	N	Y	N	N	Not likely
Little Lorikeet *Glossopsitta pusilla* DPIE	V	-	Inhabits forests, woodlands; large trees in open country; timbered watercourses, shelterbeds, and street trees. *Distribution limit: N-Tweed Heads. S-South of Eden*.	Y (OEH 2016)	Y	Y	Y	Y
Swift Parrot *Lathamus discolour* DPIE EPBC	E	E	Inhabits eucalypt forests and woodlands with winter flowering eucalypts. *Distribution limit: N-Border Ranges National Park. S-South of Eden*.	N	Y	Y	Y	Y
Turquoise Parrot *Neophema pulchella* DPIE	V	-	Inhabits coastal scrubland, open forest and timbered grassland, especially ecotones between dry hardwood forests and grasslands. *Distribution limit: N-Near Tenterfield. S-South of Eden.*	N	Y	Y	N	Low
Barking Owl *Ninox connivens* DPIE	V	-	Inhabits principally woodlands but also open forests and partially cleared land and utilises hollows for nesting. *Distribution limit: N-Border Ranges National Park. S-Eden.*	N	Y	N	N	Unlikely
Powerful Owl *Ninox strenua* DPIE	V	-	Forests containing mature trees for shelter or breeding and densely vegetated gullies for roosting. *Distribution limits: N-Border Ranges National Park. S-Eden.*	Y (OEH 2016)	Y	Y	Y	Y
Masked Owl *Tyto novaehollandiae* DPIE	V	-	Open forest and woodlands with cleared areas for hunting and hollow trees or dense vegetation for roosting. *Distribution limit: N-Border Ranges National Park. S-Eden.*	N	Y	N	N	Unlikely
White-throated Needletail MS *Hirundapus caudacutus* *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. *Distribution limit: N-Tweed Heads. S-South of Eden.*	N	Y	N	N	Unlikely
Brown Treecreeper *Climacteris picumnus victoriae* DPIE	V	-	Occupies eucalypt woodlands, open woodland lacking a dense understorey with fallen dead timber. *Distribution limit: (Sub species victoriae) Central NSW west of Great Div. Cumberland Plains, Hunter Valley, Richmond, Clarence, and Snowy River Valleys.*	N	Y	Y	Y	Y

Speckled Warbler *Chthonicola sagittata* DPIE	V	-	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts. *Distribution limit: N-Urbanville. S-Eden.*	Y (OEH 2016)	Y	Y	Y	Y
Regent Honeyeater *Xanthomyza Phrygia* DPIE EPBC	E4A	CE	Found in temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts. *Distribution limit: N-Urbanville. S-Eden.*	N	Y	N	Y	Low
Painted Honeyeater *Grantiella picta* 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. *Distribution limit: N-Boggabilla. S-Albury with greatest occurrences on the inland slopes of the Great Dividing Range.*	N	Y	N	N	Unlikely
Black-chinned Honeyeater *Melithreptus gularis gularis* DPIE	V	-	Found in woodlands containing box-ironbark associations and River Red Gums, also drier coastal woodlands of the Cumberland Plain and Hunter Richmond and Clarence. *Distribution limit: N-Cape York Pen. Qld. S-Victor H. Mt Lofty Ra & Flinders Ra. SA.*	N	Y	N	N	Unlikely
Varied Sittella *Daphoenositta chrysoptera* DPIE	V	-	Open eucalypt woodlands / forests (except heavier rainforests); mallee, inland acacia, coastal tea-tree scrubs; golf courses, shelterbelts, orchards, parks, scrubby gardens. *Distribution limit: N-Border Ranges National Park. S-South of Eden*.	Y (OEH 2016)	Y	Y	Y	Y
Dusky Woodswallow *Artamus cyanopterus cyanopterus* 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. *Widespread in eastern, southern and south-western Australia.*	Y (OEH 2016)	Y	Y	Y	Y
Hooded Robin *Melanodryas cucullata cucullata* DPIE	V	-	Found in eucalypt woodlands, *Acacia* scrubland, open forest, and open areas adjoining large woodland blocks, with areas of dead timber. *Distribution limit: N-Central Qld. S-Spencer Gulf SA.*	N	Y	Y	N	Low
Scarlet Robin *Petroica boodang* DPIE	V	-	Found in foothill forests, woodlands, watercourses; in autumn-winter, more open habitats: river red gum woodlands, golf courses, parks, orchards, gardens. *Distribution limit: N-Tweed Heads. S-South of Eden.*	N	Y	Y	Y	Y

Flame Robin *Petroica phoenicea* DPIE	V	-	Summer: forests, woodlands, scrubs, from sea-level to *c.* 1800 m. Autumn-winter: open woodlands, plains, paddocks, golf courses, parks, orchards. *Distribution limit: N northern NSW tablelands. S-South of Eden.*	N	Y	Y	N	Low
Diamond Firetail *Stagonopleura guttata* 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. *Distribution limit: N-Rockhampton Q. S-Eyre Pen Kangaroo Is. SA.*	N	Y	Y	N	Low
Spotted-tailed Quoll *Dasyurus maculatus* DPIE EPBC	V	E	Dry and moist open forests containing rock caves, hollow logs or trees. *Distribution limit: N-Mt Warning National Park. S-South of Eden.*	N	Y	N	N	Unlikely
Koala *Phascolarctos cinereus* DPIE EPBC	V	V	Inhabits both wet and dry eucalypt forest on high nutrient soils containing preferred feed trees. *Distribution limit: N-Tweed Heads. S-South of Eden.*	N	Y	Y	Y	Y
Eastern Pygmy Possum *Cercatetus nanus* 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. *Distribution limit: N-Tweed Heads. S-Eden.*	N	N	N	N	Not likely
Squirrel Glider *Petaurus norfolcensis* DPIE	V	-	Mixed aged stands of eucalypt forest & woodlands including gum barked & high nectar producing species & hollow bearing trees. *Distribution limit: N-Tweed Heads. S-Albury.*	N	Y	N	N	Unlikely
Greater Glider *Petauroides volans* 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 *Distribution limit: N-Border Ranges National Park. S- South of Eden.*	N	N	N	N	Not likely
Brush-tailed Rock-wallaby *Petrogale penicillata* EPBC	E	V	Found in rocky gorges with a vegetation of rainforest or open forests to isolated rocky outcrops in semi-arid woodland country. *Distribution limit: N-North of Tenterfield. S-Bombala.*	N	N	N	N	Not likely
Grey-headed Flying-fox	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. *Distribution limit: N-Tweed Heads. S-Eden.*	N	Y	Y	Y	Y

Pteropus poliocephalus DPIE EPBC								
Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris* DPIE	V	-	Rainforests, sclerophyll forests and woodlands. *Distribution limit: N-North of Walgett. S-Sydney.*	N	Y	Y	Y	Y
Eastern Coastal Free-tailed Bat *Micronomus norfolkensis* 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. *Distribution limit: N-Woodenbong. S-Pambula.*	Y (OEH 2016)	Y	Y	Y	Y
Large-eared Pied Bat *Chalinolobus dwyeri* 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. *Distribution limit: N-Border Ranges National Park. S-Wollongong.*	Y (OEH 2016)	Y	Y	Y	Y
Eastern False Pipistrelle *Falsistrellus tasmaniensis* DPIE	V	-	Recorded roosting in caves, old buildings and tree hollows. *Distribution limit: N-Border Ranges National Park. S-Pambula.*	N	Y	Y	Y	Y
Little Bent-winged Bat *Miniopterus australis* DPIE	V	-	Roosts in caves, old buildings and structures in the higher rainfall forests along the south coast of Australia. *Distribution limit: N-Border Ranges National Park. S-Sydney.*	Y (OEH 2016, with possible certainty)	Y	Y	Y	Y
Large Bent-winged Bat *Miniopterus orianae oceanensis* DPIE	V	-	Prefers areas where there are caves, old mines, old buildings, stormwater drains and well-timbered areas. *Distribution limit: N-Border Ranges National Park. S-South of Eden.*	Y (OEH 2016)	Y	Y	Y	Y
Southern Myotis *Myotis macropus* DPIE	V	-	Roosts in caves, mines, tunnels, buildings, tree hollows and under bridges. Forages over open water. *Distribution limit: N-Border Ranges National Park. S-South of Eden.*	N	Y	Y	Y	Y

Greater Broad-nosed Bat *Scoteanax rueppellii* DPIE	V	-	Inhabits areas containing moist river and creek systems, especially tree lined creeks. *Distribution limit: N-Border Ranges National Park. S-Pambula.*	N	Y	Y	Y	Y
New Holland Mouse *Pseudomys novaehollandiae* 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 heathy understorey of leguminous shrubs less than 1m high and sparse ground litter. Recolonise of regenerating burnt areas. *Distribution limit: N-Border Ranges National Park. S-South of Eden.*	N	N	N	N	Not likely
Cumberland Plain Land Snail *Meridolum corneovirens* 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. *Distribution limit: Cumberland Plain of Sydney Basin Bioregion.*	Y (OEH 2016, with possible certainty)	Y	Y	Y	Y
Dural Land Snail *Pommerhelix duralensis* 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. *Distribution limit: St Albans to Mulgoa with most records from The Hills LGA.*	N	Y	N	Y	Low

DPIE	- Denotes species listed within 10km of the development footprint on the *Atlas of NSW Wildlife*
EPBC	- Denotes species listed within 10km of the development footprint in the *EPBC Act* habitat search
TBE	- Denotes additional species considered by *Travers bushfire & ecology* to have potential habitat based on regional knowledge and other records
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 *Atlas of NSW Wildlife* 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.

Common name ***Scientific name***	**Preferred habitat** ***Migratory breeding***	**Suitable habitat present (y/n)**	**Recorded on site (y/n)**	**Comments**
Oriental Cuckoo (*Cuculus optatus*)	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 (*Pandion haliaetus*)	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 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.	Y	N	
White-throated Needletail (*Hirundapus caudacutus*)	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.*	Y	N	
Fork-tailed Swift (Apus pacificus)	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 (*Merops ornatus*)	Open woodlands with sandy, loamy soil; sandridges, sandspits, riverbanks, road cuttings, beaches, dunes, cliffs, mangroves, rainforest, woodlands, golf courses. *Breeding resident in northern Australia. Summer breeding migrant to south east and south west Australia.*	Y	N	
Black-faced Monarch (*Monarcha melanopsis*)	Rainforests, eucalypt woodlands; coastal scrubs; damp gullies in rainforest, eucalypt forest; more open woodland when migrating. *Summer breeding migrant to coastal south east Australia, otherwise uncommon*.	Y	N	
Spectacled Monarch (*Monarcha trivirgatus*)	Understorey of mountain / lowland rainforest, thickly wooded gullies, waterside vegetation, mostly well below canopy. *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.*	N	N	-

Common name ***Scientific name***	**Preferred habitat** ***Migratory breeding***	**Suitable habitat present (y/n)**	**Recorded on site (y/n)**	**Comments**
Satin Flycatcher (*Myiagra cyanoleuca*)	Heavily vegetated gullies in forests, taller woodlands, usually above shrub-layer; during migration, coastal forests, woodlands, mangroves, trees in open country, gardens. *Breeds mostly south-east Australia and Tasmania over warmer months, winters in north east Qld.*	Y	N	-
Rufous Fantail (*Rhipidura rufifrons*)	Undergrowth of rainforests / wetter eucalypt forests / gullies; monsoon forests, paperbarks, sub-inland and coastal scrubs; mangroves, watercourses; parks, gardens. On migration, farms, streets buildings. *Breeding migrant to south-east Australia over warmer months. Altitudinal migrant in north-east NSW in mountain forests during warmer months.*	Y	Y	
Yellow Wagtail (*Motacilla flava*)	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	-
Painted Snipe (*Rostratula australis*)	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 (*Paspalum*), saltbush (*Halosarcia*) and grass, also in ground cover of water-buttons and grasses, at the base of tussocks and under low saltbush.	N	N	

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)

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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "D"
Appendix 3
Biodiversity Overview and Management Principles
(Travers Ecological)

October 2021

Appendix 3. Biodiversity Agreement no. 1

BioBanking
Biodiversity Banking and Offsets Scheme

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

NSW GOVERNMENT | Office of Environment & Heritage

Version 1.3 June 2011

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 cluse 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 OEH 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:

[redacted]

Sally Barnes

Date 9/5/12

[redacted]

Witness signature

Date 9/5/12

Witness name Sandra Harris

Witness address 9/3 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

In the presence of

Witness signature

Date

Witness name

Witness address

Date

Member

Trustees of the Sisters of the Good Samaritans

In the presence of

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)

[redacted]

Signature of authorised person:
Name of authorised person: CLARE THERESE CONDON
Office Held: Superior

[redacted]

Signature of authorised person:
Name of authorised person:
Office Held: Member
MARIE BERNADETTE CORBOY

[redacted]

Signature of authorised person:
Name of authorised person:
Office Held: Member
BERNARDINA P.M 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:

[redacted]

Sally Barnes

Date 9/5/12

[redacted]

`Witness signature

Date 9/5/12

Witness name Sandra Harris

Witness address [redacted], 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)

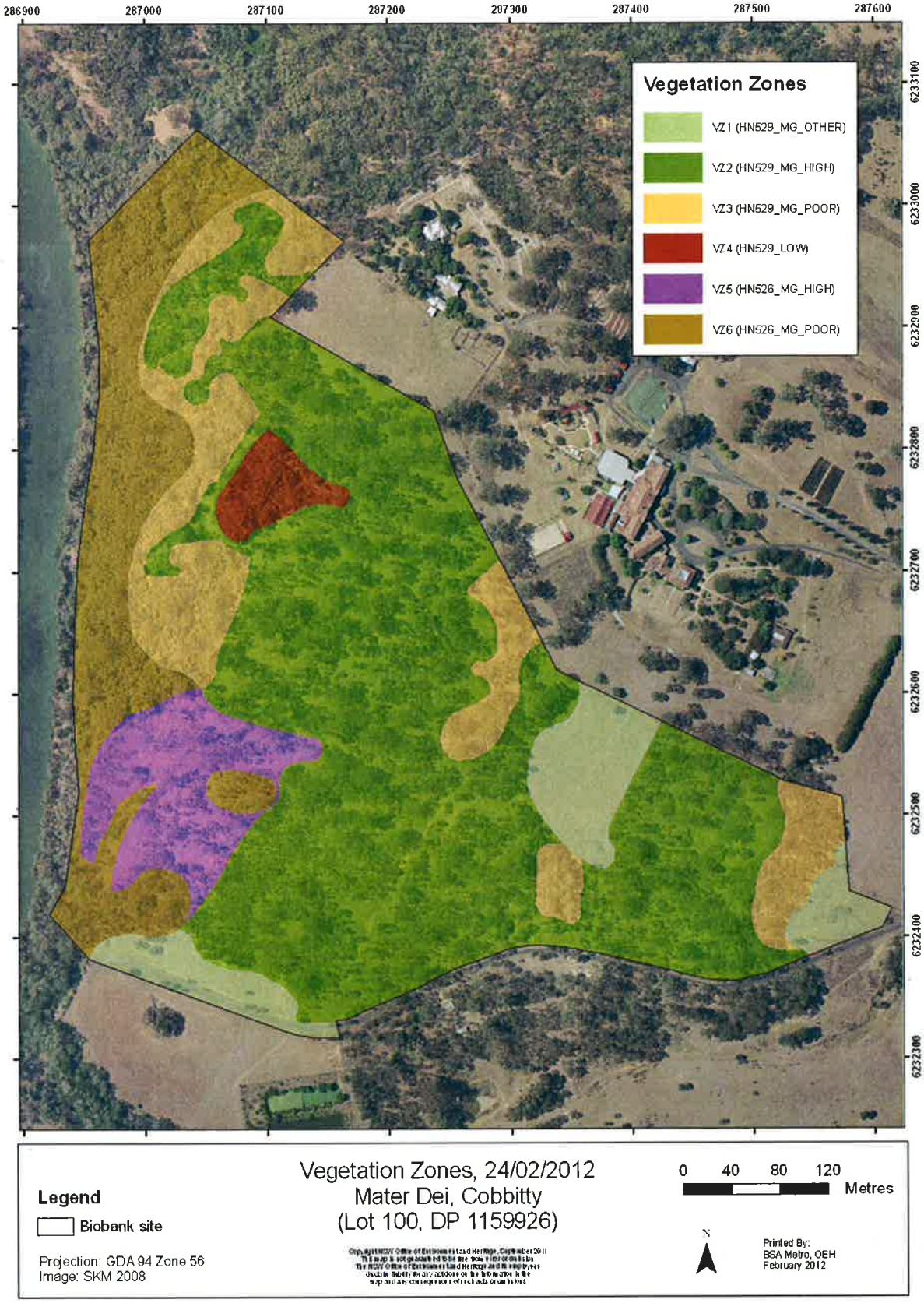
Map C - Management zones map (24/02/2012)

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

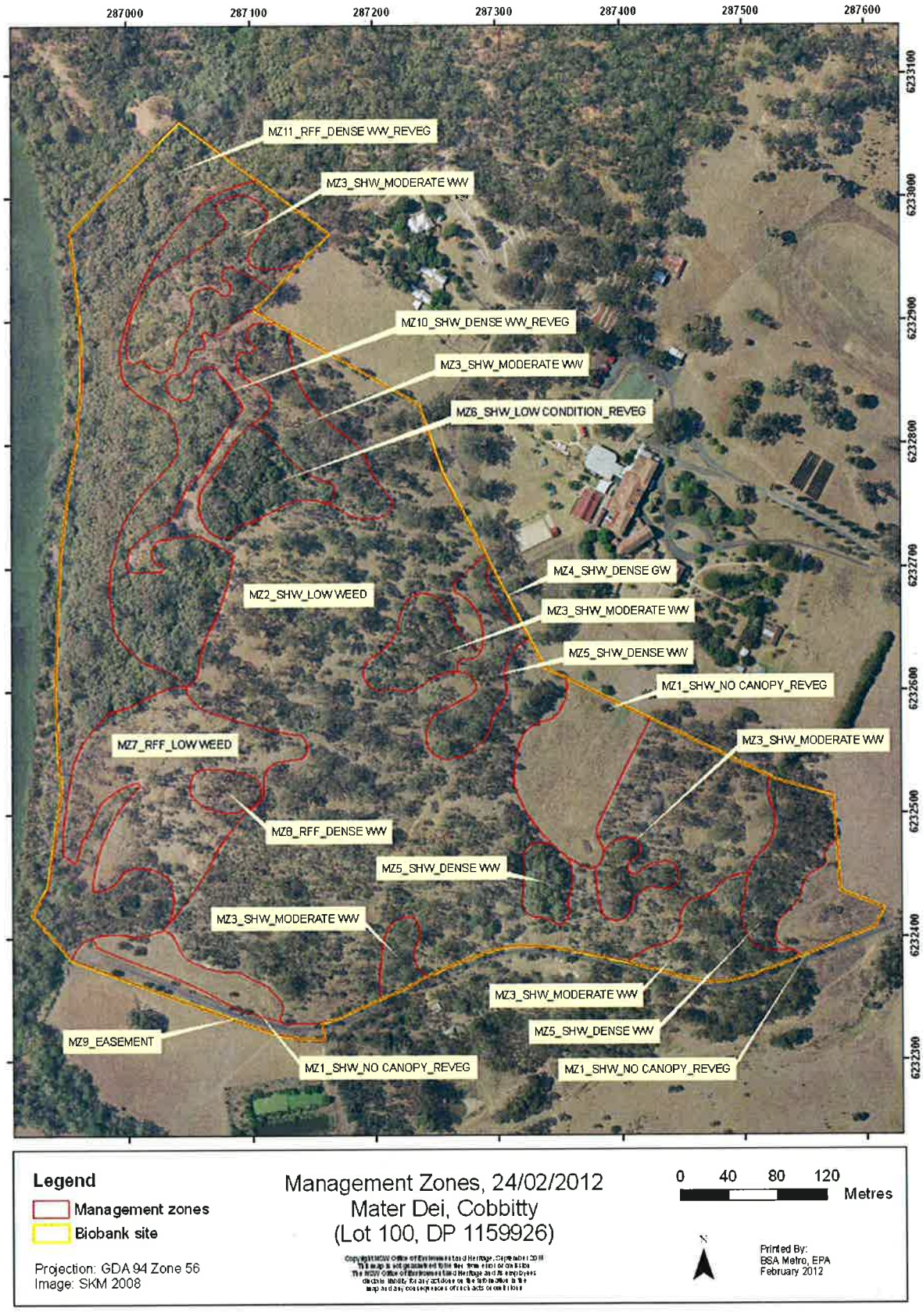
Map E – Location of plots, transects and photo-points map (24/02/2012)

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

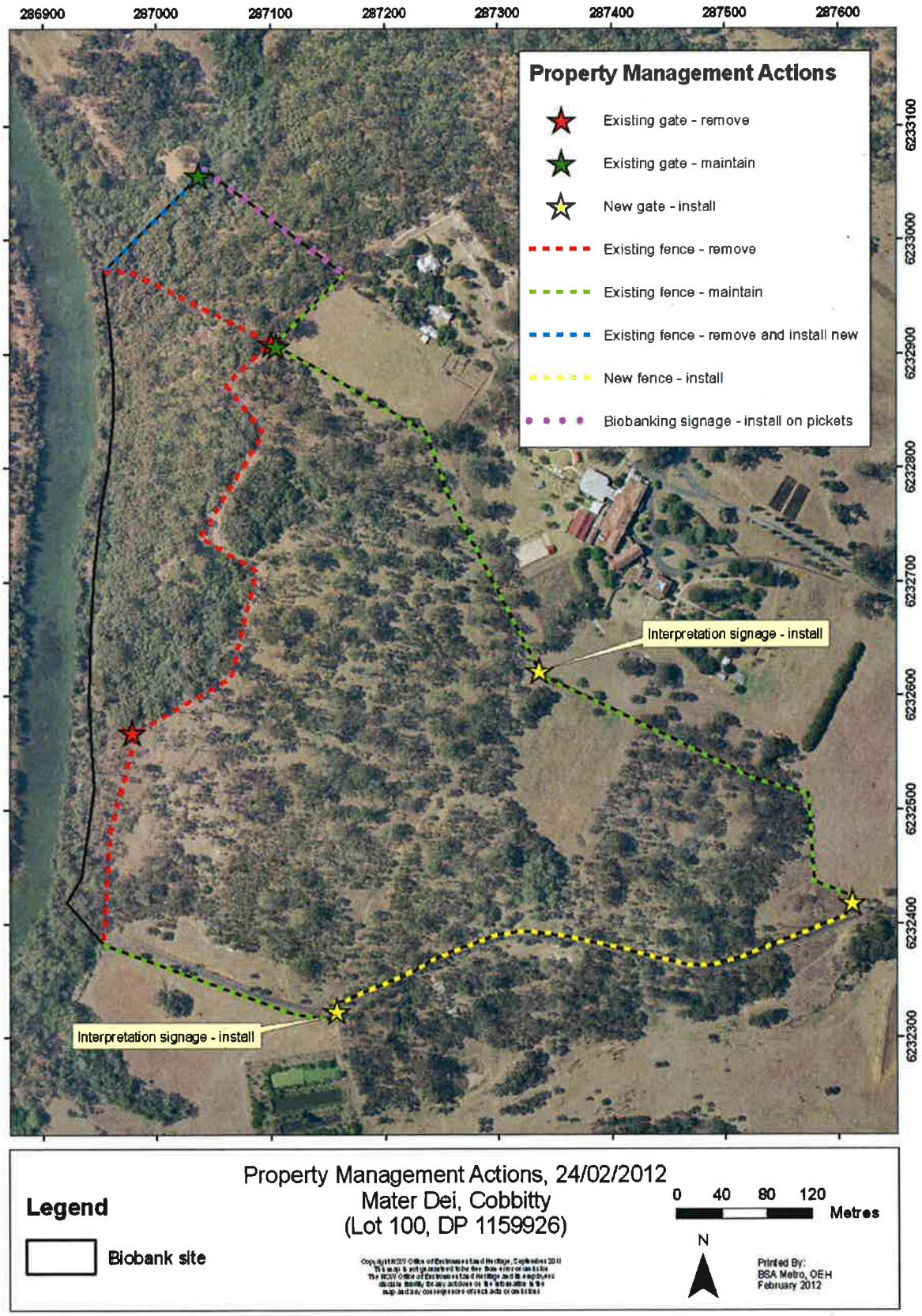
Map B - Vegetation zones map (24/02/2012)



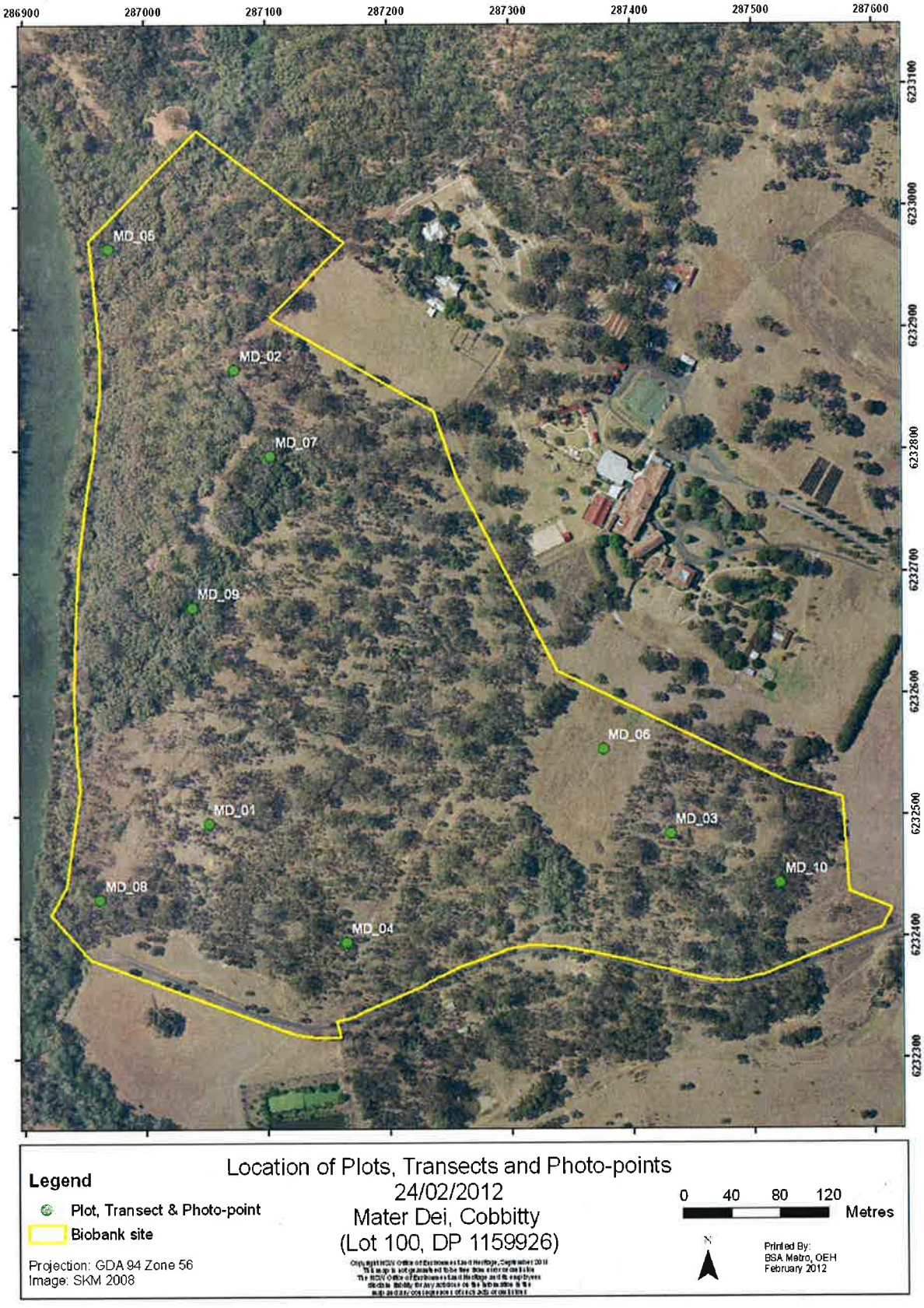
Map C - Management zones map (24/02/2012)



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

Office of Environment & Heritage

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 threatened 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 Emerg*ency 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 *Noxious Weeds Act 1993*) • 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.	

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 *Rural Fires Act 1997* to ensure minimum frequency between ecological burns • the fire intensity for the recommended vegetation types • the time of year suitable for ecological burns • the diary for recording actions taken in accordance with the fire management plan and minor alterations to fire management plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	
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 *Protection of the Environment Operations Act* 1997.	Ongoing from commencement date.
4.5	The landowner must take all reasonable steps to remove waste deposited by others on the biobank site, or which is otherwise present on the biobank site. 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.	

Item 5	**Retention of regrowth and remnant native vegetation** Note: An approval under the *Native Vegetation Act 2003* may be required to carry out thinning or any other removal or damage to native vegetation under this item.	**Timing**
5.1	Native vegetation (whether remnant native vegetation or regrowth) on the biobank site must not be cut down, felled, thinned, logged, killed, destroyed, poisoned, ringbarked, uprooted, burnt or otherwise removed, except in accordance with item 5.2 below, or if it is required as part of the management actions or it is essential for the carrying out of permissible development under clause 3.5 of this agreement. Note: Native vegetation on the biobank site may be managed to improve biodiversity values by thinning to benchmark stem densities over no more than 80% of each management zone. Benchmark stem densities has the same meaning as defined in the Vegetation Benchmark Database as published by OEH and updated from time to time. An approval under the *Native Vegetation Act 2003* may be required to carry out thinning or any other removal or damage to native vegetation under this item.	Ongoing from commencement date.
5.2	Native vegetation on the biobank site must not be burnt except in accordance with the fire management plan prepared pursuant to item 3 above.	Ongoing from commencement date.
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 Florabank Guidelines. 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 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	Eucalyptus baueriana	MZ1	40	Hiko cell	Within 4 years of commencement
Narrow-leaved Ironbark	Eucalyptus crebra	MZ1	20	As above	As above
Grey Box	Eucalyptus moluccana	MZ1	140	As above	As above
Forest Red Gum	Eucalyptus tereticornis	MZ1	140	As above	As above
Black Wattle	Acacia decurrens	MZ1	50	As above	As above
Acacia falcata	Acacia falcata	MZ1	110	As above	As above
Hickory Wattle	Acacia implexa	MZ1	50	As above	As above
Parramatta Wattle	Acacia parramattensis	MZ1	50	As above	As above
Blackthorn	Bursaria spinosa subsp. spinosa	MZ1	50	As above	As above
Wedge-leaf Hop-bush	Dodonaea viscosa subsp. cuneata	MZ1	110	As above	As above
Australian Indigo	Indigofera australis	MZ1	100	As above	As above
Blue Box	Eucalyptus baueriana	MZ6, MZ10	40	As above	Within 24 months of primary weed treatment
Narrow-leaved Ironbark	Eucalyptus crebra	MZ6, MZ10	60	As above	As above
Grey Box	Eucalyptus moluccana	MZ6, MZ10	200	As above	As above
Forest Red Gum	Eucalyptus tereticornis	MZ6, MZ10	200	As above	As above

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

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

-	Austrodanthonia racemosa var. racemosa	MZ11	140	As above	As above
Tall Chloris	Chloris ventricosa	MZ11	140	As above	As above
Barbed Wire Grass	Cymbopogon refractus	MZ11	140	As above	As above
Shorthair Plumegrass	Dichelachne micrantha	MZ11	140	As above	As above
Forest Hedgehog Grass	Echinopogon ovatus	MZ11	140	As above	As above
Fishweed	Einadia trigonos	MZ11	140	As above	As above
Common Wheatgrass	Elymus scaber var. scaber	MZ11	140	As above	As above
Wiry Panic	Entolasia stricta	MZ11	140	As above	As above
Hairy Panic	Panicum effusum	MZ11	140	As above	As above
Scrubby Spurge	Phyllanthus gunnii	MZ11	140	As above	As above
Blue Flax-lily	Dianella caerulea var. caerulea	MZ11	140	As above	As above
Bordered Panic	Entolasia marginata	MZ11	140	As above	As above
Stout Bamboo Grass	Austrostipa ramosissima	MZ11	300	As above	As above
Berry Saltbush	Einadia hastata	MZ11	300	As above	As above
-	Eragrostis benthamii	MZ11	300	As above	As above
Paddock Lovegrass	Eragrostis leptostachya	MZ11	300	As above	As above
Spiny-headed Mat-rush	Lomandra longifolia	MZ11	300	As above	As above
Weeping Grass	Microlaena stipoides var. stipoides	MZ11	300	As above	As above
Kangaroo Grass	Themeda australis	MZ11	300	As above	As above
-	Juncus usitatus	MZ11	300	As above	As above
-	Poa affinis	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 *National Parks and Wildlife Act 1974* 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	

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

Exotic vine	Honeysuckle	*Lonicera* sp	Minor infestations in disturbed riparian zone	MZ8
Exotic grass	Carpet Grass	*Axonopus fissifolius*	Minor infestation throughout site	ALL
Exotic grass	Chilean Quaking Grass	*Briza subaristata*	Minor infestations in areas of SHW, significant infestations in areas without canopy.	MZ1; MZ2; MZ3; MZ4; MZ5
Exotic grass	Ehrharta	*Ehrharta erecta*	Minor infestations throughout site	ALL
Exotic grass	African Love Grass	*Eragrostis curvula*	Minor infestations throughout site	ALL
Exotic grass	Common Paspalum	*Paspalum dilatatum*	Minor infestations throughout site, significant infestations in areas without canopy.	ALL
Exotic grass	Kikuyu	*Pennisetum clandestinum*	Minor infestations in more open parts of SHW	MZ1; MZ2; MZ4
Exotic grass	Pidgeon Grass	*Setaria gracilis*	Minor infestations in more open parts of SHW	MZ1; MZ2; MZ4
Exotic grass	Parramatta Grass	*Sporobolus africanus*	Scattered individuals in most SHW zones	MZ1; MZ2; MZ3; MZ4
Exotic grass	Squirrel Tail Fescue	*Vulpia myuros*	Minor infestations in parts of SHW without canopy	MZ1
Exotic forb	Pimpernel	*Anagallis arvensis*	Scattered individuals in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Climbing Asparagus	*Asparagus aethiopicus*	Minor infestations in more disturbed parts of site	MZ3; MZ5; MZ11
Exotic forb	Cobblers Peg	*Bidens spp*	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Fat Hen	*Chenopodium album*	Scattered individuals in SHW	MZ2
Exotic forb	Spear Thistle	*Cirsium vulgare*	Scattered individuals in SHW	MZ2; MZ3; MZ4
Exotic forb	Slender Celery	*Cyclospermum leptophyllum*	Scattered individuals in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Fleabane	*Conyza* sp.	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Gomphrena Weed	*Gomphrena celosioides*	Scattered individuals in SHW	MZ2
Exotic forb	Flatweed	*Hypochaeris* spp	Scattered individuals throughout site	ALL
Exotic forb	Slender Birds-foot Trefoil	*Lotus angustissimus*	Minor infestations in parts of SHW without canopy	MZ1
Exotic forb	Medics	*Medicago spp*	Scattered individuals in SHW	MZ2
Exotic forb	Brazilian Whitlow	*Paronychia brasiliana*	Scattered individuals throughout site	ALL
Exotic forb	Lamb's Tongue	*Plantago lanceolata*	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Mexican Clover	*Richardia brasiliensis*	Scattered individuals throughout site	ALL

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

		Methods 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. Effort 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	Performance measures 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 Methods 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. Effort	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	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 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.

		Visual inspections and reporting of completed works 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'.

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 subsequen t 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 subsequen t 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

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 *Oryctolagus cuniculus*	Present in low numbers	All
B	Hares *Lepus europaeus*	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	Temporary fencing of re-vegetation areas 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	Fumigation and destruction of burrows Note: 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. Identification of priority areas for treatment 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. Identification of the level of effort required 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. Treatment of burrows 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	Shooting program 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	1 Observations of active rabbit burrows 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	2 Observations of feral pests 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
		3 Reporting on number of active rabbit burrows treated 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.	Annually, at the completion of each year from the first payment date, or more often as required
		4 Reporting on number of person days applied to the treatment of burrows 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.	Annually, at the completion of each year from the first payment date, or more often as required
		5 Reporting on the number of surplus person days available for future treatment of burrows 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 1of Annexure C • control human disturbance if required under item 4 in Section 1 of Annexure C • control the movement of feral and overabundant native herbivores if required under item 10 of Section 2 • control vertebrate pests if required under item 11 of Section 2	Every 12 months
Records of any human disturbance on the biobank site. Note: items 4.1 and 4.2 in Section 1 of Annexure C and clause 2 of this agreement place restrictions on human activities on the biobank site.	Every 6 months
Evidence of erosion. Note: item 8 in Section 1 of Annexure C contains requirements for erosion control.	Every 6 months
Evidence of waste. Note: item 4.4 in Section 1 of Annexure C contains requirements for storing and disposing of waste on the biobank site.	Every 6 months

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.

Annual reporting template

Biobank site annual report

Location details

Biobanking agreement ID:	Name of landowner/s: Trustees of the Sisters of the Good Samaritan
Reporting date:	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					
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 exceed $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:

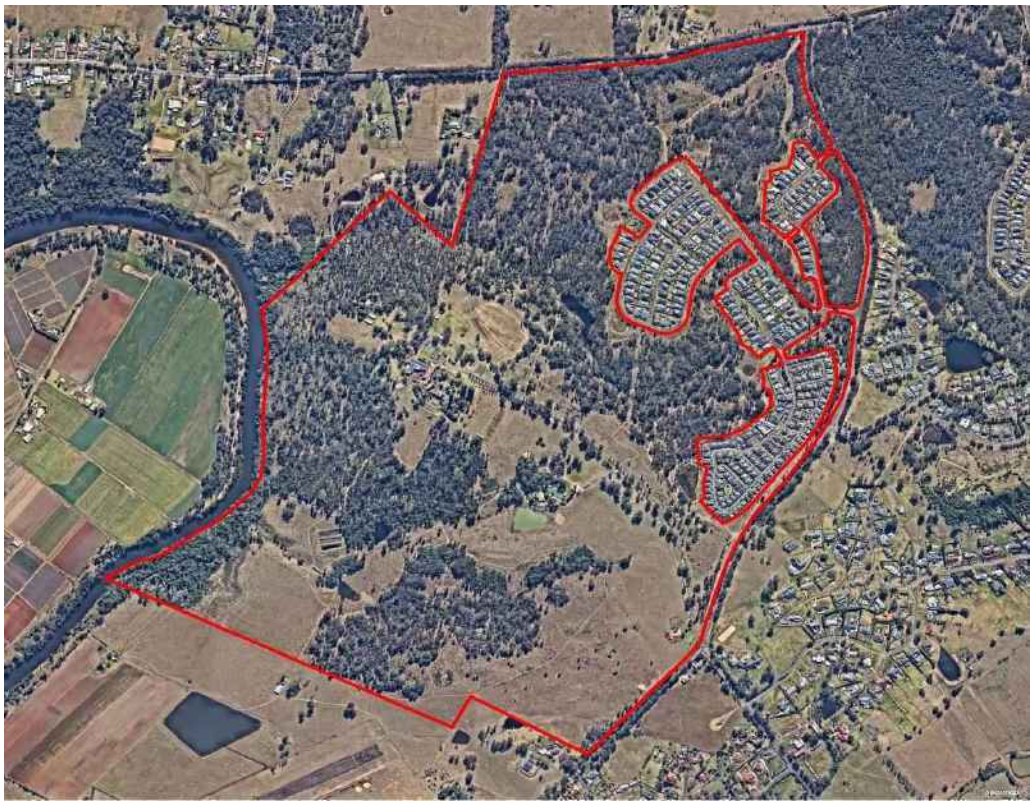
4.3.1 the owner of the biobank site has not sold any of the biodiversity credits created for the site, or

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.

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "D"
Appendices 4
Biodiversity Overview and Management Principles
(Travers Ecological)

October 2021

Appendix 4. Biodiversity Agreement no. 2

BioBanking
Biodiversity Banking and Offsets Scheme

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

NSW GOVERNMENT | Office of Environment & Heritage

Version 1.4 August 2014

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

BPMS

'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:

BPMS

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 *Petroleum (Onshore) Act 1991.*	All zones
Carrying out of any activity subject to Authority 6 or Authority 281 issued under the *Mining Act 1992* 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 *Rural Fires Act 1997.*	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

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.

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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 OEH 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:

[redacted]

Terry Bailey

4 May 2016.

Date

[redacted]

Witness signature

4 May 2016

Date

Sandra Harris

Witness name-Please Print

[redacted]

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)

[redacted]

Clare Therese Condon

Signature

12 April 2016

Date

Superior and Trustee

Position

In the presence of:

[redacted]

Witness signature

12 APRIL 2016

Date

MARY B ROBINSON

Witness name-Please Print

[redacted], RIVERVIEW 2066

Witness address

[redacted]

Veronica Joan Hoey

Signature

14 April 2016

Date

Trustee

Position

In the presence of:

[redacted]

Witness signature

14th April 2016

Date

KAREN O'CONNOR

Witness name-Please Print

[redacted] ASHWOOD 3147

Witness address

VHB BPMS

[redacted]

Bernardina Paulina Maria Sontrop

Signature

13.4.2016

Date

Trustee

Position

In the presence of:

[redacted]

Witness signature

13.4.2016

Date

PATRICIA VESELY

Witness name-Please Print

[redacted]

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:

[redacted]

Terry Bailey

4 May 2016

Date

[redacted]

Witness signature

4 May 2016

Date

Sandra Harris

Witness name-Please Print

[redacted]

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)

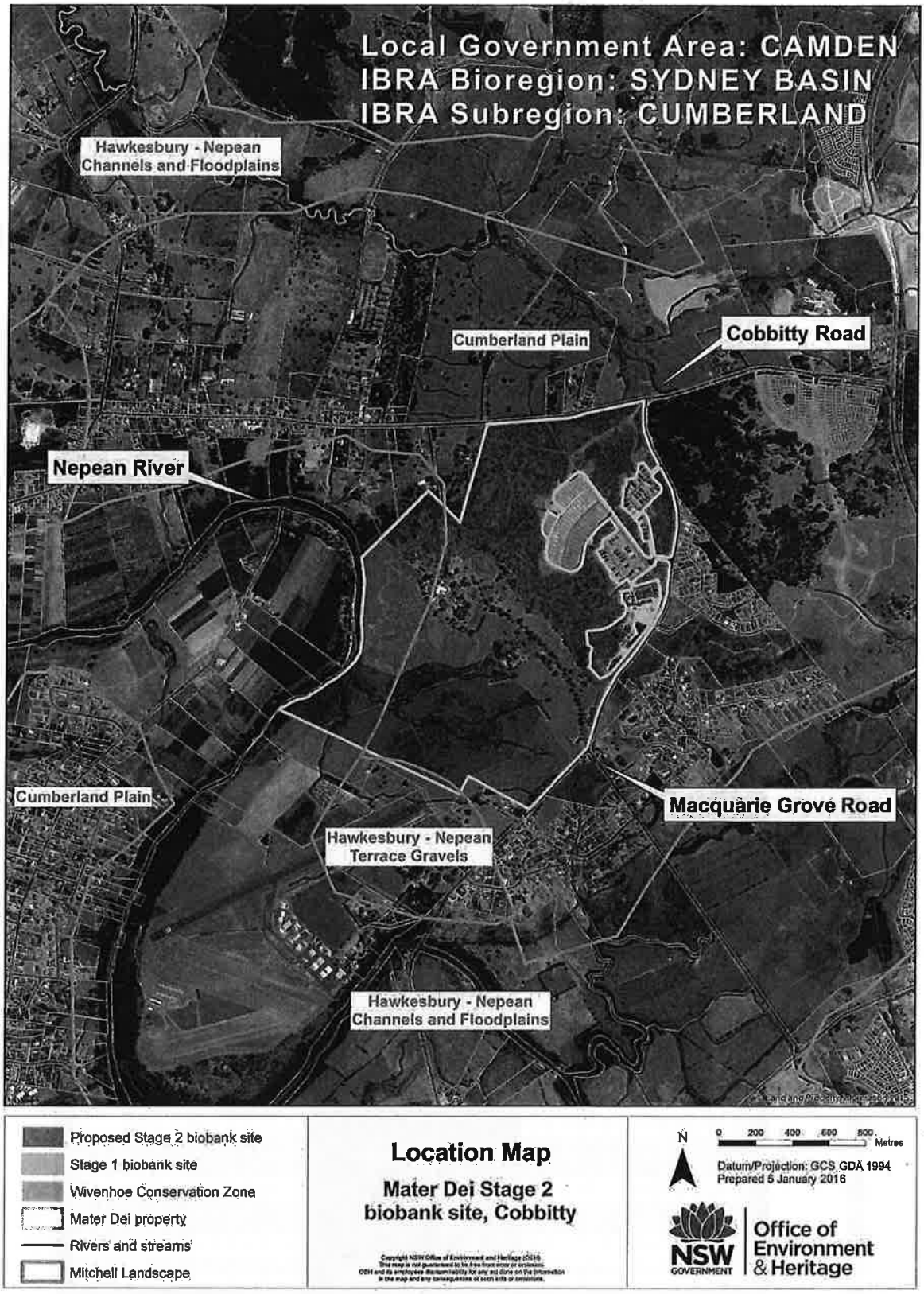
Map C Management Zone Map - Mater Dei Stage 2 - Lot 100 DP 1159926 (Dated 17 March 2016)

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

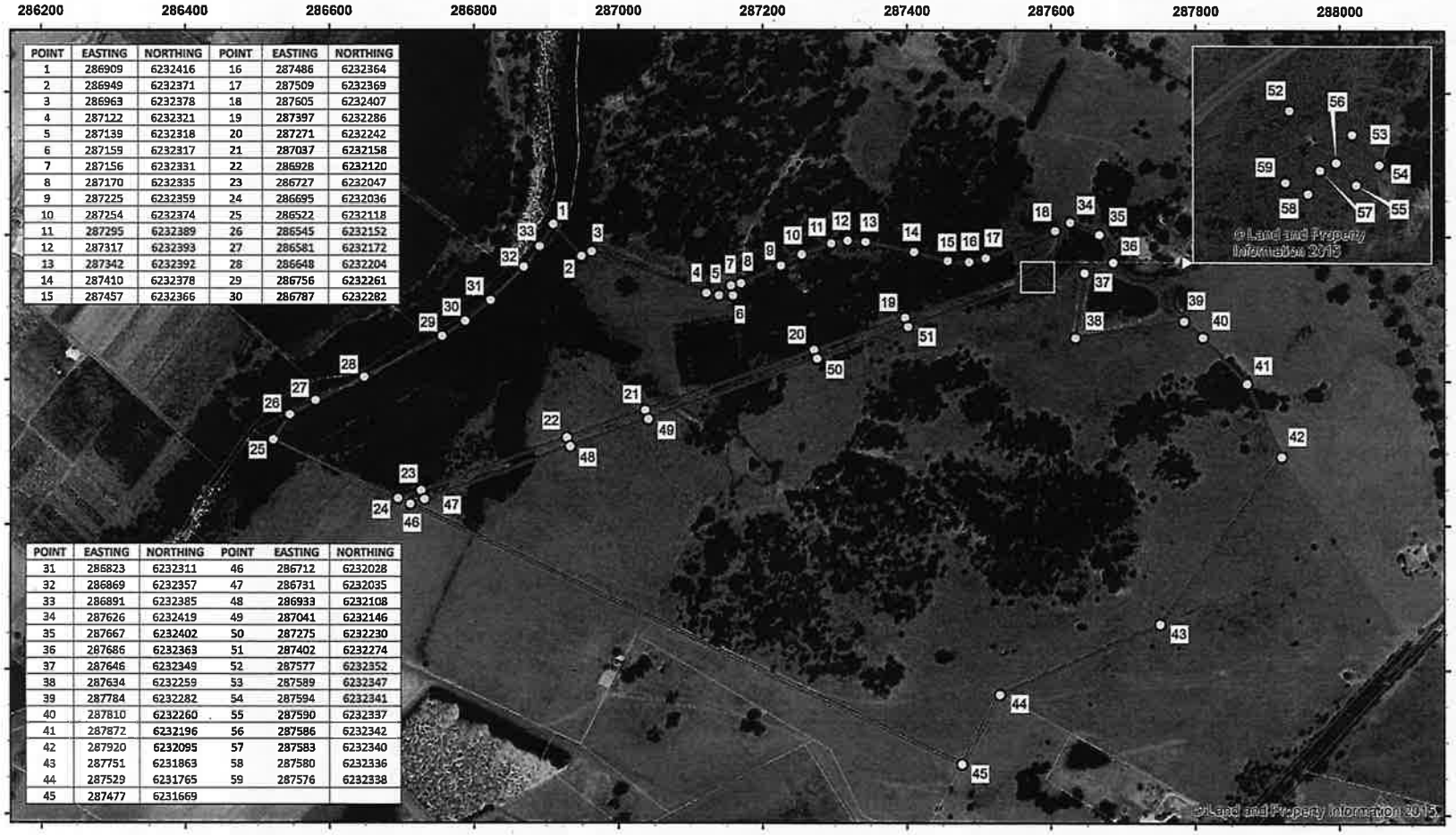
Map E Vegetation Zones - Mater Dei Stage 2 Biobank Site - Lot 100 DP 1159926 (Dated 17 March 2016)

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, Cobbity (Dated 5 January 2016)



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



POINT	EASTING	NORTHING	POINT	EASTING	NORTHING
1	286909	6232416	16	287486	6232364
2	286949	6232371	17	287509	6232369
3	286963	6232378	18	287605	6232407
4	287122	6232321	19	287397	6232286
5	287139	6232318	20	287271	6232242
6	287159	6232317	21	287037	6232158
7	287156	6232331	22	286928	6232120
8	287170	6232335	23	286727	6232047
9	287225	6232359	24	286695	6232036
10	287254	6232374	25	286522	6232118
11	287295	6232389	26	286545	6232152
12	287317	6232393	27	286581	6232172
13	287342	6232392	28	286648	6232204
14	287410	6232378	29	286756	6232261
15	287457	6232366	30	286787	6232282

POINT	EASTING	NORTHING	POINT	EASTING	NORTHING
31	286823	6232311	46	286712	6232028
32	286869	6232357	47	286731	6232035
33	286891	6232385	48	286933	6232108
34	287626	6232419	49	287041	6232146
35	287667	6232402	50	287275	6232230
36	287686	6232363	51	287402	6232274
37	287646	6232349	52	287577	6232352
38	287634	6232259	53	287589	6232347
39	287784	6232282	54	287594	6232341
40	287810	6232260	55	287590	6232337
41	287872	6232196	56	287586	6232342
42	287920	6232095	57	287583	6232340
43	287751	6231863	58	287580	6232336
44	287529	6231765	59	287576	6232338
45	287477	6231669			

Legend

- Boundary points
- Biobank site
- Cadastre

Site Map

Mater Dei Stage 2 biobank site
Lot 100 DP 1159926

N

0 60 120 180 240 Metres

Datum/Projection: GCS GDA 1994
Prepared 5 January 2016

NSW GOVERNMENT Office of Environment & Heritage

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

Legend

Biobank site

Not Native Vegetation

Management Zone Map

Mater Dei Stage 2 biobank site
Lot 100 DP 1159926

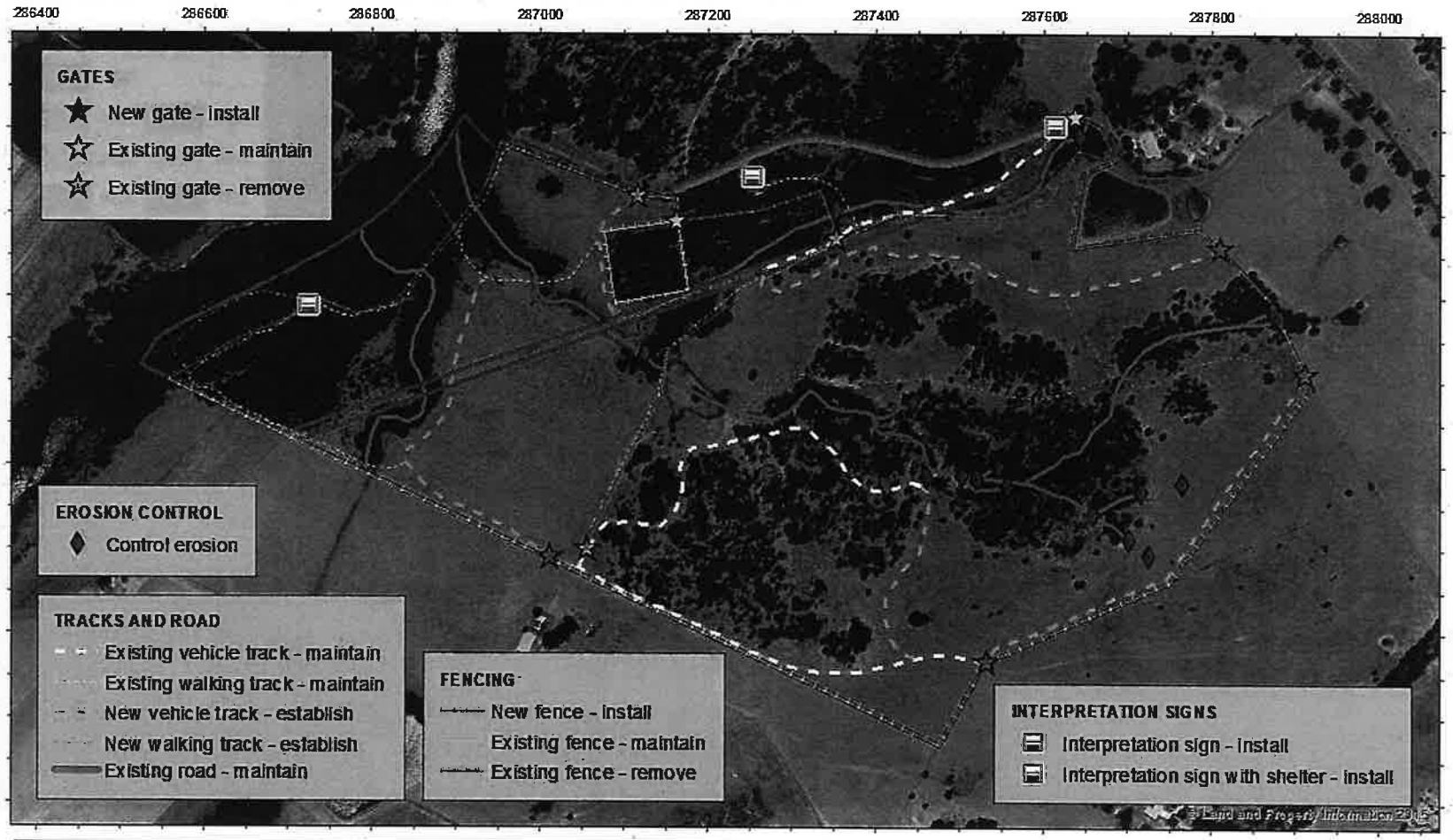
N

0 40 80 120 160 Metres

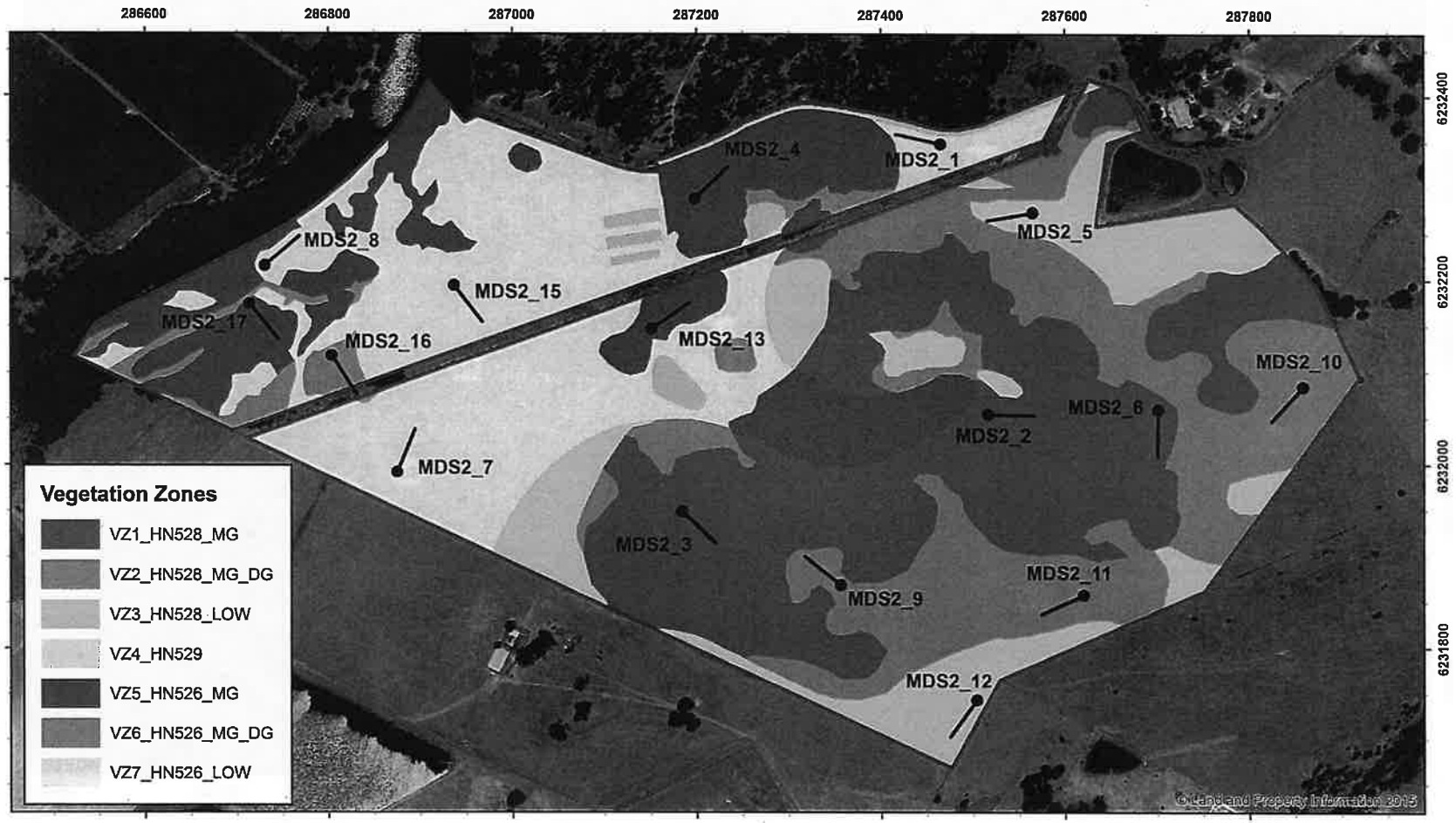
Datum/Projection: GCS GDA 1994
Prepared 17 March 2016

NSW GOVERNMENT Office of Environment & Heritage

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)



Survey plots
Survey transects
Not Native Vegetation
Biobank site

Vegetation Zones

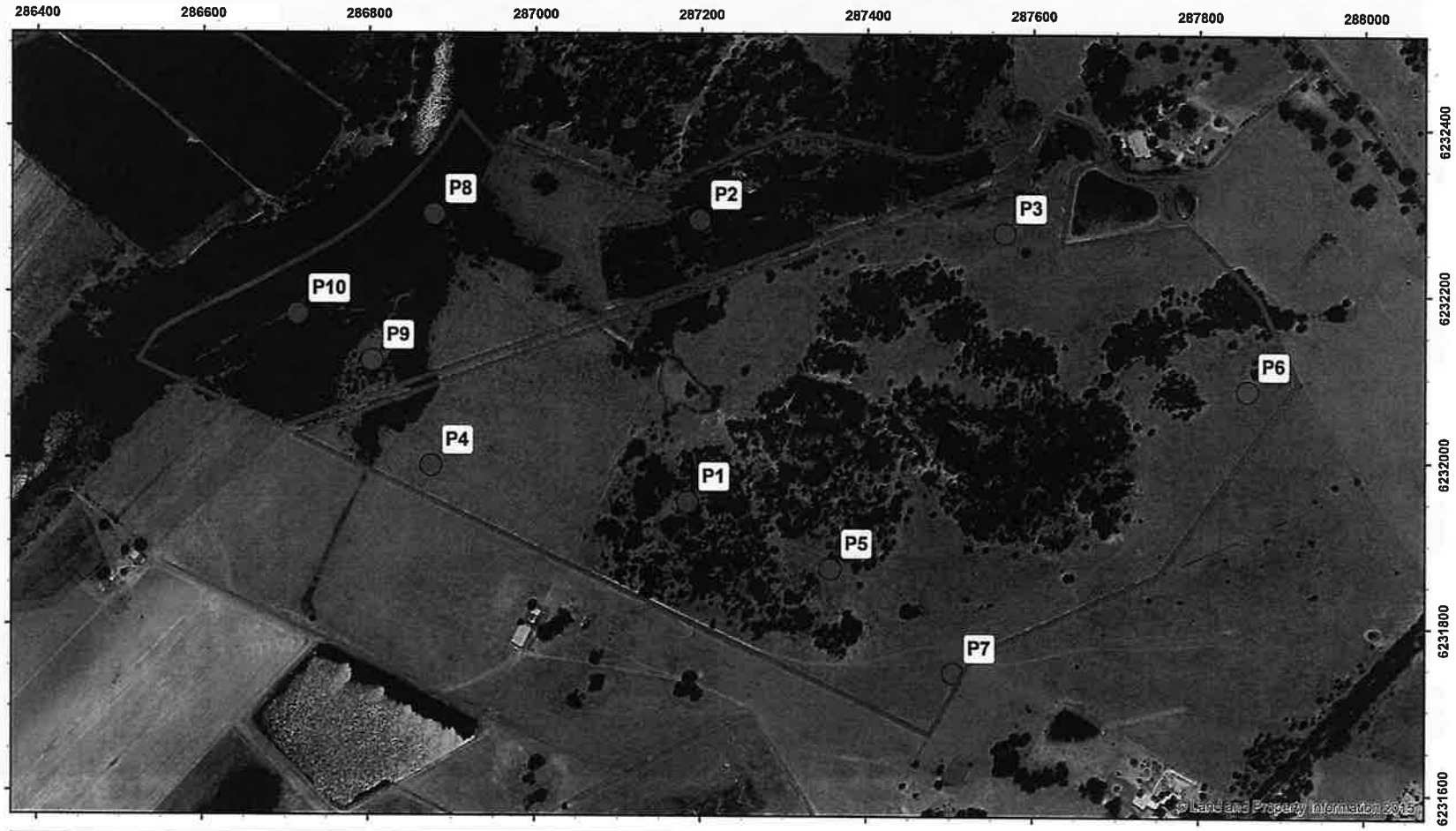
Mater Dei Stage 2 biobank site
Lot 100 DP 1159926

N
0 40 80 120 160
Metres

Datum/Projection: GCS GDA 1994
Prepared 17 March 2016

NSW GOVERNMENT Office of Environment & Heritage

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

N

0 50 100 150 200 Metres

Datum/Projection: GCS GDA 1994
Prepared 5 January 2016

NSW GOVERNMENT Office of Environment & Heritage

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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

NSW GOVERNMENT | Office of Environment & Heritage

Date of report: 22/03/2016 Time: 2:31:43PM Calculator version: v4.0

Biobank details

Proposal ID:	0078/2016/2376B
Proposal name:	Mater Dei Stage 2 - final
Proposal address:	229 Macquarie Grove Road Cobbitty NSW 2570
Proponent name:	Trustees of the Sisters 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...

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	536.00
Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	0.84	12.00
Total	57.69	889

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	Eucalyptus benthamii	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 shale 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

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Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion	Slashing

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.

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	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 *Noxious Weeds Act 1993*) • additional weed control activities to destroy or remove any new weed species that are found on the site • measures for assessing and reporting monitoring results • a diary for recording actions taken in accordance with the weed management plan and minor alterations to this plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	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.

	management actions in the plan and consider the effectiveness of the matters contained in the current plan that are outlined in the dot points below. Notification of the date of the review commencement must be provided to the Chief Executive in writing within 14 days of the commencement of the review. The findings of the review must be submitted to the Chief Executive within 3 months of commencing the review. Where the Chief Executive determines from the review that an update of the fire management plan is required, the Chief Executive will notify the landowner in writing that an update of the plan is required. The landowner must update the plan and submit it to the Chief Executive for approval within 3 months of receiving written notification from the Chief Executive that an update of the plan is required. The revised plan must be prepared by an appropriately qualified person and cover the matters outlined below and any additional matters specified by the Chief Executive in writing: • the year the last fire went through, the type of fire and the extent of the fire and location, where known • frequency of natural fires in the area of the biobank site, where known • a description of locations and management zones where ecological burns will be conducted and areas that will not be burnt • the methods that will be used for ecological burns • the fire frequency intervals recommended for the vegetation types and threatened species present, including any required adjustment to the schedule in the event of a wildfire or activities undertaken under the *Rural Fires Act 1997* to ensure minimum frequency between ecological burns • the fire intensity for the recommended vegetation types • the time of year suitable for ecological burns • the diary for recording actions taken in accordance with the fire management plan and minor alterations to fire management plan permitted for adaptive management. The details (management zone/s, date, alternative action) and reasons for the minor alterations must be recorded in the diary.	
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.

	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 *Protection of the Environment Operations Act* 1997.	Ongoing from commencement date.
4.5	The landowner must take all reasonable steps to remove waste deposited by others on the biobank site, or which is otherwise present on the biobank site. 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.

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

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 *Eucalyptus benthamii* 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 *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	
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	*Eucalyptus moluccana*	MZ4 (HN528 or HN529)	1500	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	*Eucalyptus tereticornis*	MZ4 (HN528 or HN529)	1550	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Acacia decurrens*	MZ4 (HN528 or HN529)	3000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Acacia falcata*	MZ4 (HN528 or HN529)	1000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Acacia implexa*	MZ4 (HN528 or HN529)	3000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Acacia parramattensis*	MZ4 (HN528 or HN529)	3000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Bursaria spinosa subsp. spinosa*	MZ4 (HN528 or HN529)	1000	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Indigofera australis*	MZ4 (HN528 or HN529)	1000	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	*Eucalyptus moluccana*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 3 and 5 (inclusive)
CANOPY	*Eucalyptus tereticornis*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Acacia decurrens*	MZ5 (HN528 or HN529)	2500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Acacia falcata*	MZ5 (HN528 or HN529)	500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Acacia implexa*	MZ5 (HN528 or HN529)	2500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Acacia parramattensis*	MZ5 (HN528 or HN529)	2500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Bursaria spinosa subsp. spinosa*	MZ5 (HN528 or HN529)	500	Hiko cell	Between Years 3 and 5 (inclusive)
SHRUB	*Indigofera australis*	MZ5 (HN528 or HN529)	500	Hiko cell	Between Years 3 and 5 (inclusive)
GROUNDCOVER	*Brunoniella australis*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Dianella revoluta var. revoluta*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Dichelachne micrantha*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Echinopogon ovatus*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Einadia hastata*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Einadia trigonos*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Goodenia hederacea ssp hederacea*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Juncus usitatus*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Microlaena stipoides var. stipoides*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Oplismenus aemulus*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)
GROUNDCOVER	*Phyllanthus virgatus*	MZ5 (HN528 or HN529)	1100	Hiko cell	Between Years 16 and 20 (inclusive)

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

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

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

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GROUNDCOVER	*Phyllanthus virgatus*	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUNDCOVER	*Poa affinis*	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUNDCOVER	*Poa labillardieri var. labillardieri*	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUNDCOVER	*Pratia purpurascens*	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUNDCOVER	*Rytidosperma racemosum var racemosum*	MZ6 (HN526)	150	Hiko cell	Between Years 4 and 19 (inclusive)
GROUNDCOVER	*Solanum prinophyllum*	MZ6 (HN526)	200	Hiko cell	Between Years 4 and 19 (inclusive)
GROUNDCOVER	*Themeda australis*	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.

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. Note: A licence under Section 121 of the *National Parks and Wildlife Act 1974* 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.

	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.

	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.	

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	*Lycium ferocissimum*	Widespread localised minor infestations	MZ1, MZ2, MZ3, MZ6, MZ7
Woody weed	African Olive	*Olea europaea* ssp.*cuspidata*	Moderate and major infestations	MZ1, MZ2, MZ3, MZ6, MZ7, MZ8
Woody weed	Blackberry	Rubus sp.	Localised minor infestations	MZ2, MZ3, MZ6, MZ7
Woody weed	Prickly Pear	*Opuntia stricta*	Widespread individuals	MZ1, MZ2, MZ3, MZ6, MZ7, MZ8
Woody weed	Hackberry	Celtis occidentalis	Small number of individuals	MZ6
Woody weed	Green Cestrum	*Cestrum parqui*	Small number of individuals	MZ6
Woody weed	Honey Locust	*Gleditsia triacanthos*	Major infestation along drainage lines	MZ3, MZ6, MZ7
Woody weed	Lantana	*Lantana camara*	Minor to moderate infestations	MZ1, MZ2, MZ3, MZ6, MZ7
Woody weed	Large Leaved Privet	*Ligustrum lucidum*	Minor to moderate infestations	MZ2, MZ3, MZ6, MZ7
Woody weed	Small Leaved Privet	*Ligustrum sinense*	Minor to moderate infestations	MZ2, MZ3, MZ6, MZ7
Exotic climber	Turkey Rhubarb	*Acetosa sagittata*	Small number of individuals	MZ6
Exotic climber	Balloon Vine	*Cardiospermum grandiflorum*	Localised minor infestations	MZ6
Exotic climber	Madeira Vine	*Anredera cordifolia*	Localised minor infestations	MZ6

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

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

Other ground layer weed	Jerusalem Cherry	*Solanum pseudocapsicum*	Widespread individuals	MZ6, MZ7, MZ8
Other ground layer weed	Black Nightshade	*Solanum nigrum*	Widespread individuals	MZ6, MZ7, MZ8
Other ground layer weed	Sowthistle	*Sonchus* spp	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Stinking Roger	*Tagetes minuta*	Localised minor infestations	MZ5, MZ6
Other ground layer weed	Clover	*Trifolium* spp	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Dandelion	*Taraxacum officinale*	Widespread individuals	MZ4, MZ5, MZ7, MZ8
Other ground layer weed	Purpletop	*Verbena bonariensis*	Widespread individuals	MZ1, MZ2, MZ3, MZ4, MZ5, MZ6, MZ7, MZ8
Other ground layer weed	Veined Verbena	*Verbena rigida*	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	Qualifications 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	Documenting level of effort 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	Methods • 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.

		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	Tasks 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. Performance measures 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. Effort 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	Tasks 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. Performance measures 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. Effort 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	Tasks 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. Performance measures 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. Effort 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	Tasks 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. Performance measures 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. Effort 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	Tasks 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. Performance measures 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

		weeds present. Effort 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	Tasks 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. Performance measures 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. Effort 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	Visual inspections and reporting of works undertaken 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): o regeneration of native canopy species, o regeneration of native shrubs, o regeneration of native groundcovers, o native species dieback, and o 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

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:

Date	**Management zone**	**Description and type of activity undertaken** (e.g. primary/follow-up weed treatment, weeds treated etc)	**Hours of weed control undertaken**

BPMS

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.

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 neccessary)

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.
Eucalyptus benthamii	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 to January	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 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.
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 to January	HN526 - every 10 to 35 years (except where *E. benthamii* 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 *Eucalyptus benthamii*	• No prescribed burning will be undertaken within 25 metres of *Eucalyptus benthamii* plantings or regenerating saplings until at least 30 years following planting or germination. • Remove debris build up at the base of *Eucalyptus benthamii* trees to reduce fire duration and intensity. • Ensure that any prescribed burn in *Eucalyptus benthamii* habitat is of low intensity only.	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.

	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.

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:

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.	

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 *Oryctolagus cuniculus*	Present in low numbers	MZ1, MZ2, MZ6, and MZ6
B	Hares *Lepus europaeus*	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.

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.

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

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

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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 1of Annexure C • control human disturbance if required under item 4 in Section 1 of Annexure C • control the movement of feral and overabundant native herbivores if required under item 10 of Section 2 • control vertebrate pests if required under item 11 of Section 2	Every 12 months
Records of any human disturbance on the biobank site. Note: items 4.1 and 4.2 in Section 1 of Annexure C and clause 2 of this agreement place restrictions on human activities on the biobank site.	Every 6 months
Evidence of erosion. Note: item 8 in Section 1 of Annexure C contains requirements for erosion control.	Every 6 months
Evidence of waste. Note: item 4.4 in Section 1 of Annexure C contains requirements for storing and disposing of waste on the biobank site.	Every 6 months

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.

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.

Annual reporting template

Biobank site annual report

Location details

Biobanking agreement ID: Reporting date:	Name of landowner/s: Property address:

Records of management actions undertaken

Management action	Required completion time and frequency	Action completed (Yes/No)	Actual completion date/s	Description of actions undertaken (including where undertaken (including reference to management zones), any variations and the reasons for variation)	Visual observations and other comments (including reasons for non completion)
1 Management of grazing for conservation					
2 Weed control					
3 Management of fire for conservation					
4 Management of human disturbance					
5 Retention of native vegetation					
6 Planting or seeding					

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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**

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.

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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 exceed $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.

BioBanking

BioBanking Information Management System

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.

NSW GOVERNMENT | Office of Environment & Heritage

Credit register ID	276

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

Designated email:	mjmcdonald@goodsams.org.au

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

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)÷10]		Must be paid to the landowners bank account: Name: Bank: BSB: Account:
Total value of sale (inclusive of GST) $A + $B + [$(A+B)÷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.

NSW GOVERNMENT | Office of Environment & Heritage

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.

BioBanking
Biodiversity Banking and Offsets Scheme

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.

Capital gain (or loss) = capital proceeds – 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:

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

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:

$300,000 × [$20,000 ÷ ($20,000 + $385,000)] = $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 OEH 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 OEH 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 × 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 exceed $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 OEH 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.

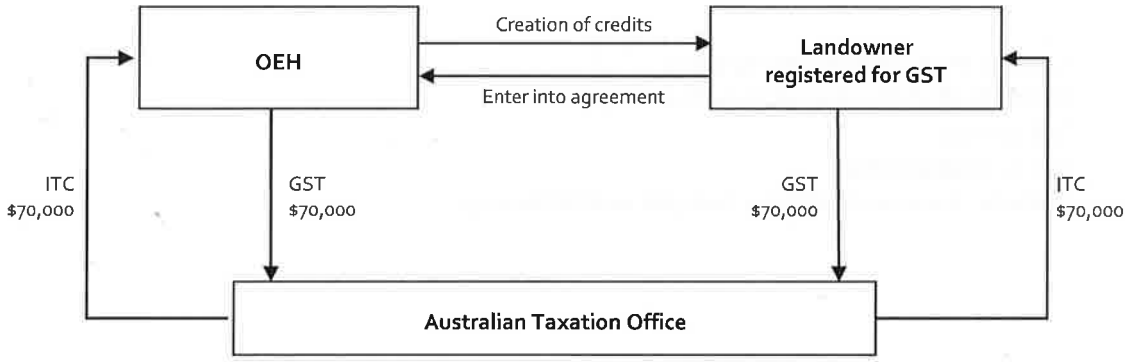
Remitting GST to the ATO

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

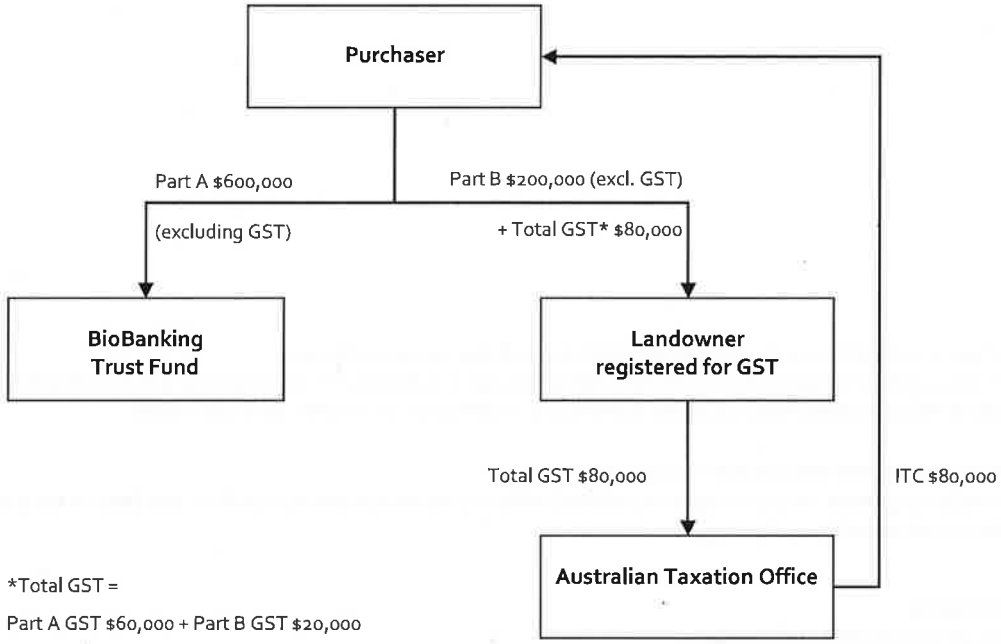
There are three BioBanking transactions that have a GST liability for the landowner. These are illustrated on the following page through an example that assumes:

- 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).

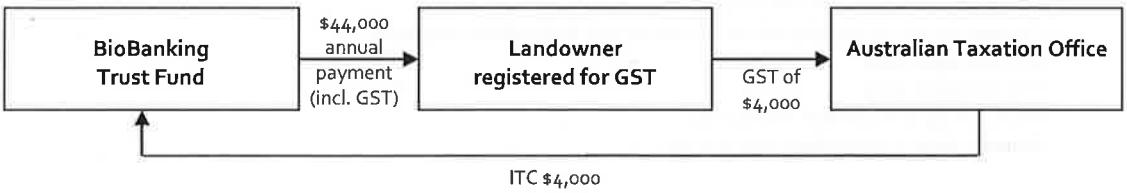
GST Liability 1: On entering a BioBanking agreement and creating biodiversity credits



GST Liability 2: Sale of credits



GST Liability 3: Annual payment for management actions



More information

Contact the OEH BioBanking team:
Email: BioBanking@environment.nsw.gov.au
Tel: 131 555
Fax: (02) 9995 6795
Website: www.environment.nsw.gov.au/BioBanking

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Office of Environment and Heritage
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Ph: 1300 361 967 (national parks information and publications requests)
Fax: (02) 9995 5999
TTY: (02) 9211 4723
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

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

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)

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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "D"
Appendix 5
Biodiversity Overview and Management Principles
(Travers Ecological)

October 2021

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.

Contents

Maps

Tables

Appendices

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 discolour* –

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 seperate 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.

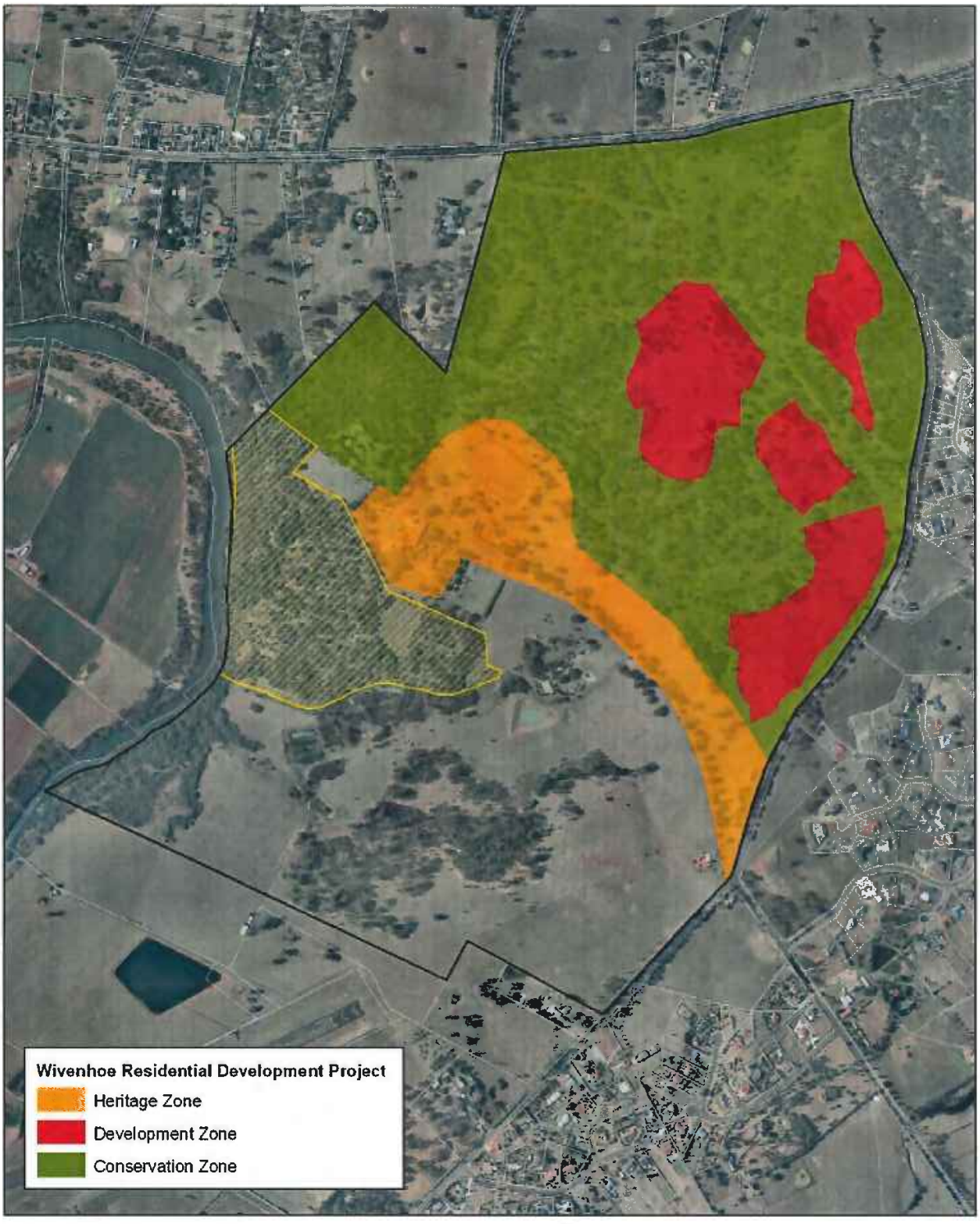
Table 2: Weed and Management Zones

Weed Zone	Management Zone	Management Sub-zone	Area (ha)
		MSZ1a	0.37
		MSZ1b	0.96
	MZ1_SHW_NO CANOPY_REVEG	MSZ1c	0.35
WZ1	MZ9_SHW_EASEMENT	MSZ9a	0.29
	MZ2_SHW_LOW WEED	MSZ2a	11.43
WZ2	MZ7_RFF_LOW WEED	MSZ7a	1.77
		MSZ3a	0.17
		MSZ3b	0.53
		MSZ3c	0.24
		MSZ3d	0.71
		MSZ3e	0.65
WZ3	MZ3_SHW_MODERATE WW	MSZ3f	0.42
	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
WZ4	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

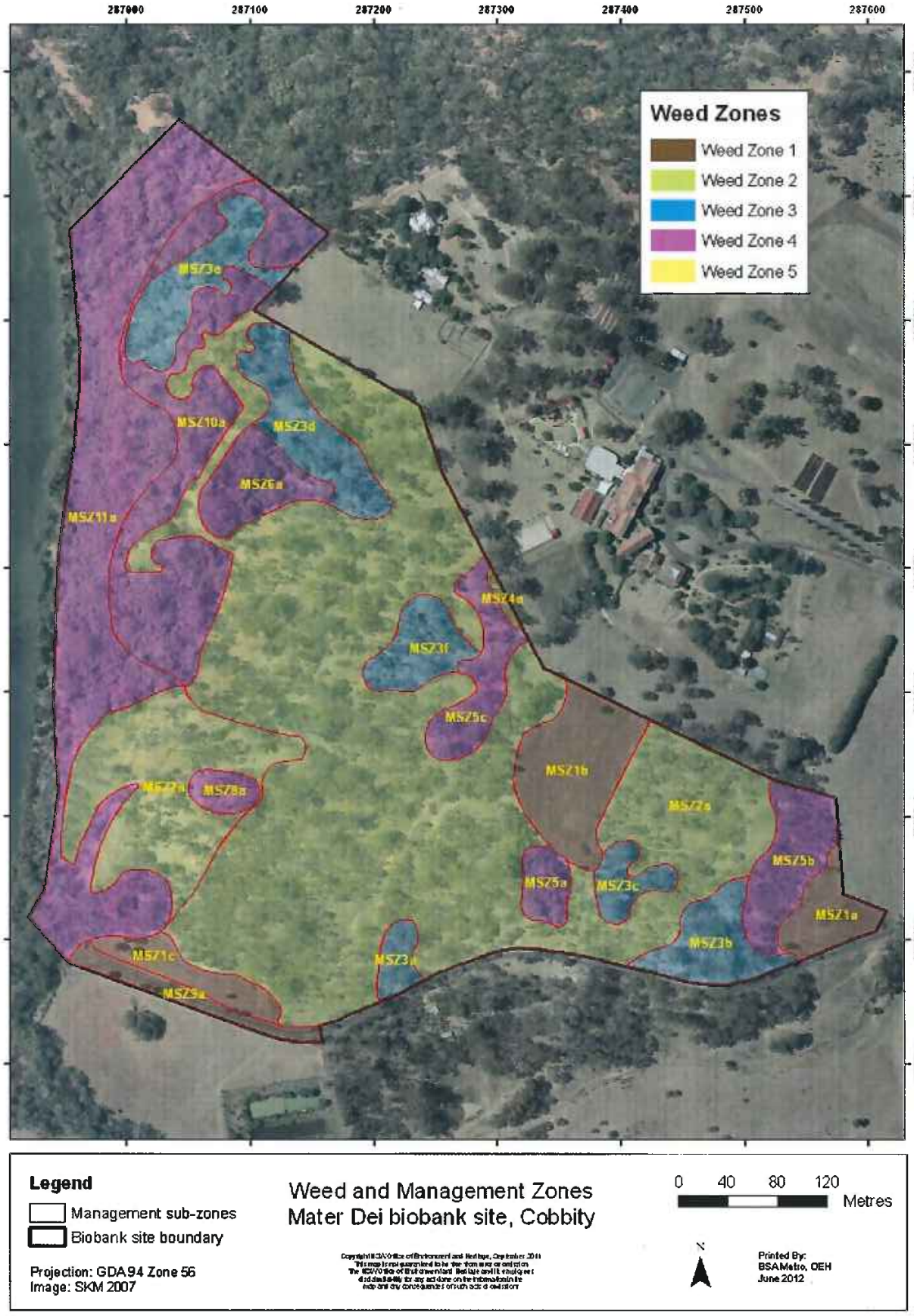
0 150 300 450
Metres

N

Printed By:
BSA Metro, EPA
December 2011

Map 3: Vegetation Types

Map 4: Weed and Management Zones



Legend

- Management sub-zones
- Biobank site boundary

Projection: GDA 94 Zone 56
Image: SKM 2007

Weed and Management Zones
Mater Dei biobank site, Cobbity

0 40 80 120
Metres

N

Printed By:
BSAMetro, OEH
June 2012

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.

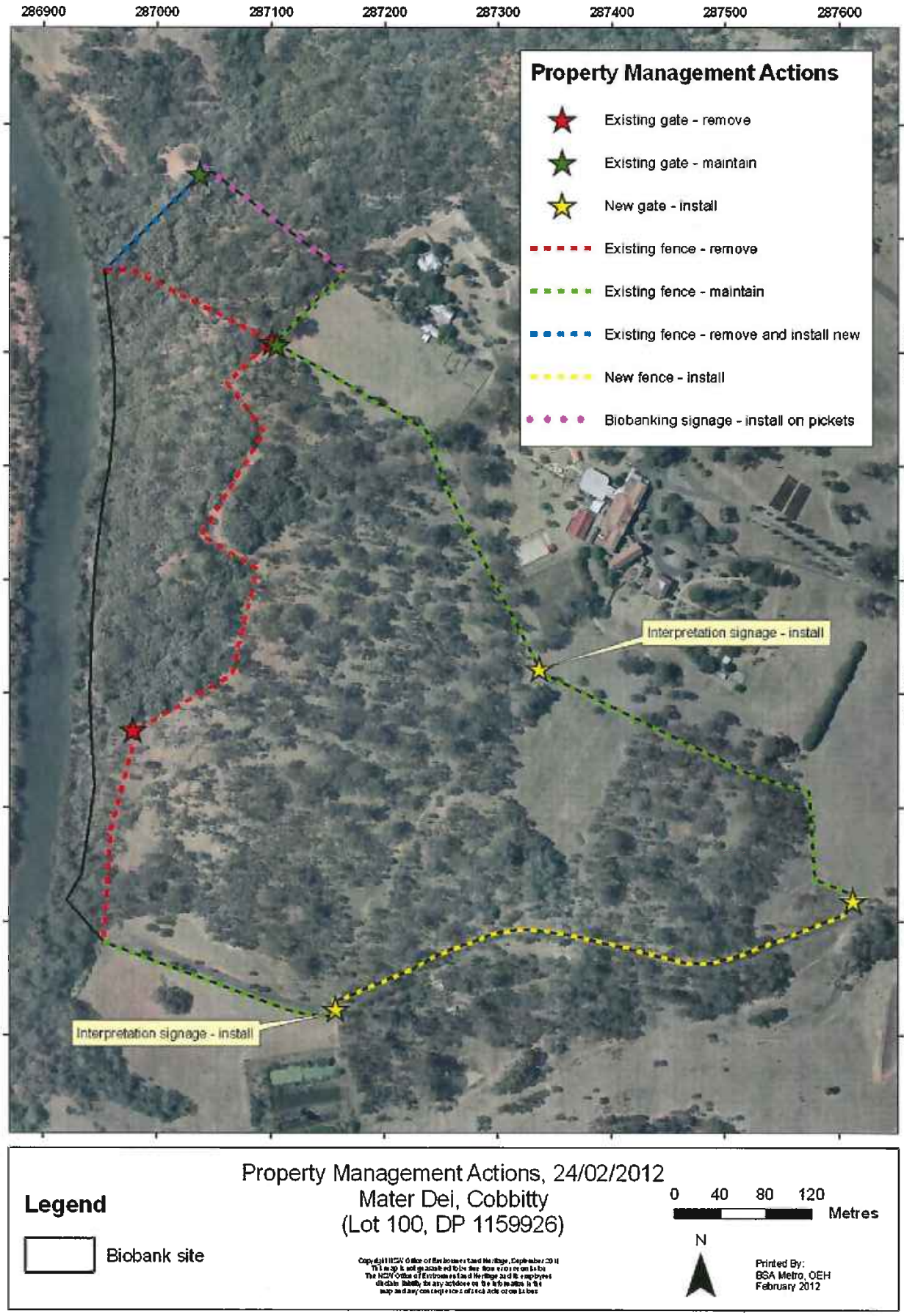
The fencing installed around the perimeter of the site must be stock-proof. It is recommended that, at a minimum, the fences consist of 5 strands of barbed wire with wooden posts every 9 metres and 2 galvanised star pickets in between. Fence removal will involve the removal of wire only with the posts 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

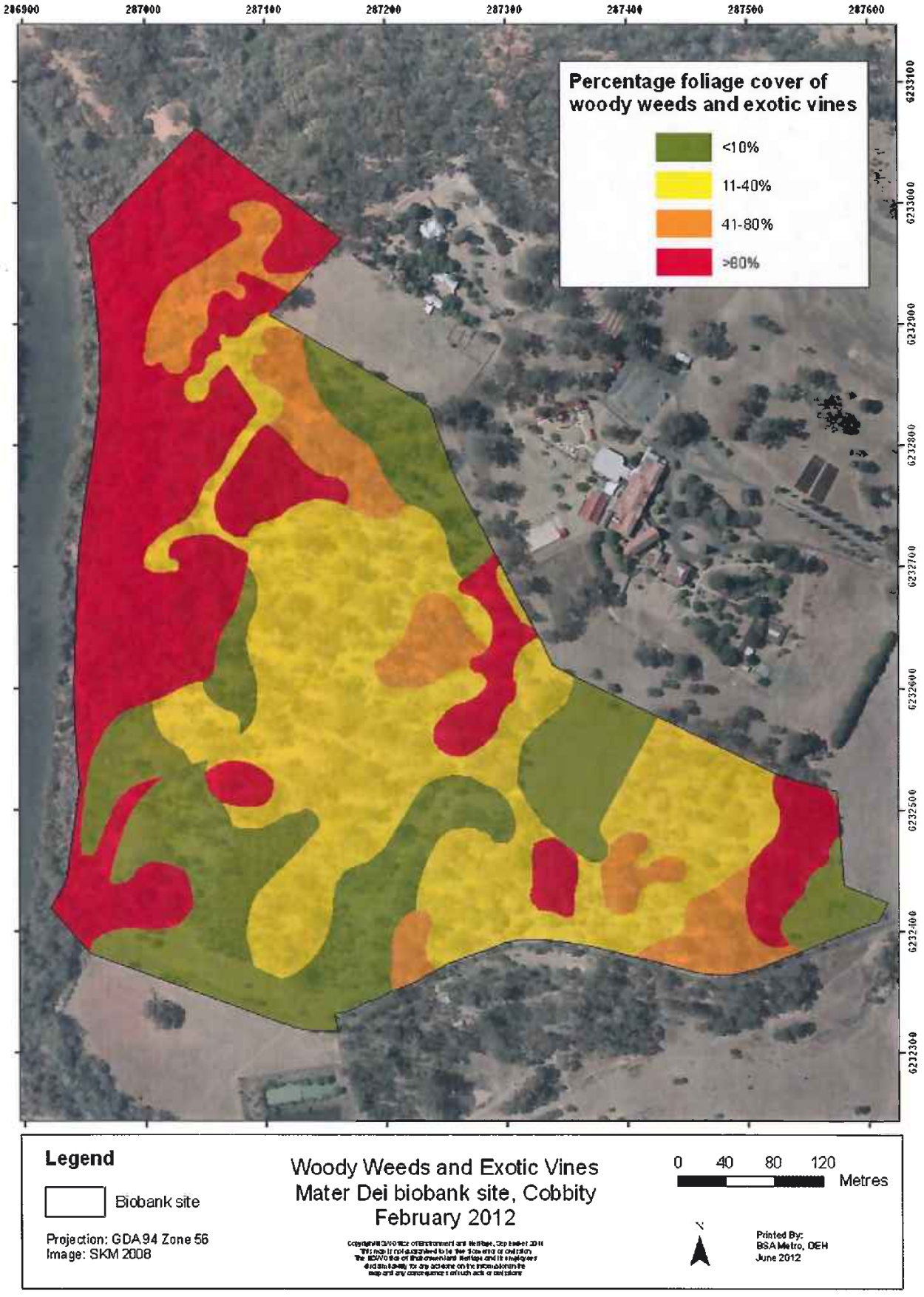
The fire management plan in the agreement (page 59) describes the ecological burn actions that must be undertaken on the site. This section of the guide provides context and justification for those actions, and guidance on how to effectively implement them.

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

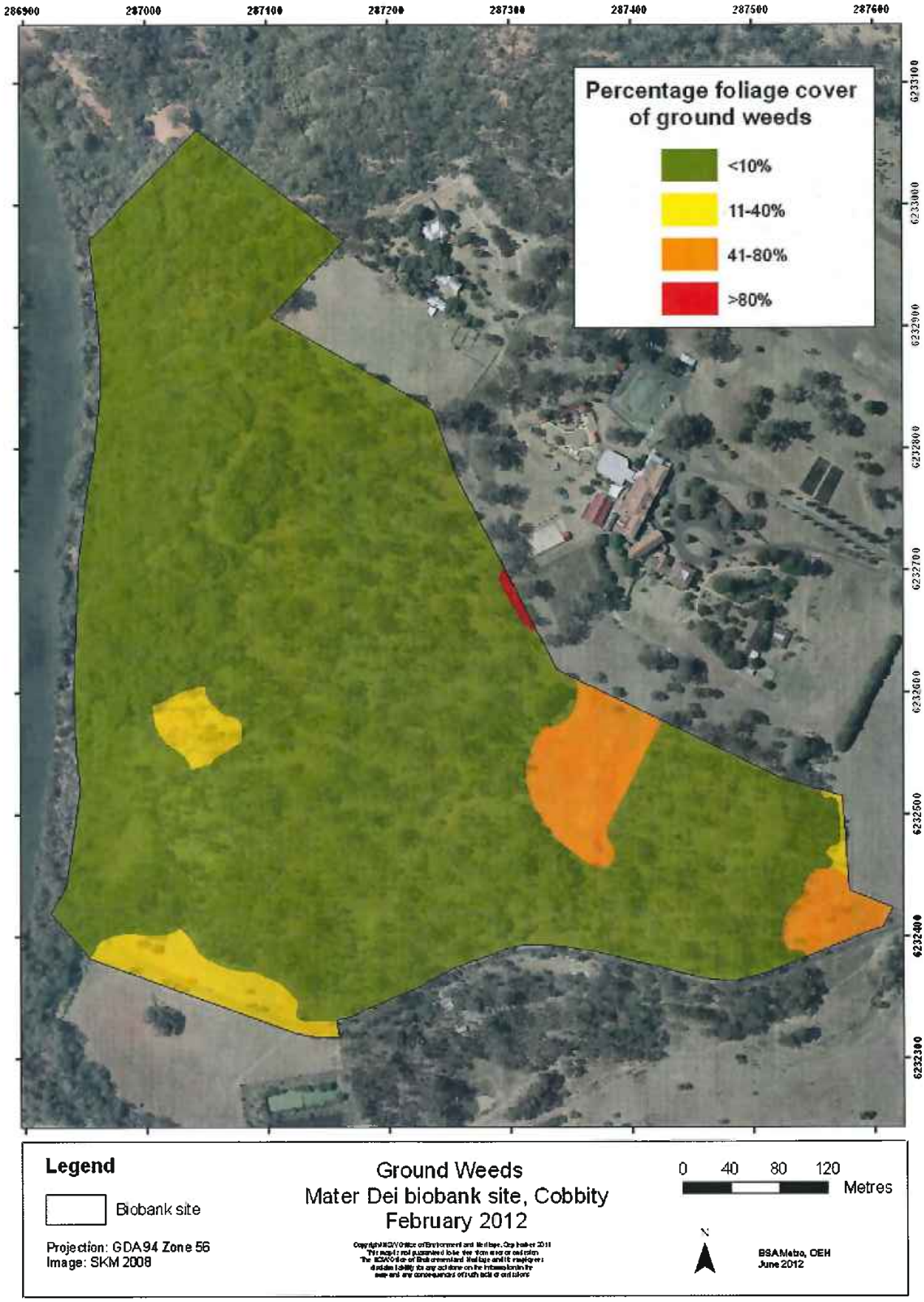


Table 4: Fire regimes for vegetation types and threatened plants

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 assets

Threatened 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 assets

Aboriginal 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						
Meridolum corneovirens	Cumberland Land Snail	Endangered	No	Confirmed (2006)	None	No slashing, trittering or tree removal
Pyrrholaemus sagittatus	Speckled Warbler	Vulnerable	No	Confirmed (2006)	None	No slashing, trittering or tree removal
Ninox strenua	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
Melanodryas cucullata cucullata	Hooded robin (southern form)	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
Stagonopleura guttata	Diamond Firetail	Vulnerable	No	Potential (2006)	None	No slashing, trittering or tree removal
Pteropus poliocephalus	Grey-headed Flyingfox	Vulnerable	Vulnerable	Confirmed (1996)	Avoid known roost sites	Avoid known roost sites
Oxyura australis	Blue-billed Duck	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
Myotis adversus	Large-footed Myotis	Vulnerable	No	Potential (2006)	No fire around known roost sites	No removal of trees
Lathamus discolor	Swift Parrot	Endangered	Endangered	Potential (2006)	Species not listed	Species not listed
Melithreptus gularis	Black-chinned Honeyeater	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
Mormopterus norfolkensis	Eastern Freetail –bat	Vulnerable	No	Potential (2006)	Species not listed	Species not listed
Threatened flora species						
Cynanchum elegans	White-flowered wax Plant	Endangered	Endangered	Potential (2012)	No fire	No slashing, trittering or tree removal
Eucalyptus benthamii	Camden White Gum	Vulnerable	Vulnerable	Potential (2012)	No fire more than once every 15 years	No slashing, trittering or tree removal
Marsdenia viridiflora subsp. viridiflora	Native Pear	Endangered population	No	Potential (2012)	Species not listed	Species not listed
Pomaderris brunnea	Brown Pomaderris	Vulnerable	Vulnerable	Potential (2012)	No fire more than once every 10 years	No slashing, trittering or tree removal
Pimelea spicata	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 temperate 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 application[5] 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:

- funding[6] 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

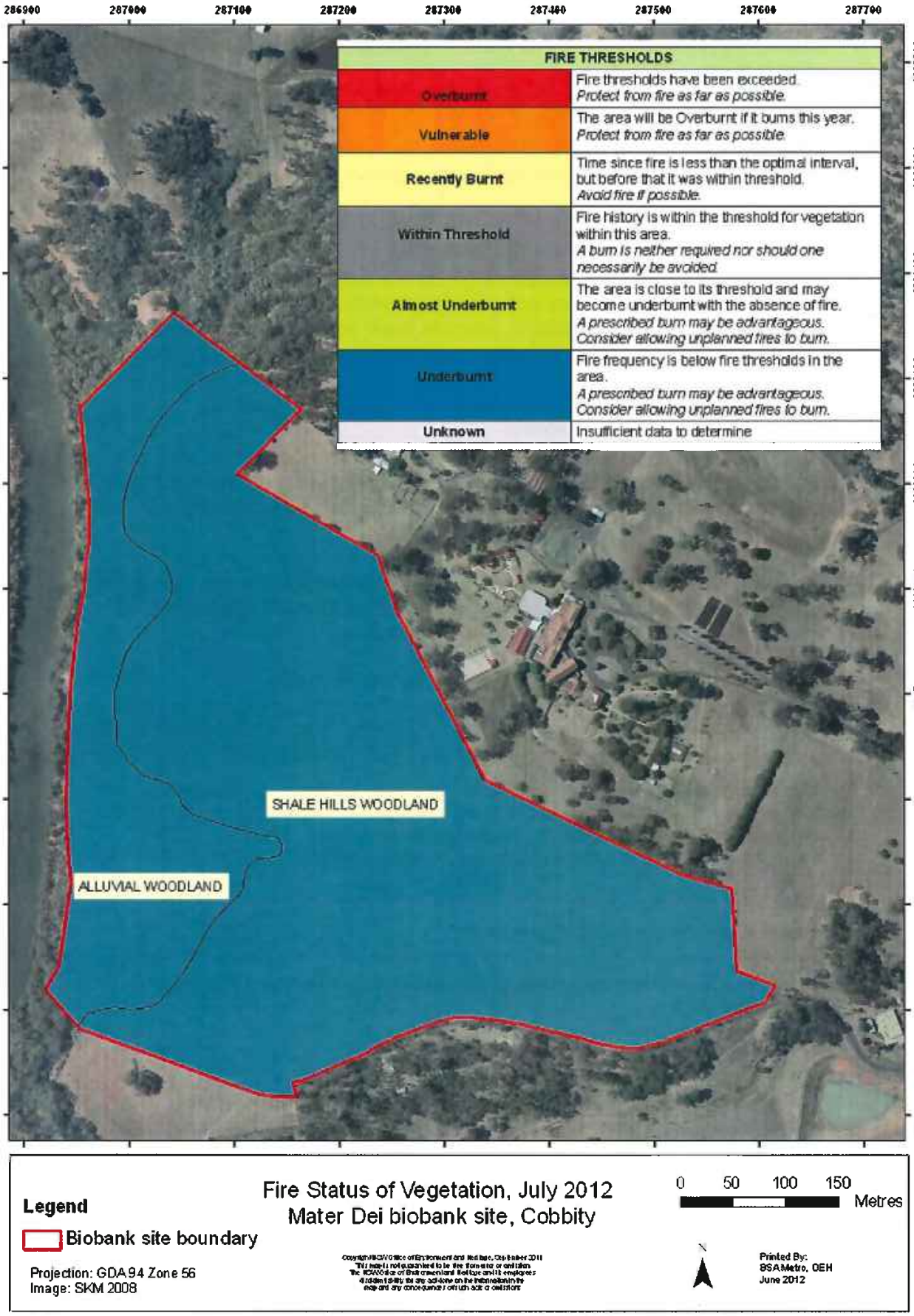
Description of human activities	Management zone/s
Passive recreation, with the exception of overnight stays and/or camp fires, is permissible on the land to the extent that the condition of vegetation on site is not degraded. Passive recreation can include but is not limited to activities such as walking 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

Legend

Proposed compartments

Biobank site boundary

Projection: GDA94 Zone 56
Image: SKM 2008

Proposed prescribed burns
Mater Dei biobank site, Cobbity

0 50 100 150 Metres

N

Printed By:
BSAMetro, OEH
June 2012

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 Guidelines[7].
- 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	Eucalyptus baueriana	MZ1	40	Hiko cell	Within 4 years of commencement
Narrow-leaved Ironbark	Eucalyptus crebra	MZ1	20	As above	As above
Grey Box	Eucalyptus moluccana	MZ1	140	As above	As above
Forest Red Gum	Eucalyptus tereticornis	MZ1	140	As above	As above
Black Wattle	Acacia decurrens	MZ1	50	As above	As above
Acacia falcata	Acacia falcata	MZ1	110	As above	As above
Hickory Wattle	Acacia implexa	MZ1	50	As above	As above
Parramatta Wattle	Acacia parramattensis	MZ1	50	As above	As above
Blackthorn	Bursaria spinosa subsp. spinosa	MZ1	50	As above	As above
Wedge-leaf Hop-bush	Dodonaea viscosa subsp. cuneata	MZ1	110	As above	As above
Australian Indigo	Indigofera australis	MZ1	100	As above	As above
Blue Box	Eucalyptus baueriana	MZ6, MZ10	40	As above	Within 24 months of primary weed treatment
Narrow-leaved Ironbark	Eucalyptus crebra	MZ6, MZ10	60	As above	As above
Grey Box	Eucalyptus moluccana	MZ6, MZ10	200	As above	As above
Forest Red Gum	Eucalyptus tereticornis	MZ6, MZ10	200	As above	As above
Black Wattle	Acacia decurrens	MZ6, MZ10	100	As above	As above
-	Acacia falcata	MZ6, MZ10	100	As above	As above
Hickory Wattle	Acacia implexa	MZ6, MZ10	100	As above	As above
Parramatta Wattle	Acacia parramattensis	MZ6, MZ10	100	As above	As above
Blackthorn	Bursaria spinosa subsp. spinosa	MZ6, MZ10	90	As above	As above
Wedge-leaf Hop-bush	Dodonaea viscosa subsp. cuneata	MZ6, MZ10	150	As above	As above
Australian Indigo	Indigofera australis	MZ6, MZ10	150	As above	As above
Austral Bugle	Ajuga australis	MZ6, MZ10	20	As above	As above
Purple Wiregrass	Aristida ramosa	MZ6, MZ10	20	As above	As above
Threeawn Speargrass	Aristida vagans	MZ6, MZ10	20	As above	As above
Narrow plantain	Plantago gaudichaudii	MZ6, MZ10	20	As above	As above
-	Plantago varia	MZ6, MZ10	20	As above	As above
Bordered Panic	Entolasia marginata	MZ6, MZ10	80	As above	As above
Wallaby Grass	Austrodanthonia racemosa var. racemosa	MZ6, MZ10	80	As above	As above
Smallflower Wallaby Grass	Austrodanthonia setacea	MZ6, MZ10	80	As above	As above
Red-leg Grass	Bothriochloa decipiens var. decipiens	MZ6, MZ10	80	As above	As above
Tall Sedge	Carex appressa	MZ6, MZ10	80	As above	As above
Tall Chloris	Chloris ventricosa	MZ6, MZ10	80	As above	As above
Barbed Wire Grass	Cymbopogon refractus	MZ6, MZ10	80	As above	As above

Blue Flax-Lily	Dianella longifolia	MZ6, MZ10	80	As above	As above
Shorthair Plumegrass	Dichelachne micrantha	MZ6, MZ10	80	As above	As above
Fishweed	Einadia trigonos subsp. trigonos	MZ6, MZ10	80	As above	As above
Common Wheatgrass	Elymus scaber var. scaber	MZ6, MZ10	80	As above	As above
Paddock Lovegrass	Eragrostis leptostachya	MZ6, MZ10	80	As above	As above
Snowgrass	Poa sieberiana var. sieberiana	MZ6, MZ10	80	As above	As above
Slender Rat's Tail Grass	Sporobolus creber	MZ6, MZ10	80	As above	As above
Smooth-flower Wallaby Grass	Austrodanthonia pilosa	MZ6, MZ10	80	As above	As above
Wallaby Grass	Austrodanthonia tenuior	MZ6, MZ10	80	As above	As above
-	Austrostipa rudis subsp. rudis	MZ6, MZ10	80	As above	As above
Red-leg Grass	Bothriochloa macra	MZ6, MZ10	80	As above	As above
Windmill Grass	Chloris truncata	MZ6, MZ10	80	As above	As above
Blue Flax-Lily	Dianella revoluta var. revoluta	MZ6, MZ10	80	As above	As above
Tufted Hedgehog Grass	Echinopogon caespitosus var. caespitosus	MZ6, MZ10	80	As above	As above
Kangaroo Grass	Themeda australis	MZ6, MZ10	130	As above	As above
Tufted Hedgehog Grass	Poa labillardieri var. labillardieri	MZ6, MZ10	130	As above	As above
Weeping Grass	Microlaena stipoides var. stipoides	MZ6, MZ10	380	As above	As above
Berry Saltbush	Einadia hastata	MZ6, MZ10	300	As above	As above
Blady Grass	Imperata cylindrica	MZ6, MZ10	300	As above	As above
Rough-barked Apple	Angophora floribunda	MZ11	110	As above	As above
Broad-leaved Apple	Angophora subvelutina	MZ11	110	As above	As above
Camden White Gum	Eucalyptus benthamii	MZ11	60	As above	As above
Blue Box	Eucalyptus baueriana	MZ11	150	As above	As above
River Peppermint	Eucalyptus elata	MZ11	140	As above	As above
Forest Red Gum	Eucalyptus tereticornis	MZ11	140	As above	As above
-	Melaleuca decora	MZ11	50	As above	As above
Black Wattle	Acacia decurrens	MZ11	120	As above	As above
White Sally Wattle	Acacia floribunda	MZ11	120	As above	As above
Hickory Wattle	Acacia implexa	MZ11	120	As above	As above
Parramatta Wattle	Acacia parramattensis	MZ11	120	As above	As above
Blackthorn	Bursaria spinosa subsp. spinosa	MZ11	120	As above	As above
Large-leaf Hop-bush	Dodonaea triquetra	MZ11	250	As above	As above
Tick Bush	Kunzea ambigua	MZ11	200	As above	As above
Tree Violet	Melicytus dentatus	MZ11	140	As above	As above
Purple Wiregrass	Aristida ramosa	MZ11	80	As above	As above
Threeawn Speargrass	Aristida vagans	MZ11	80	As above	As above

-	Austrodanthonia racemosa var. racemosa	MZ11	140	As above	As above
Tall Chloris	Chloris ventricosa	MZ11	140	As above	As above
Barbed Wire Grass	Cymbopogon refractus	MZ11	140	As above	As above
Shorthair Plumegrass	Dichelachne micrantha	MZ11	140	As above	As above
Forest Hedgehog Grass	Echinopogon ovatus	MZ11	140	As above	As above
Fishweed	Einadia trigonos	MZ11	140	As above	As above
Common Wheatgrass	Elymus scaber var. scaber	MZ11	140	As above	As above
Wiry Panic	Entolasia stricta	MZ11	140	As above	As above
Hairy Panic	Panicum effusum	MZ11	140	As above	As above
Scrubby Spurge	Phyllanthus gunnii	MZ11	140	As above	As above
Blue Flax-lily	Dianella caerulea var. caerulea	MZ11	140	As above	As above
Bordered Panic	Entolasia marginata	MZ11	140	As above	As above
Stout Bamboo Grass	Austrostipa ramosissima	MZ11	300	As above	As above
Berry Saltbush	Einadia hastata	MZ11	300	As above	As above
-	Eragrostis benthamii	MZ11	300	As above	As above
Paddock Lovegrass	Eragrostis leptostachya	MZ11	300	As above	As above
Spiny-headed Mat-rush	Lomandra longifolia	MZ11	300	As above	As above
Weeping Grass	Microlaena stipoides var. stipoides	MZ11	300	As above	As above
Kangaroo Grass	Themeda australis	MZ11	300	As above	As above
-	Juncus usitatus	MZ11	300	As above	As above
-	Poa affinis	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 ar eht eresult 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 *Oryctolagus cuniculus*	Present in low numbers	All
Hares *Lepus europaeus*	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	Temporary fencing of re-vegetation areas 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	Fumigation and destruction of burrows Note: 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. Identification of priority areas for treatment 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. Identification of the level of effort required 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. Treatment of burrows 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	Shooting program 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	1. Observations of active rabbit burrows 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	2. Observations of feral pests 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
		3. Reporting on no. of active rabbit burrows treated 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
		4. Reporting on no. of person days applied to the treatment of burrows 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
		5. Reporting on the no. of surplus person days available for future treatment of burrows 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 *Vulpes vulpes*	Likely to be present	All
Cat *Felis catus*	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
Ajuga australis	Acacia decurrens
Amyema miquelii	Aristida ramosa
Aristida ramosa	Aristida vagans
Aristida vagans	Arthropodium milleflorum
Asperula conferta	Austrodanthonia racemosa var. racemosa
Austrodanthonia racemosa var. racemosa	Austrostipa ramosissima
Austrodanthonia setacea	Brunoniella australis
Bothriochloa decipiens var. decipiens	Bursaria spinosa subsp. spinosa
Brunoniella australis	Carex appressa
Bursaria spinosa subsp. spinosa	Carex breviculmis
Carex appressa	Carex longebrachiata
Carex breviculmis	Cheilanthes austrotenuifolia
Carex gaudichaudiana	Cheilanthes sieberi subsp. sieberi
Carex inversa	Chloris ventricosa
Carex longebrachiata	Commelina cyanea
Cayratia clematidea	Convolvulus erubescens
Cheilanthes austrotenuifolia	Cymbopogon refractus
Cheilanthes sieberi subsp. sieberi	Cynodon dactylon
Chloris ventricosa	Cyperus imbecillis
Commelina cyanea	Desmodium varians
Cotula australis	Dichondra repens
Crassula sieberiana subsp. sieberiana	Einadia hastata
Cymbonotus lawsonianus	Einadia nutans subsp. nutans
Cymbopogon refractus	Elymus scaber var. scaber
Cynodon dactylon	Entolasia stricta
Cyperus enervis	Eragrostis brownii
Cyperus gracilis	Eragrostis leptostachya
Cyperus imbecillis	Eucalyptus baueriana
Daucus glochidiatus	Eucalyptus elata
Desmodium brachypodum	Eucalyptus tereticornis
Desmodium varians	Glycine clandestina
Dianella longifolia	Glycine tabacina
Dichelachne micrantha	Hibbertia diffusa
Dichondra repens	Hypericum gramineum
Einadia nutans subsp. linifolia	Lomandra confertifolia subsp. rubiginosa
Einadia nutans subsp. nutans	Microlaena stipoides var. stipoides
Einadia trigonos subsp. trigonos	Opercularia diphylla
Elymus scaber var. scaber	Oplismenus aemulus
Eragrostis leptostachya	Oplismenus imbecillis
Eucalyptus baueriana	Oxalis perennans
Eucalyptus moluccana	Pandorea pandorana subsp. pandorana
Eucalyptus tereticornis	Panicum effusum
Euchiton sphaericus	Phyllanthus gunnii
Fimbristylis dichotoma	Phyllanthus hirtellus

Cumberland Shale Hills Woodland	Cumberland River Flat Forest
Galium migrans	Pratia purpurascens
Galium propinquum	Pseuderanthemum variabile
Geranium potentilloides var. potentilloides	Solanum prinophyllum
Geranium solanderi var. solanderi	Themeda australis
Glossocardia bidens	Tricoryne elatior
Glycine clandestina	Vernonia cinerea var. cinerea
Glycine tabacina	Veronica calycina
Hypericum japonicum	Wahlenbergia gracilis
Lagenophora gracilis	
Lagenophora gracilis	
Lomandra confertifolia subsp. rubiginosa	
Melaleuca decora	
Mentha satureioides	
Microlaena stipoides var. stipoides	
Opercularia diphylla	
Oplismenus imbecillis	
Oxalis perennans	
Pellaea falcata	
Phyllanthus virgatus	
Plantago gaudichaudii	
Plantago varia	
Poa labillardieri var. labillardieri	
Poa sieberiana var. sieberiana	
Ranunculus sessiliflorus var. sessiliflorus	
Rhodanthe anthemoides	
Schoenus paludosus	
Senecio quadridentatus	
Sida corrugata	
Solanum campanulatum	
Solanum prinophyllum	
Solenogyne dominii	
Sporobolus creber	
Themeda australis	
Vernonia cinerea var. cinerea	
Veronica calycina	
Veronica plebeia	
Vittadinia cuneata var. cuneata	
Wahlenbergia gracilis	
Wahlenbergia multicaulis	
Wahlenbergia stricta subsp. stricta	
Zornia dyctiocarpa var. dyctiocarpa	

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 *Briza subaristata*. 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)

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

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	*Cestrum parqui*	Scattered individuals in disturbed riparian zone	MZ11
Woody weed	Honey Locust	*Gleditsia triacanthos*	Scattered individuals throughout site	ALL
Woody weed	Lantana	*Lantana camara*	Minor infestations in CSHW and CRFF, large infestation dominates MZ8	ALL
Woody weed	Large Leaved Privet	*Ligustrum lucidum*	Scattered individuals in highly disturbed areas of CSHW and CRFF	MZ5; MZ10; MZ11
Woody weed	Small Leaved Privet	*Ligustrum sinense*	Significant infestations in highly disturbed areas of CSHW and CRFF	MZ5; MZ10; MZ11
Woody weed	African Olive	*Olea europaea* ssp.*cuspidata*	Widespread across site, with significant infestations in highly disturbed areas of CSHW and CRFF	ALL
Woody weed	African Boxthorn	*Lycium ferocissimum*	Scattered individuals and minor infestations in most SHW zones	MZ2; MZ3; MZ4, MZ5
Succulent	Common Prickly Pear	*Opuntia stricta*	Scattered individuals throughout site	ALL
Succulent	Wandering Jew	*Tradescantia fluminensis*	Minor infestations in disturbed riparian zone	MZ12
Exotic vine	Madeira Vine	*Anredera cordifolia*	Large infestation near northern boundary of site	MZ10
Exotic vine	Moth Vine	*Araujia sericifera*	Scattered individuals throughout site	ALL
Exotic vine	Bridal Creeper	*Asparagus asparagoides*	Scattered individuals throughout site	ALL
Exotic vine	Honeysuckle	*Lonicera* sp	Minor infestations in disturbed riparian zone	MZ8
Exotic grass	Carpet Grass	*Axonopus fissifolius*	Minor infestation throughout site	ALL
Exotic grass	Chilean Quaking Grass	*Briza subaristata*	Minor infestations in areas of SHW, significant infestations in areas without canopy.	MZ1; MZ2; MZ3; MZ4; MZ5
Exotic grass	Ehrharta	*Ehrharta erecta*	Minor infestations throughout site	ALL
Exotic grass	African Love Grass	*Eragrostis curvula*	Minor infestations throughout site	ALL
Exotic grass	Common Paspalum	*Paspalum dilatatum*	Minor infestations throughout site, significant infestations in areas without canopy.	ALL
Exotic grass	Kikuyu	*Pennisetum clandestinum*	Minor infestations in more open parts of SHW	MZ1; MZ2; MZ4
Exotic grass	Pidgeon Grass	*Setaria gracilis*	Minor infestations in more open parts of SHW	MZ1; MZ2; MZ4

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	*Sporobolus africanus*	Scattered individuals in most SHW zones	MZ1; MZ2; MZ3; MZ4
Exotic grass	Squirrel Tail Fescue	*Vulpia myuros*	Minor infestations in parts of SHW without canopy	MZ1
Exotic forb	Pimpernel	*Anagallis arvensis*	Scattered individuals in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Climbing Asparagus	*Asparagus aethiopicus*	Minor infestations in more disturbed parts of site	MZ3; MZ5; MZ11
Exotic forb	Cobblers Peg	*Bidens spp*	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Fat Hen	*Chenopodium album*	Scattered individuals in SHW	MZ2
Exotic forb	Spear Thistle	*Cirsium vulgare*	Scattered individuals in SHW	MZ2; MZ3; MZ4
Exotic forb	Slender Celery	*Cyclospermum leptophyllum*	Scattered individuals in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Fleabane	*Conyza* sp.	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Gomphrena Weed	*Gomphrena celosioides*	Scattered individuals in SHW	MZ2
Exotic forb	Flatweed	*Hypochaeris* spp	Scattered individuals throughout site	ALL
Exotic forb	Slender Birds-foot Trefoil	*Lotus angustissimus*	Minor infestations in parts of SHW without canopy	MZ1
Exotic forb	Medics	*Medicago spp*	Scattered individuals in SHW	MZ2
Exotic forb	Brazilian Whitlow	*Paronychia brasiliana*	Scattered individuals throughout site	ALL
Exotic forb	Lamb's Tongue	*Plantago lanceolata*	Scattered individuals and minor infestations throughout site	ALL
Exotic forb	Mexican Clover	*Richardia brasiliensis*	Scattered individuals throughout site	ALL
Exotic forb	Fireweed	*Senecio madagascariensis*	Scattered individuals throughout site	All
Exotic forb	Paddy Lucerne	*Sida rhombifolia*	Scattered individuals throughout site	ALL
Exotic forb	Black Nightshade	*Solanum nigrum*	Scattered individuals throughout site	ALL
Exotic forb	Sowthistle	*Sonchus* spp	Scattered individuals throughout site	ALL
Exotic forb	Stinking Roger	*Tagetes minuta*	Scattered individuals in SHW	MZ2
Exotic forb	Clover	*Trifolium* spp	Scattered individuals and minor infestations in more open parts of SHW	MZ1; MZ2; MZ4
Exotic forb	Purpletop	*Verbena spp.*	Scattered individuals throughout site	ALL

APPENDIX D:

Annual Monitoring Proforma for Management Zones

MATER DEI BIOBANK SITE: ANNUAL MONITORING PROFORMA FOR MANAGEMENT ZONES

Management Zone: **Date:** **Completed by:**

SECTION A (to be completed in the field)

Condition of Zone

For each management sub-zone, record each measure as either A (absent), O (occasional), M (moderate) or F(frequent)

	MSZa	MSZb	MSZc	MSZd	MSZe	MSZf
Regeneration of native canopy species						
Regeneration of native shrub species						
Regeneration of native groundcovers						
Canopy dieback						
Evidence of erosion						

Visual estimate of weediness

For each management sub-zone, record a visual estimate of percentage foliage cover (0-100%) for each weed class

	MSZa	MSZb	MSZc	MSZd	MSZe	MSZf
Woody weeds and exotic climbers						
Exotic groundcovers						

Description of main weed infestations

Describe the main weeds that are present in the management zone (name & extent):

Formal monitoring of groundcover weeds

Establish a 50 m transect through the most weed affected part of the management zone where weed control work has occured. At 50 cm intervals along the transect (100 points in total) place a 1m 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, or score 0 if there are no weed species in contact with the stick. Record the percentage foliage cover (PFC) as the sum of these values divided by 100.

MSZ where the transect was located:		PFC recorded:	

Feral pests

For each MSZ, record the extent of active rabbit burrows as either **N** (negligible), **Min** (minimal), **Mod** (moderate) or **High** (high)

	MSZa	MSZb	MSZc	MSZd	MSZe	MSZf
Active rabbit burrows						

Provide details of any evidence of other feral pests observed:

Threatened species

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 is recorded as being moderate or high in the annual monitoring profroma 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 agreeement (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 interpetation 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

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)

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

PPS PASCOE PLANNING SOLUTIONS

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

October 2021

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

DRAFT

Guide to managing the

MATER DEI STAGE 2 BIOBANK SITE, COBBITTY

Part 1: Site Description and Management Actions

OCTOBER 2016

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

EXECUTIVE SUMMARY

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

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

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

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

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

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

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

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

Contents

1. Introduction

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

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

2 Site Description

2.1 LOCATION AND REGIONAL CONTEXT

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

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

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

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

2.2 SITE CONTEXT

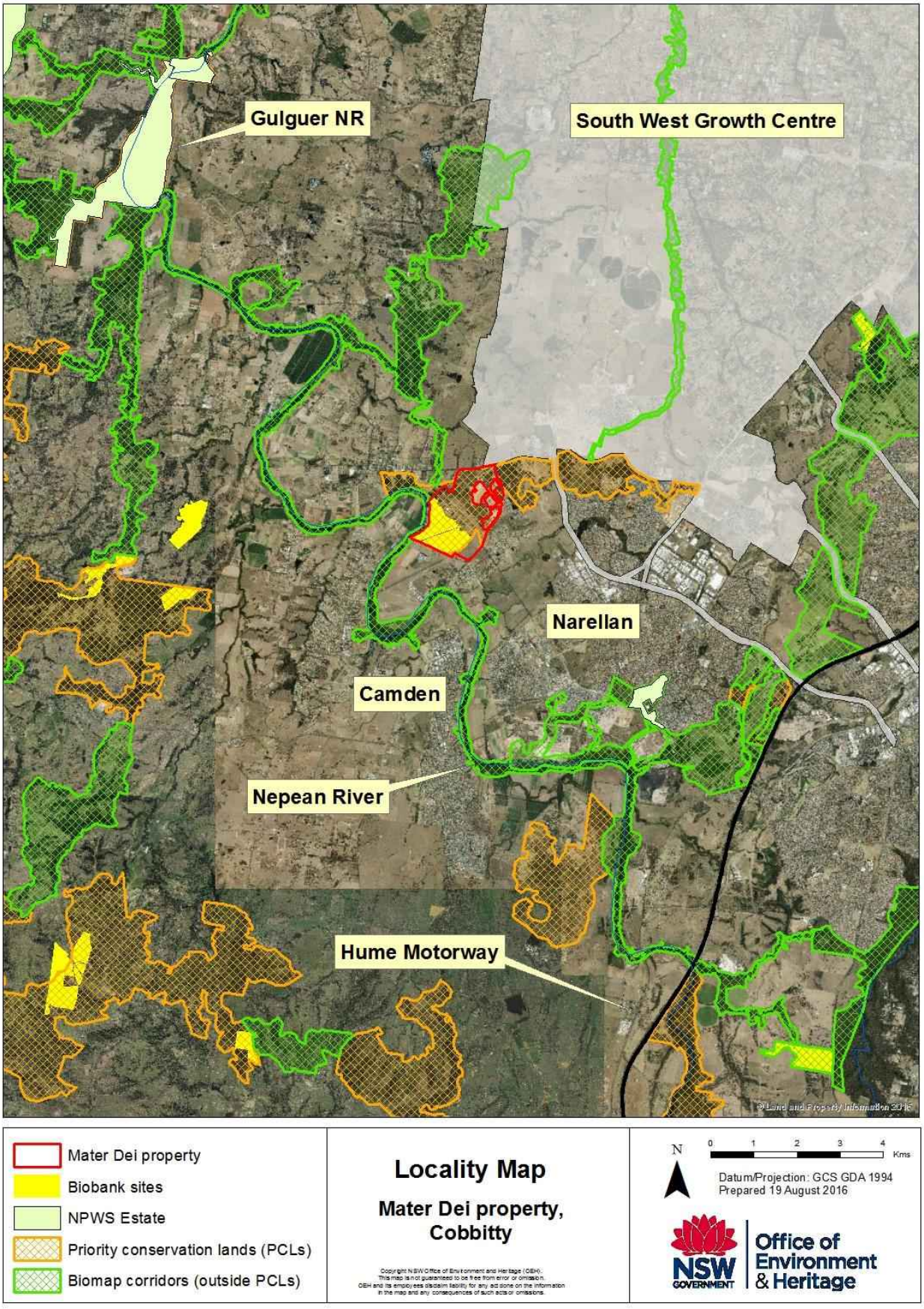
The Stage 2 biobank site is located in the southern part of the Mater Dei property and directly adjoins both the Nepean River and the Stage 1 biobank site (Map 2). It contains remnant woodland and derived grasslands that are currently grazed by cattle. Highly degraded riparian forest is present on the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

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

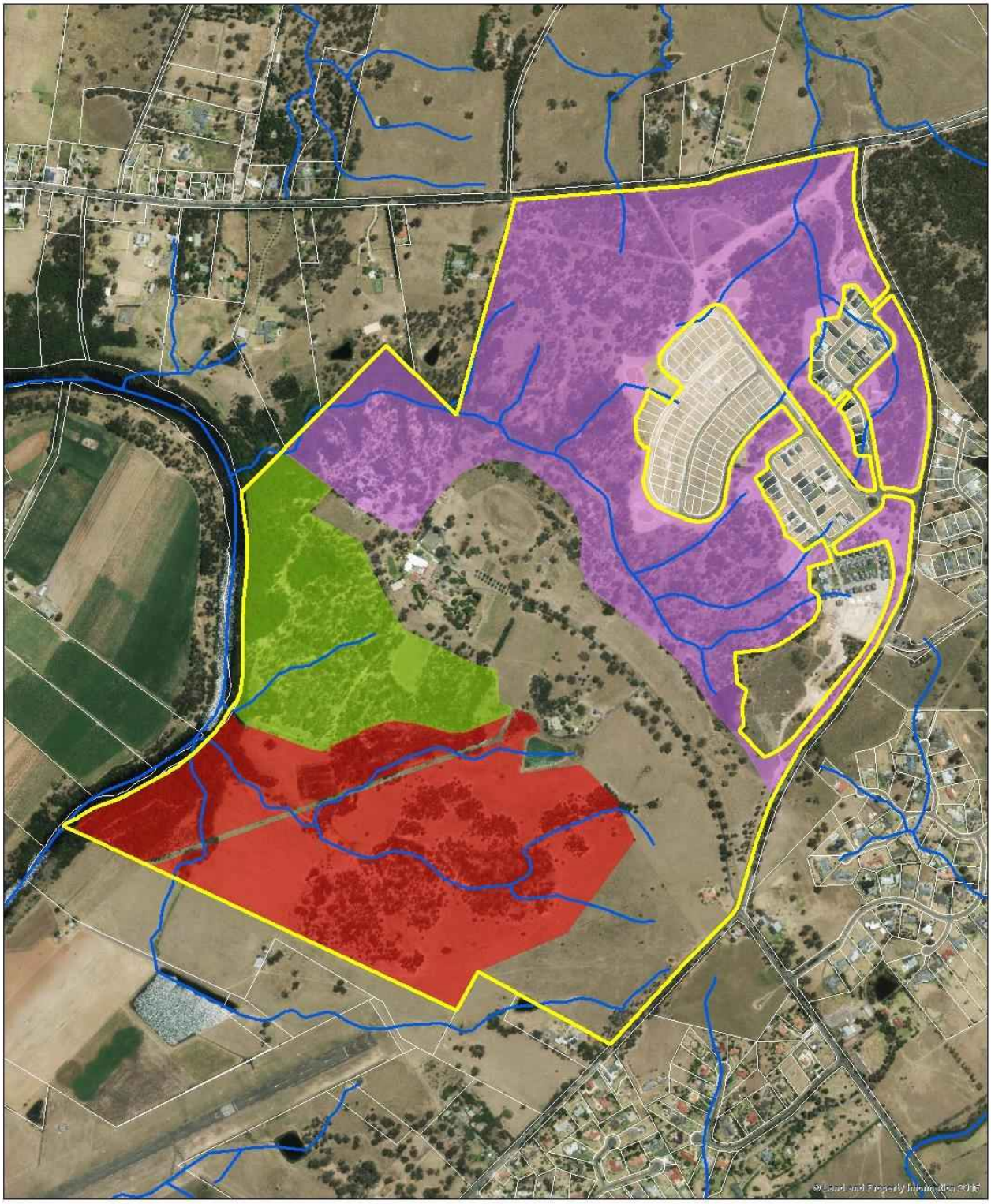
- water treatment pond enclosure (Management Zone 7),
- picnic area (Management Zone 8),
- farm dams (Management Zone 9), and
- access road (Management Zone 10).

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

Map 1: Locality Map



Map 2: Property Map



Legend

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

Property Map

Mater Dei property, Cobbitty

N

0 100 200 300 400 Metres

Datum/Projection: GCS GDA 1994
Prepared 19 August 2016

NSW GOVERNMENT Office of Environment & Heritage

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

2.3 NATIVE VEGETATION

2.3.1 Vegetation types

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

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

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

Table 1: Vegetation types

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

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

Table 2: Vegetation condition

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

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

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

2.3.2 Cumberland River Flat Forest

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

Riparian Forest

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

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

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

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

Image 1: Riparian Forest - low weed cover

Image 2: Riparian Forest - high weed cover

Alluvial Woodland

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

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

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

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

Image 3: Alluvial Woodland - low weed cover

Image 4: Alluvial Woodland - derived grassland

2.3.3 Cumberland Shale Plains Woodland

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

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

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

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

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

Image 5: CSPW - low weed cover

Image 6: CSPW - derived grassland with low weed cover

2.3.4 Cumberland Shale Hills Woodland

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

2.4 THREATENED FLORA AND FAUNA

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

2.4.1 Threatened flora

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

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

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

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

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

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

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

Image 7: Camden White Gum (OEH)

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

Image 9: Spiked Rice-flower (OEH)

Image 10: Brown Pomaderris (G. Steenbeeke)

Image 11: *Marsdenia viridiflora* (OEH)

Image 12: White-flowered Wax Plant (OEH)

2.4.2 Threatened fauna

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

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

Birds

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

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

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

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

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

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

Mammals

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

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

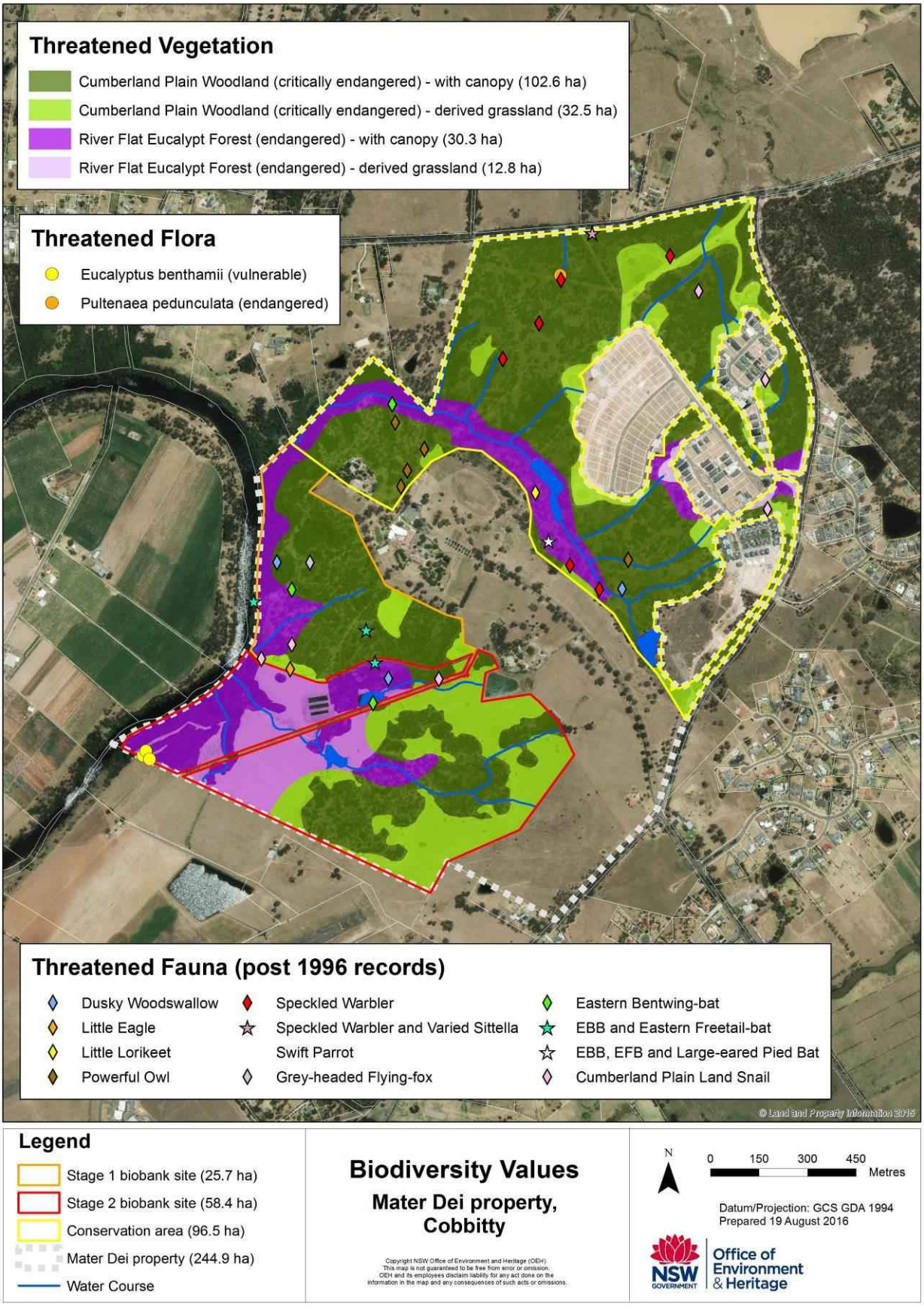
Two of these species (Eastern Bentwing-bat and East Coast Freetail-bat) were recorded on the Stage 2 biobank site, although all three species are likely to be present on the site.

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

Invertebrates

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

Map 3: Biodiversity Values on the Property



2.5 MANAGEMENT ZONES

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

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

Table 3: Management Zones

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

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

3. Management Actions

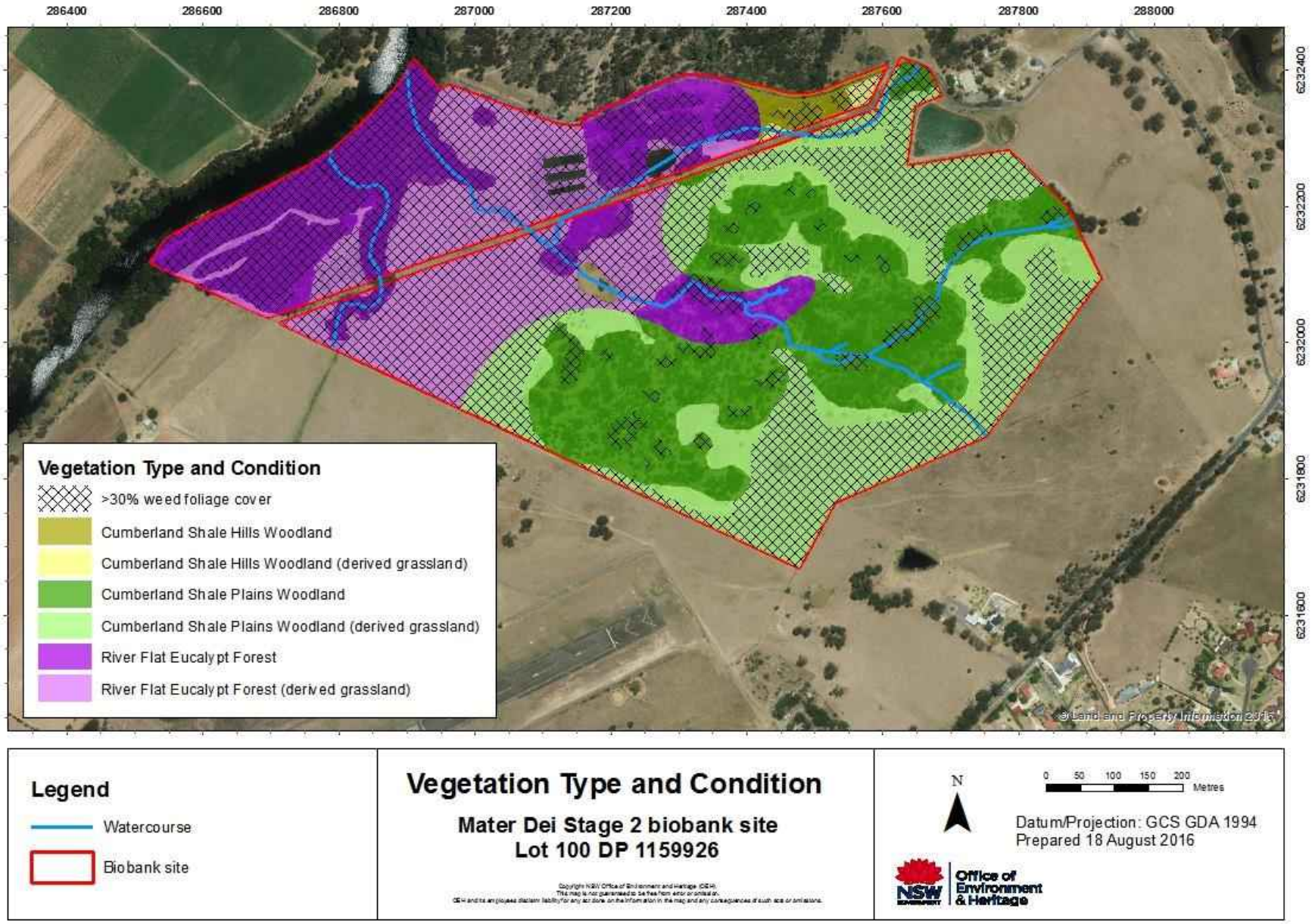
This section contains an overview of the management actions that are required to be implemented under the agreement. The management actions can be either passive or active. Passive management actions have little or no cost and include refraining from doing something, such as not removing fallen logs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

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

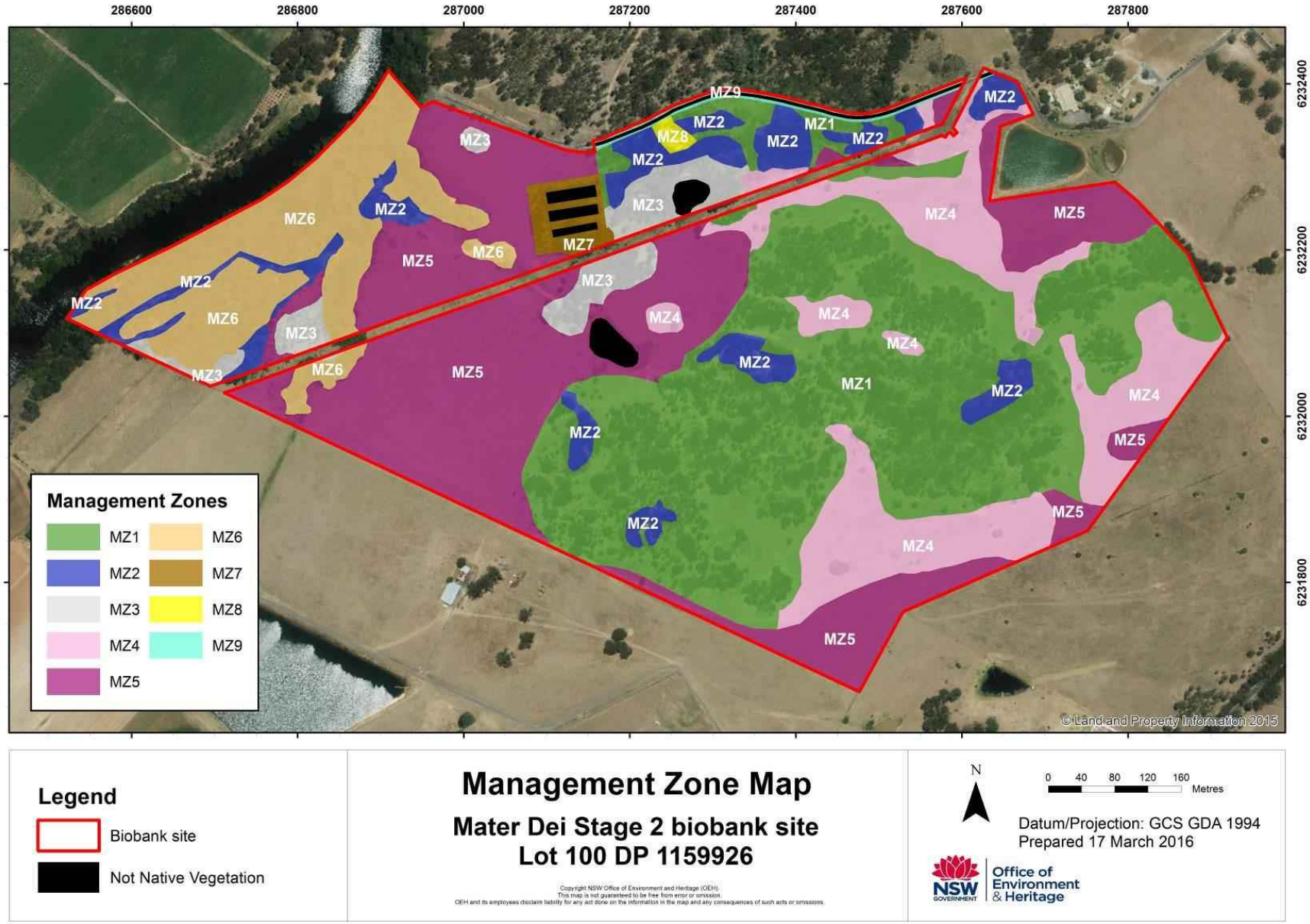
Part 2 of this guide contains a timetable for implementing the management actions during the first five years of the agreement, and describes the costs and performance measures associated with these.

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

Map 4: Vegetation Types



Map 5: Management Zones



3.1 MANAGEMENT OF GRAZING FOR CONSERVATION

3.1.1 Exclusion of livestock

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

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

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

3.1.2 Requirements relating to fencing and gates

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

Table 4: Fencing and gate actions

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

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

3.1.3 Funding for fences and gates

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

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

3.2 WEED CONTROL

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

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

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

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

3.2.1 Weed cover

Upper/mid stratum weeds

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

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

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

Ground stratum weeds

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

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

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

3.2.2 Approach to weed management

Weed control program

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

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

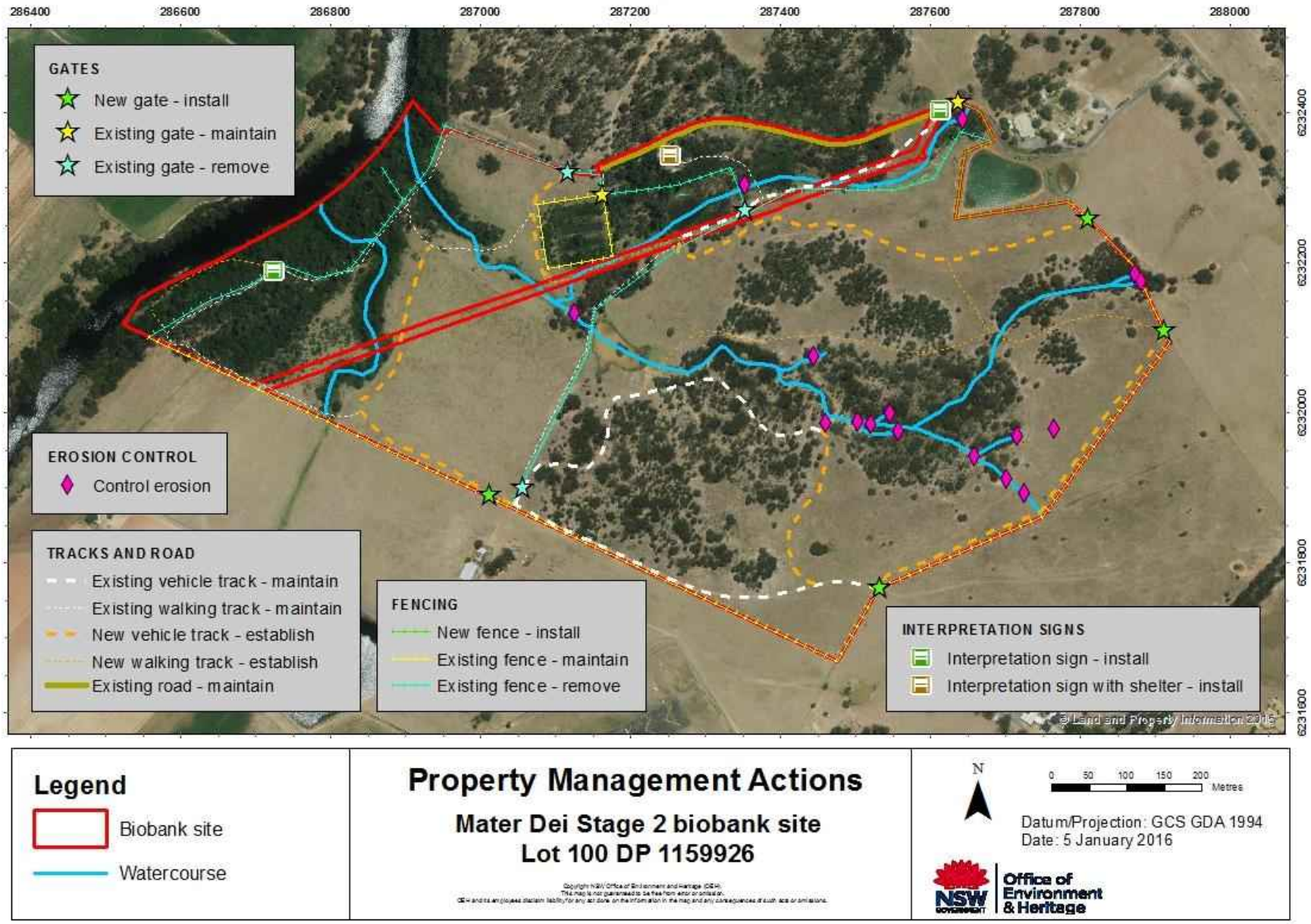
The primary treatment of woody weeds, exotic climbers and highly invasive weeds will be staged for up to 15 years (see Table 6 of this guide) to avoid the problems that can result from 'over-clearing' including loss of native fauna habitat, soil erosion, and excessive weed regrowth.

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

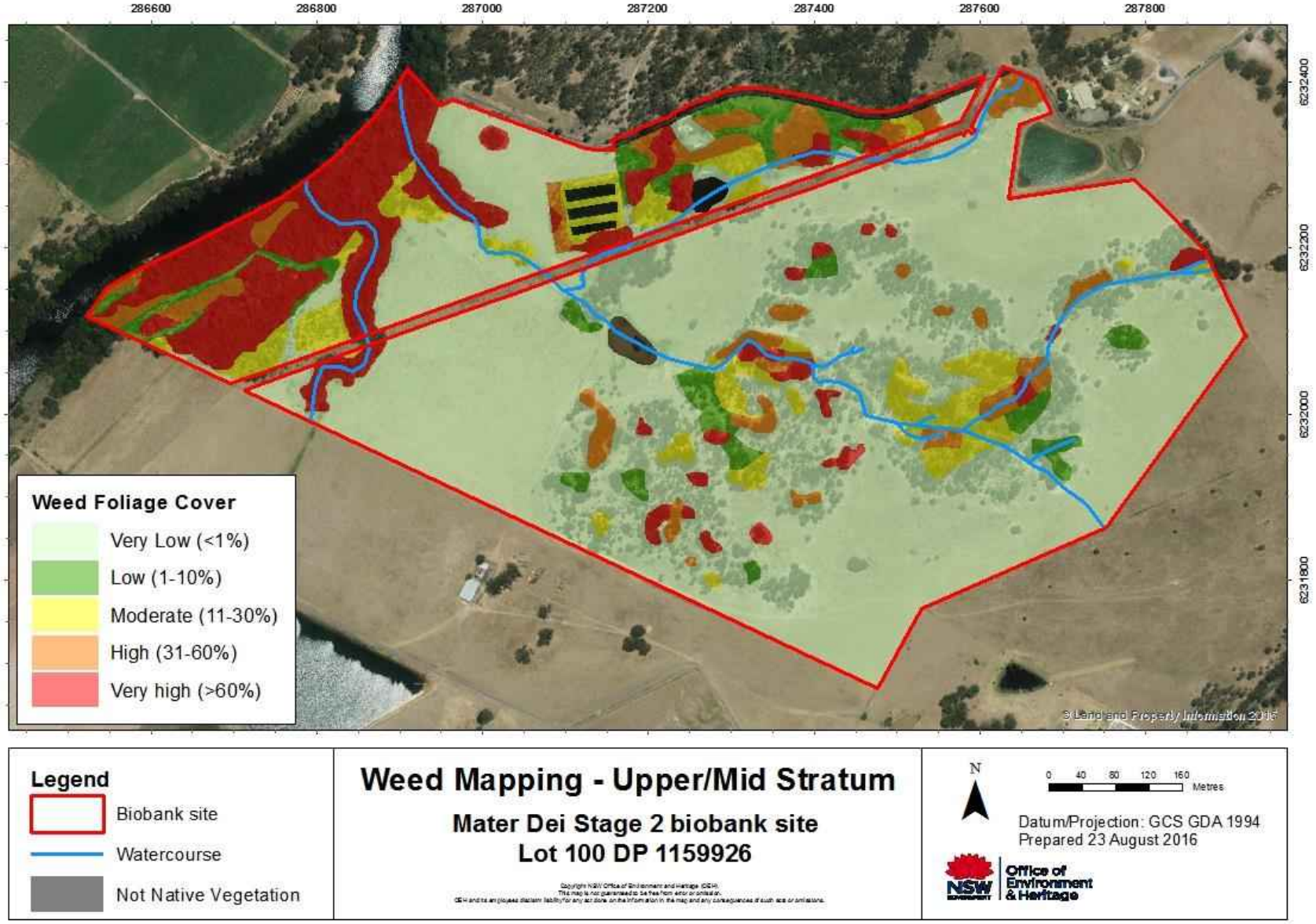
Table 5: Woody weeds, exotic vines and highly invasive

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

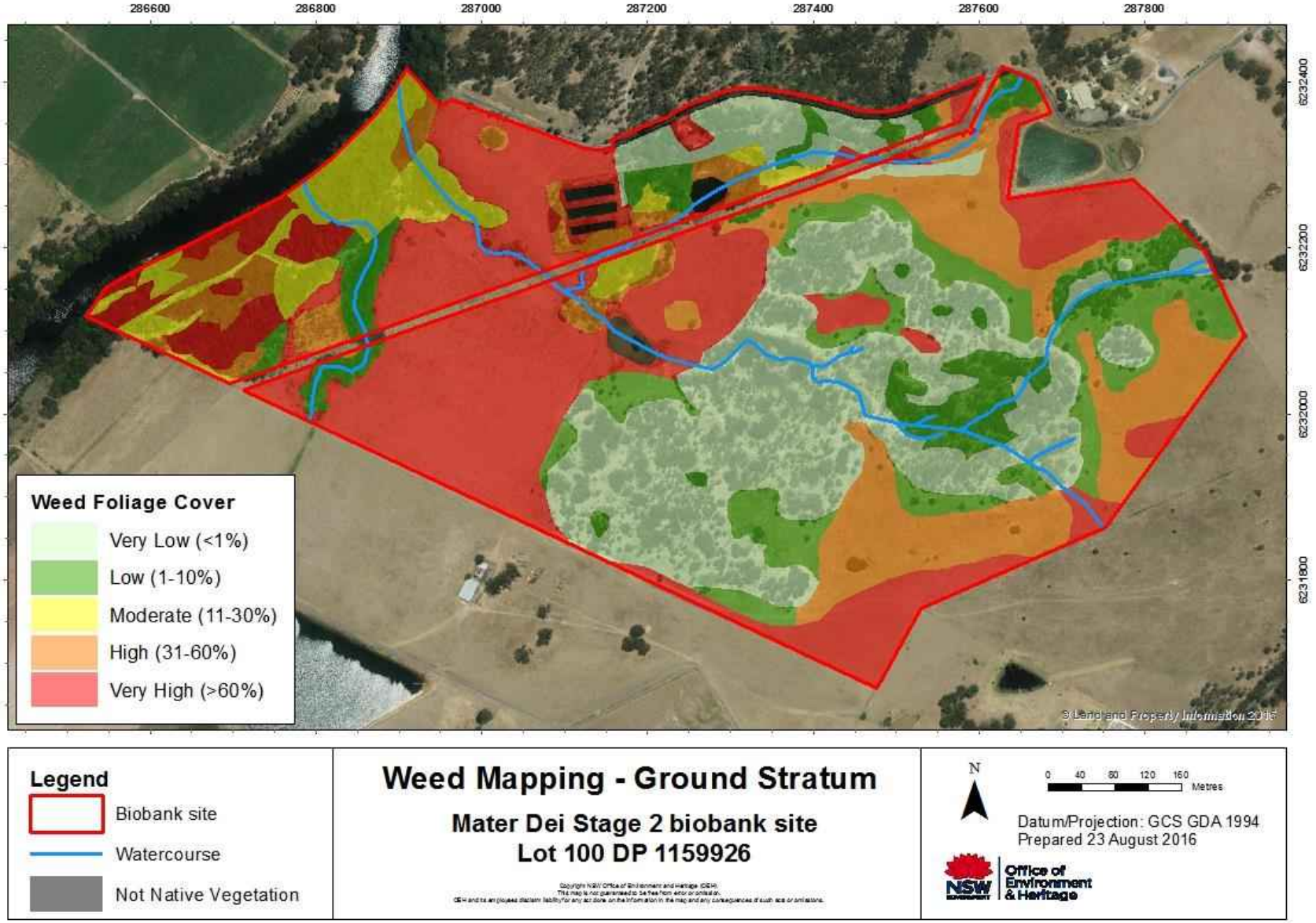
Map 6: Property Management Actions



Map 7: Upper/Mid stratum weed cover



Map 8: Ground stratum weed cover



Supervision of weed control works

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

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

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

Methods of weed control

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

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

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

Level of effort and weed control tasks

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

This information is provided in Table 6 of this guide.

Table 6: Weed control tasks and effort

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

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

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

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

Performance measures

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

3.2.3 Other weed management activities

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

3.2.4 Weed control monitoring

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

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

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

3.2.5 Review of the weed management plan

Timing and matters for consideration

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

Independent peer review

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

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

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

3.2.6 Funding for weed control and associated activities

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

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

Table 7: Performance measures for weed control

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

3.3 MANAGEMENT OF FIRE FOR CONSERVATION

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

3.3.1 Background

Fire regimes for vegetation types

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

Vegetation fire status

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

Table 8: Fire regimes for vegetation types and threatened plants

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

3.3.2 Natural assets vulnerable to fire

Threatened species and ecological communities

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

Other values

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

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

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

3.3.3 Cultural heritage assets vulnerable to fire

Aboriginal heritage

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

Non-indigenous heritage

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

3.3.4 Built assets vulnerable to fire

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

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

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

3.3.5 Fire management strategy

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

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

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

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

Burn season and intensity

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

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

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

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

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

3.3.6 Ecological burn actions

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

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

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

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

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

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

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

3.3.7 Integration with weed and pest management

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

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

Table 10: Ecological burn actions

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

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

3.3.8 Burn approvals

Prescribed burns

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

Pile burns

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

3.3.9 Monitoring and review of the fire management plan

Recording details of planned and unplanned burns

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

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

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

Review and updating the fire management plan

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

Independent peer review

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

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

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

Monitoring the outcomes of ecological burns

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

The following information must be recorded for each management zone:

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

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

3.3.10 Funding for fire management activities

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

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

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

3.4 MANAGEMENT OF HUMAN DISTURBANCE

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

3.4.1 Permissible human activities

Item 4.1 of the Biobanking agreement states that human activities that adversely affect biodiversity values on the biobank site, including repeated disturbance of native animals, must not be carried out, or caused or permitted to be carried out, on the biobank site. An exception to this is provided in Item 4.2 of the agreement for certain human activities that are listed as permissible activities under clause 3.6 of the agreement. These permissible activities are reproduced in Table 11 of this guide.

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

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

Table 11: Permissible human activities on the biobank site

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

3.4.2 Waste dumping

Item 4.4 of the agreement states that the landowner must not store, dispose of, or cause or permit to be disposed of, any waste on the biobank site. Item 4.5 states that the landowner must take all reasonable steps to remove waste deposited by others on the biobank site, or which is otherwise present on the biobank site.

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

3.4.3 Signage

Biobanking signs

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

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

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

Interpretive signage

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

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

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

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

3.4.4 Management of existing man-made structures

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

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

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

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

3.4.5 Access tracks

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

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

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

3.4.6 Passive recreation

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

The specific passive recreation activities permitted in Item 4.12 are:

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

3.4.7 Funding to manage human disturbance

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

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

3.5 RETENTION OF REGROWTH AND REMNANT VEGETATION

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

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

burnt or otherwise removed, except in accordance with Item 5.2 (see below), or if it is required as part of the management actions or it is essential for the carrying out of permissible development under clause 3.5 of the agreement.

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

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

3.6 REPLANTING OR SUPPLEMENTARY PLANTING

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

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

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

3.6.1 Specific requirements for all plantings

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

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

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

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

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

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

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

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

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

Planting of native groundcovers (MZ5)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3.6.4 Planting schedule

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

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

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

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

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

Map 9: Staging of supplementary planting in the derived grasslands

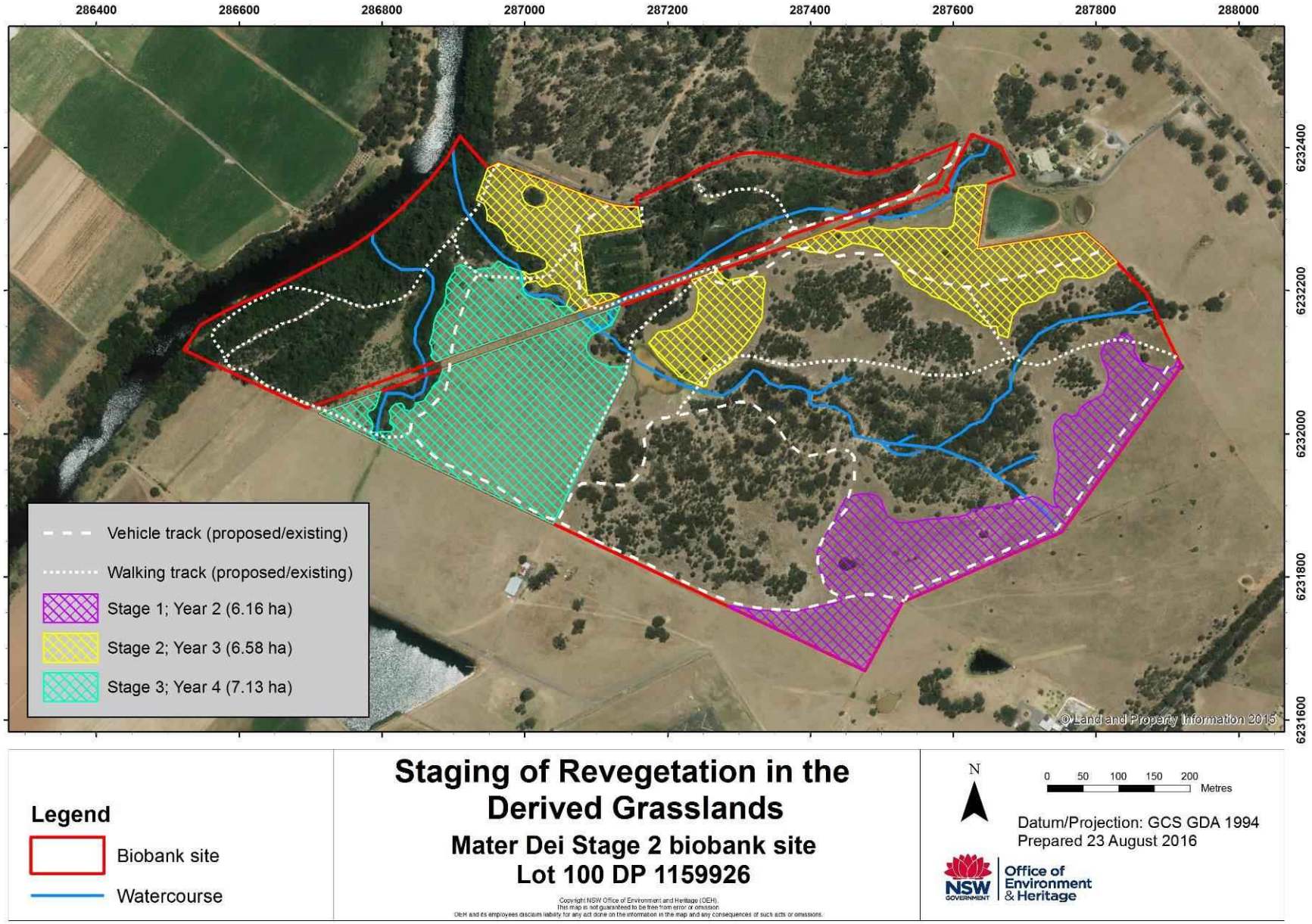


Table 12: Revegetation summary

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

3.6.5 Seed collection and propagation

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

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

3.6.6 Plant maintenance and record keeping

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

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

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

3.6.7 Monitoring survival rates and supplementary planting

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

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

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

3.6.8 Funding for revegetation works

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

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

3.7 DEAD TIMBER

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

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

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

Timber brought from outside the biobank site must be documented by the landowner in writing and records must be kept in accordance with the record keeping requirements (Section 5.3 of this guide). The landowner must record the approximate amount of timber brought from outside the biobank site, the location where the timber was placed on the biobank site and the date on which it was placed.

3.8 EROSION CONTROL

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

Item 8.1 of the Biobanking agreement states that all reasonable steps must be undertaken to prevent, control and remedy erosion on the biobank site. Soil management for preventing and controlling erosion is to be undertaken using best practice management, such as that developed by the Soil Conservation Service, applied as relevant for the biobank site.

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

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

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

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

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

3.9 RETENTION OF ROCKS

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

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

Item 9.1 of the agreement states that the landowner must not remove, or cause or permit to be removed, rocks from the biobank site or move, or cause or permit to be moved, rocks within the biobank site.

3.10 CONTROL OF FERAL AND OVERABUNDANT NATIVE HERBIVORES

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

3.10.1 Impacts of herbivores

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

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

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

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

3.10.2 Control of feral herbivores

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

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

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

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

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

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

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

Table 14: Feral herbivore control methods

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

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

3.10.3 Monitoring and inspections

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

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

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

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

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

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

Table 15: Monitoring and inspections of feral herbivores

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

3.10.4 Review of the management plan

Timing and matters for consideration

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

Independent peer review

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

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

3.10.5 Funding for feral herbivore control

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

3.11 CONTROL OF VERTEBRATE PESTS

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

3.11.1 Impact of vertebrate pests

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

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

3.11.2 Control of vertebrate pests

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

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

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

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

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

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

Table 16: Vertebrate pest control methods

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

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

3.11.3 Monitoring and inspections

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

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

Table 17: Monitoring and inspections of vertebrate pests

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

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

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

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

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

3.11.4 Review of the management plan

Timing and matters for consideration

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

Independent peer review

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

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

3.10.5 Funding for vertebrate pest control

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

4. Minor Alterations to Management Actions

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

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

5. Monitoring, Reporting and Record Keeping

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

5.1 GENERAL MONITORING

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

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

5.1.1 Photo-monitoring

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

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

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

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

5.1.2 Site Inspections

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

Table 18: Site inspection and monitoring schedule

A. Purpose	B. Interval
Number of stock and date/s when stock have entered the management zones on the biobank site.	Every 3 months
Physical condition of fencing and gates to determine whether they are maintained to a standard that can: • control the movement of stock if required under item 1 in Section 1of Annexure C • control human disturbance if required under item 4 in Section 1 of Annexure C • control the movement of feral and overabundant native herbivores if required under item 10 of Section 2 • control vertebrate pests if required under item 11 of Section 2	Every 12 months
Records of any human disturbance on the biobank site. Note: items 4.1 and 4.2 in Section 1 of Annexure C and clause 2 of this agreement place restrictions on human activities on the biobank site.	Every 6 months
Evidence of erosion. Note: item 8 in Section 1 of Annexure C contains requirements for erosion control.	Every 6 months
Evidence of waste. Note: item 4.4 in Section 1 of Annexure C contains requirements for storing and disposing of waste on the biobank site.	Every 6 months

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

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

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

5.2 ANNUAL REPORT

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

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

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

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

5.3 RECORD KEEPING

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

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

6. Licences, consents, authorisations, permits and approvals

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

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

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

References

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Appendix A:
Flora species recorded from biobank site

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

The cover score method used is as follows:

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

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

* indicates that the species is exotic

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

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

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

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

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

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

Appendix B:
Diary template for weed control and revegetation

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

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

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

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

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

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

Attach the following:

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

Appendix C:

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

Mater Dei Stage 2 biobank site:

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

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

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

Weed control summary

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

Description and recommendations for remaining weed infestations

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

Assessment of condition

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

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

Comments on condition

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

Planting survival rates

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

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

Appendix D:
Diary template for fire management

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

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

Completed by:

Date of burn:

Cause of burn:

Management zone:

Area (hectares) burnt (attach map):

Intensity of fire:

Canopy scorched (%):

Leaf litter remaining (%):

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

Appendix E:

Template for the reporting of monitoring activities – fire management

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

Appendix F:
Revised planting schedule

Planting Schedule (Year 2)

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

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

Planting Schedule (Year 3)

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

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

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

Planting Schedule (Year 4)

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

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

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

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

Planting Schedule (Year 5)

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

Appendix G:
Diary template for feral pest management

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

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

Completed by:

Date of activity:

Management zone/s:

Description and type of control undertaken

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

Assessment of results of control technique

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

Minor variations from management plan (if any)

(Include details and reasons)

Appendix H:

Template for the reporting of monitoring activities - feral pests

Mater Dei Stage 2 biobank site:

Template for the reporting of monitoring activities – feral pests

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

Completed by:

Date and time of monitoring:

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

Appendix I: Six monthly inspection checklist

Mater Dei Stage 2 biobank site:

Six monthly site inspection checklist

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

Completed by:

Date of site inspection:

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

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

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

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

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

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

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

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

Appendix J: Annual inspection checklist

Mater Dei Stage 2 biobank site:

Annual site inspection checklist

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

Completed by:

Date of site inspection:

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

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

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

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

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

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

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

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

Projected coordinate system: GDA 94 Zone 56

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

P1

P2

P3

P4

P5

P6

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

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

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

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

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

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

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

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

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

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

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

Additional site inspection and monitoring requirements

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

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

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

Any other comments or observations regarding the biobank site

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

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

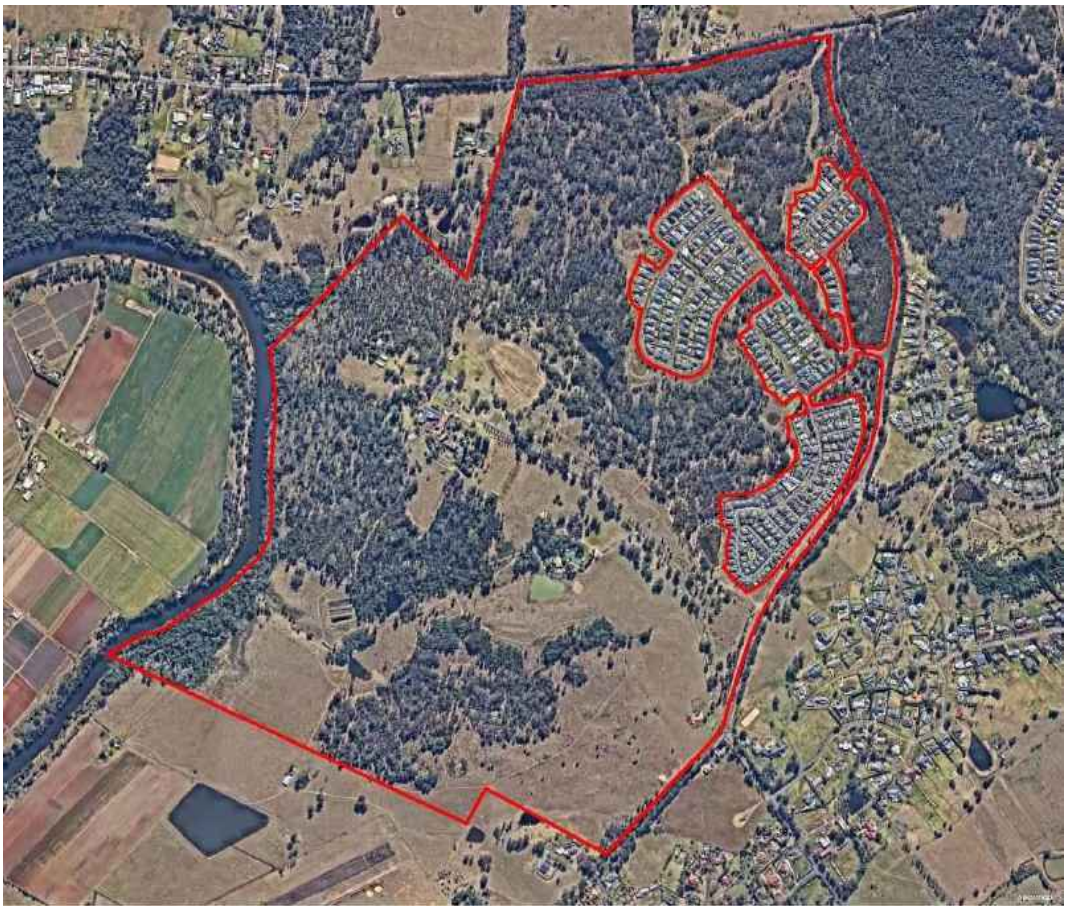
Signature and certification	
I hereby declare that the information supplied in this report is accurate and complies with the reporting requirements under item 2 of the Annexure D to the biobanking agreement. Note: If the land that forms the biobank site is owned by multiple persons, each landowner must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

Annex E

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "E"
European Heritage Assessment
Design 5 Architects

October 2021

DESIGN 5
A R C H I T E C T S

Level 3, 79 Myrtle Street, Chippendale NSW 2008
+61 2 9319 1855 www.design5.com.au
Design 5 – Architects Pty Ltd ABN 22 090 066 194
Nominated Architect – Alan Croker, Registration No 4693, Tas Registration No 883
Matthew Byrnes 8918 Robert Gasparini 7614 Lian Wong 8532

WIVENHOE - SUBDIVISION & REZONING

229 Macquarie Grove Road, Camden

Heritage Impact Statement

FINAL

30th September 2021

1.0 BACKGROUND

Design 5 – Architects have been engaged by 'The Trustees of the Sisters of the Good Samaritan' to prepare an assessment of the Heritage Impact (HIS) of the proposed subdivision and rezoning of Wivenhoe property, located at 229 Macquarie Grove Road, Camden.

This report is an accompanying document to the Planning Proposal Request (PPR) to Camden Council in preparation by Pascoe Planning Solutions (PPS) and includes important considerations that address the impact of the potential future subdivision of the property and other cultural heritage issues pertaining to the proposal.

The report has been prepared by Sagar Chauhan and Alan Croker with assistance from and review by Matthew Byrnes, all from Design 5 - Architects. Design 5 has had an involvement with the conservation of the site since 1997 and are the authors of the site's Conservation Management Plan (1997, revised 2008) and Landscape Conservation Plan (2000).

In addition, Design 5 had previously evaluated the heritage impacts of the subdivision of 210 allotments in the northern portion of the Wivenhoe property (DA/2008/192/1).

2.0 DESCRIPTION OF THE SITE

The Wivenhoe property consists of approximately 256 hectares (632 acres) of land located at 229 Macquarie Grove Road, Camden. The title survey describes the property as Lot 100, D.P. 1159926, Municipality of Camden, Parish of Narellan, County of Cumberland.

The property is located in the Camden region south-west of Sydney. The site includes all the buildings, structures, agricultural elements, vegetation and other natural features within the property boundaries. The site is bounded by the Cobbitty Rd to the north, Macquarie Grove Rd to the east, Nepean River to the west, and Camden Airport to the south. The principal access to the site is through the original driveway approach, now known as Mater Dei Rd (a private accessway) which runs along the ridgeline from the end of Kirkham Lane to the villa, Mater Dei School and other associated buildings located at the highest point of the property. The property surrounds the 'Wivenhoe Village' (retirement living) and 'Kirkham Rise' which are low density residential developments accessed independently via Macquarie Grove Rd.

Figure 2.1: Satellite view showing the site, outlined in yellow. (Source: JMD Development Consultant)

2.1 HERITAGE LISTINGS

A significant portion of the property is listed as a heritage item in the Schedule 5 of the Camden Local Environmental Plan 2010.

- "Wivenhoe" (including house and gardens, outbuildings, stables, servants quarters and coach house), Item No. 199.

This listing carries with it certain statutory obligations that are discussed later in this report.

The Wivenhoe Conservation Management Plan (revised 2008) assessed the property as having local and state significance, however, it is not currently listed on the State Heritage Register.

The property is also listed on the National Trust Register (NSW).

Figure 2.2: Extract of the Camden Local Environmental Plan 2010, showing location of 229 Macquarie Grove Road, marked in blue. (Source: CLEP 2010)

3.0 BASIS OF ASSESSMENT

This Heritage Impact Statement (HIS) assesses the proposal against the *Wivenhoe Conservation Management Plan 2008*, prepared by Design 5 – Architects, and the Camden Local Environmental Plan 2010 (CLEP 2010).

3.1 Methodology

This Heritage Impact Statement has been prepared in accordance with the principles and processes of the *Australia ICOMOS Burra Charter 2013*. The preparation of this Heritage Impact Statement also follows the process and model recommended in the NSW Heritage Manual, specifically the NSW Heritage Office guideline *Statements of Heritage Impact* (revised 2002).

3.2 Documents reviewed

This report refers to the following documents, prepared by Pascoe Planning Solutions (PPS) on behalf of the 'The Trustees of the Sisters of the Good Samaritan,' owners of the land:

- Existing and Proposed Zoning Map
- Existing and Proposed Minimum Lot Sizes

4.0 BRIEF DESCRIPTION OF THE PROPOSAL

The proposal is intended to rationalise the planning framework and ultimate holding and ownership of Wivenhoe, so as to permit a series of unique educational and environmental conservation outcomes. To achieve this, a Planning Proposal Request (PPR) is being prepared that would rationalise the land-use zoning and minimum lot size provisions in the prevailing Camden Local Environmental Plan 2010 (CLEP 2010) and ultimately undertake a "super lot" subdivision.

Broadly, the projected changes considered in this application are referred to in this report as follows:

- New land use *SP2 Educational Establishment*
- Extension of land use *E2 Environmental Conservation*
- Change of land use from *RU1 Primary Production* to *RU2 Rural Landscape*

The changes are briefly described as follows:

4.1 New land use zone *SP2 Educational Establishment*

The proposed zone includes the entrance driveway (Mater Dei Road) which runs along the ridgeline from the end of Kirkham Lane to the villa and other associated buildings located at the highest point of the property. The area is significant to the rural landscape character of the site and comprises key built cultural heritage items on site. These are Wivenhoe villa (c. 1837-38), the Villa garden, Chapel (1927), Orphanage building (1922), the farm workers cottage, and the stables (built 1834, designed by John Verge). These key elements are presently located within the land use zone *R5 Large Lot Residential*.

The zone includes a large part of the heritage listed curtilage of the Wivenhoe property.

The proposed *SP2* land use majorly encompasses the area presently zoned *R5* with an alignment of boundary that *excludes the adjoining area along the entrance driveway (presently*

included in the land use zone R5 Large Lot Residential), and expands the north western boundary to include the stables and the farm worker's cottage which are presently on land zoned *E2*. The south western boundary of the proposed zone is defined by Good Samaritan Way and includes the area of the former Vineyard to the south west of the villa; the vegetable gardens and remnants of the old orchard to the south east of the villa; and the former Polding Centre (now occupied by the Aspect Macarthur School) along Good Samaritan Way.

4.2 Extension of land use zone *E2 Environmental Conservation*

The zone comprises of the *E2 Environmental Conservation* area to the north of the site. The existing *E2* zone surrounds *E4 Environmental Living* and *R2 Low Density Residential* zoned land, occupied by residential development of Kirkham Rise Estate. *The proposal seeks to expand the E2* zone towards the south west part of the site adjoining the Camden Airport. The proposed area comprises the cultivation area (c. 1905), dam (1905), sewerage ponds (1982), dam post (1947) and part of the Nepean river catchment. This proposed extended area would encompass large portions of the threatened ecological communities (such as Cumberland Plains Woodland) on site, which are part of the *Cumberland Subregion Biodiversity Corridor of Regional Significance.*

4.3 Change of land use zone from *RU1 Primary Production* to *RU2 Rural Landscape*

The proposed land use zone *RU2 Rural Landscape* along Macquarie Grove Road provides significant views into and from the site and across the site to the Nattai Wilderness from the south of the entry along Macquarie Grove Road. The proposed area comprises the former Matron's Cottage near the entry and the surrounding landscapes to the south of Mater Dei Road and Good Samaritan Way. The area encompasses large parts of the heritage listed curtilage of the Wivenhoe property.

The proposed changes are depicted in the Figures 4.1, 4.2, 4.3 and 4.4 below.

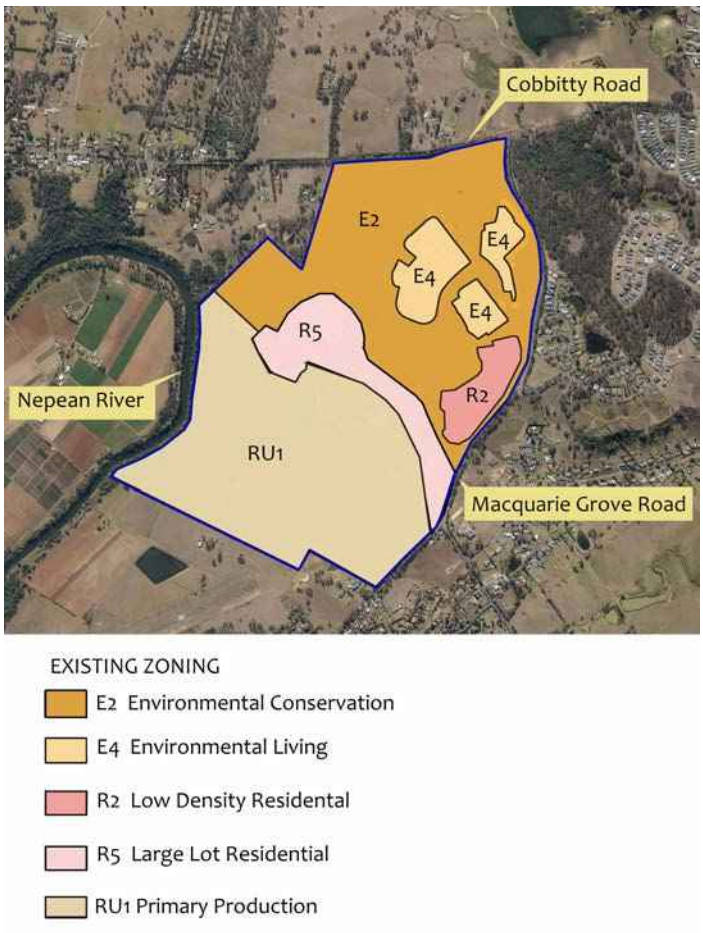


Figure 4.1: Existing zoning on site. (Source: Pascoe Planning Solutions)

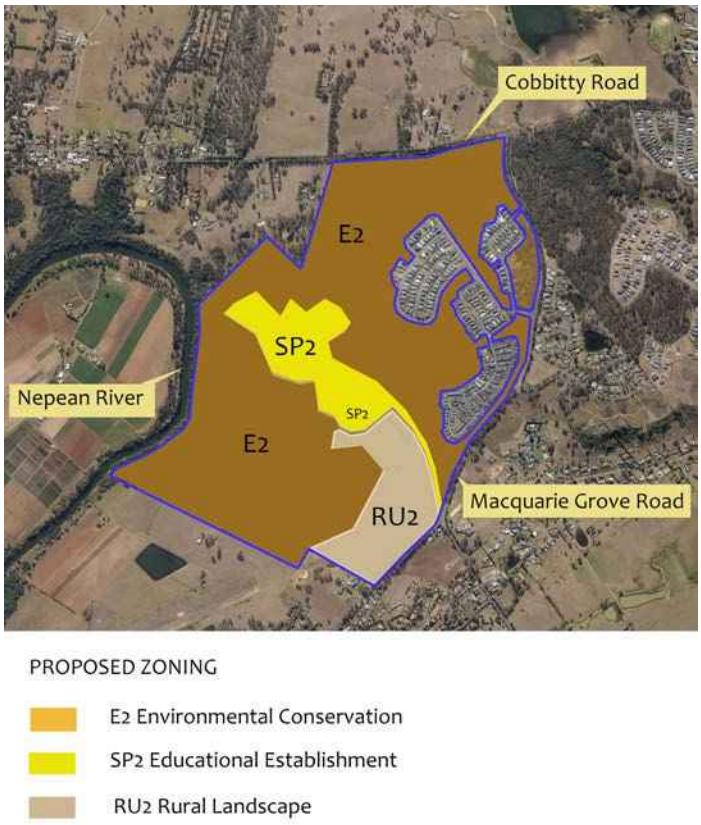


Figure 4.2: Proposed zoning on site. (Source: Pascoe Planning Solutions)

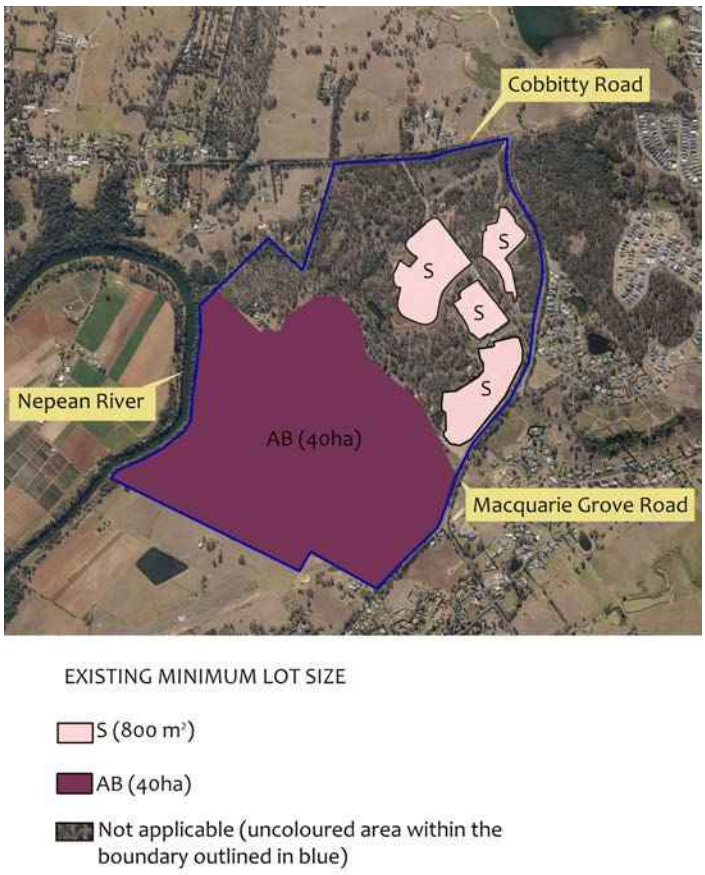


Figure 4.3: Existing minimum lot sizes on site. (Source: Pascoe Planning Solutions)

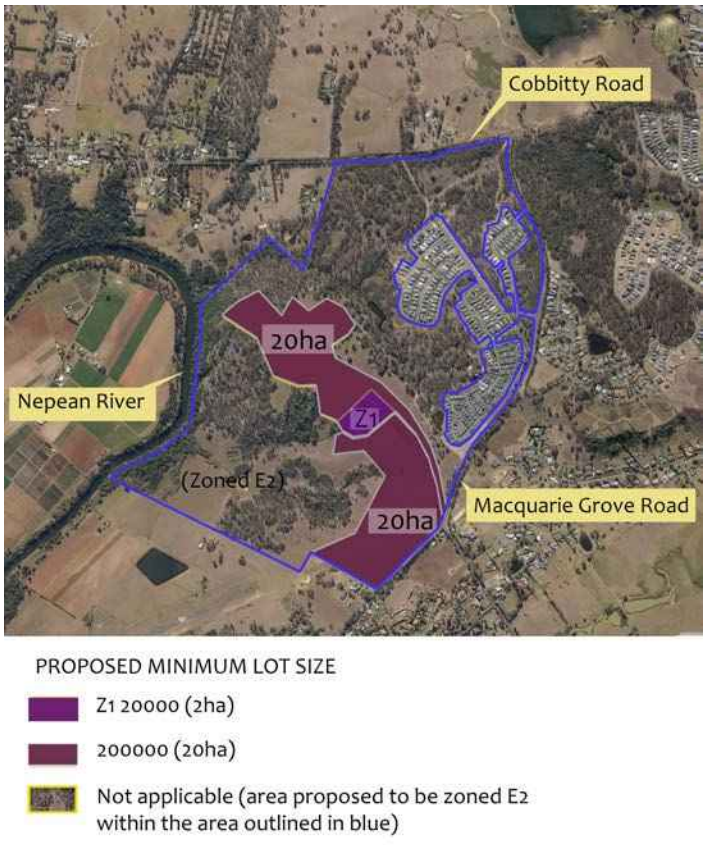


Figure 4.4: Proposed minimum lot sizes on site. (Source: Pascoe Planning Solutions)

5.0 COMPLIANCE WITH *WIVENHOE CONSERVATION MANAGEMENT PLAN* (2008)

The 2008 CMP (revised version of 1997 CMP) has been used as the basis for the assessment of heritage impacts arising from the proposal.

The CMP identifies and defines the significant values of the Wivenhoe property and then formulates policies framed to retain these values. The following discussion assesses the impact of the proposed suite of projects in the same order as the CMP:

- Significant values,
- Overarching policies,
- Significant elements and components of the place, and

5.1 *CMP Section 4.1* *STATEMENT OF SIGNIFICANCE* **Significant values – discussion of impact**

The following Statement of Significance from the 2008 CMP summarises the significant values of the place (emphasis in bold type added as it relates to this assessment):

> *The Wivenhoe estate is an excellent example of an early nineteenth century gentleman's rural estate. It comprises several significant elements and features, in particular the original villa, villa garden and stables, all set within their original 'park domain'.*
>
> *The Wivenhoe villa is a fine Georgian Regency villa, the design of which is attributed to the prominent colonial architect John Verge. The quality of the design and finishes is extremely high. Edwardian refurbishments, with their fine Art Nouveau details, are also of high quality and are significant in demonstrating the changing tastes of society in the early twentieth century.*
>
> *The villa garden is a rare surviving example of an early colonial garden belonging to a gentleman's rural estate. It was laid out contemporary to its villa in the late 1830s, possibly by John Verge, and although it has developed through the nineteenth and twentieth centuries, it has retained its earliest setout, with its formal arrangement of carriage loop and paths, mature trees, hedgerows and lawn terrace. It maintains an appropriate setting for the three-sided villa.*
>
> *The stables are a rare example of an early colonial architect-designed farm building, being the only extant example of a stable building designed by John Verge.*
>
> *The place provides substantial physical evidence of the occupation of Sir Charles Cowper, a politician of great prominence, who was a proponent of many major progressive reforms and developments in NSW during the nineteenth century. Cowper lived on the property from 1834 to 1870, during which time he named it Wivenhoe, established the extant pattern of rural development and constructed the earliest permanent buildings surviving on the site.*
>
> *The place is associated with other significant people in Australian society, including the Arding Thomas family (1875-1903), prominent members of New South Wales society, Walter Oswald Watt O.B.E. (1905-1910) and the Sisters of the Good Samaritan (1910-present).*
>
> *The historical development of the place is demonstrative of the prominent role of the clergy in early colonial society. The grant was typical of the incentives offered to encourage the clergy to stay in the colony.*
>
> *The place is significant as an example of a country orphanage and demonstrates the way in which the Sisters of the Good Samaritan provided for orphans in its benevolent care in*

the first half of the twentieth century. The place is also associated with the progressive role of the Sisters of the Good Samaritan in the education and training of intellectually disabled children—particularly through the activities of the Polding Centre and Mater Dei School—from the latter half of the twentieth century to the present.

The original fabric of the chapel and orphanage are representative of well-designed institutional architecture by the Good Samaritan congregation in the 1920s. Their visual dominance of the villa marks the change in use of the place from gentlemen's rural estate to institution.

The villa roof with its curved rafters is a rare, possibly unique example of this form of pre 1850s roof construction in Australia. The brick vaulted drainage trench surrounding the villa basement is significant as a rare and sophisticated design device for dealing with ground water and damp prior to the introduction of damp proof courses to Australian building practice later in the nineteenth century.

The place has the potential to provide archaeological evidence of early Aboriginal occupation by the Tharawal people, early European settlement between 1812 and 1834, and the development of the place between 1834 and 1906 as a gentleman's rural 'estate' including vineyard.

Comment

The PPR seeks to consolidate the educational and associated uses on site into the area zoned *SP2 Educational Establishment.* This area would encapsulate the built cultural heritage of the site while providing for the possibility of expansion for educational purposes in the future.

The property has been under the ownership of the Sisters of the Good Samaritan since 1910, and has been subject to uses relating to the care and development of students with an intellectual disability. This period forms an important aspect of the historical significance of the site under the guidance of the Sisters of the Good Samaritan. Their cause is also supported by the Aspect Macarthur School which works towards the education of students on the autism spectrum.

The consolidation of the various cultural heritage elements under the land use zone *SP2 Educational Establishment* is appropriate on heritage grounds. These elements include the Wivenhoe villa (c. 1837-38), Chapel (1927), Orphanage building (1922), the farm workers cottage, and the stables (built 1834, designed by John Verge). These have been critical in catering to the care of students and to the advancement of Good Samaritan Education. The stables and the neighbouring Farm Workers Cottage are presently located on the Environmentally Sensitive Land. The purpose of this zoning was to primarily protect the natural landscape. The integration of stables and farm Worker's cottage within the land use zone SP2 will strengthen their incidental and ancillary uses to the Mater Dei School.

Under the zoning *SP2 Educational Establishment*, *State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017* (the Education SEPP) has provisions that would make it easier for 'The Trustees of the Sisters of the Good Samaritan' to build new facilities and improve existing ones by streamlining approval processes to save time and money. The Education SEPP would allow the owners to deliver additional educational infrastructure with a focus on good design.[1]

The zoning of a major part of the land presently zoned *R5 Large Lot Residential* is proposed to be changed to *SP2 Educational Establishment*. This area comprises zones that have been identified as potential school development areas in the 2008 CMP and the new zoning would help give effect to the objectives of the CMP (this is discussed further within section 5.2.4).

[1] NSW Planning, Industry & Environment, "Education: Education and Child Care SEPP," accessed September 10, 2021, https://www.planning.nsw.gov.au/Policy-and-Legislation/Education

5.2 *Overarching policies* (CMP Sections 5.1 – 5.4)

5.2.1 *CMP Section 5.1 Generally*

Policy 1.1:
The Wivenhoe property is of considerable cultural significance and must be retained and conserved in accordance with the guidelines and policies in this CMP.

Policy 1.2:
All policies should be considered with reference to the supporting discussion, as this will make their meaning and context clear. The policy section of this report should not be used in an abridged form.

Comment

The proposed subdivision and changes in zoning would not have an adverse effect on the cultural significance of the place. No development is being proposed at this stage and the subsequent effects of the proposal are therefore limited to changes in planning controls.

5.2.2 *CMP Section 5.2 Cultural Significance*

Policy 2.1.1:
The Wivenhoe property contains areas and elements of historic, aesthetic, social and scientific significance at national, state and local levels, which should be conserved.

Policy 2.1.2:
The rural 'estate' landscape, with its contributory elements including: the 'park domain', the avenue approach along the ridge, the axial arrangement of the villa and its gardens with the greater landscape, including orchard and cultivation paddock, and natural features forming major vistas, and early structures including the stables, villa and early farm buildings, is both rare and significant at a state level and should be conserved.

Policy 2.1.3:
The stables and villa are buildings of state significance and should be conserved.

Policy 2.1.4:
The villa garden, including its historic layout, mature and significant plantings and garden structures, is of national significance and should be conserved.

Policy 2.1.5:
The Mater Dei orphanage building and chapel are of local significance. They should be conserved and may accommodate sympathetic adaptation and alteration in accordance with specific policies.

Policy 2.1.6:
Associations with important historical persons and families should be respected and conserved.

Comment

The proposed subdivision and changes in zoning would not have an adverse effect on the cultural significance of the place. No development is being proposed at this stage and the subsequent impact of the proposal is therefore limited to changes in planning controls. Any future changes to the elements of cultural significance (post the rezoning) should be guided by the policies outlined in the CMP.

The expansion of the northern part of the site zoned *E2 Conservation Area* to include the south western part of the site would have a positive impact on the rural landscape character of the place. This would potentially help the Good Samaritan Sisters' *Wivenhoe Conservation Project* in their continued efforts to restore the local ecosystem, protect the biodiversity of the site

and preserve the threatened and endangered ecological communities.[2]

The south western part of the site is currently zoned for *RU1 Primary Production* which does not allow flood mitigation works to be undertaken. The western and south western parts of the site are exposed to varying degrees of flood risk[3] and under *E2 Conservation Area* land use flood mitigation works would be permitted with consent. Furthermore, the expansion of *E2 Conservation Area* would eliminate the possibilities of any residential, educational or commercial premises to be erected within the flood zone.

The conversion of a major part of the land presently zoned *RU1 Primary Production* to *E2 Environmental Conservation* would prohibit erection of any commercial premises. "During the latter part of the 20th century the native Cumberland Plains Woodland, which during the 19th century had been left mainly on the steeper western parts of the site and along the creeks, has experienced considerable regrowth, giving an impression of what the landscape was like pre-European settlement." The change of zoning would assist in preserving the integrity and ongoing regrowth of the Cumberland Plain Woodland on the site which is part of the *Cumberland Subregion Biodiversity Corridor of Regional Significance.* The proposed E2 zoning would provide for retention of the ecological corridor.

This corridor of regional significance encompasses large parts of the site barring the section to the south of Mater Dei Rd along Macquarie Grove Rd. The change in zoning of the aforementioned part of the site from *RU1 Primary Production* to *RU2 Rural Landscape* would eliminate the possibility of developments such as intensive livestock agriculture, open cut mining, roadside stalls, extractive industries, and rural industries – activities that may not align with the objectives of 'The Trustees of the Sisters of the Good Samaritan.' This change of zoning would better support Camden Council's vision to "ensure that development undertaken in the rural areas maintains the production potential of agriculture, conserves the scenic and cultural landscapes, and protects and enhances the natural environment."[4] The prohibition of air transport facilities under *RU2 Rural Landscape* would protect the integrity of the rural landscape character of the site in the wake of future possibilities of the expansion of the Camden airport which lies immediately to the south west of the site.

The abovementioned changes in the zoning would be a positive affirmation of the nineteenth century rural 'estate' landscape of the site and of the rural setting of Camden which has valued scenic and cultural landscapes.[5] This rural setting has been identified as a key characteristic of Camden in the Camden Council's *Rural lands Strategy 2016*.

[2] Sisters of the Good Samaritan, "Restoring an endangered ecological community," accessed September 3, 2021, https://www.goodsams.org.au/article/restoring-an-endangered-ecological-community/

[3] Please refer to maps 7, 8, 8A from Camden Council, "Nepean River catchment: Nepean River Flood Study Report and Maps," accessed September 6, 2021, https://www.camden.nsw.gov.au/environment/flood-information/nepean-river-catchment/

[4] Camden Council, "6.2 Rural Land Uses," accessed September 6, 2021, https://dcp.camden.nsw.gov.au/specific-land-use/rural-land-uses/

[5] Camden Council, *Rural Lands Strategy* (Camden Council: November 2017), 3, https://www.camden.nsw.gov.au/assets/pdfs/Council/Plans-and-Strategies/ADOPTED-Rural-Lands-Strategy-as-amended-November-2018-pdf.pdf

5.2.3 *CMP Section 5.2 Sensitivity Gradings*

Policy 2.2.1:
All areas and elements should be conserved in accordance with the various sensitivity gradings given in Figures 3.36 - 3.37 and the corresponding policies set out below.

Policy 2.2.2:
The following policy statements are formulated to guide development on the place and to ensure that the integrity and significance of the place is not compromised. The area and element gradings below refer to Figures 3.36 and 3.37, which form part of this policy. The potential development zones are shown in Figures 5.1 and 5.2.

High level of sensitivity
These areas provide the setting of the rural 'estate'. Retain all significant and mature plantings and structures, retain vistas and views, and ameliorate or remove intrusive elements. Generally, no new structures should be introduced, except in the areas designated for future development as shown in figures 5.1 (Figure 2) *and 5.2. New structures and*
alterations to elements within these areas must be carefully considered and executed so as not to impinge on or diminish or obscure the significance of the place.

Moderately high level of sensitivity
These areas provide support for the setting of the rural 'estate' and its elements and help to define the heritage curtilage. New structures should be avoided, if possible, except in the areas identified for development as shown in figures 5.1 (Figure 2) *and 5.2. New structures should not intrude on or obscure significant elements, vistas or views or detract from the rural character of the 'estate' setting. Mature native vegetation should be retained.*

Low level of sensitivity
These areas are of less importance in supporting the significant rural 'estate' character of the property. New structures are possible as long as they do not intrude on significant vistas to and from the significant areas. In any change of development, the rural character of surrounding zones should be respected and maintained. If required, the northern area of land shown as suitable for development in figure 5.1 (Figure 2) *may be alienated from the site.*

Comment

The area in which the proposed subdivision is located overlaps with the landscapes that support significant views and vistas to and from the site. In addition, this area overlaps with the areas having moderate to high level of sensitivity. The proposed zone *RU2 Rural Landscape* along the Macquarie Grove Rd is identified as an area with 'High Level of Sensitivity,' and would be therefore essential in retaining Wivenhoe's significant rural 'estate' setting. The land use zone *RU1 Rural Landscape* would continue to support the significant views and vistas to and from the place (identified in Figure 5.1). Furthermore, the expansion of land use zone *E2 Environmental Conservation* surrounding the heritage listed curtilage would help protect, restore and enhance the natural setting of the place. The inclusion of the land adjoining the entry driveway within land use zones E2 and RU2 limits the scope of development along the driveway and protects its rural character. This would help retain the significant views into the site from the driveway (identified in Figure 5.2 below).

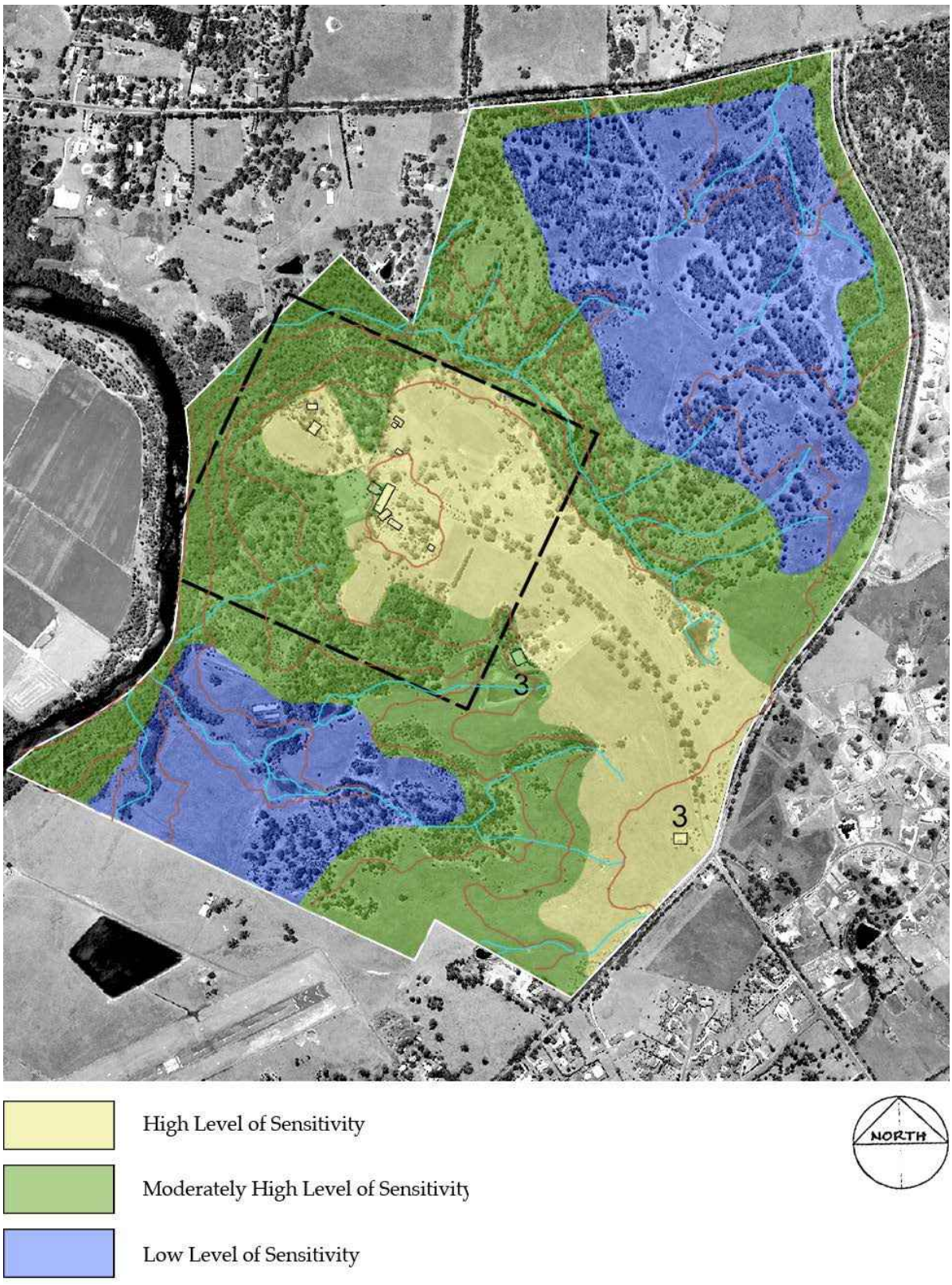


Figure 5.1: Areas of Heritage Sensitivity on the Wivenhoe Property (Figure 3.36 in the Wivenhoe CMP, 2008)

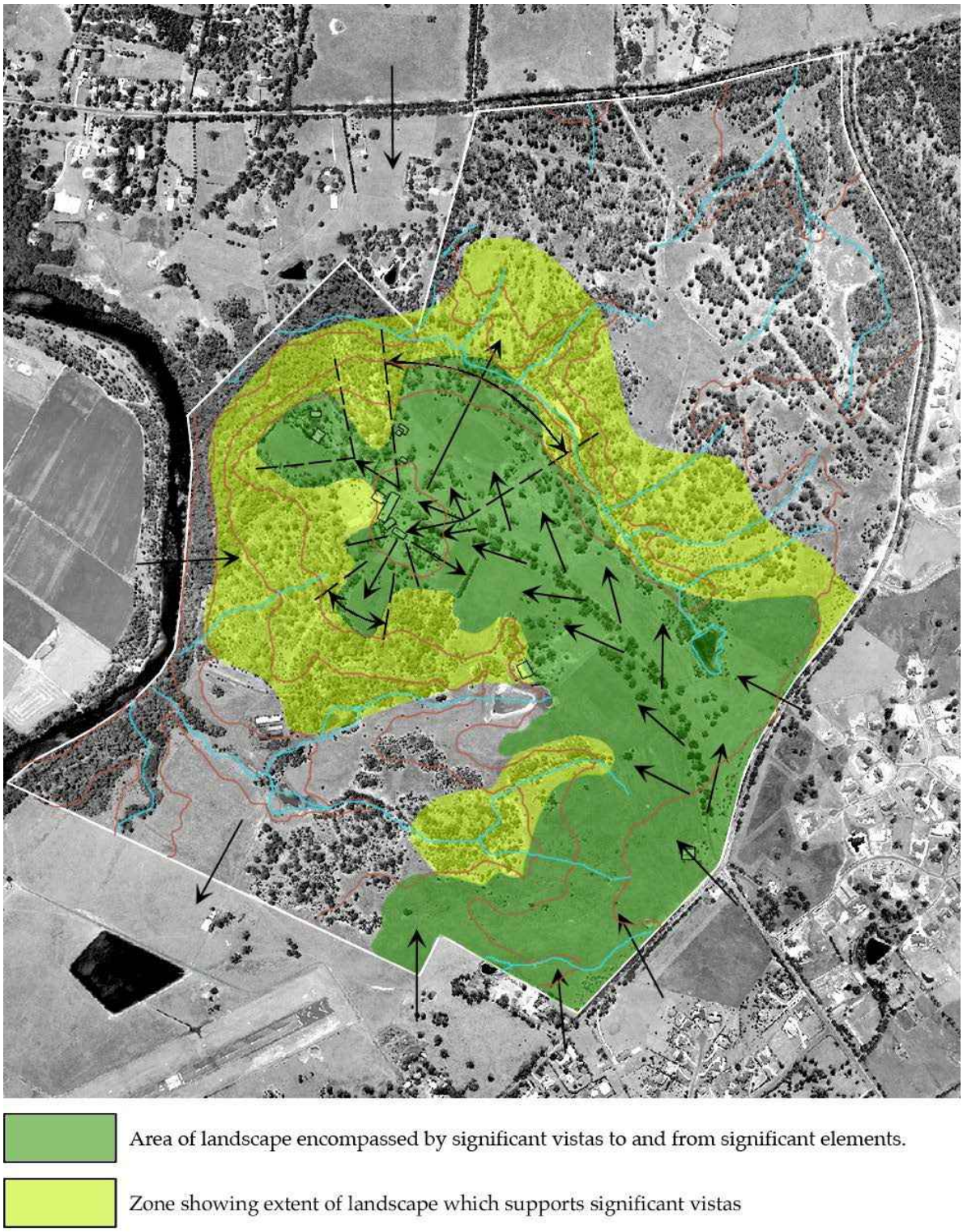


Figure 5.2: Important views to and from significant elements on the Wivenhoe Property. (Figure 3.24 in the Wivenhoe CMP, 2008)

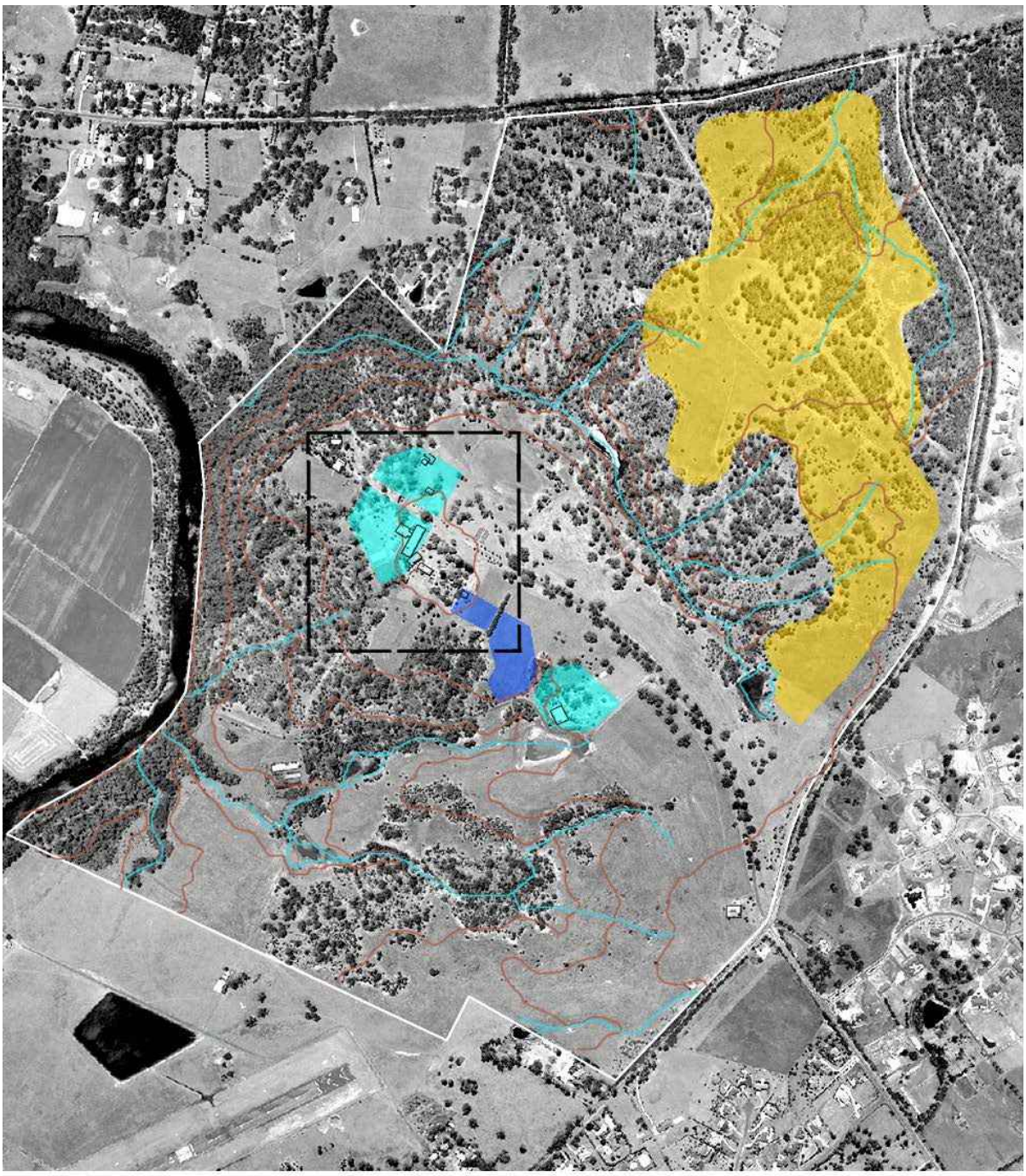


Figure 5.3: Potential Development Areas identified in the 2008 CMP. (Figure 5.1 in the Wivenhoe CMP, 2008)

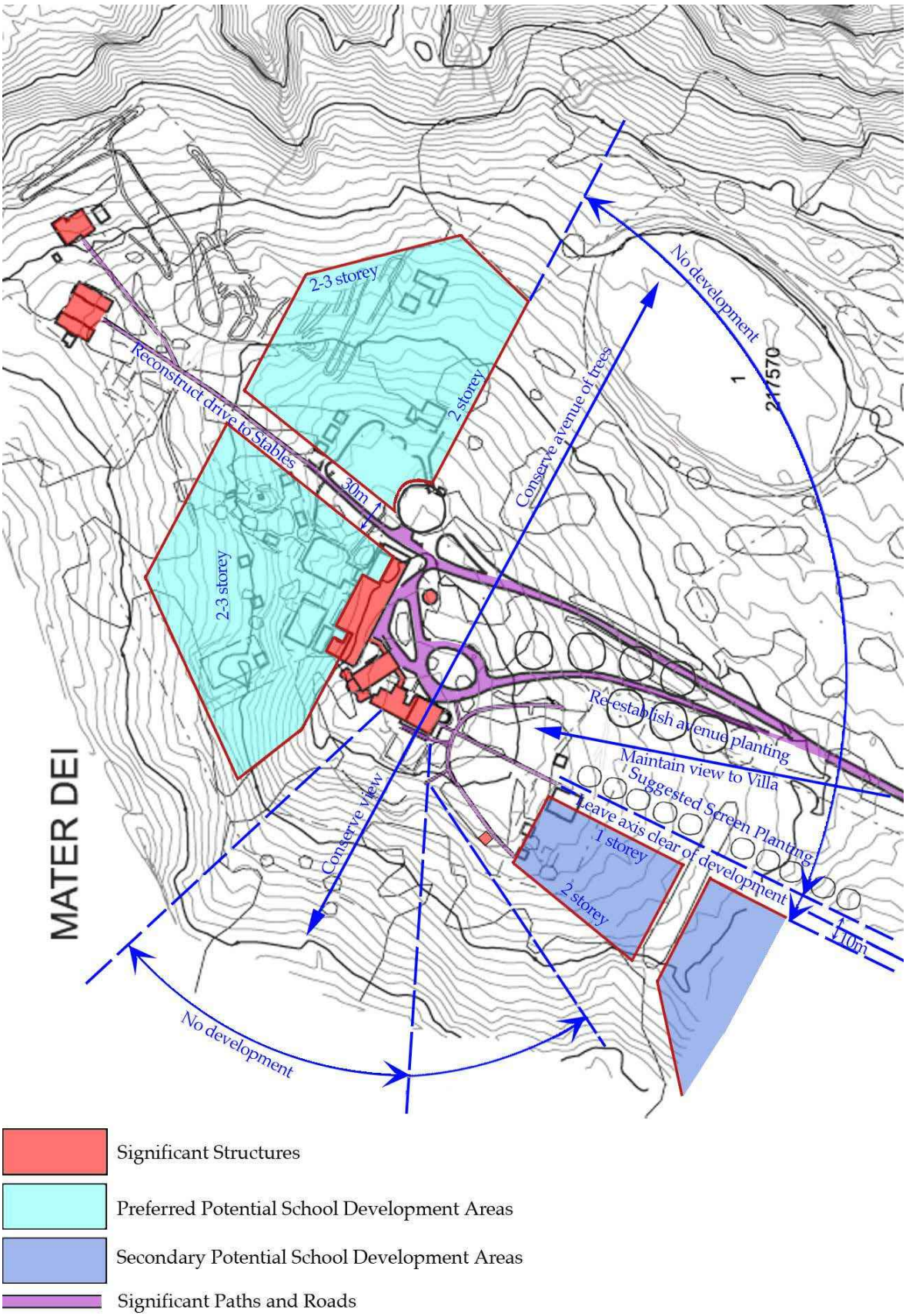


Figure 5.4: Potential Development Areas identified in the 2008 CMP. (Figure 5.2 in the Wivenhoe CMP, 2008)

5.2.4 *CMP Section 5.4 Client's Brief*

Policy 4.1:
The use of the Wivenhoe site by the sisters of the Good Samaritan for the development and expansion of its educational facilities is appropriate, provided that the development occurs within the potential development zones identified in Figures 5.1 and 5.2, and that the developments respect and respond to the significant rural 'estate' setting of the place, the significant views and vistas across the site and the development controls identified in section 5.2 of this report.

Comment

The PPR includes the educational and associated uses within the land use zone SP2, this would allow 'The Sisters of the Good Samaritan' to expand the school if they wished to do so in the future. The potential school development areas identified in the CMP are located within the new zoning and are therefore respectful of the CMP policies and the cultural heritage values of the place. (Figures 5.3 and 5.4)

5.2.5 *CMP Section 5.6 Statutory Controls*

Policy 6.1.4:
The Development Control Plan for the Wivenhoe Estate should include development guidelines for the site that respect the rural, heritage and ecological sensitivities of the place and respond to the aims of the relevant zonings.

Comment

The Camden DCP 2019 Schedule 5: Mater Dei would need to be updated to reflect the aims of the land uses being proposed. Specific guidelines about design of institutional uses should be incorporated within the DCP, consistent with the objectives and policies in the CMP 2008, to guide future proposals within the land use zone SP2. These guidelines should ensure that the visual and physical impacts of the future proposals do not adversely affect the understanding of the heritage place in its rural setting.

The subject amendments to the DCP need not occur with advancement of the relevant Planning Proposal.

5.2.6 *CMP Section 5.10 Future Development*

Policy 10.2.2:
No new buildings should be built on the main ridge of the property. Broad grassed areas should be maintained either side of the main entrance drive. In order to conserve the rural character of the site, these should not be mown and should consist of native grasses or grazing land.

Policy 10.2.4:
Mature trees should be conserved within development areas, if possible, and incorporated into the design of the new development.

Policy 10.2.2:
No new buildings should be built on the main ridge of the property. Broad grassed areas should be maintained either side of the main entrance drive. In order to conserve the rural character of the site, these should not be mown and should consist or native grasses or grazing land.

Policy 10.2.7:
New internal access roads may be developed, possibly along existing farm tracks, provided they respect the rural character of the site and they are located so as to minimise their impact on significant views and vistas. New roads should not be kerbed and guttered, but have a softer edge treatment such as grassed swales.

Comment

The proposed land use zones E2 and RU1 include the area adjoining the entry driveway along its length and this would protect the rural character of the site. The possibility of internal roads, walking tracks or trails would be limited to the land use E2 and would have limited effect on the rural setting of the site as long as these changes are guided by the policy 10.2.7.

6.0 IMPACT WITH REGARD TO CAMDEN LOCAL ENVIRONMENTAL PLAN 2010

LEP controls	*Assessment*
Part 1 Preliminary **1.2 Aims of the Plan**	
(1) This Plan aims to make local environmental planning provisions for land in Camden in accordance with the relevant standard environmental planning instrument under section 33A of the Act. (2) The particular aims of this Plan are as follows: a) to ensure Camden retains its valued traditional qualities, character and scenic landscapes while providing for sustainable urban growth, b) to ensure that new communities are planned and developed in an orderly, integrated and sustainable manner and contribute to the social, environmental and economic sustainability of Camden, c) to ensure natural assets within Camden are protected and enhanced, d) to minimise the impact on existing and future communities of natural hazards such as bush fires and flooding, e) to ensure that appropriate housing opportunities are provided for all existing and future residents of Camden at all stages of their lives, f) to ensure that the economic, employment and educational needs of all existing and future residents of Camden are appropriately planned for, g) to ensure the agricultural production potential of rural land, and prevent the fragmentation of agricultural holdings, h) to ensure that the recreation, cultural and social needs of all existing and future residents of Camden are appropriately planned for, i) to protect and restore the environmental values of land, including waterways and riparian land, as part of the natural systems, j) to conserve and enhance the built and landscape heritage of Camden. k)	Only some of the particular aims are directly relevant. These being namely (a) – (d) inclusive, (f) and (g), and (i) and (j). The PPR is not inconsistent with the preceding aims. Importantly it would have no negative impacts on the built and landscape heritage of the site. Any development application post rezoning would be guided by the CMP which would help retain and enhance the natural and built heritage character of the site.
Part 5 Miscellaneous Provisions **5.10 Heritage Conservation**	
(1) Objectives The objectives of this clause are as follows: a) to conserve the environmental heritage of Camden, b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views, c) to conserve archaeological sites, d) to conserve Aboriginal objects and Aboriginal places of heritage significance.	The proposal is able to protect the cultural significance of Wivenhoe property and accordingly fulfill the subject objectives. Detailed discussion regarding the same is recorded in Section 6 of this report.

(2) Requirement for consent Development consent is required for any of the following: a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance): (i) a heritage item, (ii) an Aboriginal object, (iii) a building, work, relic or tree within a heritage conservation area, b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item, c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed, d) disturbing or excavating an Aboriginal place of heritage significance, e) erecting a building on land: (i) on which a heritage item is located or that is within a heritage conservation area, or (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance, f) subdividing land: (i) on which a heritage item is located or that is within a heritage conservation area, or on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.	The proposal includes subdivision and rezoning of land on which heritage items listed in Schedule 5: Environmental Heritage are situated and therefore requires consent under this clause.
(3) When consent not required	n/a
(4) Effect of proposed development on heritage significance The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).	The heritage impacts arising from the proposal are considered in the Summary of Heritage Impacts, prepared by Design 5 – Architects. (see Section 5, with an overview provided in Section7: Summary Conclusion of the Impact of the Proposal).
(5) Heritage assessment The consent authority may, before granting consent to any development: a) on land on which a heritage item is located, or b) on land that is within a heritage conservation area, or c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.	A Heritage Impact Statement should accompany any future development application and should demonstrate consistency with the 2008 CMP.
(6) Heritage conservation management plans The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.	The Conservation Management Plan titled '*Wivenhoe Conservation Management Plan*,' revised 2008 accompanies the PPR.
(7) Archaeological sites The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the *Heritage Act* applies): a) notify the Heritage Council of its intention to grant consent, and	Archaeological sites would not be affected under the PPR. (refer to below)

b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.	
(8) Aboriginal places of significance The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance: a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.	Aboriginal places of significance would not be affected under the PPR. It is noted that there are several Aboriginal sites on the Wivenhoe property recorded in AHIMS. For further information on these sites refer to 2021 report titled '*Aboriginal Heritage Due Diligence Assessment: Planning Proposal Request to facilitate Future Superlot Subdivision and Landuse Rationalisation,'* prepared by Travers Bushfires & Ecology. The report concludes that there are no constraints to the PPR rezoning and super lot subdivision proceeding with respect to protection of Aboriginal archaeological heritage. Undiscovered Aboriginal artefacts or Potential Aboriginal Deposits (PADs) protocols and AHIP requirements are detailed in this assessment. Any development application post rezoning should carefully consider impacts on Aboriginal archaeological sites against this assessment.
(9) Demolition of nominated State heritage items The consent authority must, before granting consent under this clause for the demolition of a nominated State heritage item: a) notify the Heritage Council about the application, and b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.	n/a
(10) Conservation incentives The consent authority may grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, or for any purpose on an Aboriginal place of heritage significance, even though development for that purpose would otherwise not be allowed by this Plan, if the consent authority is satisfied that— a) the conservation of the heritage item or Aboriginal place of heritage significance is facilitated by the granting of consent, and b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and c) the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance, and e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area.	The Conservation Management Plan titled '*Wivenhoe Conservation Management Plan*,' revised 2008 accompanies the PPR. The impacts on the cultural heritage significance are assessed against the relevant policies that have been outlined within the CMP for preservation of cultural significance. (see section 5)

7.0 SUMMARY CONCLUSION OF THE IMPACT OF THE PROPOSAL

The proposed planning amendments to facilitate subdivision and rezoning affects significant portions of the Wivenhoe property, however, all will have a neutral to positive impact on the place, supporting and potentially enhancing its significant values. The proposal follows the guidelines and policies in the 2008 CMP and is therefore consistent with it and supports it. There should be no adverse impacts on the built heritage items of the site.

The proposal is a thoughtful consideration of the site's character, its evolving functions and the vision of 'The Trustees of the Sister of the Good Samaritan.' In 2007, the entry driveway, the Wivenhoe Villa and the buildings associated with the Mater Dei School were zoned as Cultural Landscape (*Zone 5(a)*) by the Council. This zoning reflected the recognized cultural heritage significance of Wivenhoe. The aim of this zoning was to conserve the significance of the villa and its immediate environs, whilst facilitating appropriate development. In Camden LEP 2010, the *Zone 5(a)* on the site was replaced with a *R5 Large Lot residential* – a zoning that does not reflect the cultural heritage significance of the Wivenhoe Estate. The proposed zoning would consolidate the built heritage items that have catered to the educational, childcare and associated uses since the early twentieth century and locate these within land use zone *SP2 Educational Establishment*.

A majority of natural landscapes surrounding the built heritage items of the site would be protected and conserved under the land use zone *E2 Environmental Conservation*. This would complement the rural landscape character of the site and protect the setting of the built heritage items in a nineteenth century gentleman's 'rural estate.'

The expansion of the land use zone E2 *Environmental Conservation* would give effect to the aims of the Camden LEP 2010 which aims "to protect and restore the environmental values of land, including waterways and riparian land, as part of the natural systems." This vision is shared by the Good Samaritan Sisters' *Wivenhoe Conservation Project* which aims to restore the local ecosystem, protect the biodiversity of the site and preserve its threatened and endangered ecological communities.

The natural landscapes towards the south of the ridgeline are presently zoned for land use *RU1 Primary Production*. This landscape has generally not been used for farming apart from grazing,[6] and the conversion of the land use for Environmental Conservation is therefore appropriate to conserve the threatened ecological communities that now inhabit this area (such as the Cumberland Plains Woodland) and the integrity of *Cumberland Subregion Biodiversity Corridor of Regional Significance* which are essential to the ecological diversity of the site.

The proposal is considered acceptable in heritage terms, based upon the following recommendations:

1. Any development applications post the proposed rezoning should continue to uphold the cultural heritage significance of the place based upon the findings, guidelines and policies outlined in the 2008 CMP.
2. The inclusion of open grassland to the south of the driveway within the proposed E2 zone should not adversely affect one of the objectives of the Policy 2.3.2 in the CMP i.e., "open grassland should be conserved along the sides of the main drive and across the southern portion of the site." This is essential to maintain the significant views and vistas to the site from the driveway.
3. The boundary of the proposed SP2 zone should carefully consider the hazard extents depicted in the 'Bush Fire Prone Land Map'[7] and the 'Nepean River Flood Study Report and Maps' of the Camden Council LGA.[8] For instance, the north-western

[6] The rural land is grazed by agistment agreement with the Congregation of the Sisters of the Good Samaritan.

[7] Camden Council, "Bushfires: Bush Fire Prone land," accessed September 6, 2021, https://www.camden.nsw.gov.au/environment/bushfires/

[8] Please refer to maps 7, 8, 8A from Camden Council, "Nepean River catchment: Nepean River Flood Study Report and Maps," accessed September 6, 2021, https://www.camden.nsw.gov.au/environment/flood-information/nepean-river-catchment/

part of this zone overlaps the boundary of the 'Vegetation Category 1' and 'Vegetation Category 3' which are considered to be at the highest and medium risk for bush fire respectively. It should be ensured in any future development proposals that new structures (owing to their location) do not jeopardise the built heritage items in an event of a bush fire.

4. The expansion of the land use zone *E2 Environmental Conservation* should take into consideration the 'Threatened Ecological Communities Greater Sydney' as recognised by the NSW Government OEH in order to best preserve the natural heritage of the site. It is noted that the new land use zone *RU2 Rural Landscape* (close to the Macquarie Grove Rd) overlaps the threatened communities zone.[9]

In summary, it is our assessment that the proposal supports the objectives of the Camden Local Environmental Plan 2010, and the polices outlined in the Conservation Management Plan titled *'Wivenhoe Conservation Management Plan*,' revised 2008. We support the proposal and recommend its approval in accordance with the above recommendations.

Alan Croker
Design 5 – Architects

2021

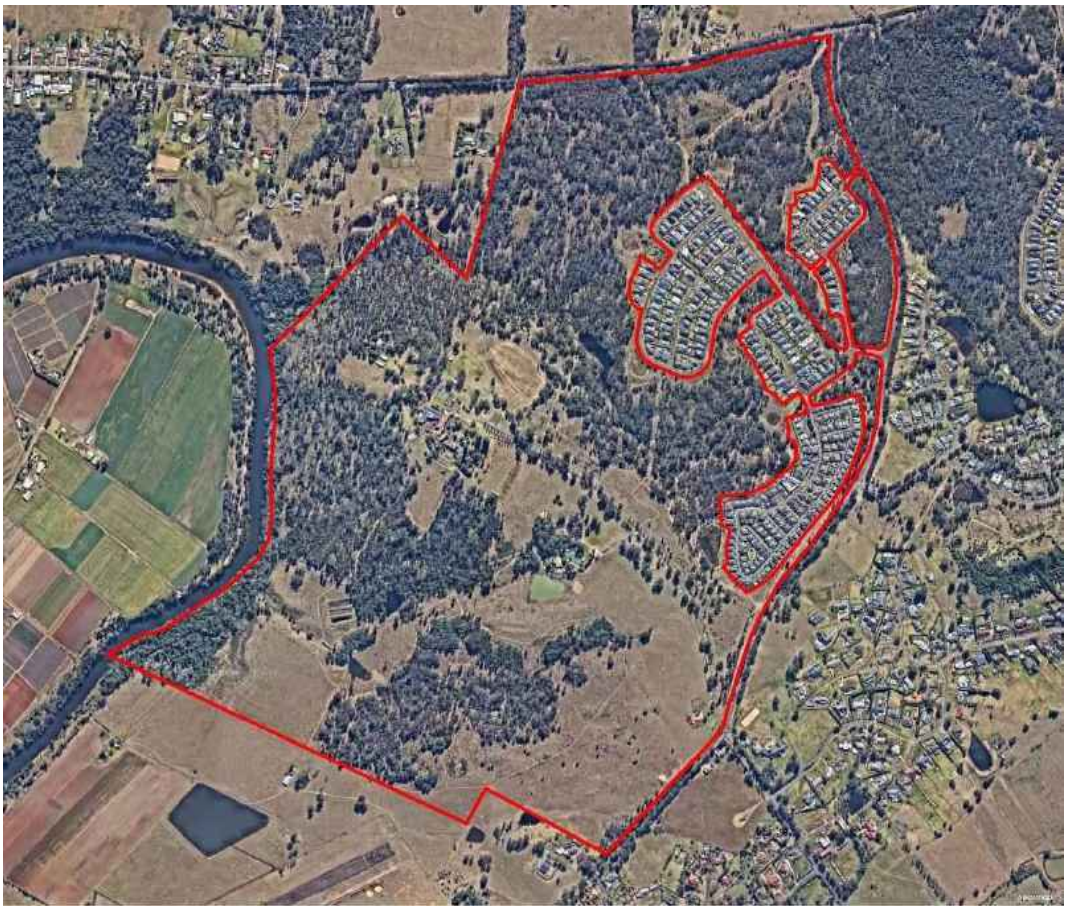
[9] The *Flora and Fauna Impact Assessment, Wivenhoe* by Eco Logical Pty Ltd (2008) has identified several threatened ecological communities in the northern portion of the site.

Annex F

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

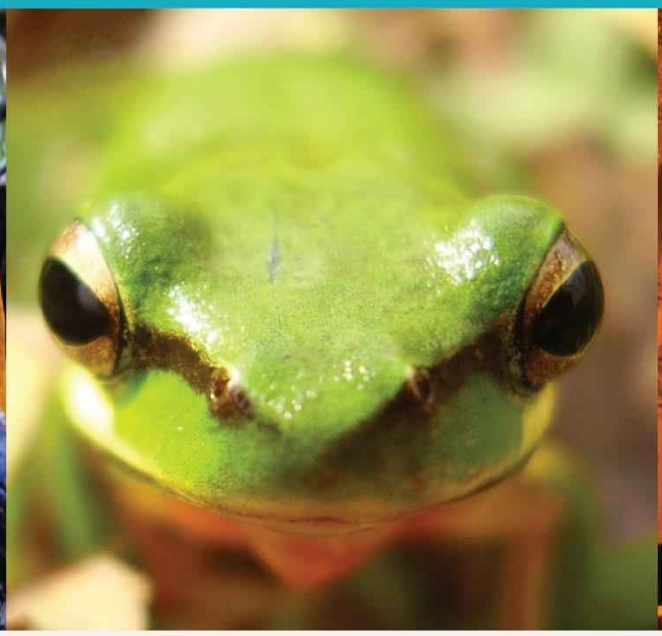
PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "F"
Aboriginal Due Diligence Assessment
(Travers Bushfire & Ecology)

October 2021

TRAVERS BUSHFIRE & ECOLOGY

A TBE ENVIRONMENTAL COMPANY



ABORIGINAL HERITAGE DUE DILIGENCE ASSESSMENT

Planning Proposal Request to Facilitate Future Superlot Subdivision and Landuse Rationalisation

Lot 100, DP 1159926

229 Macquarie Grove Road

Cobbitty

22 September 2021

(REF: 21PPS02.2AB)

ABORIGINAL HERITAGE DUE DILIGENCE ASSESSMENT

For

Planning Proposal Request to Facilitate Future Superlot Subdivision and Landuse Rationalisation

Lot 100, DP 1159926, 229 Macquarie Grove Road, Cobbitty

Report authors:	Robert Sansom B. Sc. (Hons.) – Botanist
Plans prepared:	Sandy Cardow B. Sc.
Reviewed by:	Michael Sheather-Reid (BAAS17085) Managing Director
Date:	22/09/21
File:	21PPS02.2AB

Disclaimer:

This report has been prepared to provide advice to the client on matters pertaining to the particular and specific development proposal as advised by the client and / or their authorised representatives. This report can be used by the client only for its intended purpose and for that purpose only. Should any other use of the advice be made by any person, including the client, then this firm advises that the advice should not be relied upon. The report and its attachments should be read as a whole and no individual part of the report or its attachments should be interpreted without reference to the entire report.

The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

EXECUTIVE SUMMARY

This Aboriginal Heritage Due Diligence Assessment has been prepared by *Travers bushfire & ecology* for the property at Lot 100, DP1159926, 229 Macquarie Grove Road, Cobbitty within the Camden Council Local Government Area (LGA). This assessment was undertaken in accordance with the following:

1. The *National Parks and Wildlife Act* (1974)
2. National Parks and Wildlife Regulation 2009, and
3. Due Diligence Code of Practice for the protection of Aboriginal Objects in NSW (DECCW, 2010).

This Aboriginal Heritage Due Diligence Assessment was undertaken to provide the required information for the Planning Proposal Request (PPR) to rezone parts of the site and allow the future creation of super-lots. These super-lots will then be managed in accordance with their assigned purpose, such as:

1. Central Mater Dei property (School) (SP2)
2. Special Needs School / Facility (SP2)
3. Natural Environment Conservation Lands (E2), and
4. Rural Landscape Holding (RU2)

This Due Diligence Report has been undertaken to meet NSW legislative requirements. The aims of these requirements are to:

1. Identify any known or likely Aboriginal heritage on or adjacent to the property,
2. Assess the potential impact of the proposal on Aboriginal heritage, and
3. Determine if an Aboriginal Heritage Impact Permit (AHIP) is required prior to commencement of the development or construction within the study area, under a future development / planning time horizon.

Summary of findings

Predictive modelling of key trends associated with the content of Aboriginal archaeological sites on the Cumberland Plain (*Navin Officer Heritage Consultants P/L*, October 2015 – *Western Sydney Airport Aboriginal Cultural Heritage Assessment*) highlights a set of predictive statements or criteria that are associated with historical use of the landscape within the wider Cumberland Plain.

The area subject to the PPR has a number of attributes which would indicate that historical Aboriginal use of the site would have been likely. However, moderate to high levels of disturbance to the site's landform in modern history has affected the surface expression of aboriginal artefacts. This is caused by past land uses and management practices such as vegetation clearing, modification to the rock outcrops, establishment of a historical working pastoral property, quarrying, creation of dams, construction of roads, tracks and buildings and more recently as two separate schools, including the retention and restoration of the European heritage buildings and other outbuildings and infrastructure.

Despite the disturbance of the topsoil over much of the subject site, it is considered that the site has a moderate potential to contain aboriginal artifacts. The main areas that are likely to contain aboriginal artifacts are along the numerous watercourses, ridgelines and rock outcrops or vantage points which form a network throughout the study area. The PPR seeks to rationalise the prevailing zonings and establish a template for future development / management, via a superlot subdivision.

In the unlikely event known or new Aboriginal artefacts are identified or disturbed during any future activities within the new proposed superlots, then works shall cease immediately and the site assessed by a qualified archaeologist which will then guide the activities to conserve the site. If disturbance to newly found or known existing sites is necessary, then an AHIP will be required for any resulting impacts. Conversely, if no Aboriginal artefacts are identified, an AHIP application is not necessary.

Applications for an AHIP must be accompanied by an assessment report conducted in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010.* Applications must also provide evidence of consultation with the Aboriginal communities. Consultation is required under Part 8A of the NPW Regulation 2009 and is to be conducted in accordance with the *Aboriginal Heritage Consultation Requirements for Proponents 2010.*

Predictive modelling of the landscape suggests that potential Aboriginal Heritage areas have a moderate probability to occur within the subject site, but are importantly manageable within the subject framework.

LIST OF ABBREVIATIONS

AS 4970	Protection of trees on a development site
APZ	asset protection zone
BC Act	Biodiversity Conservation Act, 2016
BPA	bushfire protection assessment
CRZ	critical root zone
DCP	Development Control Plan
DAWE	Commonwealth Department of Agriculture, Water and the Environment.
DOEE	Commonwealth Department of Environment & Energy (superseded by DAWE)
DPIE	NSW Department of Planning, Industry and Environment
EEC	endangered ecological community
EPA	Environmental Protection Authority
EP&A Act	Environmental Planning and Assessment Act
EPBC Act	Environment Protection and Biodiversity Conservation Act
ESMP	ecological site management plan
FF	flora and fauna assessment
FM Act	Fisheries Management Act
FMP	fuel management plan
ha	hectares
HTA	habitat tree assessment
IPA	inner protection area
LEP	local environment plan
LGA	local government area
m	metres
NES	national environmental significance
NPWS	NSW National Parks and Wildlife Service
OEH	NSW Office of Environment and Heritage (superseded by DPIE from August 2019)
OPA	outer protection area
PBP	Planning for bush fire protection 2006
RF Act	Rural Fires Act
RFS	NSW Rural Fire Service
ROTAP	rare or threatened Australian plants
SRZ	structural root zone
SULE	safe useful life expectancy
TPO	tree preservation order
TPZ	tree protection zone
TRRP	tree retention and removal plan

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Appendices

1. BACKGROUND

1.1 Project background

This Aboriginal Heritage Due Diligence Assessment has been prepared by *Travers bushfire and ecology* for the property known as Lot 100, DP 1159926, at 229 Macquarie Grove Road, Cobbitty within Camden local government area (LGA) (as shown in Figure 1-1). This assessment was undertaken in accordance with the following:

1. *The National Parks and Wildlife Act* 1974
2. *National Parks and Wildlife Regulation* 2009, and
3. *Due Diligence Code of Practice for the protection of Aboriginal Objects in NSW* (DECCW, 2010).

This Aboriginal Heritage Due Diligence Assessment was undertaken to provide the required information for the Planning Proposal Request (PPR)

This Due Diligence Assessment is required to meet NSW legislative requirements. The aims of these requirements are to:

1. identify any known or likely Aboriginal heritage on the property,
2. assess the potential impact of the proposal on Aboriginal heritage, and
3. determine if an Aboriginal Heritage Impact Permit (AHIP) is required prior to commencement of the development or construction within the study area.

1.2 Project description

This Aboriginal Heritage Due Diligence Assessment was undertaken to provide the required information for the PPR which is to rationalise the zoning of r parts of the site and allow the creation of a Superlot subdivision for the following purposes:

1. The centrally located Mater Dei School (SP2)
2. A Special Needs facility / school (SP2)
3. Natural Environment Conservation Lands (E2), and
4. Rural Landscape (RU2)
   (Refer to Figure 1.2)

The ultimate proposal is to subdivide the site into super-lots such that various ownership and management requirements can be enacted within appropriately zoned and managed lands as shown in Figure 1.3. This super-lot subdivision will potentially allow different entities to undertake management or other works independently from entities owning or managing adjacent super-lots.

Figure 1-1 – Aboriginal heritage due diligence study area, location and extent
(Source SIX-maps)

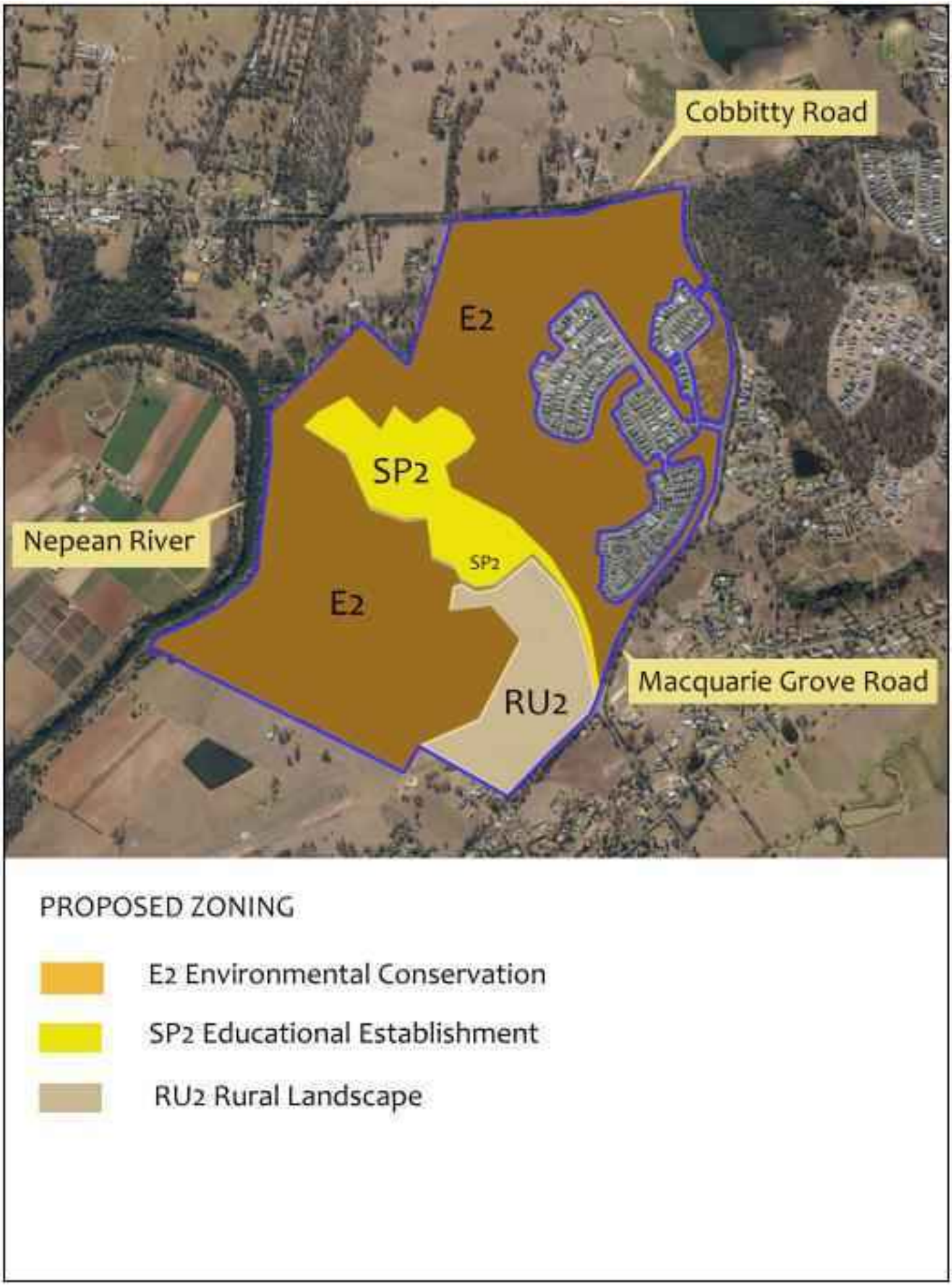

Figure 1-2 - Proposed Zones / Precincts

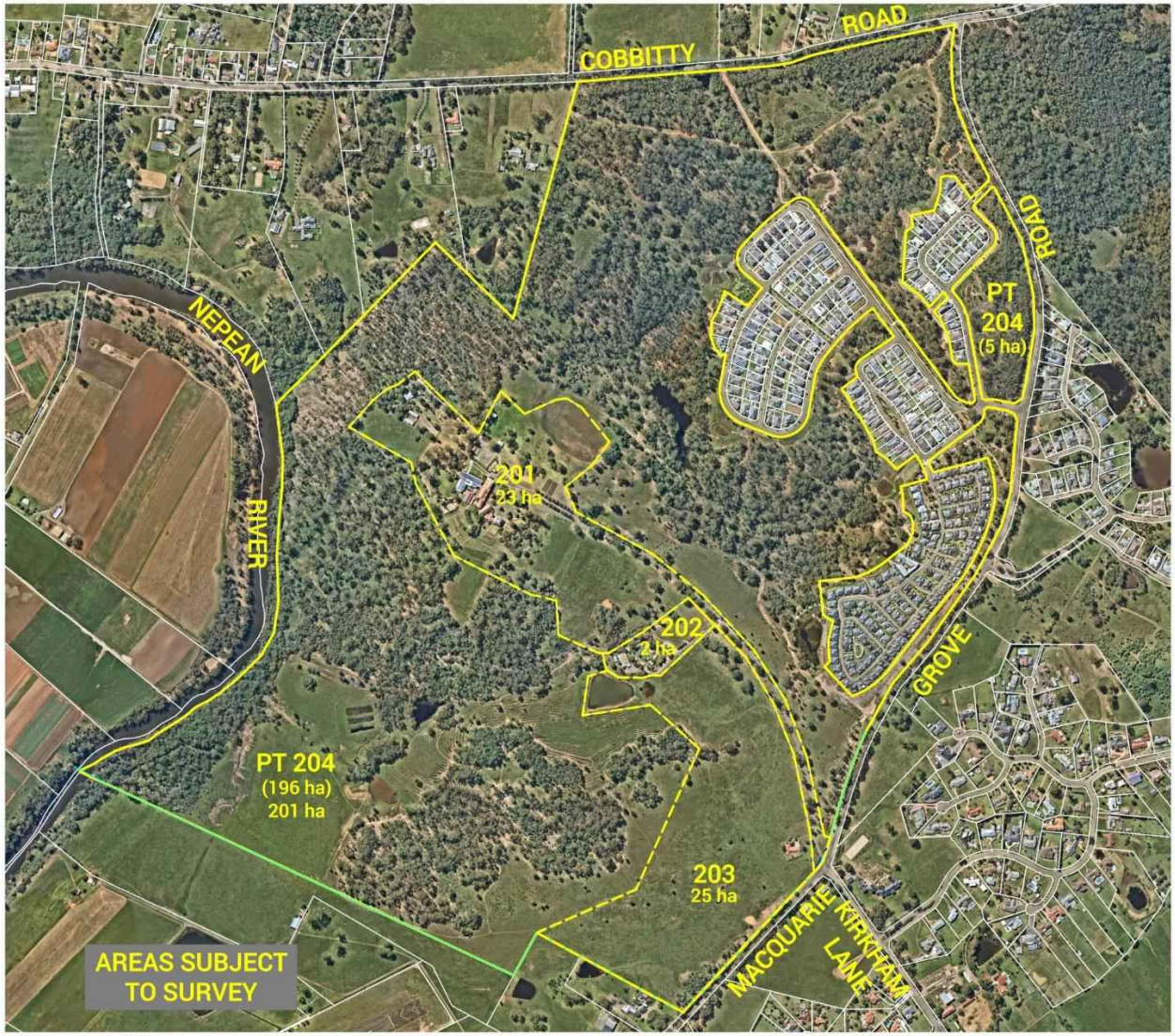

Figure 1-3 – Proposed Super-lot subdivision
(Source: JMD Development Consultants Ref: 20115PS Issue Dated 20/76/2021)

Issue	Date	Description
F	20-07-2021	LOTS 202, 203 & 204 BOUNDARY ADJUSTMENT
C	05-08-2020	LOTS 202, 203 & 204 BOUNDARY ADJUSTMENT
B	04-08-2020	LOTS 201, 202 & 204 BOUNDARY ADJUSTMENT
A	31-07-2020	ORIGINAL ISSUE

SURVEY INFORMATION	Orientation:	MGA	Date of survey :	N/A
	Datum		Origin	
Coordinate	MGA	MGA		
Level	LIDAR	N/A		

JMD Development Consultants

John M. Daly & Associates Pty Ltd
A.B.N. 88 051 977 989
Surveying
Engineering
Project Management
Licensed Water Service Co ordinators
32 Iolanthe Street
P.O. BOX 25
CAMPBELLTOWN NSW 2560
PH. (02) 4625 5055
email: admin@jmd.com.au

Client :	TRUSTEES OF THE SISTERS OF THE GOOD SAMARITAN
Project :	LOT 100 IN DP1159926 - 229 MACQUARIE GROVE ROAD, COBBITTY
	PLAN OF PROPOSED SUBDIVISION
Locality :	COBBITTY
L.G.A. :	CAMDEN
Ref:	20115PS

1.3 Previous studies

Previous Aboriginal Heritage / Archaeological studies, surveys and Local Aboriginal Land Council (LALC) consultations and liaison have been undertaken for the Wivenhoe Residential Development (formerly part of the Mater Dei holding). A detailed report was produced by *Kelleher Nightingale Consulting Pty Ltd* (April 2008).

In addition, A Curtilage study was undertaken by Dallas, M. and Tuck, D. (July 2003) – *Denbigh Curtilage Study: Aboriginal Cultural Heritage.* (It is noted that Denbigh property is a nearby large rural landholding to the north of Cobbitty Road)

1.4 Assessment process

The Due Diligence Code of Practice for the protection of Aboriginal Objects (Section 4) (DECCW, 2010) states:

> *"Consideration of the potential impacts of development on Aboriginal heritage is a key part of the environmental impact assessment process under the Environmental Planning and Assessment Act 1979 (EP&A Act). The standards in this code can be used or adapted by proponents to inform the initial assessment of the environmental impacts of an activity on Aboriginal heritage. An environmental impact assessment which meets all of the requirements of this code will satisfy the due diligence test."*

Section 6 of DECCW, 2010) also states:

> *"In the context of protecting Aboriginal cultural heritage, due diligence involves taking reasonable and practicable measures to determine whether your actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm.*
>
> *There are several advantages to having a due diligence process for assessing potential harm to Aboriginal objects in that it:*

- *assists in avoiding unintended harm to Aboriginal objects*
- *provides certainty to land managers and developers about appropriate measures for them to take*
- *encourages a precautionary approach*
- *provides a defence against prosecution if the process is followed*
- *results in more effective conservation outcomes for Aboriginal cultural heritage."*

In order to fulfil the requirements of 'Due Diligence', the generic due diligence process as outlined within Section 8 of DECCW (2010) should be followed as a minimum. The steps required are summarised below.

1. Does the activity require disturbance to the ground surface?

2a. Search the AHIMS database and use any other sources of information of which you are already aware.

2b. Activities in areas where landscape features indicate the presence of aboriginal objects, (eg. Within 200m of waters or below/above a cliff, sand dune systems, ridge tops or lines or headlands, within 20m of a cave, rock shelter or cave mouth, etc.)

3. Can harm to the object or disturbance of the landscape feature be avoided?

4. Desktop assessment and Visual Inspection. The visual inspection must be done by a person with expertise in locating and identifying Aboriginal objects. This person with expertise could be an Aboriginal person or landholder with experience in locating and identifying Aboriginal objects or a consultant with appropriate qualifications or training in locating and identifying Aboriginal objects.

5. Further investigations and impact assessment. If after the above detailed investigation and impact assessment you decide that harm will occur to Aboriginal objects then an AHIP application must be made. If you have followed this code and at any point have reasonably decided that an AHIP application is not necessary either because Aboriginal objects are not present or, if they are present, harm to those objects can be avoided, you can proceed with caution. If, however, while undertaking your activity you find an Aboriginal object you must stop work and notify DECCW and you may need to apply for an AHIP. Some works may not be able to resume until you have been granted an AHIP and you follow the conditions of the AHIP. Further investigation may be required depending on the type of Aboriginal object that is found.

2. ASSESSMENT

This assessment section works through the requirements of the 'Due Diligence' process as outlined in Section **Error! Reference source not found.**.

2.1 Identify if the proposed works will disturb the ground surface

The proposal PPR is to facilitate rezoning of parts of the study area and the creation of several super-lots. This will allow separate entities to manage these land parcels as appropriate to the new zoning requirements, and to undertake limited development in the future and to potentially allow these separate entities to operate independently from neighbouring properties. It is expected that the newly created super-lots will require replacement of existing fence lines which is expected to be the only disturbance to the soil resulting from the proposal. It is also expected that any future (currently unknown) works undertaken within the study area will avoid areas known to contain aboriginal artefacts and may be the subject of further assessment. Therefore, the known Aboriginal sites within the study area are unlikely to suffer from ground disturbance as a result of the creation of Super-lots and the fencing required to delineate the boundaries. See Figure 2.1 for locations of aboriginal Heritage sites within the study area.

2.2 AHIMS database searches and other known information sources

2.2.1 AHIMS web database searches

Basic AHIMS Search

The Aboriginal Heritage Information Management System (AHIMS) is a database that can be accessed via the web. It contains information and records of registered Aboriginal archaeological sites (containing Aboriginal objects) and declared Aboriginal Places in NSW.

A basic AHIMS area search was undertaken on 11th August 2021 using the Lot and DP numbers (Lot 100, DP 1159926) with a 50-metre buffer external to the Lot. This area covers the whole of the subject site and an area of at least 50 metres beyond, on all sides.

The Basic AHIMS search provides only presence / absence information and does not provide any other details. However, the Basic search did return information that twelve (12) Aboriginal sites have been recorded in or near the Study Area. From this information it was determined that an Extensive Search would be more informative.

Extensive AHIMS search

An extensive AHIMS search was undertaken on 11th August 2021 for the same area as described above. Details used for the search were:

Lot 100, DP 1159926, with a buffer of 50 metres.

This search again returned twelve (12) recorded Aboriginal Sites located within the study Area. The Extensive search provides more detailed information such as the unique site identification number, the site name, the mapping datum with easting and northing coordinates, the context of the site, site status, features present, and the document number of any previous

archaeological report for each site. The results of the extensive search are shown in Table 2-1 below.

Table 2-1 – AHIMS Extensive search results for the Study Area

Site ID	Site name	Datum	Zone	Easting	Northing	Context	Site status	Site features
52-2-3344	MD1	AGD	56	288278	6232209	Open Site	Valid	Artefact: 1
52-2-3345	MD2 Camden	AGD	56	287995	6232233	Open Site	Valid	Artefact: 1
52-2-3346	MD3	AGD	56	288091	6232254	Open Site	Valid	Artefact: 1
52-2-3347	MD4	AGD	56	287958	6232287	Open Site	Valid	Artefact: 1
52-2-3348	MD5	AGD	56	288102	6232562	Open Site	Valid	Potential Archaeological Deposit (PAD)
52-2-3349	MD6	AGD	56	287635	6233053	Open Site	Valid	Artefact: 1
52-2-3350	MD7	AGD	56	287747	6233378	Open Site	Valid	Artefact: 18
52-2-3351	MD8	AGD	56	288331	6233371	Open Site	Valid	Artefact: 1
52-2-3352	PAD6	AGD	56	287947	6232407	Open Site	Valid	Potential Archaeological Deposit (PAD)
52-2-3353	MD-OS-1	AGD	56	288468	6232583	Open Site	Valid	Artefact: 4
52-2-3355	MD-IF-1	AGD	56	287860	6233477	Open Site	Valid	Artefact: 1
52-2-3356	MD-ST-1	AGD	56	288469 *AHIMS 288468	6232541 *AHIMS 6232583	Open Site	Valid	Modified Tree (Carved or Scarred)

*Note, the coordinates for AHIMS sites 52-2-3353 and 52-2-3356 have been duplicated within the AHIMS database. The correct coordinates for Site 52-2-3356 are also shown in Table 2.1. The correct coordinates and site ID label from the above data were imported into a GIS system and plotted over a geo-referenced and recent aerial photograph with the proposed super-lot boundaries shown in Figure 2-1.

Site Cards

In order to obtain the details of AHIMS sites the site cards were requested for each site. These cards record the details of the artefacts with notes, directions, context and placement within the landscape. In some cases, photographs are also included in the site card. Copies of the site cards are provided in Attachment 1.

2.2.2 Other heritage registers and databases

Other sources of information including heritage registers and lists were also searched for known Aboriginal heritage in the vicinity of the study area. These included:

- NSW State Heritage Register

  The State Heritage Register lists 'Denbigh' (Listing No. 01691 – Gazetted 12/22/2006)

- Commonwealth Heritage List

  Two places are listed for the Camden Local Government area. These are:

  1. Camden Post Office 135 Argyle St Camden, and
  2. Cottage in rear of Macquarie Grove House, Macquarie Grove Road – this building is possibly part of what is now called Denbigh House.

- National Heritage List

  The National Heritage List has no listings within 5 km of the Study Area

- Australian Heritage Database

  This Database returns the same information as the Commonwealth Heritage Database search

2.2.3 Known Aboriginal heritage and previously recorded sites

Twelve (12) known AHIMS sites have been previously identified within the Study Area as shown in Table 2.1 and Figure 2.1.

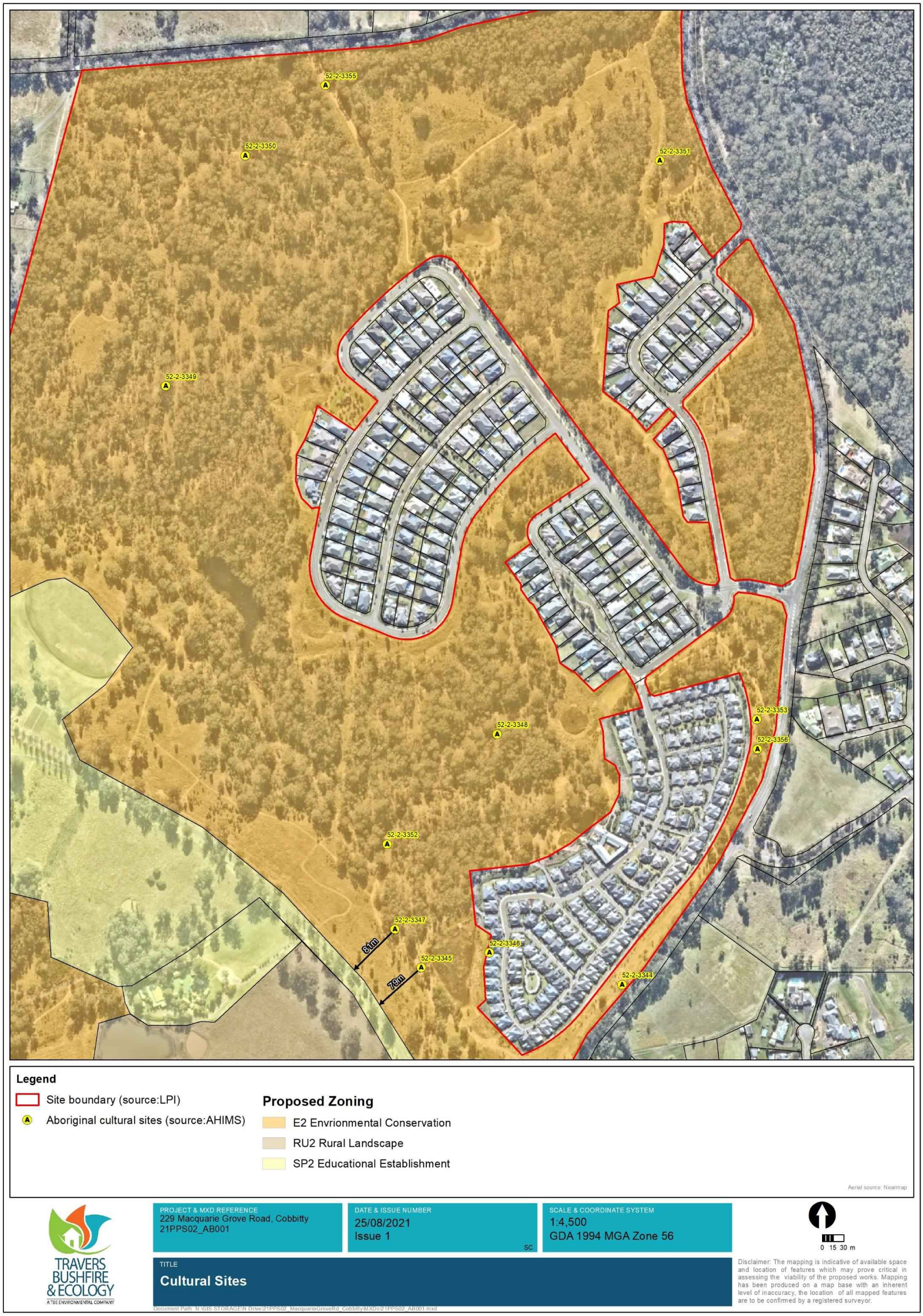

Figure 2-1 – Plot of known AHIMS sites within the Study Area

2.3 Landscape assessment

Haglund (1980) (in Dallas *et. al*.) developed a predictive model of site location based on early survey work in the Blacktown area. She predicted that sites would most likely be located near watercourses such as creeks and soaks, and on high ground near creek confluences.

Kohen (1986) postulated that the availability of water was the most important factor influencing the distribution of sites across the landscape.

Brayshaw, H. (1988) (in Dallas *et.al.*) Assessed the Probable Maximum Flood (PMF) inundation zone of the Warragamba Dam. She noted that the majority of the known sites were located on the Wianamatta shale landforms. Since that time, a number of archaeological surveys have been conducted in and around the Oakdale Colliery and nearby at the Brimstone Colliery.

Smith, L. J. (1989) Conducted a planning study over a large (25 km2) area near Liverpool. This study concluded that "sites in the Liverpool area were more likely to occur on creek flats than on any other topographical feature, and that the probability of sites occurring on creek flats increased near creek confluences.

Navin Officer, (1998) have summarised the history of investigations and observed that a wide range of site types common in Hawkesbury sandstone are present and that site density varies according to topography and steepness of terrain. Site densities ranged from 1 site per 9.5ha to one site per 110ha. The higher site densities occur in landforms of low gradient slopes and open or flat valley floors. It must be noted that Wianamatta shale is also present within the subject site which provides additional diversity to the potential for Aboriginal heritage sites to occur.

Predictive modelling of key trends associated with the content of Aboriginal archaeological sites on the Cumberland Plain (*Navin Officer Heritage Consultants P/L*, October 2015 – *Western Sydney Airport Aboriginal Cultural Heritage Assessment*) highlights a set of predictive statements or criteria that are associated with historical use of the landscape within the wider Cumberland Plain. It is generally inferred that Aboriginal people often used certain landscape features and that Aboriginal objects are most often associated with these.

The study area has a number of attributes which would indicate that Aboriginal use of the site would have been historically likely. Therefore, an evaluation of landscapes present within the study area aids in assessing the likelihood of Aboriginal objects occurring within the subject site.

2.3.1 Historical Aboriginal Cultural Heritage of the Cumberland Plain

Some of the trends to predict the location and potential content of Aboriginal archaeological sites (*Navin Officer*, 2015), are present within the study area such as:

- Site frequency and artefact density are strongly related to access to fresh water and other necessary resources.
- Intact archaeological material may still be present below the plough zone (i.e. top 25 cm of soil).
- Artifacts are mostly situated close (within 100 metres) to permanent fresh water sources such as second order or higher creeks, rivers and wetland basins.

- Aboriginal sites are frequently located on creek banks, alluvial flats and lower slopes, or on higher ground such as ridges or knolls.
- Sites are often located within a short range of food resources and the raw materials for making tools.
- Complex sites that support large groups, or small groups at regular intervals, are usually located near permanent water sources.
- Stream order may provide a predictive framework for the occurrence and complexity of associated archaeological deposits (McDonald, 2005).
- Fourth and fifth order streams are likely to contain more complex and possibly stratified evidence of more permanent or repeated occupation.
- Third order streams are more likely to contain evidence of frequent occupation such a knapping areas. Higher artefact densities are often found in the lower reaches of tributary creeks.
- Second order watercourses are likely to contain sparse archaeological evidence, likely caused by mostly occasional use or occupation.
- First Order watercourses are associated with sparse archaeological evidence.
- Creek junctions may also provide a focus point and the size of artefact deposits may increase with the size or Order of these watercourses
- High value artefact deposits are most likely to occur in areas where fluvial deposits are accumulating within valley floors, on fringing basal slopes or on nearby locally elevated and well drained areas.
- Ridge tops and hill crests are usually defined as low potential for artefacts; however, some hilltops or ridgelines do present large artifact deposits.
- Single old trees and stands of remnant 'old growth' have potential for evidence of scarring by Aboriginals.
- Grinding grooves may occur in creek lines and are often associated with a sandstone substrate.

2.3.2 Historical Aboriginal Cultural Heritage within the locality

A report by Mary Dallas and Dan Tuck (July 2003) – Titled "*Denbigh Curtilage Study: Aboriginal Cultural Heritage*' was also produced. This report was more specific to the central areas within the study area and has determined that Aboriginal activity across the local landscape was evidenced by multiple interactions between Aboriginal and European peoples since the first European settlers within the region. This information was extracted from reports and writings of the times which described people, places, skirmishes and peaceful cohabitation in the area.

This study describes the environment with respect to the geology dominated by The Tertiary Bringelly Shales of the Wianamatta Geological Group. Minchinbury sandstone beds that are often associated with this group occur along the ridgeline to the north and east of the homestead. Quaternary fine-grained silts and clays dominate the Nepean floodplain. This landscape supported various forested types such as, Grey Box Woodland, Red Gum Forest and Narrow-leaved Ironbark Woodland. The Nepean River is supported by a large number of small tributaries derived from a network of even smaller first, second and third Order watercourses. Dallas and Tuck (2003) stated that "*The general archaeological context for this portion of the Sydney Basin is of interest because it lies close to the interface of the shale-based and sandstone formations*". They go on to say – "*Most of the sites in the region are strongly correlated to the underlying geology. The predominant site types are sheltered occupation deposits, painted and engraved art sites and axe grinding grooves within the sandstone formations*".

Dallas and Tuck (2003) conclude that: "*There is firm archaeological and historical evidence of the Aboriginal association with Denbigh. This evidence includes activities associated with tool and equipment-making and ceremonial activities*. *Further archaeological investigations and field survey is likely to provide evidence of extensive use of the area, particularly the ridge system and the Cobbitty Creek valley floor".*

2.3.3 Likely occurrence of Aboriginal sites within the subject site

The subject site is located on the Blacktown Soil Landscape consisting of gently undulating rises on Wianamatta Shale with gently inclined slopes. The study area is traversed by several First and Second Order watercourses which feed into the Nepean River. These watercourses and river have eroded down into the Theresa Park soil landscape which is derived from sandstones and fluvial deposits. This soil landscape is associated with floodplains surrounded by higher shale bands which sometimes form steep banks and outcrops.

The topography has been modified through land management practices associated with pastoral activities for over 100 years. Several dams and farm tracks have been constructed.

Prior to European settlement the study area would have been vegetated with vegetation types such as, Grey Box Woodland, Red Gum Forest and Narrow-leaved Ironbark Woodland. After European settlement, the study area was mostly cleared for pastoral purposes. However, more recently the vegetation has been allowed to naturally recover, yet it still has some way to go to achieve an almost natural state. Weeds such as Lantana, African Olive and other invasive species are the targets for ongoing weed control.

As described above, the landscape within the study area provides features that are known to be associated with aboriginal use and therefore areas within the study area are likely to contain known (e.g. AHIMS records) and as yet undiscovered aboriginal heritage artefacts. Landform features that are associated with Aboriginal activity, use, or occupation as determined by the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010), are present within the study area, such as:

- The presence of fresh water within intermittent and semi-permanent watercourses and also within 100 metres of the watercourses,
- Creek banks, alluvial flats, lower slopes, or on higher ground such as ridges, lookouts or knolls,
- Within a short range of food resources and the raw materials for making tools,
- Sites that support large groups, or small groups at regular intervals, are usually located near permanent water sources such as the floodplain along the Nepean River,
- Higher artefact densities such as knapping areas are often found in the lower reaches of tributary creeks,
- Higher order watercourses are more likely to contain artefacts from more permanent or frequently repeated occupation,
- Creek junctions may also provide a focus point and the size of artefact deposits may increase with the size of these watercourses,
- High value artefact deposits are most likely to occur in areas where fluvial deposits are accumulating within valley floors, on fringing basal slopes or on nearby locally elevated and well drained areas,
- Ridge tops and hill crests are usually defined as low potential for artefacts; however, some hilltops or ridgelines do present large artifact deposits, especially those that have a view across the surrounding country,
- "Old Growth" forest and single old trees provide potential for 'scarring' by Aboriginals,
- Grinding grooves are most often found in creek lines and are often found in association with a sandstone substrate.

However, the majority of the study area is disturbed land as defined within the code of practice as the land has undergone activities such as:

- clearing of vegetation,
- construction of buildings,
- construction of dams
- establishment of farm tracks,
- construction or installation of utilities or services (electricity, water, sewer, stormwater, communications),
- Disturbance to the upper layers of the soil (such as tilling) to promote the growth of pasture species,
- construction of earthworks associated with anything mentioned in the above points.

Despite the above-mentioned disturbances, it is considered that the site does have a moderate potential to contain aboriginal artifacts. However, the main areas that are likely to contain aboriginal artifacts are along the Nepean riverbank, along the multiple creeklines and along ridgetops and knolls. Some locations on the larger river flats and flatter higher ground within the site may also contain artifacts from camps. The proposed rezoning and subdivision into super-lots within the study area will retain all twelve (12) currently known AHIMS sites within future conservation and offset areas which are to be rezoned to E2.

2.3.4 Due Diligence inspection by Cubbitch Barta Native Title Claimants Aboriginal Corporation

Mary Dallas and Dan Tuck were accompanied by Glenda Chalker, chairperson of the Cubbitch Barta Native Title Claimants Aboriginal Corporation during the reconnaissance survey across the Denbigh Homestead property on 17 June 2003.

Other Aboriginal Consultations were undertaken by *Kelleher Nightingale* (2008) for the proposed development of *Wivenhoe Residential Development*. Tharawal Local Aboriginal Land Council (TLALC), Cubbitch Barta Native Title Claimants Aboriginal Corporation (CBNTCAC), Darug Tribal Aboriginal Corporation (DTAC), Darug Custodian Aboriginal Corporation (DCAC) and Darug Aboriginal Cultural Heritage Assessments (DACHA) were consulted regarding the proposed rezoning and residential development. Kelleher Nightingale further states: "*The proposed conservation area incorporates a number of the recorded Aboriginal sites and the area of archaeological potential. This represents a positive conservation outcome for Aboriginal heritage as it retains the connection between identified Aboriginal sites and areas of archaeological sensitivity, forming a landscape approach to the conservation of Aboriginal cultural heritage*".

Written responses from the consulted local Aboriginal community groups on the assessment by *Kelleher Nightingale* (2008) confirmed the findings and support for the recommendations**:**

DTAC agreed with and supported the recommendations made in the report. In addition, it requested that if any work is done outside the development area that DTAC be notified.

DCAC expressed its support of the information and recommendations made in the assessment report.

DACHA supported the findings of the field survey and agreed with the recommendations in the report. In addition, it expressed interest in continuing to be involved in any future works on the lands.

2.4 Impact avoidance

The PPR to rezone parts of the site and to allow the creation of super-lots is unlikely to cause any significant disturbance to the soil surface. After the creation of the super-lots it is expected that the boundaries of these new lots will be fenced. The proposed super-lots have been planned such that the new zone boundaries utilise existing internal fence lines. Some of these fences require maintenance or replacement. However, the proposed zone boundaries and the required maintenance and replacement fences will be located along the existing fence lines.

It is expected that fence maintenance and replacement is likely to require the digging of fence post holes along the existing fence lines. It must be noted that AHIMS sites 52-2-3344, 52-2-3346 and 52-2-3356 are located in proximity to fences surrounding the recently constructed Wivenhoe residential development. *Kelleher Nightingale* (2008) has assessed potential impacts of the Wivenhoe residential development and all three of these AHIMS sites have been left in situ (see Figure 2.2). In particular, AHIMS site 52-2-3346 is located close to the fence line in the south-western portion of the Wivenhoe residential development, however, this site is preserved in-situ within a parkland area that is to be managed as a bushfire Asset Protection Zone (APZ).

Considering the small areas of likely soil disturbance (possible new fence post holes along an existing fence line), and the proposed location of the new super-lot boundaries over existing fences, it is considered that the PPR with subsequent rezoning and subdivision into Super-lots will avoid any significant impact to known Aboriginal heritage artefacts or sites.

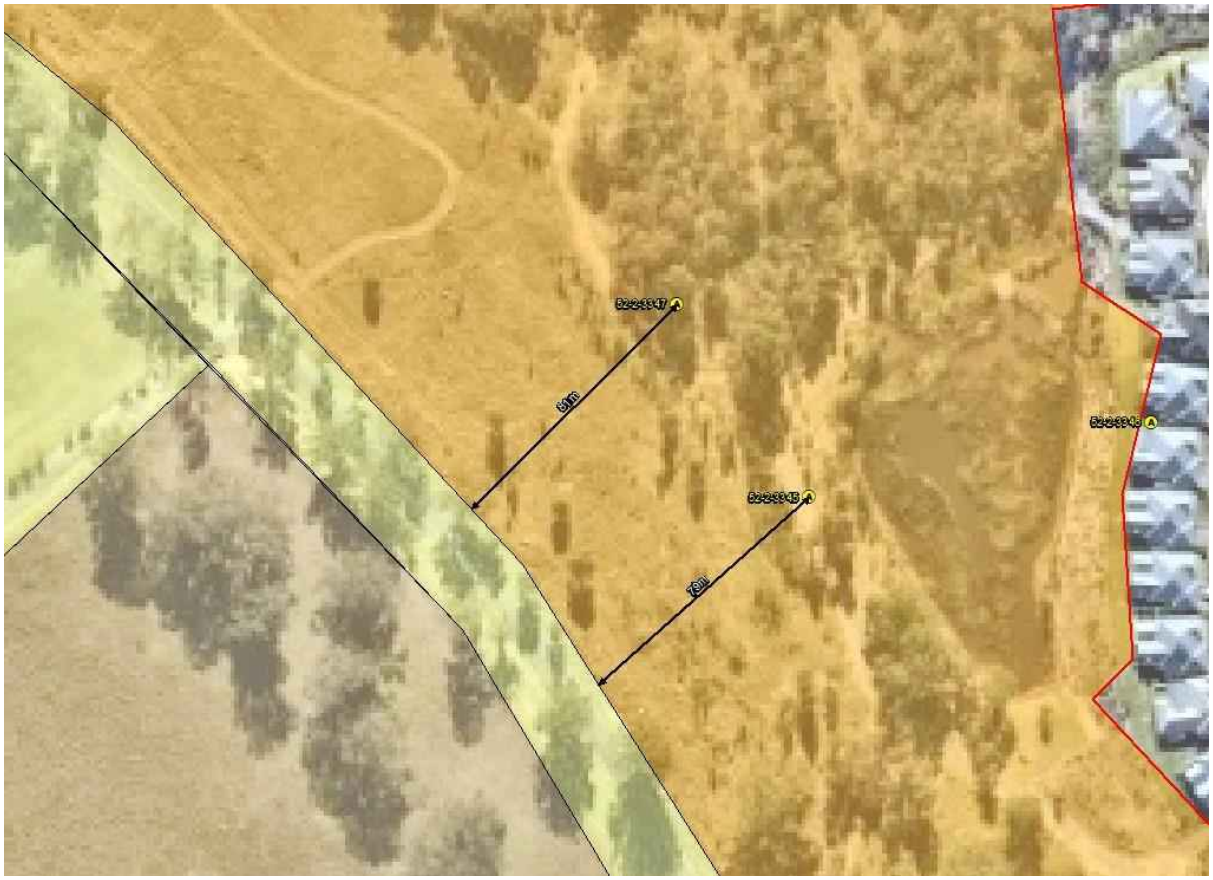

Figure 2-2 – detail from Figure 2.1 – Showing closest proximity of 3x AHIMS sites to existing fence line

2.5 Desktop assessment

There is a moderate possibility that undiscovered aboriginal objects may be located within the subject site. However, all remaining AHIMS sites are located within land proposed to be Conservation Areas or Biobank sites. Further, it is considered that the landscapes most likely to contain aboriginal artefacts (e.g. creeks and their surrounds, ridgelines, knolls, river flats etc.) will be conserved within the proposed E2 Lands. The following is a desktop assessment based on previous works in the region, within the study area, and incorporating landscape interpretation within the subject site.

2.5.1 Aboriginal heritage within the study area

Desktop assessment and multiple database searches (see Sections 2.2.1 and 2.2.2) identified twelve (12) Aboriginal heritage AHIMS sites within the study area. Details of these sites are provided in Table 2.2 below.

Table 2-2 - ***Impacts and Management Actions*** (adapted from Kelleher Nightingale 2008)

AHIMS Site	Type	Significance	Impact Assessment	Management / Mitigation Actions	Enhancement Strategy	Status after proposed rezoning
52-2-3344 MD1	Isolated artefact	Low - moderate	Site is situated within proposed Macquarie Grove Road Landscape Visual Buffer and on the edge of an APZ, Which is part of the existing Wivenhoe Village	Development and maintenance of the Landscape Visual Buffer and APZ should avoid this site if possible. The location of the site should be identified in the relevant conservation management plans, to avoid accidental damage during construction works and ensure the site is not directly or indirectly impacted by future uses, management or maintenance activities within the Landscape Visual Buffer. If it cannot be avoided, section 90 consent will be required for this site. The DECC Interim Community Consultation Requirements for Applicants would be required to be implemented, if it is not deemed to be an ongoing project. CBNTCAC confirmed there should be no issues with this site provided it is avoided by machinery and earthworks.		Located within the proposed E2 Environmental Conservation Zone, within the Visual Buffer between the existing Wivenhoe development and Macquarie Grove Rd. **To be retained in-situ.**
52-2-3345 MD2	Isolated artefact	Low - moderate	No impact. Site is within the conservation zone.	No action required. The location of the site should be identified in the relevant conservation management plans, to avoid accidental damage during construction works and ensure the site is not directly or indirectly impacted by future uses, management or maintenance activities within the conservation zone. The conservation of this site is supported by the local Aboriginal community groups.	The site is located near a proposed trail and could contribute to interpretation and recognition opportunities within the conservation zone. Further consultation with the local Aboriginal community groups would be required.	Located within the proposed E2 Environmental Conservation Zone, approximately 79 metres north-east of the proposed SP2 access corridor. **To be retained in-situ.**
52-2-3346	Isolated artefact	Low - moderate	No impact	No action required.	The site is in a proposed parkland within the current	Located within the existing parkland which forms part

AHIMS Site	Type	Significance	Impact Assessment	Management / Mitigation Actions	Enhancement Strategy	Status after proposed rezoning
MD3				The site is situated within proposed parkland within the LEP boundary and so will not be directly impacted. Placement of facilities or landscaping works within the public recreation area should ensure the site is not impacted. The location of the site should be identified in the relevant conservation management plans, to avoid accidental damage during construction works. The conservation of this site is supported by the local Aboriginal community groups.	LEP boundary. Signage in neighbourhood parklands could contribute to interpretation and recognition opportunities within the broader Wivenhoe lands. Further consultation with the local Aboriginal community groups would be required.	of the APZ for the existing Wivenhoe development. **To be retained in-situ**
52-2-3347 MD4	Isolated artefact	Moderate	No impact. Site is within the conservation zone.	No action required. The location of the site should be identified in the relevant conservation management plans, to avoid accidental damage during construction works and ensure the site is not directly or indirectly impacted by future uses, management or maintenance activities within the conservation zone. The conservation of this site is supported by the local Aboriginal community groups.	This site is located near a proposed trail and could contribute to interpretation and recognition opportunities within the conservation zone. Further consultation with the local Aboriginal community groups would be required.	Located within the proposed E2 Environmental Conservation Zone, approximately 81 metres north-east of the proposed SP2 access corridor. **To be retained in-situ**
52-2-3348 MD5	Isolated artefact	High	No impact. Site is within the conservation zone.	No action required. The location of the site should be identified in the relevant conservation management plans, to avoid accidental damage during construction works and ensure the site is not directly or indirectly impacted by future uses, management or maintenance activities within the conservation zone. The conservation of this site is supported by the local Aboriginal community groups. CBNTCAC recommended a section 87 permit be obtained to allow the salvage collection of the artefact, an axe head, from the site location.	The site is located near a proposed trail and could contribute to interpretation and recognition opportunities within the conservation zone. Further consultation with the local Aboriginal community groups would be required.	Located within the proposed E2 Environmental Conservation Zone, approximately 120 metres from any development. **To be retained in-situ**
52-2-3349	Isolated artefact	Moderate	No impact.	No action required.	The site is located near a proposed trail and could	Located within the proposed E2

AHIMS Site	Type	Significance	Impact Assessment	Management / Mitigation Actions	Enhancement Strategy	Status after proposed rezoning
MD6			Site is within the conservation zone.	The location of the site should be identified in the relevant conservation management plans, to avoid accidental damage during construction works and ensure the site is not directly or indirectly impacted by future uses, management or maintenance activities within the conservation zone. The conservation of this site is supported by the local Aboriginal community groups. CBNTCAC recommended the site be avoided by proposed pedestrian trails.	contribute to interpretation and recognition opportunities within the conservation zone. Further consultation with the local Aboriginal community groups would be required.	Environmental Conservation Zone, in excess of 200 metres from any development. **To be retained in-situ**.
52-2-3350 MD7	Open artefact scatter	High	Has been impacted? Site is situated on existing trail created by Endeavour Energy.	The site should be avoided by detailed design of the trail if possible. It is noted the recorded area associated with the site is extensive (covering a 100m x 100m area). Further assessment of the spatial extent of the site (on the ground) would be required to determine the impact of detailed design. Further consultation with the local Aboriginal community groups would be required. Management measures or mitigation actions would be required for this site, with relevant permit/consent issued by DECC. CBNTCAC advised there would be no issues and no need for section 90 consent if the site is avoided by proposed pedestrian trails.	Opportunity for enhancement and recognition. The site is located on a proposed trail and could contribute to interpretation and recognition opportunities within the conservation zone. Further consultation with the local Aboriginal community groups would be required.	Located within the proposed E2 Environmental Conservation Zone, approximately 130 metres from any development. **To be retained in-situ.**

AHIMS Site	Type	Significance	Impact Assessment	Management / Mitigation Actions	Enhancement Strategy	Status after proposed rezoning
52-2-3351 MD8	Isolated artefact	Low - Moderate	No impact Site is within the conservation zone	No action required. The location of the site should be identified in the relevant conservation management plans, to avoid accidental damage during construction works and ensure the site is not directly or indirectly impacted by future uses, management or maintenance activities within the conservation zone. The conservation of this site is supported by the local Aboriginal community groups.	The site is located near a proposed trail and could contribute to interpretation and recognition opportunities within the conservation zone. Further consultation with the local Aboriginal community groups would be required.	Located within the proposed E2 Environmental Conservation Zone, approximately 80 metres from any development. **To be retained in-situ.**
52-2-3352 PAD6	Potential Archaeological Deposit	Moderate to High potential	No impact Pad is wholly within the conservation zone	No action required. The location of the PAD should be identified, in the relevant conservation management plans, to avoid accidental damage during construction works and ensure the site is not directly or indirectly impacted by future uses, management or maintenance activities within the conservation zone. The conservation of this PAD is supported by the local Aboriginal community groups		Located wholly within the proposed E2 Environmental Conservation Zone, approximately 120 metres west of the southern housing group within the Wyvern development **To be retained in-situ.**
52-2-3353 MD-OS-1	Open artefact scatter	Low - Moderate	No direct impact. Site is situated in APZ between Precinct and Macquarie Grove Road.	No action required. The location of the site should be identified in the relevant conservation management plans, to avoid accidental damage during construction works. Any future works or use of this area, including but not limited to maintenance of the APZ, construction and maintenance of the transmission line, road construction or subdivision construction should ensure the site is not directly or indirectly impacted.		Located within the proposed E2 Environmental Conservation Zone, within the Visual Buffer between the existing Wivenhoe development and Macquarie Grove Rd. **To be retained in-situ.**

AHIMS Site	Type	Significance	Impact Assessment	Management / Mitigation Actions	Enhancement Strategy	Status after proposed rezoning
				CBNTCAC confirmed there should be no issues with this site provided it is avoided by machinery and earthworks.		
52-2-3355 MD-IF-1	Open artefact scatter	Low - moderate	Site is situated on transmission line easement and proposed trail.	The site should be avoided by detailed design of transmission line pole locations and trail if possible. If it cannot be avoided, section 90 consent will be required for this site. The DECC Interim Community Consultation Requirements for Applicants would be required to be implemented, if it is not deemed to be an ongoing project. CBNTCAC advised there would be no issues and no need for section 90 consent if the site is avoided.		Located within the proposed E2 Environmental Conservation Zone, approximately 25 metres south of the northern fenceline along Cobbitty Road. This site is in proximity to a transmission easement with an existing trail which have been constructed in order to avoid this site. **To be retained in-situ.**
52-2-3356 MD-ST-1	Not an Aboriginal site (Scarred trees)	None	No direct impact. Site is situated in APZ between residential precinct and Macquarie Grove Road.	No action required		Located within the proposed E2 Environmental Conservation Zone, within the Visual Buffer between the existing Wivenhoe development and Macquarie Grove Rd. **To be retained in-situ.**

2.5.2 Potential impact of the proposal on Aboriginal heritage within the study area

The proposal is for a PPR seeks to rezone parts of the site and allow the creation of super-lots (see Figure 2.1). These super-lots will then be managed by owners in accordance with their assigned purpose such as:

1. Central Mater Dei property (School) – to be Zoned SP2 Educational Establishment

2. Special Needs School / Facility - to be Zoned SP2 Educational Establishment

3. Natural Environment Conservation Lands - to be Zoned E2 Environmental Conservation

4. Rural Landscape holding – To be Zoned RU2 Rural Landscape

All of the twelve (12) AHIMS sites known to occur within the site (Lot 100, DP 1159926), Number 229, Macquarie Grove Road, Cobbitty will be retained within proposed new lot 204 which will be rezoned to E2 Environmental Conservation.

The proposed rezoning boundaries will follow existing fence lines and will not require any works or ground disturbance that would be likely to have any direct impact on any known or potential Aboriginal heritage items or previously recorded AHIMS site within the study area.

Despite the historical disturbance of the top layer of soil over much of the site for pastoral purposes, it is considered that the site does have potential to contain as yet undiscovered aboriginal artifacts. The main areas that are likely to contain aboriginal artifacts are along the numerous watercourses, watercourse confluences, adjoining flats, banks and riparian zones, on the lower slopes located just above the floodplain of the Nepean River and on ridgetops, knolls and rock outcrops. Some locations on higher ground in the western parts of the site may also contain artifacts from camps. Therefore, it is considered that no impacts on any known artifacts located within the Proposed E2 (Environmental Conservation) protected areas is likely to occur as a result of the proposed rezoning and subdivision into Super-lots.

3. CONCLUSIONS & RECOMMENDATIONS

3.1 Conclusions

Fourteen (14) sites within the study area (Lot 100 DP 1159926 – No. 229 Macquarie Grove Rd. Cobbitty) were listed within the *Aboriginal Heritage Information and Management System* (AHIMS).

These 14 sites have been studied in detail for the existing Wivenhoe residential development (*Kelleher Nightingale*, 2008). The Wivenhoe development required the recovery of one site which is no longer listed within the AHIMS database, while another site was determined to be not of aboriginal origin, and is also no longer listed. Therefore, there are now twelve (12) sites within the study area which are listed within the AHIMS database.

All twelve (12) of the remaining AHIMS sites are located within the proposed E2 Environmental Conservation area, or are incorporated into parkland which will be managed as a bushfire Asset Protection Zone (APZ) within the Wivenhoe village adjusted boundary. As a result, all known aboriginal artefacts within the study area will be retained in-situ within the proposed E2 zoned land.

Potential or undiscovered Aboriginal Heritage artefacts have a moderate likelihood to occur within the subject site. However, areas with the greatest potential to contain Aboriginal artifacts or aboriginal value such as the Nepean Riverbank, creeklines and the riparian zones will be retained within the proposed E2 zone. Therefore, it is considered that the proposal will result in minimal impacts on known or potential aboriginal deposits. Moreover, these deposits will be perpetually conserved and managed within the proposed E2 zone.

All other naturally vegetated areas within the site are intended to be retained and regenerated in accordance with the vegetation management plan and/or the weed control plan.

In the unlikely event that Aboriginal artefacts are identified during any weed control or land management activities, all works should cease. A qualified archaeologist is to be engaged to assess the item/s and to liaise with the local Aboriginal groups. The required consulting process will then facilitate alternative methods be employed to avoid impacts to Aboriginal heritage items. If soil or ground surface disturbance is unavoidable on or near an Aboriginal artefact, then an Aboriginal Heritage Impact Permit (AHIP) will be required before any resulting impacts are undertaken. Conversely, if no Aboriginal artefacts are identified, an AHIP application is not necessary and works can proceed without Aboriginal heritage constraint.

3.2 Recommendations

1. All known aboriginal artefacts or Potential Aboriginal Deposits (PADs) known within the proposed E2 Environmental Conservation zone are to be plotted and marked in the field and on any land management or vegetation management plans. These plans are to operate in such a way as to conserve all of these sites at their current location and in perpetuity.

2. If as yet undiscovered Aboriginal artefacts are identified during any excavation or soil disturbance phase of the site management, then works will cease in the affected area and the artifacts will be assessed in accordance with the *Code of Practice for*

Archaeological Investigation of Aboriginal Objects in NSW 2010, an AHIP will be required for any impacts arising from the works.

3. An Aboriginal Heritage Impact Permit (AHIP) is required if impacts to Aboriginal objects and/or places cannot be avoided. Applications for an AHIP must be accompanied by an assessment report conducted in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW 2010.* Applications must also provide evidence of consultation with the Aboriginal communities. Consultation is required under Part 8A of the NPW Regulation 2009 and is to be conducted in accordance with the *Aboriginal Heritage Consultation Requirements for Proponents.*

4. BIBLIOGRAPHY

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APPENDIX 1. AHIMS SITE CARDS

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional information ☐

SITE IDENTIFICATION					
Site name	MD1			**NPWS Site Number**	52-2-3344
Owner/manager	Sisters of the Good Samaritan				
Owner Address					
LOCATION					
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.				
How to get to the site	See attached topographic map				
1:250,000 map name				**NPWS map code**	
AMG Zone	56	**AMG Easting**	288278	**AMG Northing**	6232209
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)
NPWS District	Sydney			**NPWS Zone**	
Portion no.				**Parish**	
SITE DESCRIPTION					
Site type(s)	Isolated Find			**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	MD1 is located along a low ridge line running adjacent to Macquarie Grove Road. The artefact was located approximately 2-3m from the fence line and 10m from the road. The area appears moderately to heavily disturbed, although heavy grass growth obscures a large majority of the area. The artefact was located on a small area of exposure, and consists of a silcrete proximal flake with evidence of retouch along one margin.				

Version: June 1998	Data entered by:	Date entered:

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Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT

Land form	Ridge	**Aspect**		**Slope**	
Mark position of the site					
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.	**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	approx. 500m	**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wooded, near wetlands	**Vegetation**	Cumberland Plain woodland, native grasslands and exotic species.		
Edible plants		**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.

SITE MANAGEMENT

Site condition	Very disturbed	Moderate to high disturbance; Low to moderate significance.
Management recommendations	Report recommends Section 90.	

Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING

Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

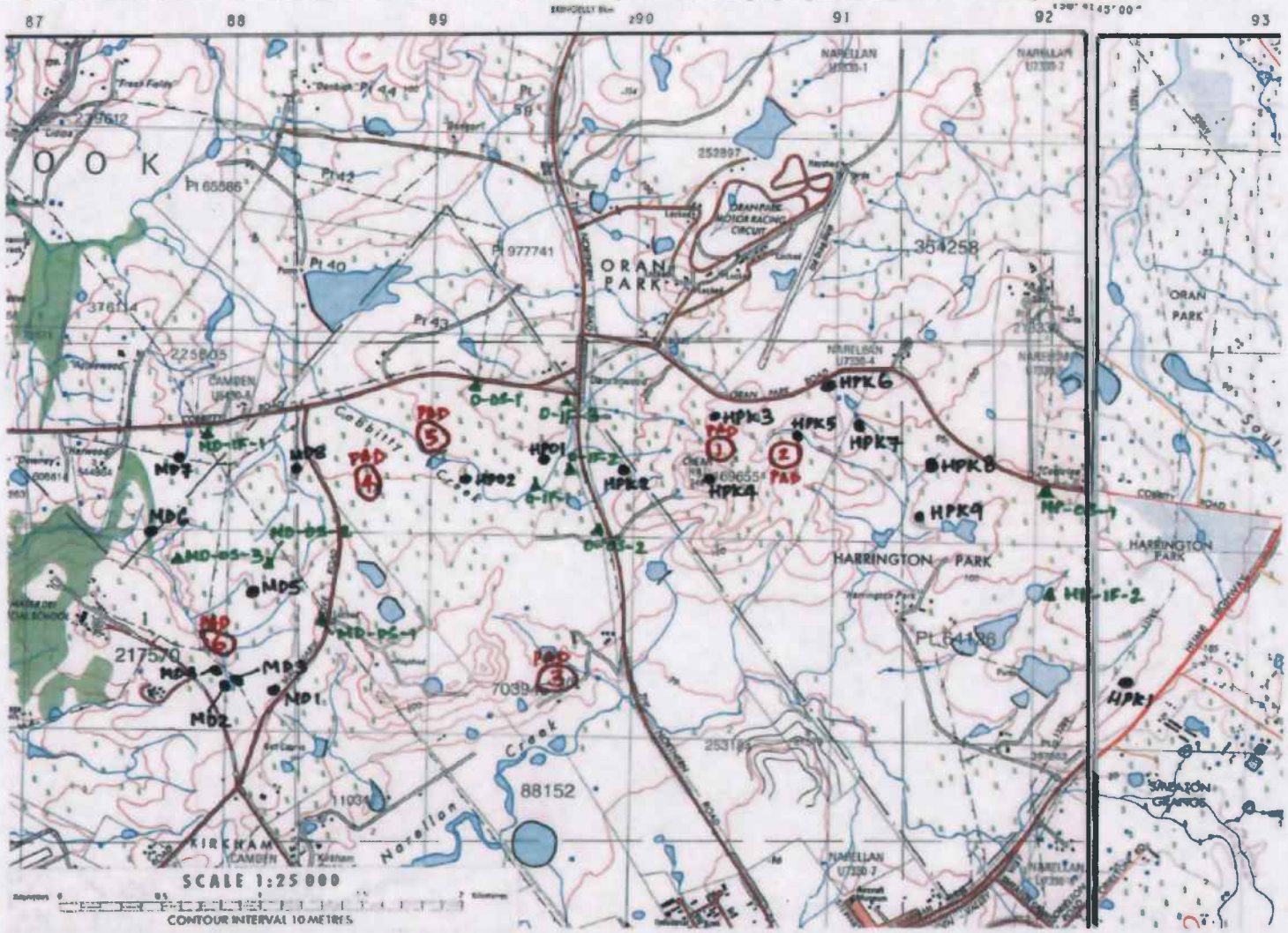
Version: June 1998	Data entered by:	Date entered:

MD 1 Site Photos

Plate 1: Site MD 1 looking south along fence line. Macquarie Grove Road on the left.

Plate 2: Silcrete artefact from MD 1

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional information ☐

SITE IDENTIFICATION

Site name	MD2 Camden	**NPWS Site Number**	52-2-3345
Owner/manager	Sisters of the Good Samaritan		
Owner Address			

LOCATION

Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.						
How to get to the site	See attached topographic map						
1:250,000 map name					**NPWS map code**		
AMG Zone	56	**AMG Easting**	287995		**AMG Northing**	6232233	
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)		
NPWS District	Sydney				**NPWS Zone**		
Portion no.					**Parish**		

SITE DESCRIPTION

Site type(s)	Isolated Find	**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns. axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	MD2 is located along the edge of a dam, approximately 10-15m to the west of the waterline. The dam is located at the upper reaches of Sickle Creek and appears to conform to the natural landscape, with dam banks raised on the northern side to stop movement of water into the natural channel. The location of the artefact is along a raised spur which does not appear to be man made, the western side of the dam is substantially higher than the eastern side (location of MD3). The area appears heavily disturbed, mainly due to to what appears to be heavy ploughing of the area, with associated disturbance of the area, with associated disturbance of the subsurface deposit. The area has been totally clearedf although stands of new growth trees have occupied the northern section of the dam where it drains into the original creek. One silcrete artefact was found at this site, red-pink in colour, 20mm long.		

Version: June 1998	Data entered by: JK	Date entered:

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT

Land form	Upper sloper	**Aspect**		**Slope**	
Mark position of the site					
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.	**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	10-15m	**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wooded, near wetlands	**Vegetation**	Cumberland Plain woodland, native grasslands and exotic species.		
Edible plants		**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.

SITE MANAGEMENT

Site condition	Very disturbed	High disturbance; low - moderate significance	
Management recommendations	Report recommends site be conserved.		
Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING

Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines	Yes		
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

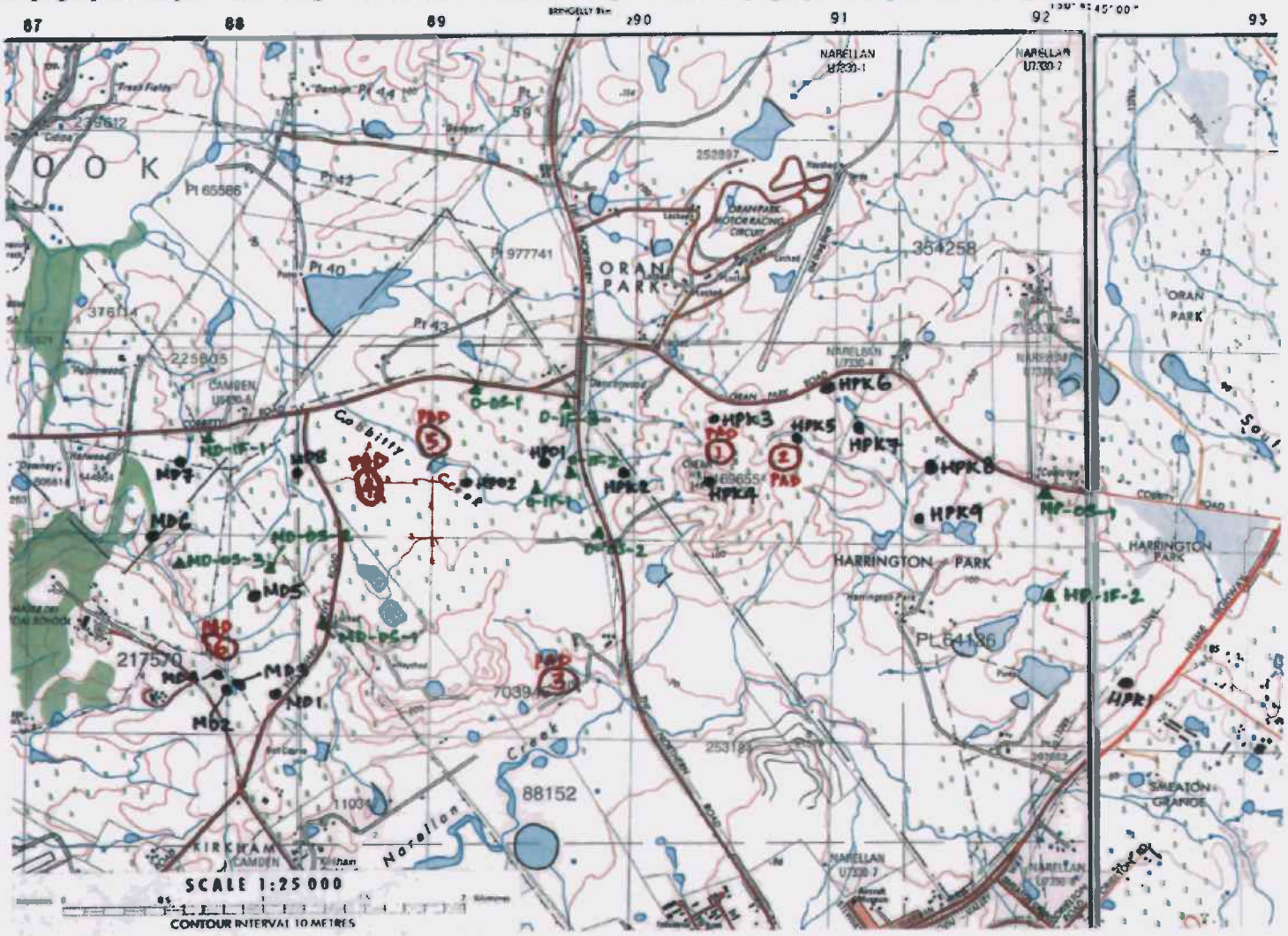
Version: June 1998	Data entered by:	Date entered:

MD2 and MD3 Site Photos

Plate 1: Sites MD 2 and MD 3 located by the side of dam. Photo looking west.

Plate 2: Silcrete artefacts from MD 2 and 3.

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N N↑



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional Information ☐

SITE IDENTIFICATION					
Site name	MD3			**NPWS Site Number**	52-2-3346
Owner/manager	Sisters of the Good Samaritan				
Owner Address					
LOCATION					
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.				
How to get to the site	See attached topographic map				
1:250,000 map name				**NPWS map code**	
AMG Zone	56	**AMG Easting**	288091	**AMG Northing**	6232254
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)
NPWS District	Sydney			**NPWS Zone**	
Portion no.				**Parish**	
SITE DESCRIPTION					
Site type(s)	Isolatedf Find			**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	Located on the opposite side (eastern) of the dam to MD2, this site is situated on a slightly raised area approximately 10m to the west of the waterline. Previous installation of a power pole appears to have disturbed localilsed areas of the site, and there appears to be active erosion in the area. Vegetation cover is sparse, with patchy grass cover over the raised area. The site is situated at the base of a slope running west of the main ridgeline off Macquarie Grove Road. The paddock where this is situated has been heavily ploughed both in the past and recently. One silicified tuff flake was located at this site (pink and tan in colour, 20mm long).				

Version: June 1998	Data entered by:	Date entered:

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Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT					
Land form	lower slope	**Aspect**		**Slope**	
Mark position of the site					
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.	**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	within 20m	**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wooded, near wetlands	**Vegetation**	Cumberland Plain woodland, native grasslands and exotic species.		
Edible plants		**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.

SITE MANAGEMENT		
Site condition	Very disturbed	Moderate to high disturbance; low-moderate significance.
Management recommendations	Report recommends site be conserved.	

Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING			
Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines	Yes		
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

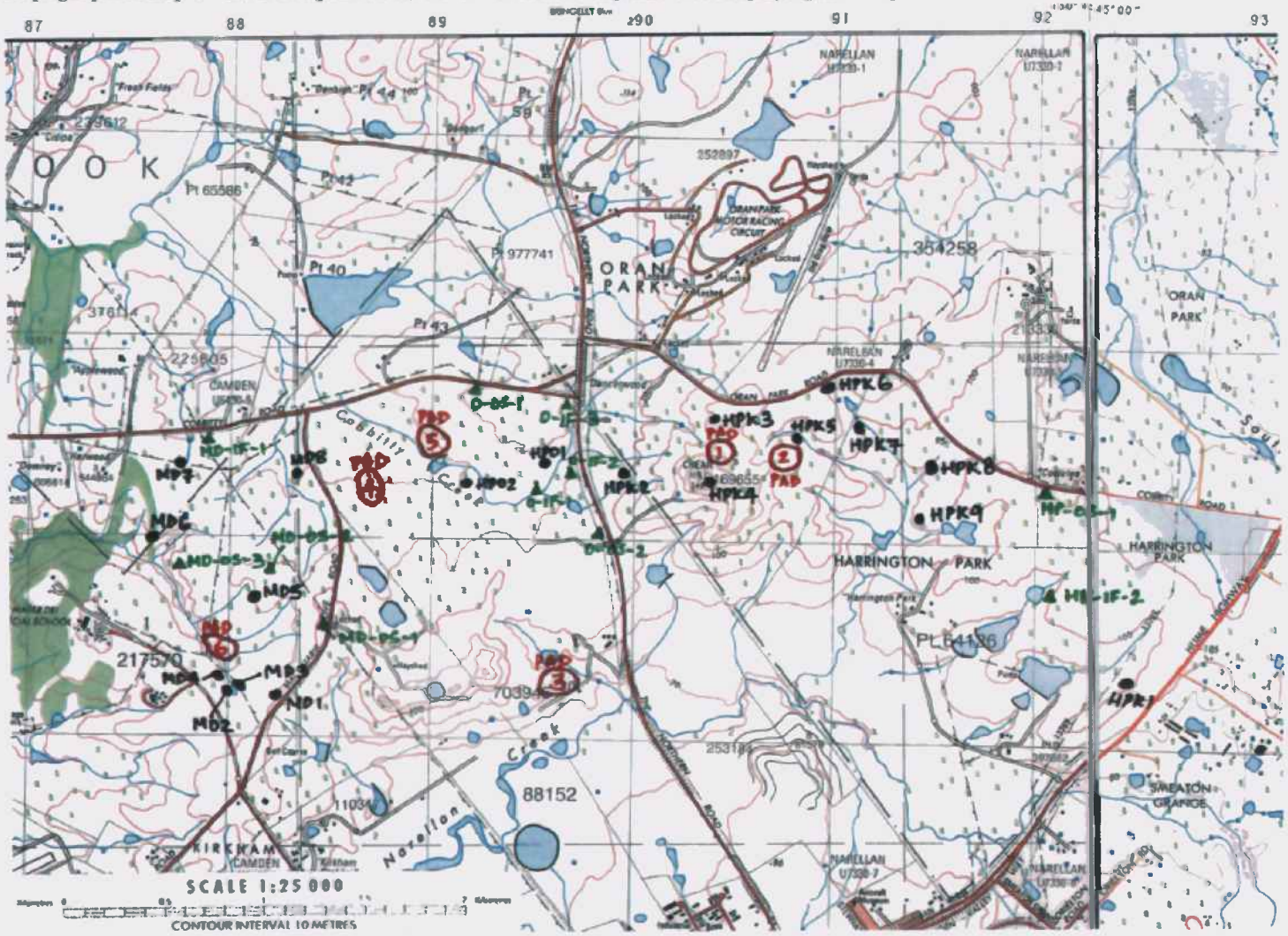
Version: June 1998	Data entered by:	Date entered:

MD2 and MD3 Site Photos

Plate 1: Sites MD 2 and MD 3 located by the side of dam. Photo looking west.

Plate 2: Silcrete artefacts from MD 2 and 3.

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional information ☐

SITE IDENTIFICATION					
Site name	MD4			**NPWS Site Number**	52-2-3347
Owner/manager	Sisters of the Good Samaritan				
Owner Address					
LOCATION					
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.				
How to get to the site	See attached topographic map				
1:250,000 map name				**NPWS map code**	
AMG Zone	56	**AMG Easting**	287958	**AMG Northing**	6232287
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)
NPWS District	Sydney			**NPWS Zone**	
Portion no.				**Parish**	
SITE DESCRIPTION					
Site type(s)	Isolated Find			**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	Located approximately 40-50m to the north-west of MD2, the artefact was located along the same heavily ploughed area. However it was located at the base of a raised spur running down towards the main drainage channel. The spur or mound has new growth trees and grass cover so surface exposure was minimal. It is estimated that the site would extend over the raised area running towards the creek. The mound appears minimally to moderately disturbed although it was difficult to assess subsurface disturbance. One silcrete distal flake was located at this site.				

Version: June 1998	Data entered by:	Date entered:

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT

Land form	upper slope	**Aspect**		**Slope**	
Mark position of the site					
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.	**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	50m	**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wooded, near wetlands	**Vegetation**	Cumberland Plain woodland, native grasslands and exotic species.		
Edible plants		**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.

SITE MANAGEMENT

Site condition	Disturbed	Low-moderate disturbance; moderate significance.	
Management recommendations	Report recommends site be conserved.		
Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING

Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

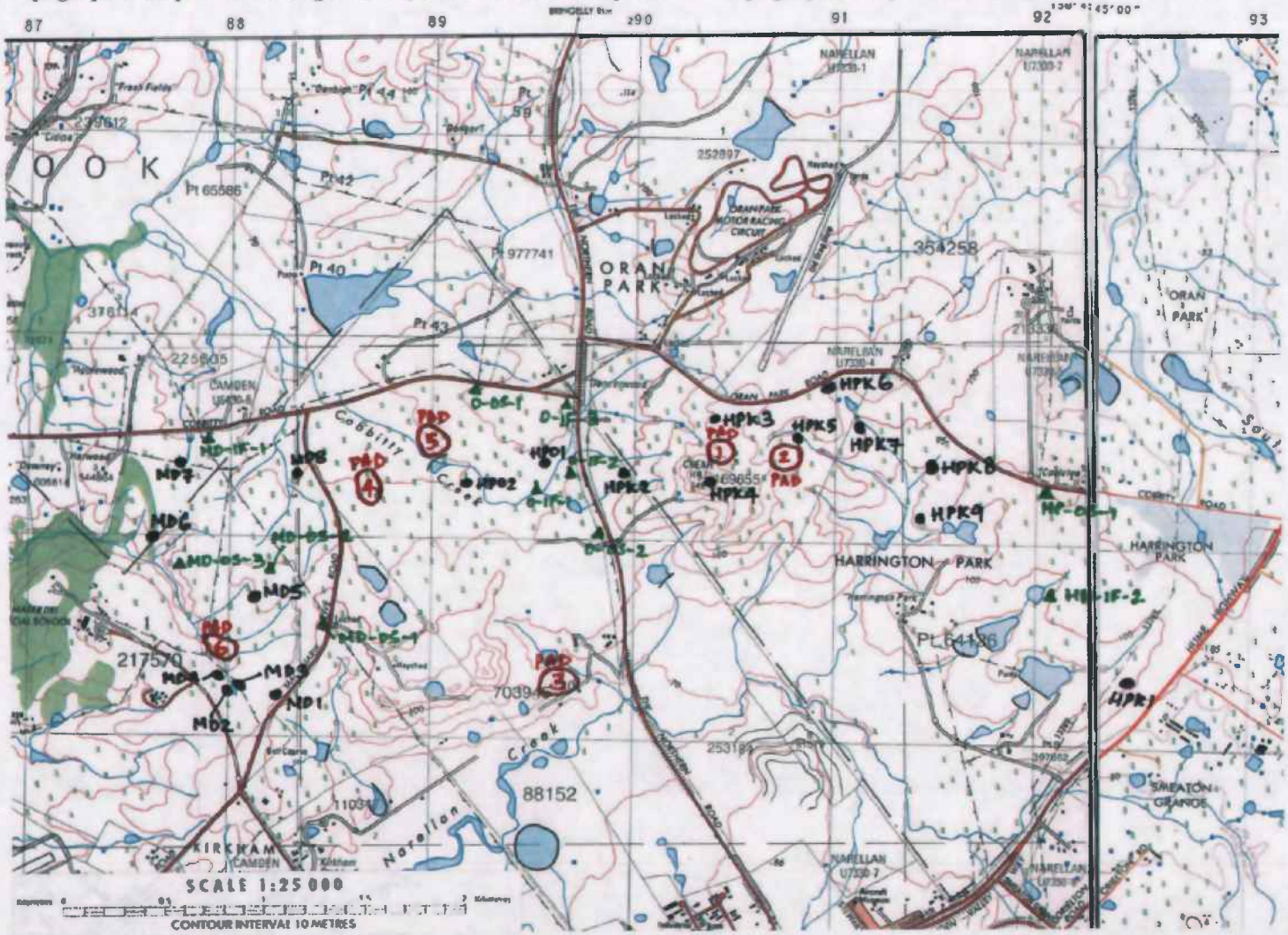
Version: June 1998	Data entered by:	Date entered:

MD 4 Site Photos

Plate 1: Site MD 4 – artefact found at the edge of ploughed area. The extent of the site would encompass the mounded area behind the artefact.

Plate 2: Artefact found at MD 4.

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional Information ☐

SITE IDENTIFICATION					
Site name	MD5			**NPWS Site Number**	52-2-3348
Owner/manager	Sisters of the Good Samaritan				
Owner Address					
LOCATION					
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.				
How to get to the site	See attached topographic map				
1:250,000 map name				**NPWS map code**	
AMG Zone	56	**AMG Easting**	288102	**AMG Northing**	6232562
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)
NPWS District	Sydney			**NPWS Zone**	
Portion no.				**Parish**	
SITE DESCRIPTION					
Site type(s)	Isolated Find			**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet./dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	MD5 is located near the mid point of a spur running west from the main ridgeline running adjacent to Macquarie Grove Road, the spur is one of a series running in this direction. The area has relatively dense grass and leaf cover with surface visibility minimal. The area appears to have been cleared at some time in the past, although individual mature Eucalypts are also present scattered throughout the area. There is no visible evidence of ploughing or other subsurface disturbance. The ground edged axe was located in dense leaf litter and grass, and appears to have some recent damage. One 70 x 60 mm axe fragment was located at this site, of igneous material, tan in colour, damaged.				

Version: June 1998	Data entered by:	Date entered:

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT

Land form	ridge/mid-slope	**Aspect**		**Slope**	
Mark position of the site					
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.	**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	250m	**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wooded, near wetands	**Vegetation**	Cumberland Plain woodland, native grasslands and exotic species.		
Edible plants		**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.

SITE MANAGEMENT

Site condition	Good	Low disturbance; high significance.	
Management recommendations	Report recommends site be conserved.		
Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING

Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

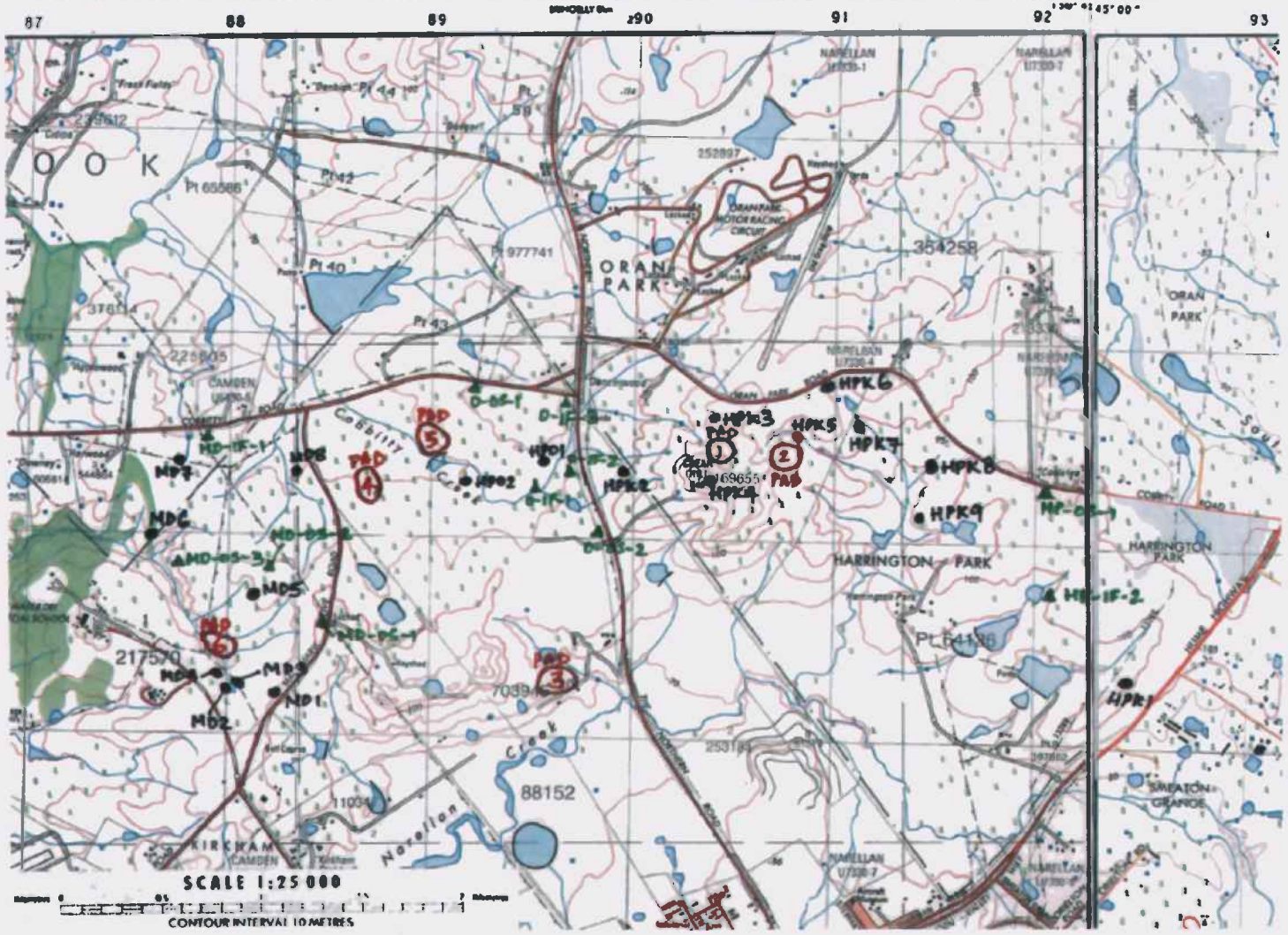
Version: June 1998	Data entered by:	Date entered:

MD5 Site Photos

Plate 1: Site MD 5 – located in the middle of a gently sloping spur line with drainage lines on both sides.

Plate 2: Ground axe fragment from MD 5. Some areas of recent damage apparent.

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional Information ☐

SITE IDENTIFICATION					
Site name	MD6			**NPWS Site Number**	52-2-3349
Owner/manager	Sisters of the Good Samaritan				
Owner Address					
LOCATION					
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.				
How to get to the site	See attached topographic map				
1:250,000 map name				**NPWS map code**	
AMG Zone	56	**AMG Easting**	287635	**AMG Northing**	6233053
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)
NPWS District	Sydney			**NPWS Zone**	
Portion no.				**Parish**	
SITE DESCRIPTION					
Site type(s)	Isolated Find			**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	MD6 is located along the mid-slope of a southern reaching spur near the western boundary of the study area. The artefact was located in an area of exposure with only sparse grass cover although moderate to heavy leaf litter. There is a stand of mature trees running along the spur approximately 3 to 5m to the west of where the artefact was found. The slope becomes steep as it nears the creek (which along most of its length and particularly at this point is very deep with vertical walls of up the 5m with moderate to high erosion). A very high quality banded chert artefact with retouch was located at this site.				

Version: June 1998 Data entered by: Date entered:

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT

Land form	ridge/mid-slope	**Aspect**		**Slope**	
Mark position of the site					
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.	**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	100m	**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wooded, near wetlands	**Vegetation**	Cumberland Plain woodland, native grasslands and exotic species.		
Edible plants		**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.

SITE MANAGEMENT

Site condition	Disturbed	Low-moderate; moderate significance.	
Management recommendations	Report recommends site be conserved.		
Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING

Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

Version: June 1998	Data entered by:	Date entered:

MD 6 Site Photos

Plate 1: MD 6 – artefact marked by flag.

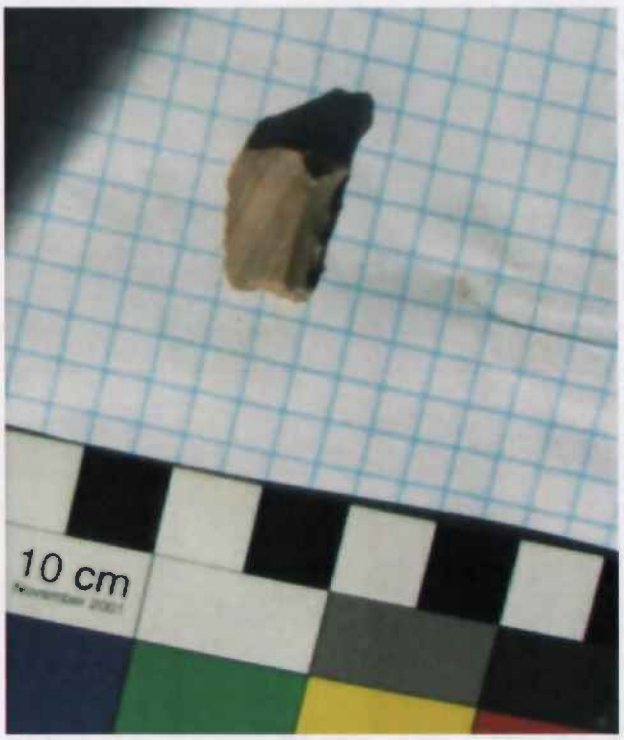
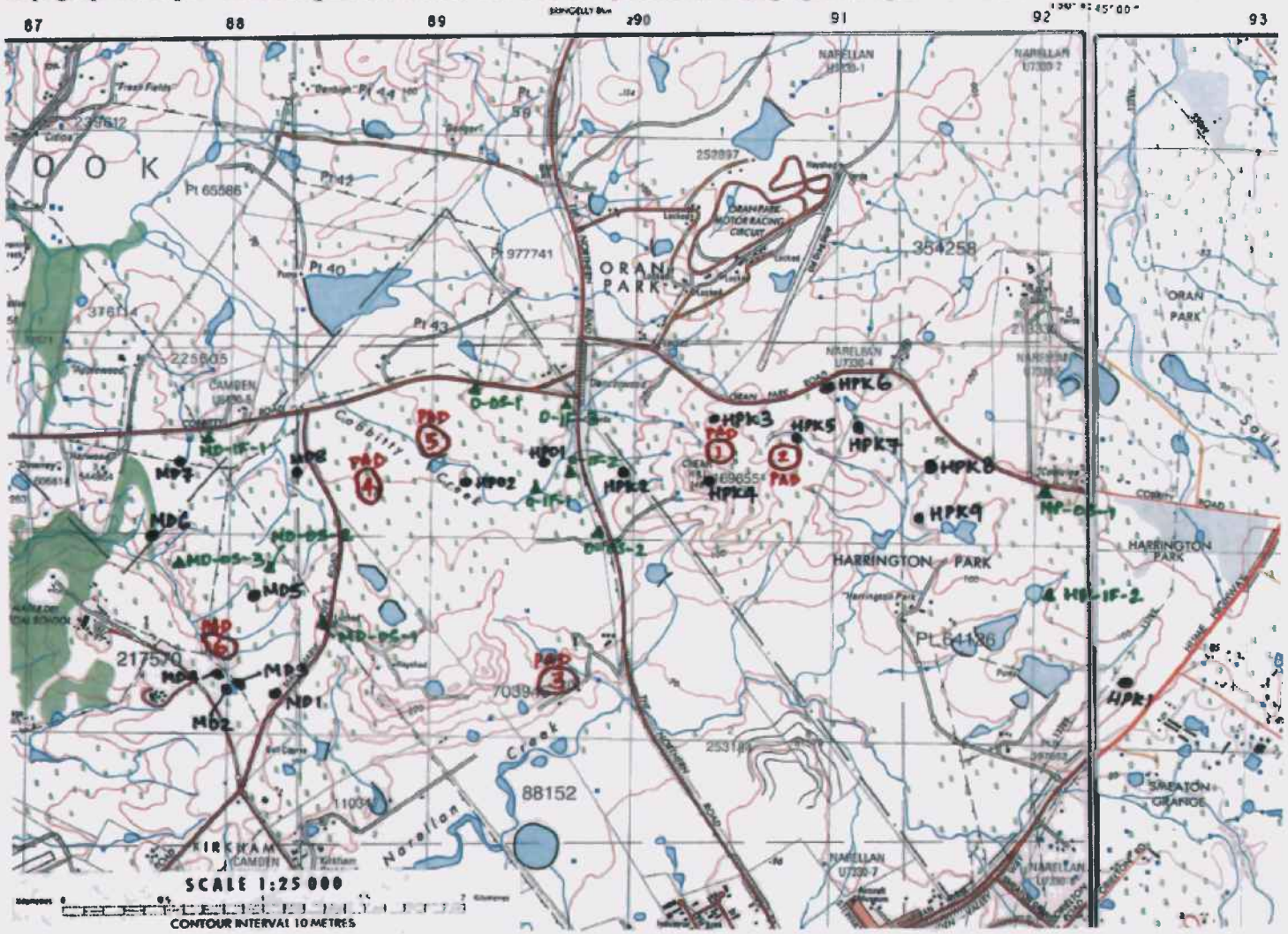


Plate 2: Chert Artefact from site MD 6

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N N↑



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional information ☐

SITE IDENTIFICATION					
Site name	MD7			**NPWS Site Number**	52-2-3350
Owner/manager	Sisters of the Good Samaritan				
Owner Address					
LOCATION					
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.				
How to get to the site	See attached topographic map				
1:250,000 map name				**NPWS map code**	
AMG Zone	56	**AMG Easting**	287747	**AMG Northing**	6233378
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)
NPWS District	Sydney			**NPWS Zone**	
Portion no.				**Parish**	
SITE DESCRIPTION					
Site type(s)	Open Camp Site			**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	This is an extensive site with artefacts scattered across an area roughly 100m x 100m. Artefacts were located in very dense leaf litter with exposure predominantly located along a dirt track associated with a transmission line running east to west along the northern edge of the site. The site is situated on a gently slopping hill leading to drainage lines to the north. The area appears minimally disturbed with mature Eucalypts scattered across the entire area. Some recent clearing has occurred, although no visible subsurface disturbance is evident. The main concentration of visible artefacts is located along and beside the dirt track, although isolated artefacts were located over a wider area. The identified artefacts consist of 14 silcrete flakes and flake fragments and four chert flakes.				

Version: June 1998	Data entered by:	Date entered:

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Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT						
Land form	ridge/mid-slope		**Aspect**		**Slope**	
Mark position of the site						
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.		**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	1km		**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wetlands		**Vegetation**	Native grasslands and exotic species.		
Edible plants			**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)						
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Isolated Finds & PADs.	

SITE MANAGEMENT		
Site condition	Good	Low disturbance; high significance.
Management recommendations	Report recommends site be conserved.	

Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING			
Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

Version: June 1998	Data entered by:	Date entered:

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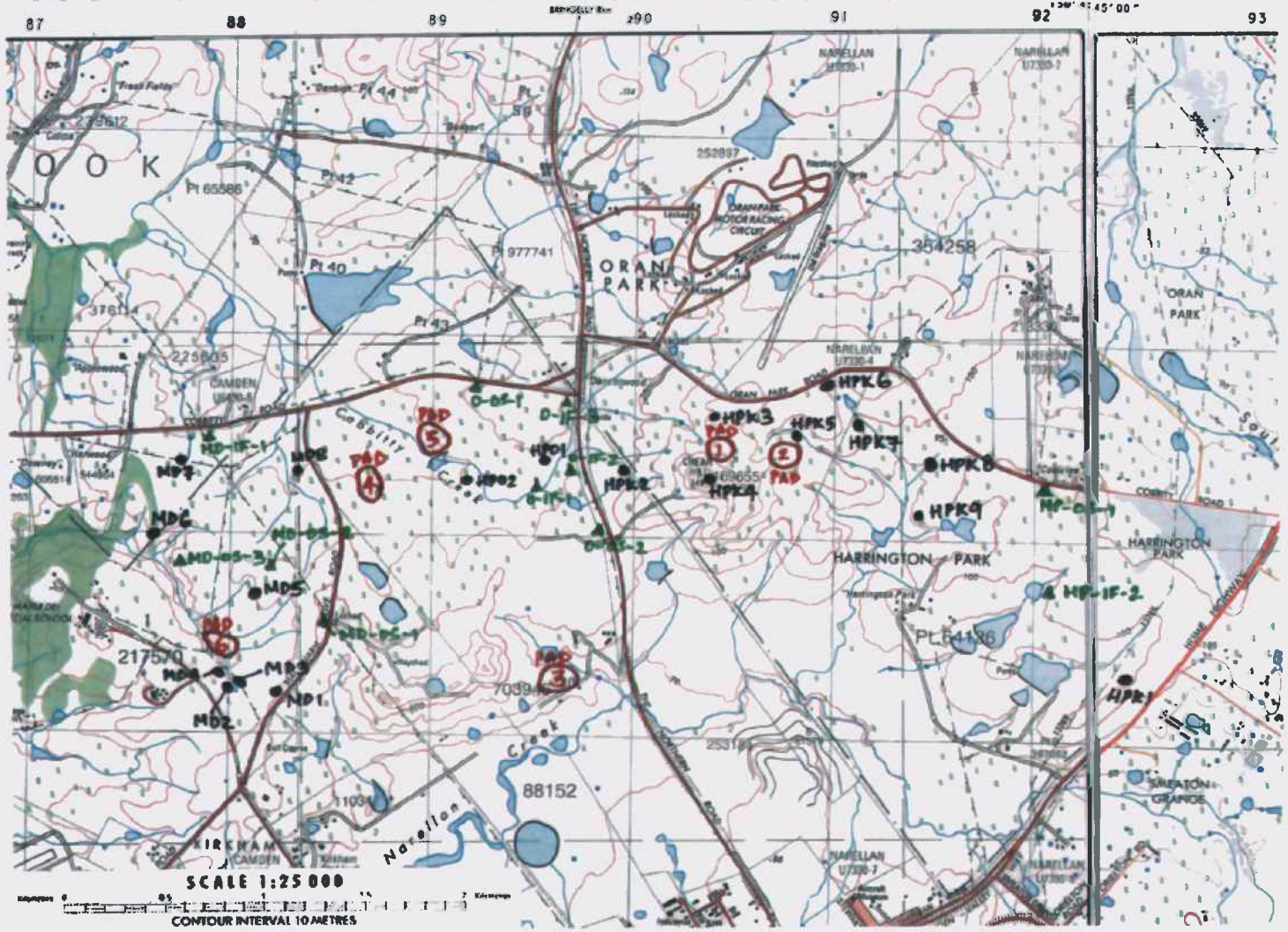
MD 7 Site Photos

Plate 1: MD 7 – an extensive site. Photo showing the main concentration of visible artefacts located beside track. (Looking east)

Plate 2: MD 7 looking north – artefacts were located scattered throughout the area.

Plate 3: MD 7 sample of artefacts.

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N N↑



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional Information ☐

SITE IDENTIFICATION					
Site name	MD8			**NPWS Site Number**	52-2-3351
Owner/manager	Sisters of the Good Samaritan				
Owner Address					
LOCATION					
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.				
How to get to the site	See attached topographic map				
1:250,000 map name				**NPWS map code**	
AMG Zone	56	**AMG Easting**	288331	**AMG Northing**	6233371
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)
NPWS District	Sydney			**NPWS Zone**	
Portion no.				**Parish**	
SITE DESCRIPTION					
Site type(s)	Isolated Find			**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns. axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	This site is located in the low lying area in the northeast section of the Mater Dei lands. The artefact was located on a dirt track in an area that had been cleared, and exhibiting dense new growth shrubs. The area appears to be a low alluvial bench associated with the western branch of the upper tributaries to Cobbity Creek. The Silcrete artefact was situated in a moderately disturbed context.				

Version: June 1998	Data entered by:	Date entered:

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT						
Land form	lower slope/alluvial			**Aspect**		**Slope**
Mark position of the site						
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.			**Land use/effect**	Extensive clearing and modification for pastures and grazing.	
Distance from drinking water	100m			**Source**	Tributary of the Nepean River	
Resource zone (eg. estuarine, river, forest)	wetlands			**Vegetation**	Native grasslands and exotic species.	
Edible plants				**Faunal resources** (include shellfish)		
Other exploitable resources (eg. ochre)						
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.	

SITE MANAGEMENT		
Site condition	Disturbed	Low-moderate disturbance; low-moderate significance.
Management recommendations	Report recommends site be conserved.	

Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

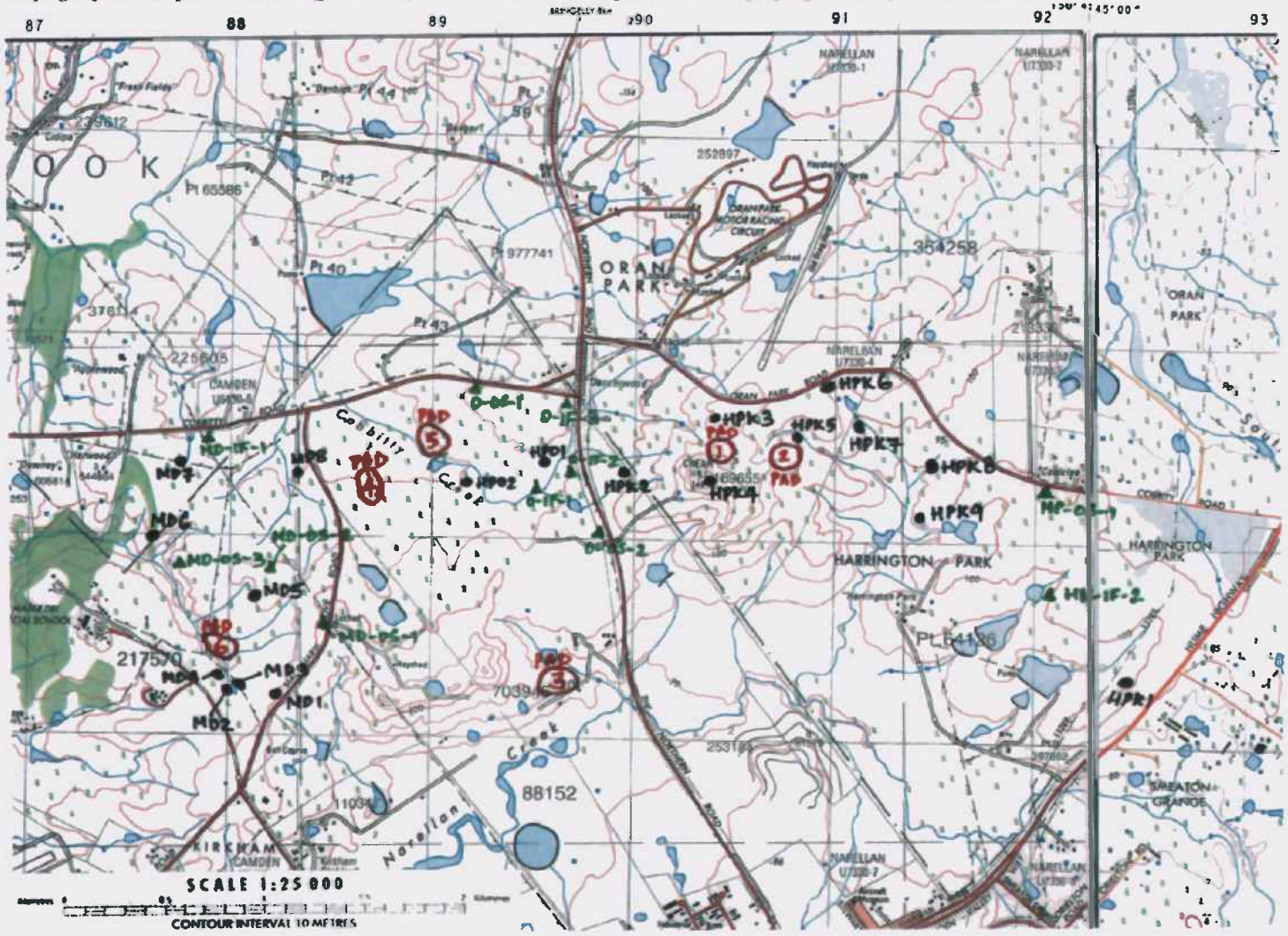
SITE INSPECTION AND RECORDING			
Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

Version: June 1998	Data entered by:	Date entered:

MD 8 Site Photo

Plate 1: MD 8 – flag marks the location of the artefact. (Photo looking south)

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☒ Additional information ☐

SITE IDENTIFICATION					
Site name	PAD 6			**NPWS Site Number**	52-2-3352
Owner/manager	Sisters of the Good Samaritan				
Owner Address					

LOCATION							
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.						
How to get to the site	See attached topographic map						
1:250,000 map name					**NPWS map code**		
AMG Zone	56	**AMG Easting**	287947		**AMG Northing**	6232407	
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)		
NPWS District					**NPWS Zone**		
Portion no.					**Parish**		

SITE DESCRIPTION			
Site type(s)	PAD	**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	Located within the Mater Dei lands, the Pad is located at the westernmost point of a western reaching spur. The spur terminates at Sickles Creek, a very deep drainage line with steep walls. Large areas of this creek appear to be experiencing heavy erosion. The PAD itself is located along the gently sloping apex of the spur, with heavy grass cover and leaf litter, as well as scattered new growth and mature trees. It is not clear the extent of surface or subsurface disturbance, however it appears to be minimal. This spur is one in a series spurs running off the main ridgeline running adjacent to Macquarie Grove Road such as the spur with site MD5 located on it.		

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT					
Land form	ridge/lower slope	**Aspect**		**Slope**	
Mark position of the site					
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.	**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	within 5m	**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wooded, near wetlands	**Vegetation**	Cumberland Plain woodland, native grasslands and exotic species.		
Edible plants		**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.

SITE MANAGEMENT			
Site condition	Good	Low disturbance; moderate - high significance.	
Management recommendations	Report recommends site be conserved.		
Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

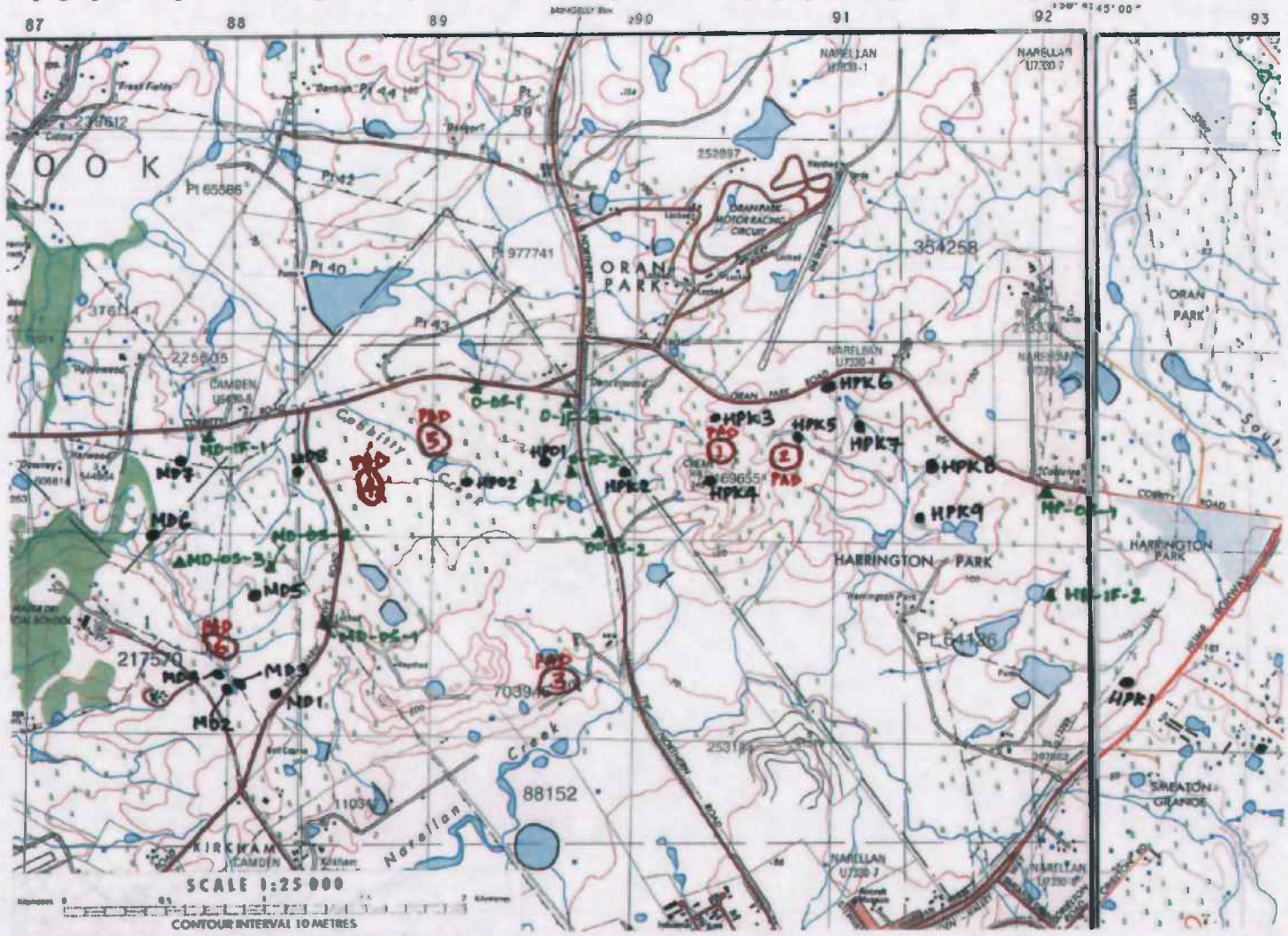
SITE INSPECTION AND RECORDING			
Reason for investigation			
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

Version: June 1998	Data entered by:	Date entered:

Site Photos PAD 6: potential archaeological deposit
Phase 2 Photos:

Plate 1: PAD 6 – located on lower spur leading directly into major drainage line at the back of picture.

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N N↑



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☐ Additional information ☒

SITE IDENTIFICATION					
Site name	MD-OS-1			**NPWS Site Number**	52-2-3353
Owner/manager	Sisters of the Good Samaritan				
Owner Address					

LOCATION					
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.				
How to get to the site	See attached topographic map				
1:250,000 map name				**NPWS map code**	
AMG Zone	56	**AMG Easting**	288468	**AMG Northing**	6232583
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000	**Map name**	Camden 9029-4N (map published in 1987)
NPWS District				**NPWS Zone**	
Portion no.				**Parish**	

SITE DESCRIPTION			
Site type(s)	Open Campsite	**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet,/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	Artefacts found at this site were located in an area of surface exposure on the upper slope of a low ridgeline running adjacent with Macquarie Grove Road. The area appears moderately disturbed, with introduced gravels evident across the whole area. The scarred trees associated with this site were assessed as being of historic origin, and are most likely be associated with tree lopping. Four artefacts were located in the same area as the Phase 1 survey, however it is not clear whether they are the same as previously identified. The stone axe fragment located in Phase 1 over 100m to the south of this area was not relocated. Artefacts located consisted of Silcrete flakes and flake fragments and one silicified tuff flake.		

Version: June 1998	Data entered by:	Date entered: JK 31/01/07

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT						
Land form	ridge/mid-slope		**Aspect**		**Slope**	
Mark position of the site						
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.		**Land use/effect**	Extensive clearing and modification for pastures and grazing.		
Distance from drinking water	500m		**Source**	Tributary of the Nepean River		
Resource zone (eg. estuarine, river, forest)	wooded, near wetlands		**Vegetation**	Cumberland Plain woodland, native grasslands and exotic species.		
Edible plants			**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)						
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.	

SITE MANAGEMENT		
Site condition	Very disturbed	Moderate-high disturbance; low-moderate significance.
Management recommendations	Report recommends section 90.	

Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING			
Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

Version: June 1998	Data entered by:	Date entered:

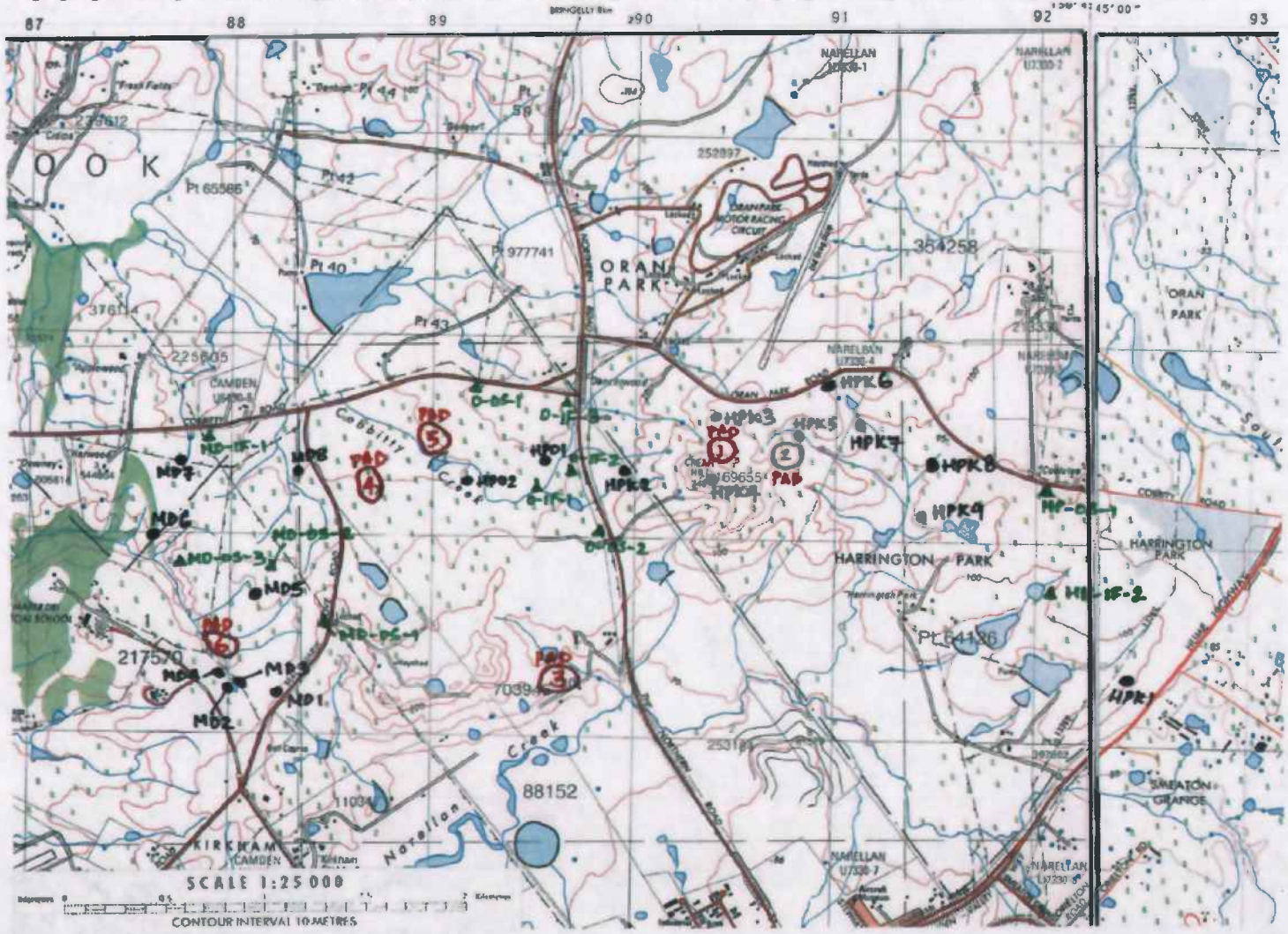
MD-OS-1 Site Photos, Phase 2

Plate 1: MD-OS-1 looking south – location of artefacts and scarred trees

Plate 2: Artefacts from MD-OS-1

Plate 3: Scars associated with tree lopping at MD-OS-1 (site MD_ST_1)

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N N↑



Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☐ Additional information ☒

SITE IDENTIFICATION					
Site name	MD-IF-1			**NPWS Site Number**	52-2-3355
Owner/manager	Sisters of the Good Samaritan				
Owner Address					

LOCATION							
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.						
How to get to the site	See attached topographic map						
1:250,000 map name						**NPWS map code**	
AMG Zone	56	**AMG Easting**	287860			**AMG Northing**	6233477
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000		**Map name**	Camden 9029-4N (map published in 1987)	
NPWS District						**NPWS Zone**	
Portion no.						**Parish**	

SITE DESCRIPTION			
Site type(s)	Open Campsite	**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead. likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	The artefact found at this site was located on a dirt track approximately 40m to the south of a gate leading on to Cobbity Road. Only one artefact was identified during the initial assessment, with a further two artefacts located during this assessment. The original artefact was described as an indurated mudstone flake, the two located recently were silicified tuff distal flake fragments. The site category has changed from an isolated find to an open campsite.		

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT

Land form	ridge		**Aspect**		**Slope**
Mark position of the site					
Local rock type	Shale, medium grained sandstone, carbonaceous claystone, laminate and minor coal bands.		**Land use/effect**	Extensive clearing and modification for pastures and grazing.	
Distance from drinking water	250m		**Source**	Tributary of the Nepean River	
Resource zone (eg. estuarine, river, forest)	wetlands		**Vegetation**	Native grasslands and exotic species.	
Edible plants			**Faunal resources** (include shellfish)		
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register** Yes	**Other site types include**	Open Camp Sites and PADs.	

SITE MANAGEMENT

Site condition	Very disturbed	Moderate-high disturbance; low-moderate significance.
Management recommendations	Report recommends site be conserved.	

Have artefacts been removed from site	No	**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING

Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference	Harrington Park 2 Mater Dei Rezoning Project Phase 2	**ASR report**	C-

Version: June 1998	Data entered by:	Date entered:

MD_IF_1 Site photos, Phase 2

Plate 1: MD-IF-1 – Artefacts found along track. Two more were located within the vicinity of the artefact found previously.

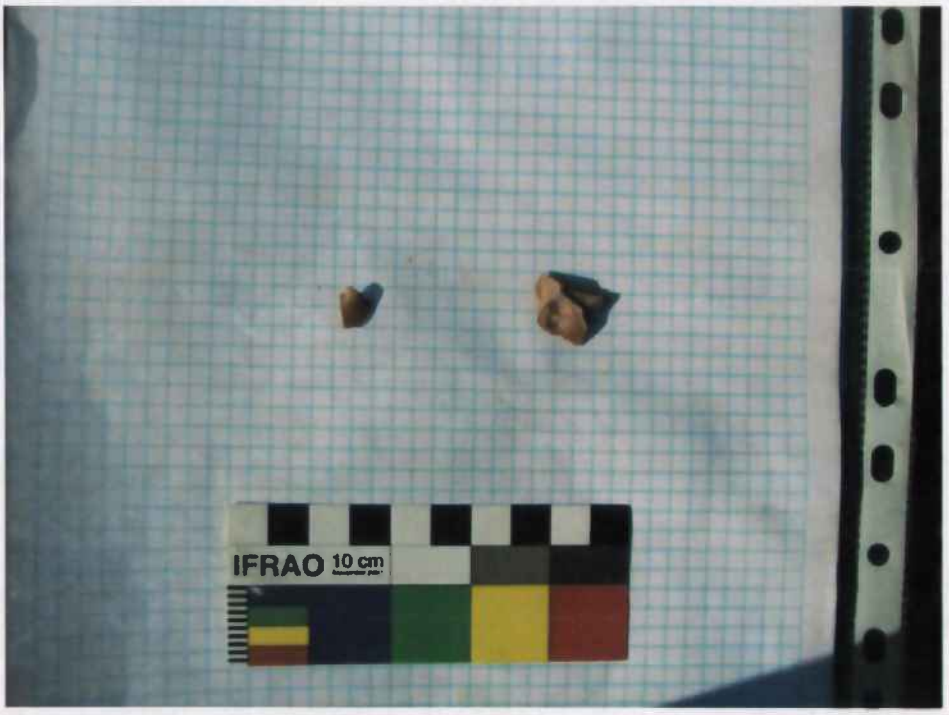


Plate 2: Additional artefacts found at MD-IF-1

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

New Recording ☐ Additional Information ☒

SITE IDENTIFICATION					
Site name	MD-ST-1			**NPWS Site Number**	52-2-3356
Owner/manager	Sisters of the Good Samaritan				
Owner Address					

LOCATION							
Location	Camden, west of Macquarie Grove Rd and south of Cobbity Rd.						
How to get to the site	See attached topographic map. Trees are associated with site MD-OS-1.						
1:250,000 map name						**NPWS map code**	
AMG Zone	56	**AMG Easting**	288468			**AMG Northing**	6232583
Method for grid reference	Hand-held GPS	**Map scale (if method = map)**	1:25,000		**Map name**		Camden 9029-4N (map published in 1987)
NPWS District						**NPWS Zone**	
Portion no.						**Parish**	

SITE DESCRIPTION			
Site type(s)		**Site type code (NPWS use only)**	
Description of site and contents CHECKLIST: eg. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock. DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types. ART: area of decorated surface, motifs, colours, wet/dry pigment, engraving technique, no. of figures, sizes, patination. BURIALS: number & condition of bone, position, age, sex, associated artefacts. TREES: number, alive, dead, likely age, scar shape, position, size, patterns, axe marks, regrowth. QUARRIES: rock type, debris, recognisable artefacts, percentage quarried	Scarred trees relocated and scars assessed as being footholds of European origin related to tree lopping. **Attach photographs and sketches, eg. plan & section of shelter.**		

Version: June 1998	Data entered by:	Date entered:

Aboriginal Sites Register of NSW

NPWS, PO Box 1967, Hurstville NSW 2220

Standard Site Recording Form

SITE ENVIRONMENT

Land form		**Aspect**		**Slope**	
Mark position of the site					
Local rock type		**Land use/effect**			
Distance from drinking water		**Source**			
Resource zone (eg. estuarine, river, forest)		**Vegetation**			
Edible plants		**Faunal resources** (include shellfish)			
Other exploitable resources (eg. ochre)					
Are there other sites in the locality	Yes	**Are they in the Sites Register**	Yes	**Other site types include**	Open Camp Sites and PADs.

SITE MANAGEMENT

Site condition			
Management recommendations	Not an Aboriginal site, no action recommended.		
Have artefacts been removed from site		**When**	
By whom		**Deposited at**	
Consent applied for	☐	**Consent issued**	☐
Date of issue		**Consent number**	

SITE INSPECTION AND RECORDING

Reason for investigation	Aboriginal Heritage Assessment (Phase 2 Survey)		
Were local Aborigines contacted or present for the recording	☐ Not contacted ☒ Contacted and present ☐ Contacted but not present	**Names and addresses**	Leanne Hestelow Tharawal LALC PO Box 440 Picton NSW 2571 Glenda Chalker Cubbitch Barta NTCAC 55 Nightingale Rd Pheasants Nest NSW 2574
Is the site important to local Aborigines			
Verbal/written reference sources	Harrington Park 2 Mater Dei Rezoning Project Phase 2 Indigenous Heritage Assessment and Conservation Strategy	**ASR report number(s)**	C- C-

Version: June 1998	Data entered by:	Date entered:

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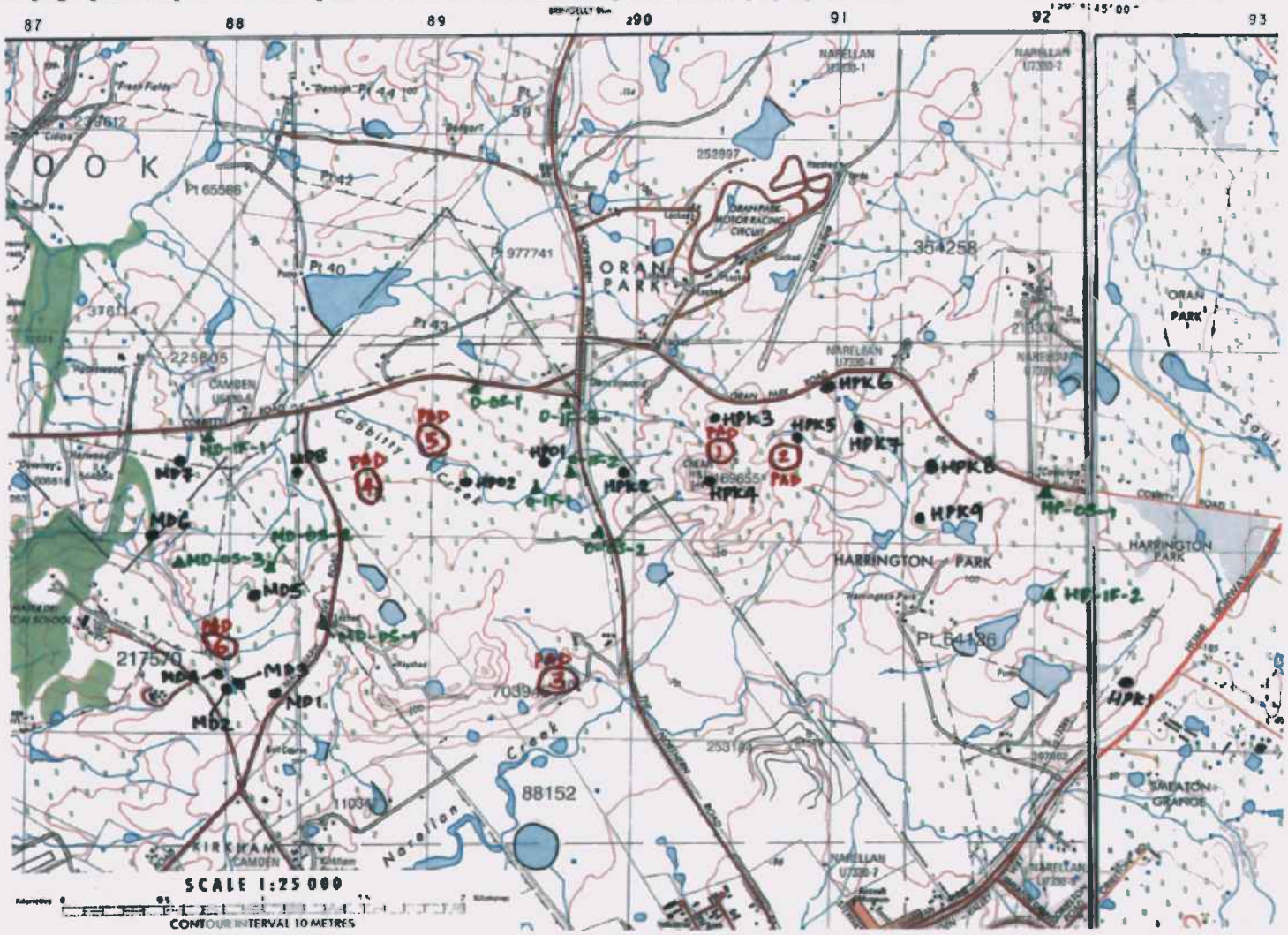
MD-ST-1 Site Photo

Plate 1: Scars re-assessed to be associated with European tree lopping.

Camden Topographic Map 2nd Edition (pub 1987) 9029-4-N and Campbelltown Topographic Map 2nd Edition (pub 1985) 9029-1-N N↑



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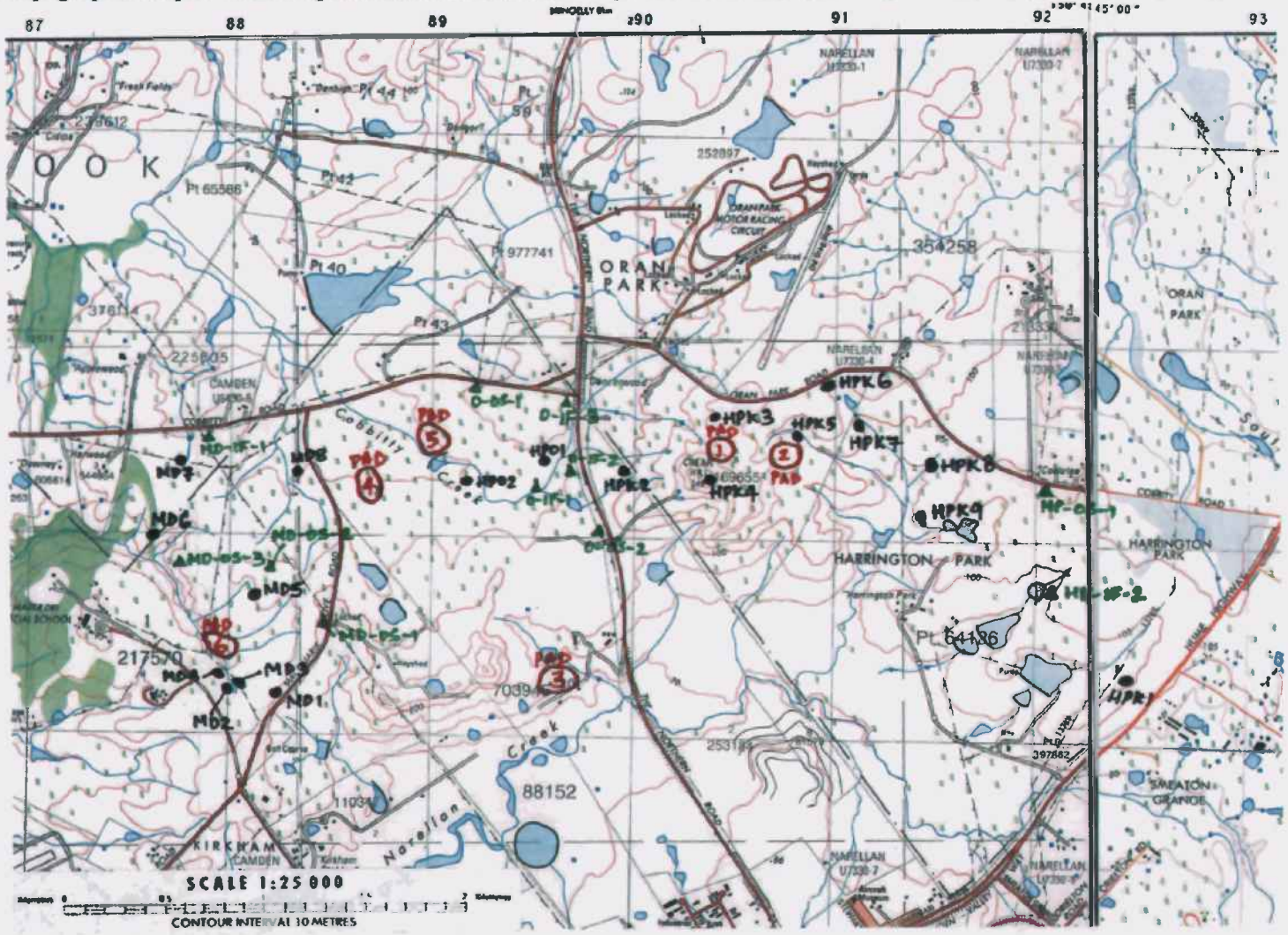
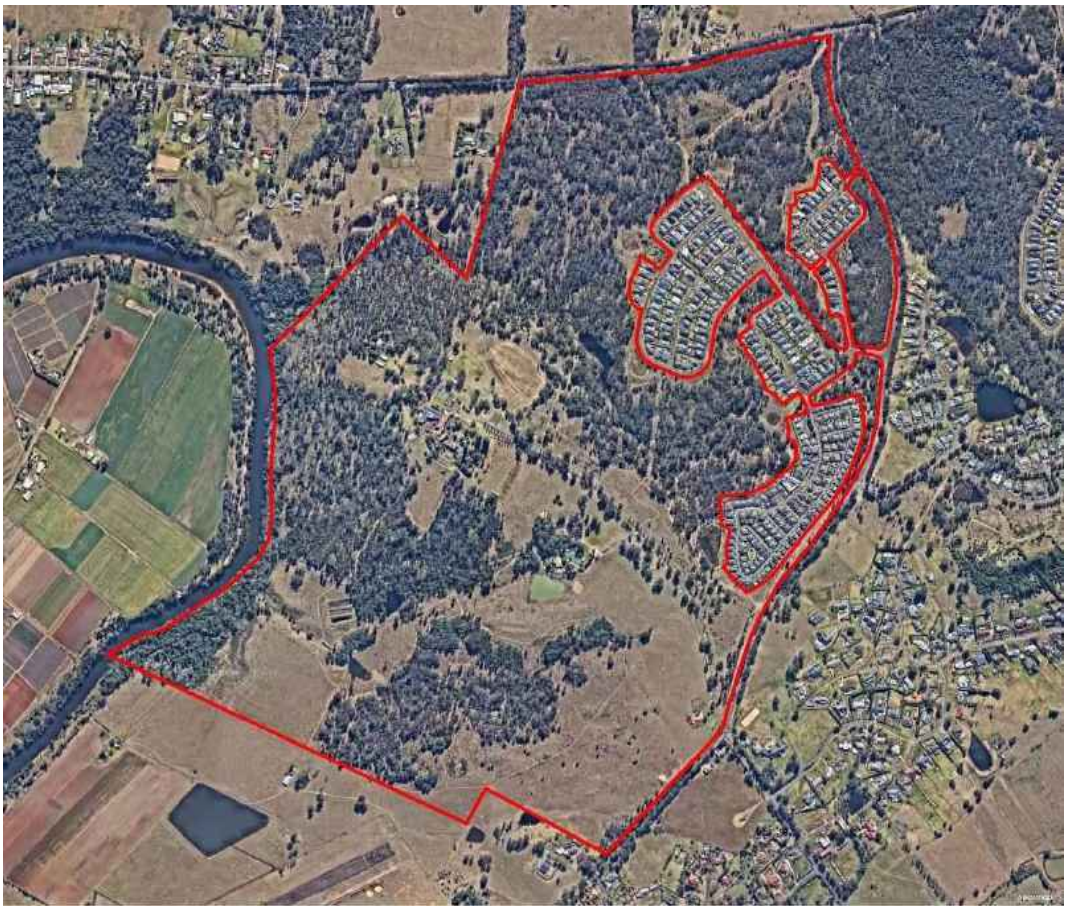


Annex G

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

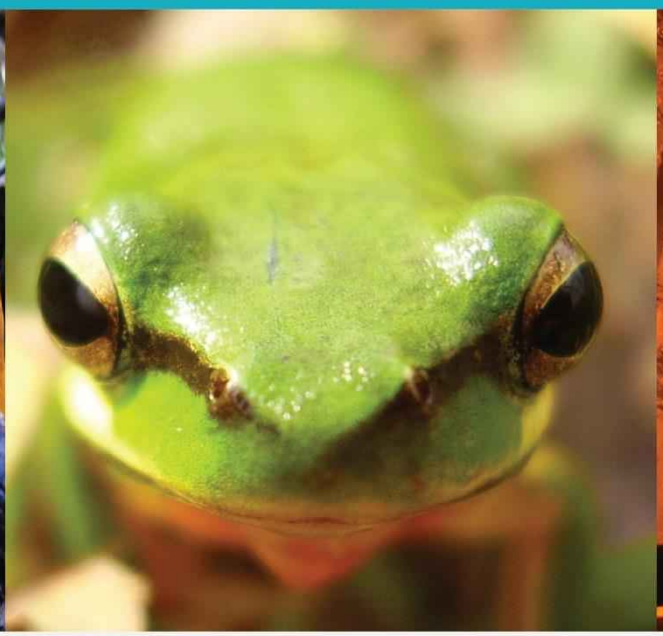
PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "G"
Bushfire Protection Assessment
Travers Bushfire & Ecological

October 2021

TRAVERS BUSHFIRE & ECOLOGY

A TBE ENVIRONMENTAL COMPANY


BUSHFIRE PROTECTION ASSESSMENT

Planning Proposal Request to Facilitate Future Superlot Subdivision and Landuse Rationalisation

Lot 100, DP 1159926

229 Macquarie Grove Road, Cobbitty

Under Section 9.1(2) of the *EP&A Act* (1979) and

Section 100B of the Rural Fires Act 1997

3 September 2021

(REF: 21PPS02)

BUSHFIRE PROTECTION ASSESSMENT

Planning Proposal Request to facilitate future Superlot Subdivision and landuse rationalisation

Lot 100, DP 1159926 229 Macquarie Grove Road, Cobbitty

Report Authors:	Heath Fitzsimmons B. Sc. BPAD-2 56336
Plans prepared:	Sandy Cardow
Checked by:	Nicole van Dorst B. App. Sc. Grad. Dip., BPAD-L3 23610
Approved by:	Michael Sheather-Reid B. Nat. Res. Managing Director
Date:	3/09/21
File:	21PPS02

BPAD Bushfire Planning & Design Accredited Practitioner Level 3

Disclaimer:

This report has been prepared to provide advice to the client on matters pertaining to the particular and specific development proposal as advised by the client and / or their authorised representatives. This report can be used by the client only for its intended purpose and for that purpose only. Should any other use of the advice be made by any person, including the client, then this firm advises that the advice should not be relied upon. The report and its attachments should be read as a whole and no individual part of the report or its attachments should be relied upon as meaning it reflects any advice by this firm. The report does not suggest or guarantee that a bush or grass fire will not occur and or impact the development. This report advises on policies and specifications published by the NSW Rural Fire Service e.g. Planning for Bush Fire Protection 2019.

The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features are to be confirmed by a registered surveyor.

EXECUTIVE SUMMARY

This bushfire protection assessment has been undertaken for the proposed rezoning geared to facilitate a superlot subdivision and landuse of 229 Macquarie Grove Road, Cobbitty in June 2016.

This report identifies matters for consideration for the planning proposal request (PPR) and highlights the required bushfire protection measures, including asset protection zones (APZs), for future development under *Ministerial Direction 4.4 'Planning for Bush Fire Protection*'. This Ministerial Direction made under Section 9.1(2) of the *EP&A Act* requires Council to consult with the Commissioner of the RFS and to take into account any comments by the Commissioner and to have regard to the planning principles of *PBP* (detailed within Section 1.5.3).

The key principle for the proposal is to ensure that future development is capable of complying with *PBP*. Planning principles for the PPR include the provision of adequate access including perimeter roads, establishment of adequate APZs for future development, specifying minimum lot depths to accommodate APZs and the introduction of controls which avoid placing inappropriate developments in hazardous areas and placement of combustible material in APZs.

Our assessment has found that the PPR adequately addresses bushfire risk and the land is suitable for development in the context of that risk. The PPR results in a decrease in the area that can be used for residential purposes, and of itself creates no increase in demand on the local road network, emergency services or infrastructure, further, it has and no implications for adjoining land.

The assessment has concluded that there is the capacity for future development on site to conform to the planning principles of *PBP 2019* and *Ministerial Direction 4.4 'Planning for Bush Fire Protection*'.

GLOSSARY OF TERMS

AHIMS	Aboriginal Heritage Information System
APZ	asset protection zone
AS1596	*Australian Standard – The storage and handling of LP Gas*
AS2419	*Australian Standard – Fire hydrant installations*
AS3745	*Australian Standard – Planning for emergencies in facilities*
AS3959	*Australian Standard – Construction of buildings in bushfire-prone areas 2018*
BAL	*bushfire attack level*
BCA	*Building Code of Australia*
BSA	bushfire safety authority
DA	development application
DLUP	Development Land Use Plan
EEC	Endangered ecological community
EP&A Act	*Environmental Planning & Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
FFDI	forest fire danger index
IPA	inner protection area
LEP	Local Environmental Plan
LGA	local government area
m	metres
NCC	*National Construction Code*
OPA	outer protection area
PBP 2019	*Planning for Bush Fire Protection 2019*
PPR	*Planning Proposal Request*
RF Act	*Rural Fires Act 1997*
RFS	NSW Rural Fire Service
SFR	short fire run
SFPP	special fire protection purpose
TBE	*Travers bushfire & ecology*

TABLE OF CONTENTS

TABLE

FIGURES

ATTACHMENTS

1. INTRODUCTION

Travers bushfire & ecology has been engaged to undertake a bushfire protection assessment of the PPR and superlot subdivision and zoning rationalisation and subsequent development of the site located at Lot 100, DP 1159926, Macquarie Grove Road, Cobbitty.

The proposal is located on land identified as bushfire prone on the *Camden* bushfire prone land map (refer Figure 1-1). Ministerial Direction *4.4 Planning for Bushfire Protection* issued under Section 9.1(2) of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* identifies matters for consideration for planning proposals that will affect, or are in proximity to land mapped as bushfire prone. Although no residential use is proposed at this time, the proposed subdivision does pertain to land that can lawfully be used for residential and school purposes as such the provisions of Section 100B of the *Rural Fires Act 1997* apply. This requires that a bush fire safety authority (BFSA) must be obtained prior to the granting of development consent.

In accordance with this direction, the relevant planning authority must ensure the objectives of Direction 4.4 are met and is required to consult with the Commissioner of the NSW Rural Fire Service (RFS) and to take into account any comments by the Commissioner.

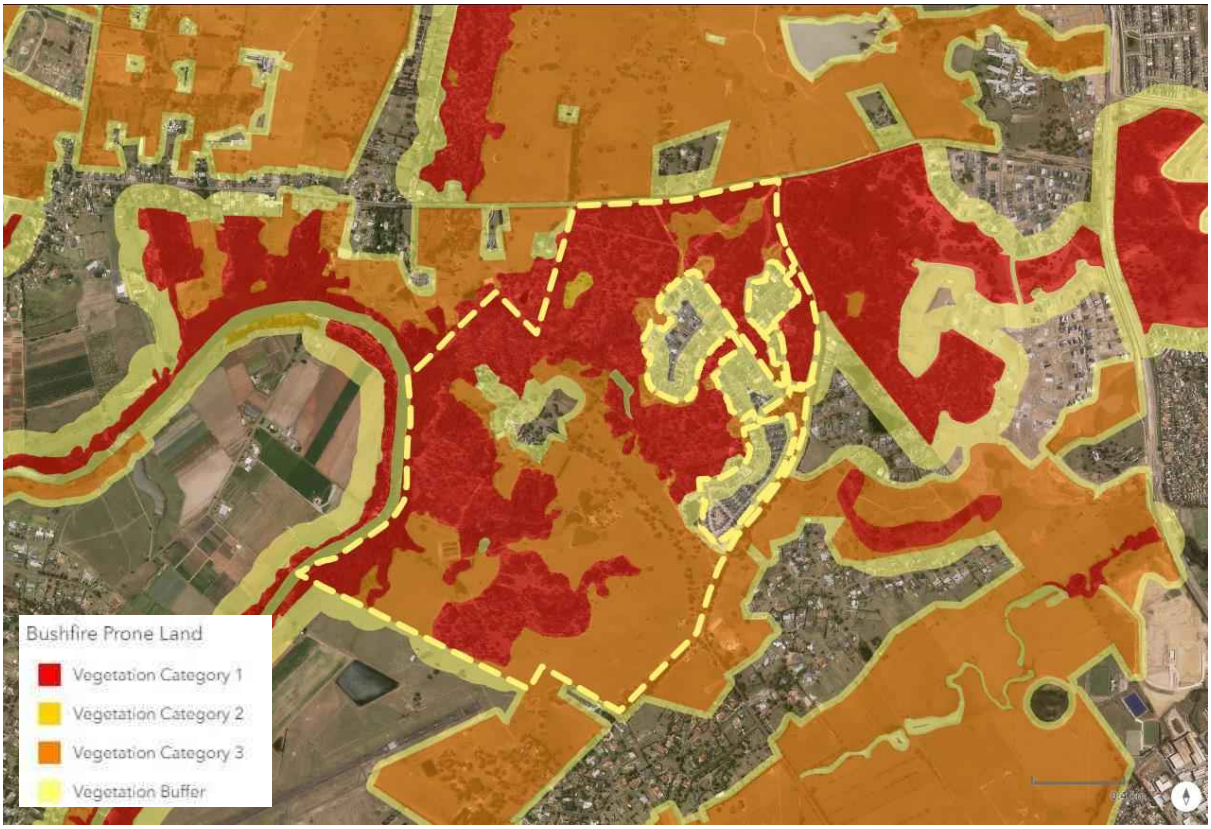


Figure 1-1 – Bushfire Prone Land Map
(source: NSW Planning Portal, 2021)

1.1 Aims of the assessment

Planning proposals are required to address Section 9.2(2) Direction 4.4 of Planning for Bushfire Protection. The objectives of this direction are;

a) to protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas

    1. The land is also noted to have frontage to Cobbitty Road. and

2. to encourage sound management of bush fire prone areas.

The potential variation to the planning framework for the property, from a bushfire context, needs to ensure that future land uses are in a suitable location to minimise the risk and impact of bush fire attack. In addition, services and infrastructure to facilitate effective suppression of a bush fire also needs to be provided.

The broad principles which should be applied to strategic level development are as follows:

a) not all land is suitable for development in the context of bush fire risk

b) any new development on bush fire prone land must comply with PBP

c) infrastructure associated with emergency evacuation and firefighting operations must be provided

d) appropriate ongoing land management practices must be facilitated.

Strategic planning (such as the PPR) should provide for the exclusion of inappropriate development in bush fire prone areas as follows:

a) when the bush fire risk makes it inappropriate for new development to occur

b) for development that is likely to be difficult to evacuate during a bush fire

c) for development that will adversely affect other bush fire protection strategies or place existing development at increased risk

d) for development that is within an area of high bush fire risk where density of existing development may cause evacuation issues for both existing and new occupants.

e) where environmental constraints to the site cannot be overcome.

1.2 Proposed development

The proposal seeks to amend the prevailing planning framework (refer to figures 1.2 to 1.4) by rationalising the zoning regime and amending the minimum subdivision lot size provision (refer to figures 1.3 and 1.5). It is proposed to undertake a future superlot subdivision creating four (4) superlots as an initial development stage. (Refer to Figure 1.6). As identified in Figure 1.2, the lot is currently zoned a combination of E2, RU1, R5 and SP1, with a large portion of the RU1 area comprised of native vegetation managed under an in-perpetuity conservation agreement.

The zoning rationalisation includes the rezoning of a large tract of RU1 land to E2 land in a manner consistent with the adjoining land which is currently the subject of a conservation agreement.

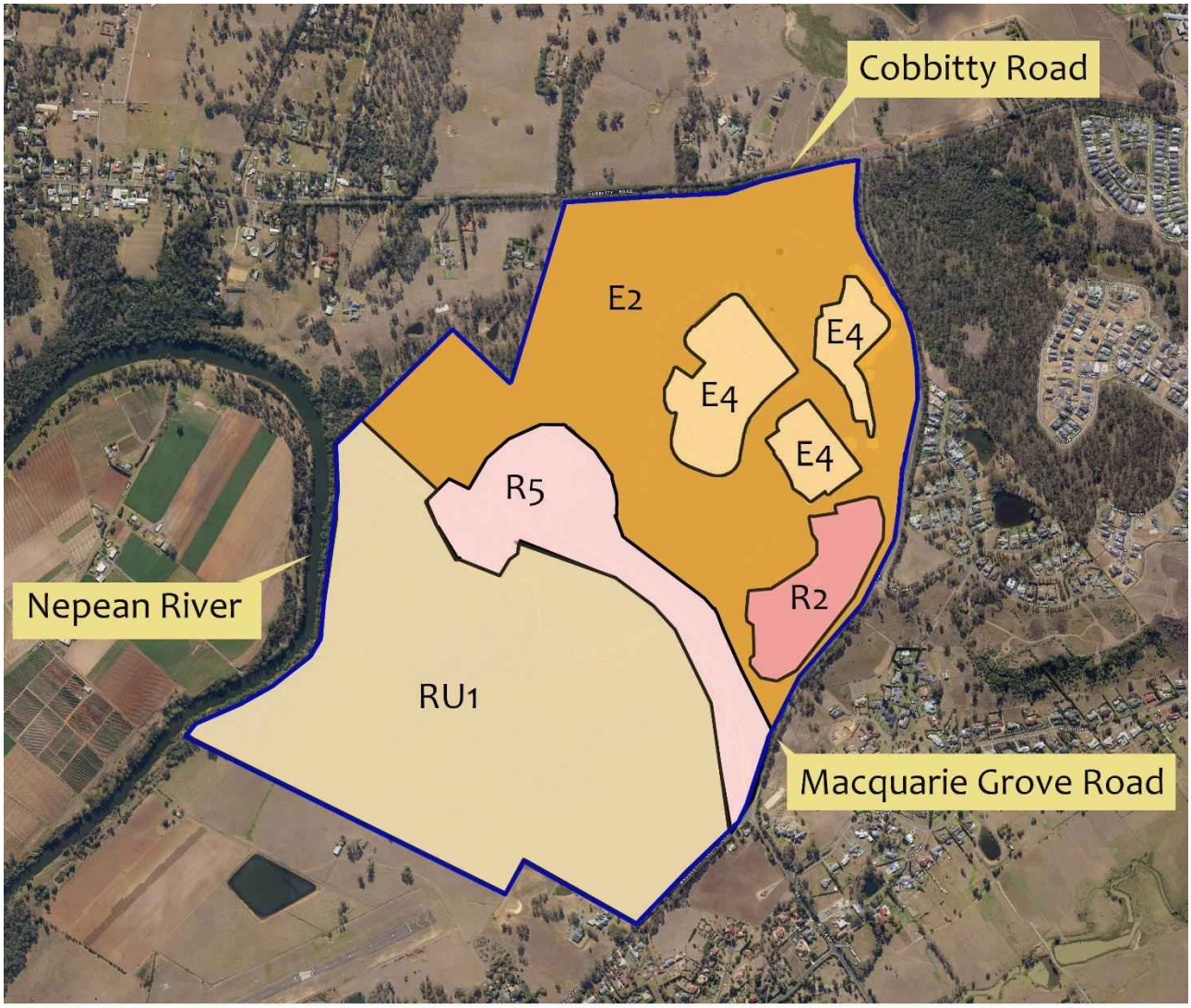


Figure 1-2 – Current Land Use Zoning
(source: NSW Planning Portal 2021)

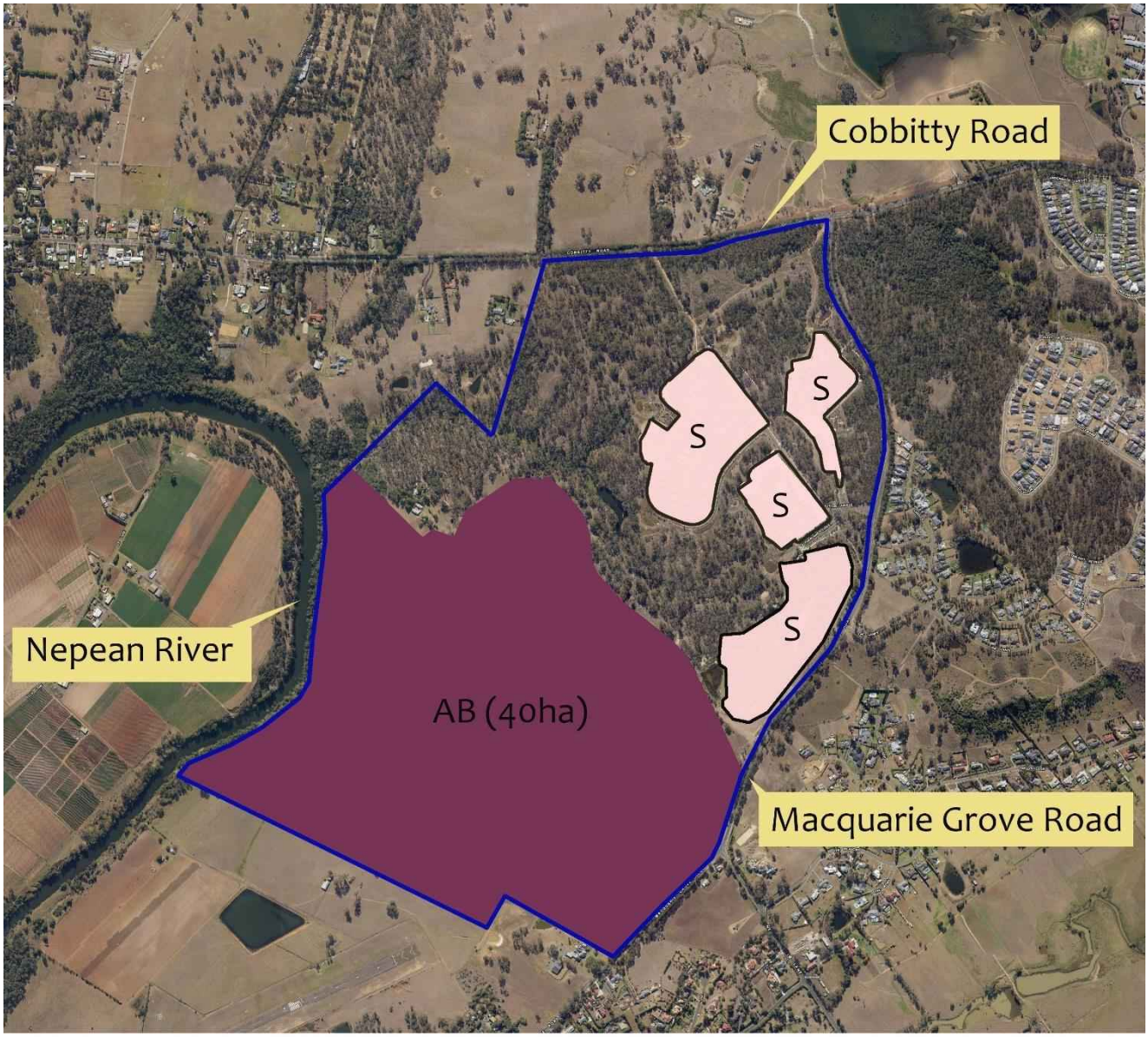


Figure 1-3 – Minimum lot size map

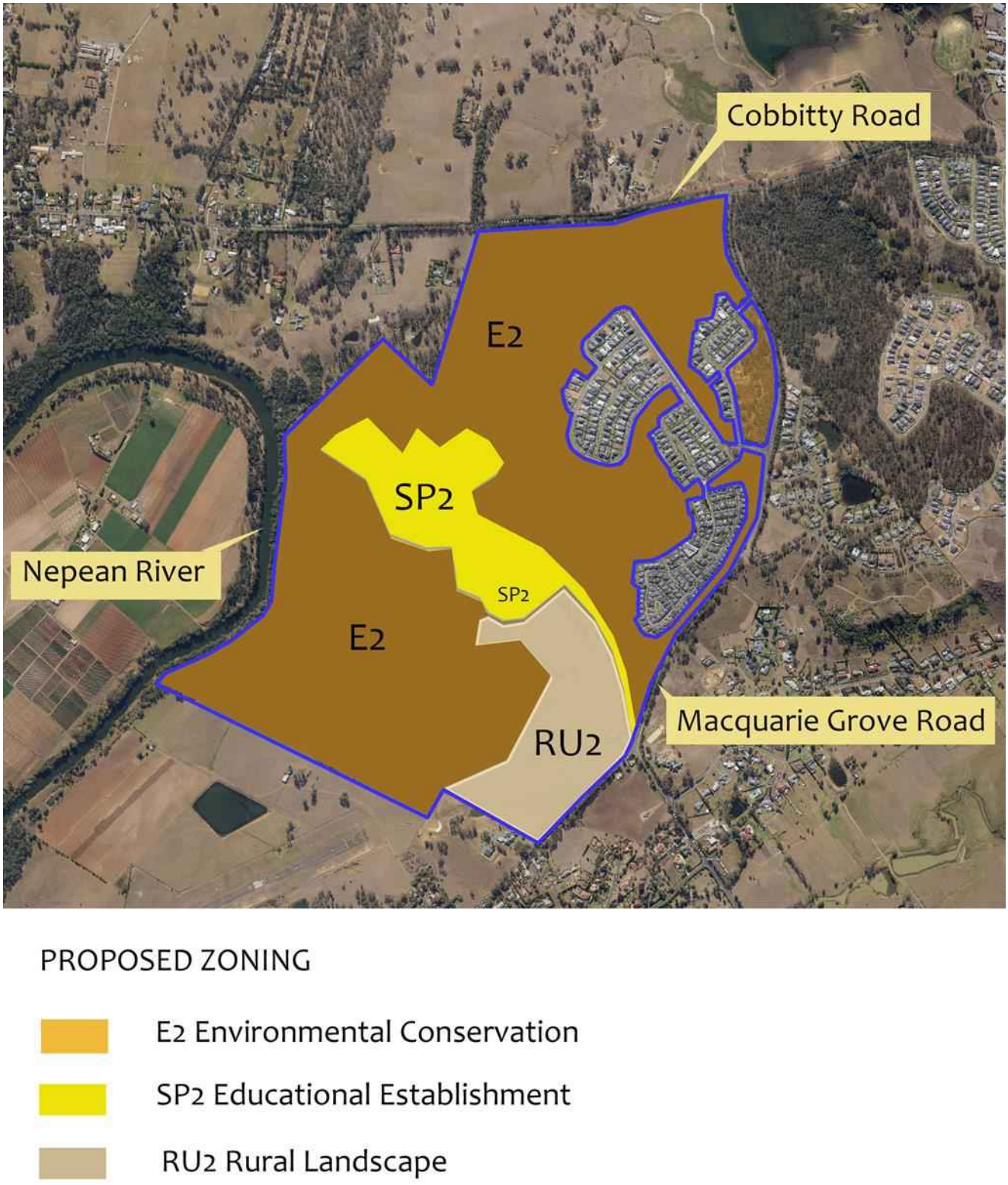


Figure 1-4 – Proposed Land Use Zoning

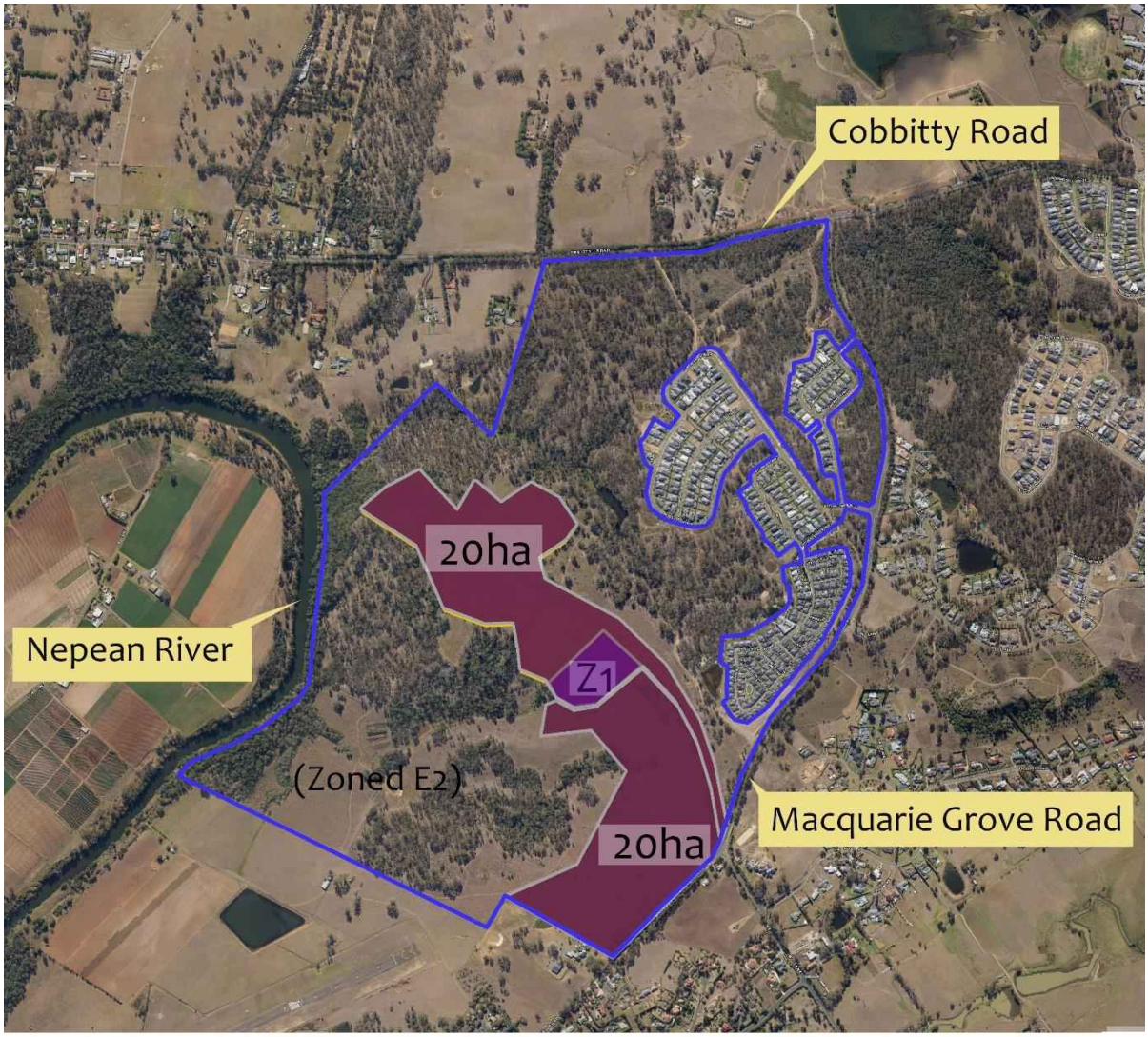


Figure 1-5 – Proposed minimum Lot size map

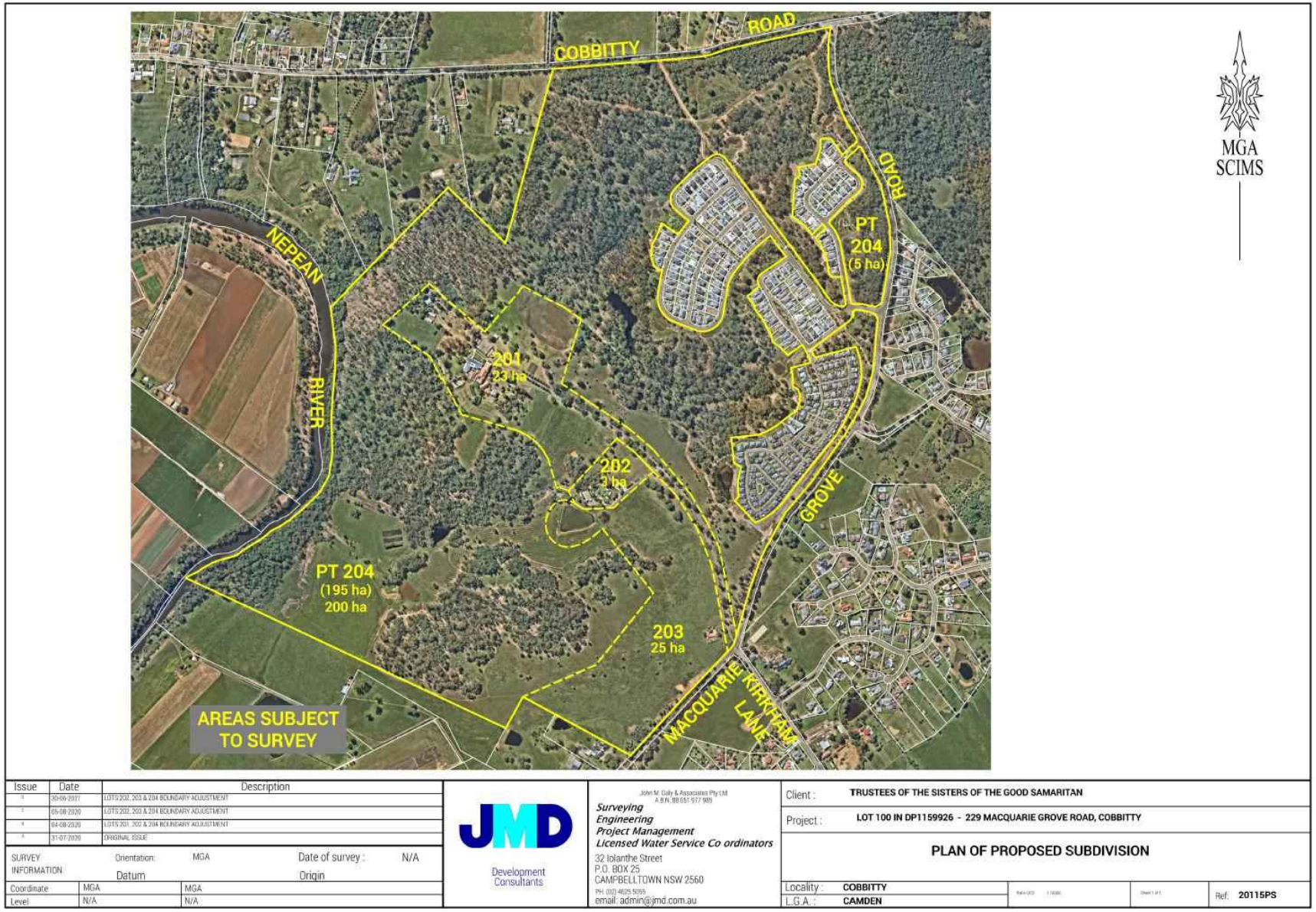


Figure 1-6 - Proposed Subdivision Layout
(source: JMD Development Consultants Ref: 20115PS Dated 30/06/2021)

1.3 Information collation

To achieve the aims of this report, a review of the information relevant to the property was undertaken prior to the initiation of field surveys. Information sources reviewed included the following:

- Camden Local Environmental Plan 2010
- *Nearmap* aerial photography
- Topographical maps *DLPI of NSW* 1:25,000
- *Australian Standard 3959 Construction of buildings in bushfire-prone areas*
- *Planning for Bush Fire Protection 2019 (PBP, 2019)*
- *Section 9.1 Directions* (direction issued by the Minister for Planning to relevant planning authorities under section 9.1(2) of the *Environmental Planning and Assessment Act 1979*)

1.4 Site description

The site is located at Lot 100 DP 1159926, 229 Macquarie Grove Road, Cobbitty. It is situated to the south of Cobbitty Road and to the west of Macquarie Grove Road.

In the approximate centre of the lot is two existing schools support infrastructure and other incidental buildings, with the remainder of the site comprised primarily of native vegetation managed for conservation and/or open rural lands. To the north-east of the schools is a cluster of residential and seniors living allotments excised from the lot under a previous subdivision, and not part of the current proposal.

Figure 1-7 – Aerial appraisal
(source: SIXmaps)

1.5 Legislation and planning instruments

1.5.1 Environmental Planning and Assessment Act (1979) and bush fire prone land

The *EP&A Act* governs environmental and land use planning and assessment within New South Wales. It provides for the establishment of environmental planning instruments, development controls and the operation of construction controls through the *Building Code of Australia (BCA).* The identification of bushfire prone land is required under Section 10.3 of the *EP&A Act*.

PBP, 2019 (p. 18) stipulates that if a proposed amendment to land use zoning or land use affects a designated bushfire prone area then the Section 9.1(2) Direction No 4.4 of the *EP&A Act* must be applied. This requires Council to consult with the Commissioner of the RFS and to take into account any comments by the Commissioner and to have regard to the planning principles of *PBP, 2019* (detailed within Section 1.5.3).

1.5.3 Planning for Bush Fire Protection 2019 (PBP)

Bushfire protection planning requires the consideration of the RFS planning document entitled *Planning for Bush Fire Protection 2019 (PBP). PBP, 2019,* provides planning principles for rezoning of bush fire prone land as well as guidance on effective bushfire protection measures.

For strategic development proposals in bush fire prone areas *PBP* requires, as a minimum, assessment of the components in Table 1-1 below. These issues are addressed in Section 3 of this report.

Table 1-1 - Requirements for a Bush Fire Strategic Study

Issue	*Detail*	*Assessment Considerations*
Bush fire landscape assessment	A bush fire landscape assessment considers the likelihood of a bush fire, its potential severity and intensity and the potential impact on life and property in the context of the broader surrounding landscape.	The bush fire hazard in the surrounding area, including: • Vegetation • Topography • Weather The potential fire behaviour that might be generated based on the above; Any history of bush fire in the area; Potential fire runs into the site and the intensity of such fire runs; and The difficulty in accessing and suppressing a fire, the continuity of bush fire hazards or the fragmentation of landscape fuels and the complexity of the associated terrain.
Land use assessment	The land use assessment will identify the most appropriate locations within the masterplan area or site layout for the proposed land uses.	The risk profile of different areas of the development layout based on the above landscape study; The proposed land use zones and permitted uses; The most appropriate siting of different land

Issue	*Detail*	*Assessment Considerations*
		uses based on risk profiles within the site (i.e. not locating development on ridge tops, SFPP development to be located in lower risk areas of the site); and The impact of the siting of these uses on APZ provision.
Access and egress	A study of the existing and proposed road networks both within and external to the masterplan area or site layout.	The capacity for the proposed road network to deal with evacuating residents and responding emergency services, based on the existing and proposed community profile; The location of key access routes and direction of travel; and The potential for development to be isolated in the event of a bush fire.
Emergency services	An assessment of the future impact of new development on emergency services.	Consideration of the increase in demand for emergency services responding to a bush fire emergency including the need for new stations/ brigades; and Impact on the ability of emergency services to carry out fire suppression in a bush fire emergency.
Infrastructure	An assessment of the issues associated with infrastructure and utilities.	The ability of the reticulated water system to deal with a major bush fire event in terms of pressures, flows, and spacing of hydrants; and Life safety issues associated with fire and proximity to high voltage power lines, natural gas supply lines etc.
Adjoining land	The impact of new development on adjoining landowners and their ability to undertake bush fire management.	Consideration of the implications of a change in land use on adjoining land including increased pressure on BPMs through the implementation of Bush Fire Management Plans.

2. BUSHFIRE THREAT ASSESSMENT

To assess the bushfire threat and to determine the required width of an APZ (as a management "tool") for a development, an assessment of the potential hazardous vegetation and the effective slope within the vegetation is required. These elements include the potential hazardous landscape that may affect the site and the effective slope within that hazardous vegetation.

2.1 Hazardous fuels

PBP 2019 guidelines require the identification of the predominant vegetation formation in accordance with David Keith (2004) if using the simplified acceptable solutions in PBP 2019, or alternatively the vegetation class if adopting the comprehensive vegetation fuel loads (as allowable when undertaking an assessment under Method 2 of AS3959). The hazardous vegetation is calculated for a distance of at least 140m from a proposed building envelope.

The vegetation posing a bushfire threat to future development within the subject area is almost exclusively the vegetation within the lot itself. This vegetation is identified as Coastal Valley Grassy Woodlands on the Cumberland Plain West vegetation map.

Table 2-1 - Vegetation

Plant Community Type	*Vegetation formation*	*Vegetation classification*	*Acceptable Solutions fuel loads (t/ha)*
Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin Bioregion (PCT ID 849, 850)	Grassy Woodland	Coastal Valley Grassy Woodlands	10.5/20.2

2.2 Effective slope

The effective slope has been assessed throughout the vegetated area of the subject site, with a focus on the vegetation within 140m of the proposed RU2 and SP2 zoned area. Effective slope refers to that slope which provides the most effect upon likely fire behaviour. A mean average slope may not in all cases provide sufficient information such that an appropriate assessment can be determined.

The effective slope within the hazardous areas is provided in detail within Section 2.3 however the worst-case effective slope can be summarised as follows;

- 0-5° downslope to the south and south-west,
- 5-10° downslope to the east, north-east and north, and
- 15-20° downslope to the north-west

2.3 Bushfire attack assessment

The following assessment has determined the APZ requirements via the following approaches;

- Tables A1.12.1 and A1.12.2 of *PBP2019*

A fire danger index (FDI) of 100 has been used to calculate bushfire behaviour on the site based on its location within the Greater Hunter region. Table 2-2 provides a summary of the bushfire attack assessment based on residential and SFFD development and the methodologies identified above.

Table 2-2 - Bushfire Attack Assessment Summary

Aspect	Predominant Vegetation Class	Effective Slope	Minimum APZ Required	
			Residential	SFPP
North-east East	Grassy Woodland	5-10°	20m	60m
South-east South	Grassland	0-5°	12m	36m
South-west West	Grassy Woodland	0-5°	16m	50m
North-west North	Grassy Woodland	15-20°	32m	85m

3. SPECIFIC PROTECTION ISSUES

3.1 Asset protection zones (APZs)

Table 3.1 outlines the capacity for future development on the site to conform with the performance criteria for APZs.

Table 3-1 – Performance criteria for asset protection zones (PBP 2019 guidelines pg. 43)

Performance criteria	Acceptable solutions	Comment
Potential building footprints will not be exposed to radiant heat levels exceeding 29kW/m^2 on each proposed lot	APZs are provided in accordance with Tables A1.12.2 and A1.12.4 based on the FFDI	The proposed RU2 and SP2 zoned area is sufficiently large to incorporate the required APZs. See Schedule 1.
APZs are managed and maintained to prevent the spread of a fire towards the building	APZs are managed in accordance with the requirements of Appendix 4 of *PBP 2019*	Can be made a condition of consent for future DAs.
The APZ is provided in perpetuity	APZs are wholly within the boundaries of the development site	The proposed RU2 and SP2 zoned area is sufficiently large to incorporate the required APZs.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised	The APZ is located on lands with a slope of less than 18^o	All slopes within the proposed RU2 and SP2 zoned area are less than 18 degrees, other than creek banks and some small artificial embankments alongside roads etc.

Performance criteria	Acceptable solutions	Comment
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions	Landscaping is in accordance with Appendix 4 of *PBP 2019*	Can be made a condition of consent for future DAs.
	Fencing is constructed in accordance with section 7.6 of *PBP 2019*	Can be made a condition of consent for future DAs.

3.2 Access for firefighting operations

Table 3-2 outlines the capacity for future development on the site to conform with the performance criteria for access.

Table 3-2 – Performance criteria for access within Residential Subdivisions (PBP 2019) Guidelines pg. 44)

	Performance criteria	Acceptable solution	Comment
ACCESS (GENERAL REQUIREMENTS)	Firefighting vehicles are provided with safe, all weather access to structures.	Property access roads are two-wheel drive, all-weather roads	Existing access road complies. Can be made a condition of consent for future DAs.
		Perimeter roads are provided for residential subdivisions of three or more allotments.	Can be made a condition of consent for future DAs.
		Subdivisions of three or more allotments have more than one access in and out of the development.	There is scope for further limited access points along an 850m length of Macquarie Grove Road
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	Can be made a condition of consent for future DAs.
		Maximum grades for sealed roads do not exceed 15 degrees and an average grade of not more than 10 degrees or other gradient specified by road design standards, whichever is the lesser gradient.	All slopes within the proposed RU2 and SP2 zoned area are less than 15 degrees, other than creek banks and some small artificial embankments alongside roads etc.
		All roads are through roads	Can be made a condition of consent for future DAs.
		Dead end roads are not recommended, but if unavoidable, dead ends are not more than 200m in length, incorporate a minimum 12 metres outer radius turning circle, and are clearly sign posted as a dead end.	Can be made a condition of consent for future DAs.

	Performance criteria	Acceptable solution	Comment
		Where kerb and guttering are provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	Can be made a condition of consent for future DAs.
		Where access / egress can only be achieved through forest, woodland or heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.	There is scope for alternate access/egress and routes that traverse grassland only.
		One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	Can be made a condition of consent for future DAs.
	The capacity of access roads is adequate for firefighting vehicles.	The capacity of perimeter and non-perimeter road surfaces and any bridges / causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges / causeways are to clearly indicate load rating.	Can be made a condition of consent for future DAs.
	There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	Can be made a condition of consent for future DAs.
		Hydrants are provided in accordance with *AS 2419.1:2005.*	Can be made a condition of consent for future DAs.
		There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	Can be made a condition of consent for future DAs.
PERIMETER ROADS	Access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	Are two-way sealed roads.	Can be made a condition of consent for future DAs.
		Minimum 8m carriageway width kerb to kerb.	Can be made a condition of consent for future DAs.
		Parking is provided outside of the carriageway width.	Can be made a condition of consent for future DAs.
		Hydrants are located clear of parking areas.	Can be made a condition of consent for future DAs.
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	Can be made a condition of consent for future DAs.

Performance criteria		Acceptable solution	Comment
		Curves of roads have a minimum inner radius of 6m.	Can be made a condition of consent for future DAs.
		The maximum grade road is 15° and average grade is 10°.	Can be made a condition of consent for future DAs.
		The road crossfall does not exceed 3°.	Can be made a condition of consent for future DAs.
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Can be made a condition of consent for future DAs.
NON-PERIMETER ROADS	Access roads are designed to allow safe access and egress for medium rigid firefighting vehicles while residents are evacuating.	Minimum 5.5m carriageway width kerb to kerb.	Can be made a condition of consent for future DAs.
		Parking is provided outside of the carriageway width.	Can be made a condition of consent for future DAs.
		Hydrants are located clear of parking areas.	Can be made a condition of consent for future DAs.
		Roads are through roads, and these are linked to the internal road system at an interval of no greater than 500m.	Can be made a condition of consent for future DAs.
		Curves of roads have a minimum inner radius of 6m.	Can be made a condition of consent for future DAs.
		The road crossfall does not exceed 3°.	Can be made a condition of consent for future DAs.
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Can be made a condition of consent for future DAs.
PROPERTY ACCESS	Firefighting vehicles can access the dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	There is scope to provide future allotments with direct frontage to public roads or provide property access roads in compliance with the acceptable solutions.

3.3 Water supplies

Table 3-3 outlines the capacity for future development on the site to conform with the performance criteria for water supply.

Table 3-3 – Performance criteria for reticulated water supplies (PBP guidelines pg. 47)

Performance criteria	Acceptable solutions	Comment
Adequate water supplies is provided for firefighting purposes.	Reticulated water is to be provided to the development, where available.	Can be made a condition of consent for future DAs.
	A static water supply is provided for non-reticulated developments or where reticulated water supply cannot be guaranteed	Can be made a condition of consent for future DAs.
	Static water supplies shall comply with Table 5.3d.	Can be made a condition of consent for future DAs.
Water supplies are located at regular intervals. The water supply is accessible and reliable for firefighting operations.	Fire hydrant, spacing, design and sizing complies with the relevant clauses of Australian Standard *AS 2419.1:2005.*	Can be made a condition of consent for future DAs.
	Hydrants are not located within any road carriageway.	Can be made a condition of consent for future DAs.
	Reticulated water supply to urban subdivisions uses a ring main system for areas with perimeter roads.	Urban subdivision is not proposed, the principles can be observed where relevant.
Flows and pressure are appropriate.	Fire hydrant flows and pressures comply with the relevant clauses of *AS 2419.1:2005.*	Can be made a condition of consent for future DAs.
The integrity of the water supply is maintained.	All above-ground water service pipes are metal, including and up to any taps.	Can be made a condition of consent for future DAs.
	Above ground water storage tank shall be of concrete or metal	Can be made a condition of consent for future DAs.

3.4 Gas

Table 3-4 outlines the capacity for future development on the site to conform with the performance criteria for gas supply.

Table 3-4 – Performance criteria for gas supplies (PBP Guidelines pg. 47)

Performance criteria	Acceptable solutions	Comment
Location of gas services will not lead to the ignition of surrounding bushland or the fabric of buildings.	Reticulated or bottled gas bottles are to be installed and maintained in accordance with *AS/NZS 1596 (2014)*, the requirements of relevant authorities and metal piping is to be used.	Can be made a condition of consent for future DAs.
	All fixed gas cylinders are to be kept clear of flammable materials to a distance of 10m and shielded on the hazard side.	Can be made a condition of consent for future DAs.
	Connections to and from gas cylinders are metal.	Can be made a condition of consent for future DAs.
	Polymer sheathed flexible gas supply lines are not used.	Can be made a condition of consent for future DAs.
	Above ground gas service pipes are metal, including and up to any outlets.	Can be made a condition of consent for future DAs.

3.5 Electricity

Table 3-5 outlines the capacity for future development on the site to conform with the performance criteria for electricity supply.

Table 3-5 – Performance criteria for electricity services (PBP guidelines pg. 47)

Performance criteria	Acceptable Solutions	Comment
Location of electricity services limit the possibility of ignition of surrounding bushland or the fabric of buildings.	Where practicable, electrical transmission lines are underground.	Can be made a condition of consent for future DAs.
	Where overhead electrical transmission lines are proposed: lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in ISSC3 Guideline for Managing Vegetation Near Power Lines.	Can be made a condition of consent for future DAs.

4. CONCLUSION & RECOMMENDATIONS

4.1 Conclusion

Our assessment has found that future development in accordance with the Planning Proposal Request adequately addresses bushfire risk and the land is suitable for development in the context of that risk. The proposal is noted to result in a decrease in the area that can be used for residential purposes. Further, no increase in demand on the local road network, emergency services or infrastructure, and no implications for adjoining land are occasioned at this formative planning phase and can be adequately dealt with in future development applications.

The assessment has concluded that future development on site can conform to the planning principles of *PBP 2019* and *Ministerial Direction 4.4 'Planning for Bush Fire Protection*'.

5. REFERENCES

Australian Building Codes Board (2010) – *Building Code of Australia*, Class 1 and Class 10 Buildings Housing Provisions Volume 2.

Chan, K.W. (2001) – *The suitability of the use of various treated timbers for building constructions in bushfire prone areas*. Warrington Fire Research.

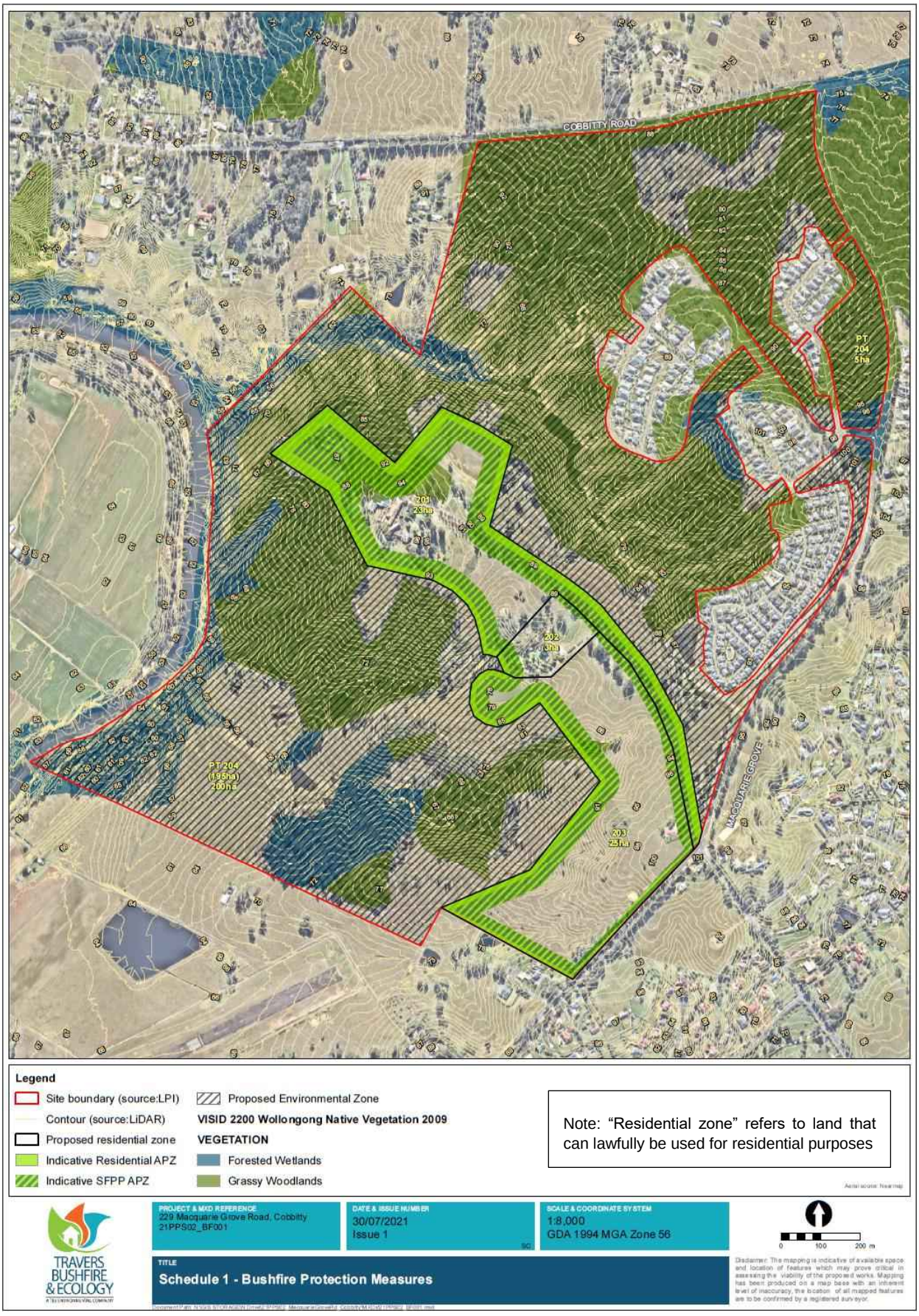
Councils of Standards Australia AS3959 (2009) – *Australian Standard Construction of buildings in bush fire-prone areas.*

Keith, David (2004) – *Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT*. The Department of Environment and Climate Change.

Rural Fire Service (2019) - *Planning for bushfire protection – a guide for councils, planners, fire authorities and developers*. NSW Rural Fire Service.

Tan, B., Midgley, S., Douglas, G. and Short (2004) - *A methodology for assessing bushfire attack.* RFS Development Control Service.

SCHEDULE 1. ESTIMATED MINIMUM APZ SETBACKS

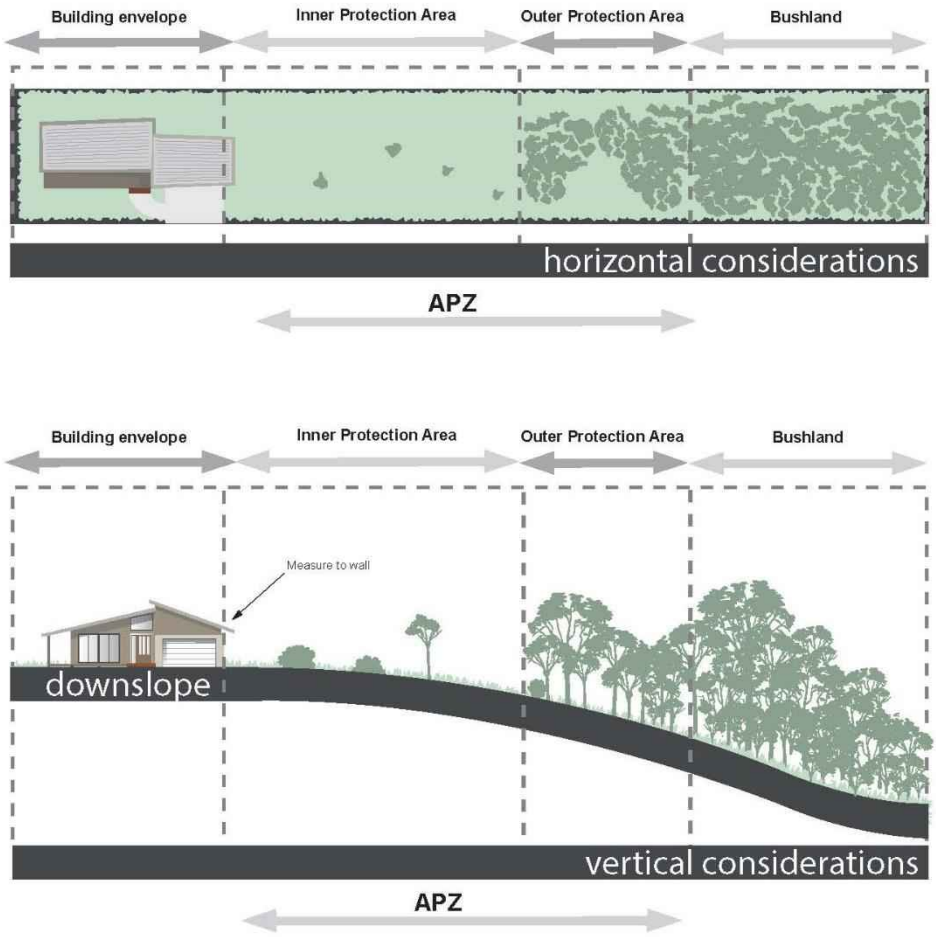


APPENDIX 1. MANAGEMENT OF ASSET PROTECTION ZONES

The RFS provides basic advice in respect of managing APZs through documents such as, *Standards for Asset Protection Zones* (RFS, 2005), with landscaping to comply with Appendix 4 of *PBP*.

In forest vegetation an APZ may consist of two subordinate areas, an inner protection area (IPA) and an outer protection area (OPA). The IPA is the area immediately surrounding the building and the OPA (up to 30% of the total APZ width) is between the IPA and the hazard.

A typical APZ is graphically represented below.



APZs and progressive reduction in fuel loads
(Source: PBP, 2019)

> **Note:** Vegetation management as shown is for illustrative purposes only. Specific advice is to be sought regarding vegetation removal and retention from a qualified and experienced expert to ensure APZs comply with the RFS performance criteria.

The following table adapted from *PBP 2019* provides maintenance advice for vegetation within the IPA and OPA. The APZ is to be maintained in perpetuity and maintenance should be undertaken regularly, particularly in advance of the bushfire season.

	Inner Protection Area	Outer Protection Area
Trees	➢ Tree canopy cover should be **less than 15%** at maturity; ➢ Trees at maturity should not touch or overhang the building; ➢ Lower limbs should be removed up to a height of **2m above the ground**; ➢ Tree canopies should be separated by **2 to 5m**; and ➢ Preference should be given to retaining smooth barked and evergreen trees.	➢ Tree canopy cover should be **less than 30%;** and ➢ Canopies should be separated by **2 to 5m**.
Shrubs	➢ Large discontinuities or gaps in the vegetation should be provided to slow down or break the progress of fire towards buildings; ➢ Shrubs should not be located under trees; ➢ Shrubs should form **less than 10%** ground cover; and ➢ Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.	➢ Shrubs should not form a continuous canopy; and ➢ Shrubs should **form less than 20%** of ground cover.
Grass and Leaf Litter	➢ Grass should be kept mown to a height of **less than 100mm**; and ➢ Leaves and other debris should be removed	➢ Grass should be kept mown to a height of **less than 100mm**; and ➢ Leaf and other debris should be removed.

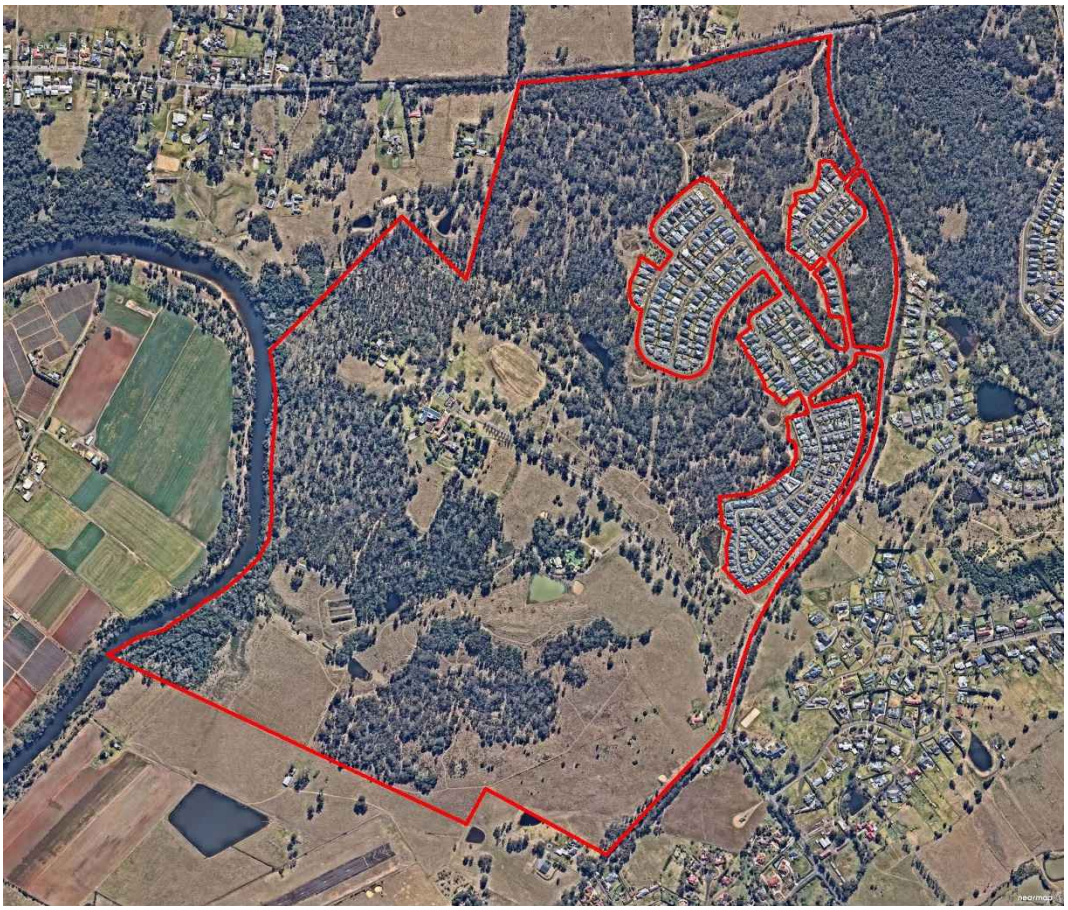
	All Management Zones
Weeds	➢ All weeds should be removed in accordance with best practice guidelines, and measures taken to prevent their further spread
Landscaping	➢ Suitable impervious areas being provided immediately surrounding the building such as courtyards, paths and driveways; ➢ Restrict planting in the immediate vicinity of the building which may over time and if not properly maintained come into contact with the building; ➢ When considering landscape species consideration needs to be given to estimated size of the plant at maturity; ➢ Avoid species with rough fibrous bark, or which retain/shed bark in long strips or retain dead material in their canopies; ➢ Use smooth bark species of trees species which generally do not carry a fire up the bark into the crown; ➢ Avoid planting of deciduous species that may increase fuel at surface / ground level (i.e. leaf litter); ➢ Avoid climbing species to walls and pergolas; ➢ Locate combustible materials such as woodchips / mulch, flammable fuel stores away from the building; ➢ Locate combustible structures such as garden sheds, pergolas and materials such timber garden furniture way from the building; and ➢ Use of low flammability vegetation species.

Annex H

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "H"
Camden Airport Operations Report
(REHBEIN Airport Consulting)

October 2021

REHBEIN Airport Consulting

17 September, 2021
Our File Ref: M21116AL001
Contact: Bridget Wouts

Project Manager
Trustees of the Sisters of the Good Samaritan
c/o Pascoe Planning Solutions
PO Box 349
Mittagong NSW 2575

Attention: Graham Pascoe

RE: 'WIVENHOE' – 229 MACQUARIE ROAD GROVE, COBBITTY
NASF ASSESSMENT – AVIATION SERVICES

REHBEIN Airport Consulting was engaged by the Trustees of the Sisters of the Good Samaritan via Pascoe Planning Solutions to undertake an Aviation Safeguarding assessment of the land identified at 229 Macquarie Road Grove, Cobbitty (the subject land).

The subject land has been assessed against the National Airports Safeguarding Framework (NASF) Guidelines as they relate to the adjacent Camden Airport, for the purposes of a planning proposal request which, Pascoe Planning advises, seeks to facilitate a super lot subdivision and land use planning rationalisation.

1. PLANNING PROPOSAL

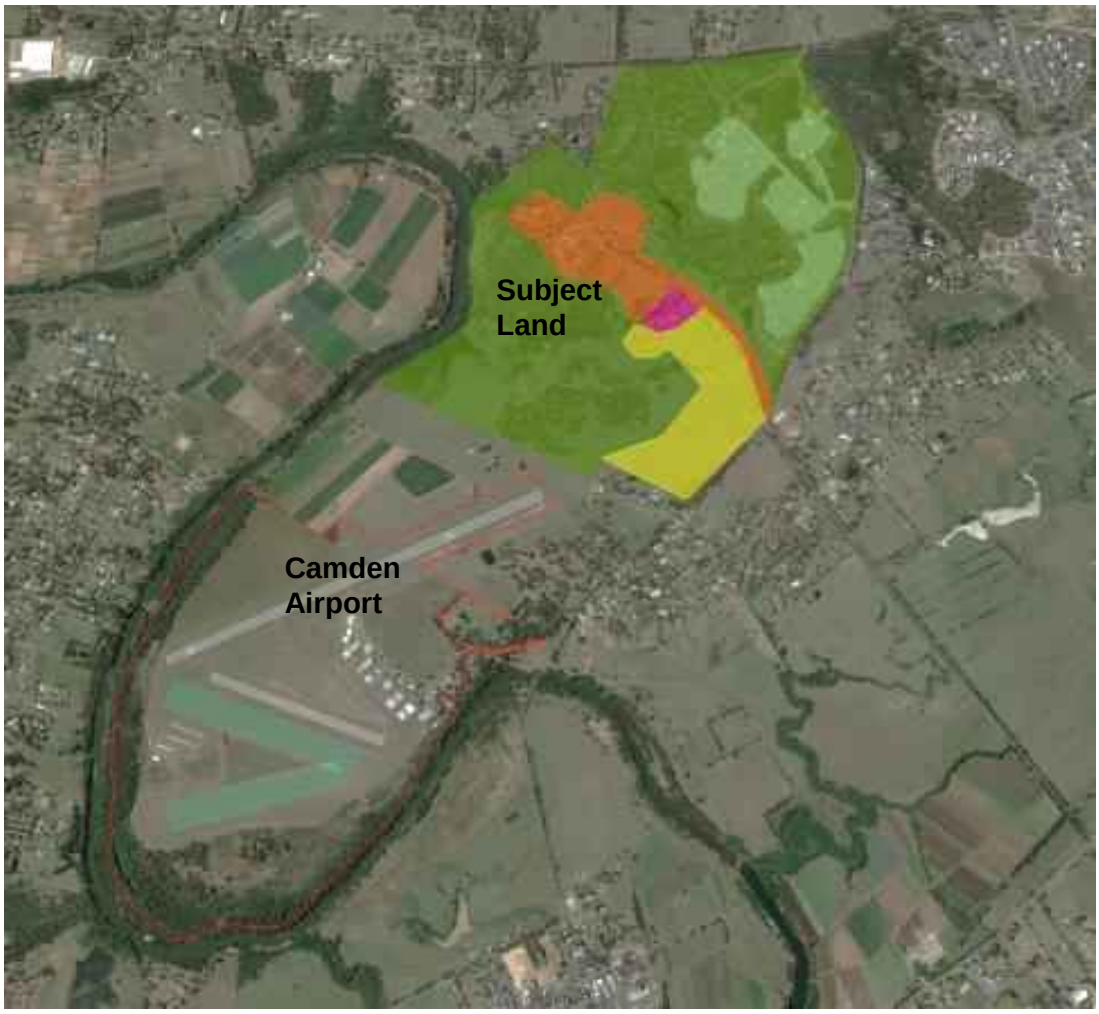
The subject land is owned by the Trustees of the Sisters of the Good Samaritan, who are proposing to subdivide it to permit a five (5) precinct super lot/subdivision. The proposed precincts are listed as follows:

- Conservation – (dryland);
- Mater Dei School and Curtilage;
- Aspect school;
- Residue Site; and
- Wivenhoe Village and Residential.

Additionally, Pascoe Planning advises the proposal seeks to rationalise the land use zoning planning provisions.

The subject land is located adjacent to the north of Camden Airport, in close proximity to the eastern end of the main Runway 06/24 as illustrated in **Figure 1** below.

Figure 1: Location Plan



Source: Google Earth

2. CAMDEN AIRPORT

Camden Airport is a general aviation airport, which is operated by Camden Airport Limited (CAL). CAL's vision is to continue to operate and develop Camden Airport to be[1]:

> …the general aviation, emergency services, sport and recreational airport servicing the South West Growth Centre for Sydney, and a bespoke commercial and employment hub for the Camden region.

Camden Airport operates 24 hours 7 days a week and caters for a wide range of general aviation aircraft including fixed wing, helicopters and gliders. The airport provides for flight training, emergency services, gliding, ballooning and recreational flying along with not-for-profit youth organisations and aviation maintenance facilities.

[1] Camden Airport Limited *Camden Airport Master Plan 2020* (March 2021) Approved by the Commonwealth Minster for Infrastructure, Transport and Regional Development on 25 January 2021.

2.1 Protected Airspace

Camden Airport is a federally leased airport regulated under the *Airports Act 1996* (Cth) (the Act). The Department of Infrastructure, Transport, Regional Development and Communications protects the airspace around Camden Airport under Part 12 of the Act and the *Airports (Protection of Airspace) Regulations 1996*. Together these regulations establish the framework for the protection of airspace at and around Camden Airport.

The airspace above the airport's Obstacle Limitation Surface (OLS) and the Procedures for Air Navigation Services – Aircraft Operations (PANS-OPS) surface forms the airport's protected airspace. The protection of this airspace is discussed in **Section 3.6**.

2.2 Master Plan 2020

All leased federal airports are subject to a planning framework in the Act that requires the airport to prepare a Master Plan that is approved by the Minister.

The Camden Airport Master Plan 2020, approved by the Commonwealth Minister for Infrastructure, Transport, Regional Development and Communications on 25 January 2021, sets out a long-term plan to maintain and continue to development Camden Airport as one of the closest general aviation and recreational airports to the Sydney CBD, servicing the Greater Sydney region and the Southern Highlands. The Master Plan provides details of investment in maintaining and improving existing aviation infrastructure and supporting commercial development. A focus for the Master Plan is the development of the existing vacant land to the east of the existing airport hangar facilities, for both airside (hangar) and landside aviation and commercial development.

3. NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK

The National Airports Safeguarding Framework (NASF) is a national land use planning framework that aims to:

- Improve community amenity by minimising aircraft noise-sensitive developments near airports including through the use of additional noise metrics and improved noise-disclosure mechanisms; and
- Improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety related issues.

The National Airports Safeguarding Advisory Group (NASAG), comprising of Commonwealth, State and Territory Government planning and transport officials, the Australia Government Department of Defence, the Civil Aviation Safety Authority (CASA), Airservices Australia and the Australian Local Government Association (ALGA), has developed the National Airports Safeguarding Framework.

Commonwealth, State and Territory Ministers considered NASF at the Standing Council on Transport and Infrastructure meeting on 18 May 2012. Ministers agreed to the NASF, noting reservations from New South Wales on the format of Guideline A on measures for managing impacts of aircraft noise. The agreement represents a collective commitment from Governments to ensure that an appropriate balance is

maintained between the social, economic and environmental needs of the community and the effective use of airport sites[2].

All Guidelines can be found at www.infrastructure.gov.au .

NASF currently consists of a set of nine guidelines, as follows, each has been summarised for its relevance to the subject land and likely implications for future planning and development.

3.1 Guideline A: Measures for Managing Impacts of Aircraft Noise

At Camden Airport, the majority of aircraft operating at the airport are used for pilot training and recreational aviation. Camden Airport consists of two runways, two glider strips and a helicopter landing site on the north side of the main Runway 06/24. The airport does not have a curfew. It operates under Air Traffic Control (ATC) during daylight hours and on a common frequency during night when not operating under air traffic control.

The majority of the fixed wing aircraft will use Runway 06/24, with almost all the traffic operating during daylight hours. Aircraft operating for training activities (i.e. circuits), both fixed wing and helicopters, will be flying to the north-eastern side of the airport.

Guideline A can be used in the assessment of new development applications for noise sensitive uses and is considered to be relevant in advancing planning proposals. The subject land is partly within the endorsed Camden Airport Australian Noise Exposure Forecast (ANEF) 2040.

The portions of the land identified as the Residue Site, Conservation and Mater Dei School and Curtilage lie within the 20 to 25 ANEF zone as illustrated on **Figure M21116/01** (Refer to Appendix "A"). The majority of the subject land is outside the 20 ANEF contour.

For land within the 20 ANEF contour, AS2021:2015 provides building site acceptability based on ANEF zones. Building types such as *School, University* or *House, home unit, flat, caravan park* are considered 'conditionally acceptable' within 20 to 25 ANEF zone.

It should be noted, that while the majority of the subject land is outside the 20 ANEF contour, the actual location of the 20 ANEF contour is difficult to define accurately, mainly because of variation in aircraft flight paths.

Further, recognising that noise does not suddenly stop at the 20 ANEF level, Guideline A provides for frequency based measures of aircraft noise as an additional tool for illustrating potential aircraft noise impacts. This approach combines information into a description of high noise zones, termed the 'Number Above' noise metric. This N70 or N65 or N60 is the number of aircraft noise events per average day which are louder than 70 dB(A) or 65 dB(A) or 60 dB(A) respectively, on the ground. The 70 dB(A) events have often been used to categorise an event as 'noisy' as these correspond to a 60 dB(A) noise level indoors, which can disturb conversation or other indoor activities such as watching television.

[2] https://www.transportinfrastructurecouncil.gov.au/sites/default/files/SCOTI_2nd_Communique_FINAL.pdf

Figure M21116/02 (Refer to Appendix "B") illustrates the N60 contours and **Figure M2116/03** (Refer to Appendix "B") illustrates the N70 contours as described above and included in the Camden Airport Master Plan 2020.

From the N60 contours it can be seen that parts of the Residue Site and Wivenhoe Village and Residential precincts are forecast to be subject to over 100 noise events of 60 dB(A) or louder on an average day in 2040. The N70 contours indicate that the Residue Site would experience between 50-100 event of 70 dB(A) or louder on an average day in 2040. Other parts of the subject land are expected to experience between 50 and 5 70 dB(A) events per average day.

3.2 Guideline B: Managing the Risk of Building Generated Windshear and Turbulence at Airports

The purpose of this Guideline is to assist land use planners and airport operators in their planning and development processes to reduce the risk of building generated windshear and turbulence at airports near runways. Applicability of this Guideline is initially determined by the location of the 'assessment trigger area' around the runway, that is:

- 1200 m or closer perpendicular from the runway centreline (or extended runway centreline);
- 900 m or closer in front of runway threshold (towards the landside of the airport); and
- 500 m or closer from the runway threshold along the runway.

Should any building developments be proposed within the assessment trigger area, Guideline B refers to the mitigation of risk by use of a 'height multiplier' (that is, the 1 in 35 rule) determining that buildings meeting this rule are not expected to create unsafe wind effects.

The western half of the subject land is within the building generated windshear and turbulence assessment trigger area at Camden Airport as illustrated in **Figure M21116/04** (Refer to Appendix "C").

3.3 Guideline C: Managing the Risk of Wildlife Strikes in the Vicinity of Airports

Guideline C pertains to the way in which existing land use is managed in the vicinity of airports with respect to the attraction of wildlife, particularly birds. Guideline C establishes buffer areas of 3 km, 8 km and 13 km of an airport, where the Aerodrome Reference Point (ARP) is generally used as the point of origin. However, the Guideline acknowledges there may be some circumstances where multiple points of origin may be appropriate. In the case of Camden Airport, where the airport is surrounded by areas that are attractive to wildlife, especially birds, the buffer areas have been measured from the runway thresholds.

The subject land is within the 3 km Wildlife buffer zone as illustrated on **Figure M21116/05** (Refer to Appendix "D"). Attachment 1 to Guideline C (Refer to Appendix "D") provides guidance on the land uses that present a risk of attracting wildlife and triggers (based on distance from the airport) for adopting active measures to mitigate that risk.

Attachment 1 to Guideline C identifies Conservation land uses as follows:

- 'Wildlife sanctuary / conservation area – dryland' as having a Wildlife Attraction Risk of 'Moderate' and where this land use is within 3 km of the airport the recommended action is 'mitigation'. This applies for existing developments, as well as for proposed developments/changes to existing developments.
- 'Wildlife sanctuary / conservation area – wetland' as having a Wildlife Attraction Risk of 'High'. Proposed wetland developments are considered 'incompatible' within 3 km of an airport under Guideline C.

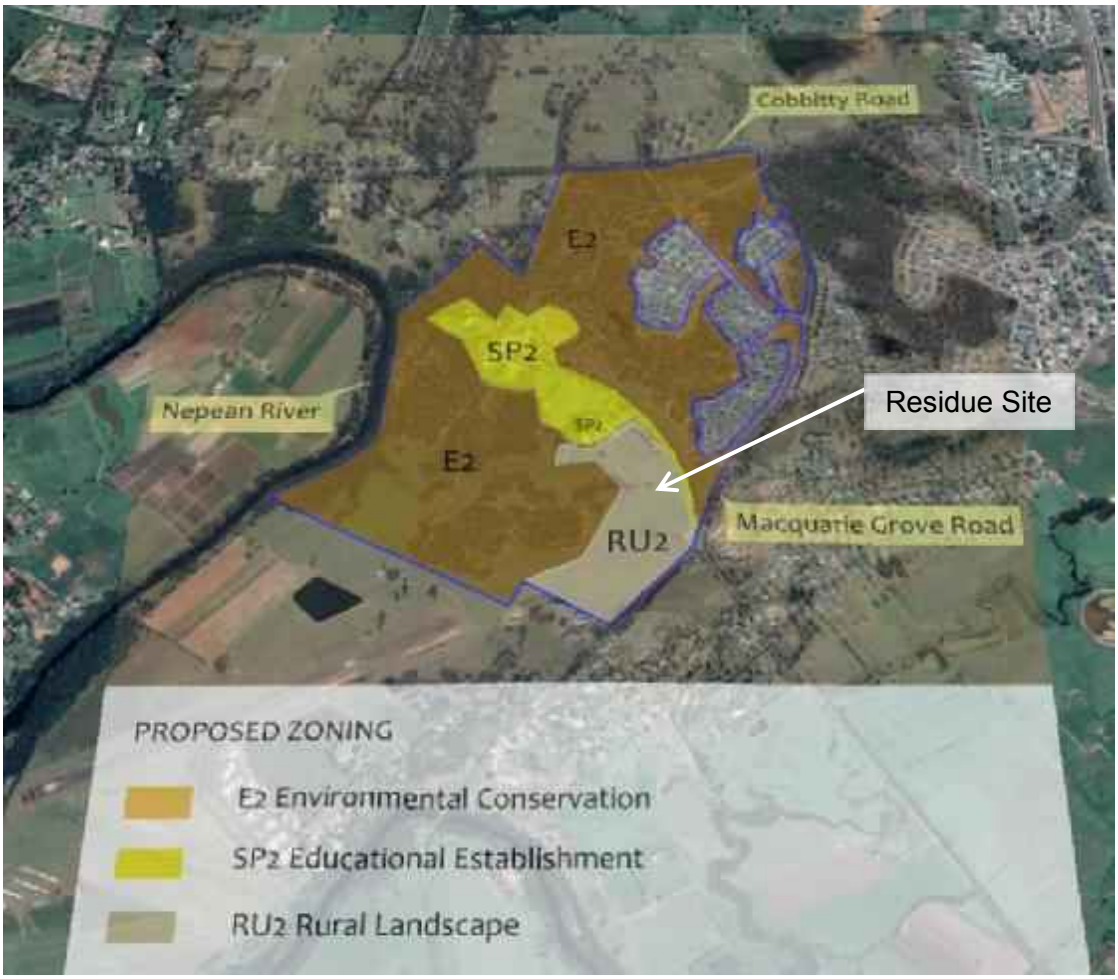
The project inception meeting held on 29 June 2021 confirmed that the subject land identified as Conservation would be classified as 'conservation area – dryland'. It is understood through advice from Travers Bushfire & Ecology (email dated 26 August 2021) that the proposed rezoning and subdivision is intended to allow the current land uses to remain in place. Currently the existing land uses include conservation, residential and primary production as illustrated below in Figure 2.

Figure 2: Existing Zoning

The proposed zoning rationalises the land use zoning planning provisions; however of particular interest to the airport operations is the change in zoning of the Residue

Site at the south eastern end of the subject land from zone RU1 to zone RU2 as illustrated below in Figure 3.

Figure 3: Proposed Zoning



This Residue Site is beneath the Runway 06/24 extended centreline. Changing the Residue Site, e.g. revegetating, may impact the safety of aircraft operations. To mitigate this, it is recommended that vegetation avoids the use of potentially bird attracting species and once established vegetation must be managed to avoid intrusions into the protected airspace (height limitations are discussed in **Section** Error! Reference source not found.). Creation of wetlands should be avoided as being incompatible with NASF Guideline C.

As a certified airport under Part 139 of the *Civil Aviation Safety Regulations 1996* there are number of requirements that must be met, including monitoring and recording of wildlife activity.

Given the adjacent vegetated landscape already exists within the proposed Environmental Conservation precinct, it is assumed current monitoring and management practices are acceptable to Camden Airport. Ongoing discussions with the airport operator are recommended to confirm the monitoring and mitigation measures currently in place will remain appropriate, and will also be applied to the Residue Site going forward.

3.4 Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation

Guideline D provides guidance to State/Territory and local government decision makers, airport operators and developers of wind farms to jointly address the risk to civil aviation arising from development, presence and use of wind farms and wind monitoring towers.

The subject land does not include any proposal for wind turbine farms.

3.5 Guideline E: Managing the Risk of Distraction to Pilots from Lighting in the Vicinity of Airports

NASF Guideline E provides guidance on the risk of distractions to pilots of aircraft from lighting and light fixture near airports. Advice for the guidance of designers and installation contractors is provided for situations where lights are to be installed within a 6 km radius (applied from the centre point of each runway) of a known aerodrome.

The CASA *Part 139 (Aerodromes) Manual of Standards 2019* Section 9.144: *Lights – requirements for zones* sets out the restrictions and degree of interference ground lights can cause as a pilot approaches. Advice for the guidance of designers and installation contractors is provided for situations where lights are to be installed within a 6 km radius, applied from the centre point of each runway. Within this 6 km radius is a primary area which is divided into four light control zones: A, B, C and D. These zones reflect the degree of interference ground lights can cause pilots as they approach.

The subject land is within the 6 km radius of Camden Airport and partially within the primary area light control zones A, B, C and D as illustrated on **Figure M21116/06** (Refer to Appendix "E"). Lighting associated with any proposals within the corresponding zone should therefore meet the restrictions associated with that Zone as follows:

- Zone A does not allow for any (0 cd) intensity of light sources measured at 3 degrees above the horizontal;
- Zone B allows for the maximum intensity of light sources measured at 3 degrees above the horizontal to be 50 cd;
- Zone C allows for the maximum intensity of light sources measured at 3 degrees above the horizontal to be 150 cd; and
- Zone D allows for the maximum intensity of light sources measured at 3 degrees above the horizontal to be 450 cd.

The design of any potential development should take into consideration NASF Guideline E to ensure that lighting does not compromise aviation safety and specify any mitigation measures to be put in place.

Coloured lights, flashing lights or lasers may cause a hazard to aircraft operations and should be referred to CASA for detailed guidance as they are likely to cause conflict particularly as coloured lights are used to identify different aerodrome facilities and infrastructure.

The lighting designer will need to ensure that the lights meet the requirements prescribed in the CASA *Part 139 (Aerodromes) Manual of Standards 2019* Section 9.144: *Lights – requirements for zones.*

Glare caused by reflective surfaces may also be a source of distraction to pilots. It should be noted that solar panel installation is a particular consideration in relation to glare/reflectivity affecting aircraft in various stages of flight as well as ATC operations. If any solar panels are ultimately proposed, the proponent will need to complete a solar glare hazard analysis to satisfy CASA that the safety of aircraft and ATC will not be affected.

3.6 Guideline F: Managing the Risk of Intrusions into the Protected Operational Airspace of Airports

NASF Guideline F is designed to address the issue of intrusions into the operational airspace of airports by tall structures, such as buildings and cranes as well as trees in the vicinity of airports. The Guideline also addresses activities that could cause air turbulence that could affect the normal flight of aircraft operating in the prescribed airspace and/or emissions of steam, other gas, smoke, dust or other particulate matter that could affect the prescribed airspace in accordance with Visual Flight Rules (VFR).

As a leased federal airport, Camden Airport airspace is protected under the *Airports (Protection of Airspace) Regulations 1996*. Any activities that result in intrusions into the airspace are deemed controlled activities and required approval under the regulations. Controlled activities in relation to prescribed airspace are activities that intrude into the airspace and range from any activity or physical structure or thing such as vegetation that is attached to or in physical contact with the ground. Controlled activities also include a range of activities such as sources of artificial light, reflectivity, activities that cause air turbulence or result in the emission of smoke, dust, steam or other gas, or other particulate matter.

Controlled activities must not be carried out without an approval by the Department of Infrastructure, Transport, Regional Development and Communications (DITRDC). Carrying out a controlled activity without approval is a punishable offence under the *Airports Act 1996*.

3.6.1 Obstacle Limitation Surfaces (OLS)

The Obstacle Limitation Surfaces (OLS) is the protection for aircraft operating on visual flight procedures. It is a series of virtual surfaces around a runway, which establish the height limits for objects in and around an airport.

The subject land is within the lateral extents of the Camden Airport OLS as illustrated on **Figure M21116/07** (Refer to Appendix “F”). The majority of the subject land lies within the OLS inner horizontal surface at 113.0 m AHD.

The Residue Site and the south east end of the Conservation area are partially within the extents of:

- OLS Runway 24 approach surface;
- OLS Runway 06 take-off climb surface; and
- OLS Runway 06/24 transitional surface.

These sloping surfaces range over this section of the subject land from approximately 78 m AHD to 113.0 m AHD as illustrated on **Figure M21116/7.1** (Refer to Appendix "F").

3.6.2 PANS-OPS Airspace

The PANS-OPS protective surfaces are for aircraft operating under instrument flight rules. The existing PANS-OPS protected surfaces for aircraft operating under these non-visual conditions, at Camden Airport, are estimated to be higher than the OLS.

The subject land is within the lateral extents of the Camden Airport PANS-OPS as shown in the Camden Airport Master Plan 2020 Figure 6.6, which shows the most restrictive PANS-OPS limit at approximately 200 m AHD over the subject land.

3.6.3 Height limits

It is important to note that vegetation, as well as structures, must remain below the OLS and PANS-OPS to avoid becoming a hazard to aircraft operations..

The OLS and PANS-OPS limits are conventionally expressed in metres above the Australian Height Datum (AHD), not above ground level. Therefore, limits must be compared to the ground elevations to understand the height available above the ground.

The ground beneath these surfaces varies in elevation ranging from 76 m AHD to 100 m AHD under the OLS as shown **M21116/7.1**. The OLS consists of a complex series of sloping surfaces and also shown on Figure **M21116/7.1**. Therefore, the available height above the ground ranges from approximately 2 m to 10 m across the site (the elevation of the OLS minus the elevation of the ground) and within the extents of the Runway 06 take-off climb surface.

As a certified airport under Part 139 of the *Civil Aviation Safety Regulations 1996* there are number of requirements that must be met, including regular obstacle surveys. These surveys identify infringements of the OLS and report them back to the airport operator for action.

Given the adjacent vegetated landscape already exists within the proposed Environmental Conservation precinct, it is assumed current obstacle monitoring and management practices are acceptable to Camden Airport. Ongoing discussions with the airport operator are recommended to confirm the monitoring and mitigation measures currently in place will remain appropriate, and will also be applied to the Residue Site going forward.

3.6.4 Helicopter Landing Site

Camden Airport has a main HLS located on the northern side of Runway 06/24 with flight paths that operate parallel to the runway centreline so as not to cause traffic conflicts with fixed wing operations. The subject land is beneath the arrival and departure paths for the main HLS as illustrated on **Figure M21116/08** (Refer to Appendix "G").

The helicopter OLS ranges from approximately 107 m AHD to 163 m AHD across the south eastern quadrant of the subject land. The ground beneath this surface is also changing in elevation ranging from 73 m AHD to 95 m AHD. Therefore, the available height above the ground ranges from 34 m to 68 m (the elevation of the helicopter OLS minus the elevation of the ground).

3.7 Guideline G: Protecting Aviation Facilities – Communication, Navigation and Surveillance (CNS)

The purpose of Guideline G is to formalise the protection of CNS facilities in land use planning decisions. This Guideline provides land use planning guidance to better protect CNS facilities which support the system and processes in place by various agencies to safely manage the flow of aircraft into, out of and across Australian airspace. The Guideline also informs procedures which ensure development associated activities within Building Restricted Areas (BRA) of CNS facilities do not adversely affect the facility or cause interference for air traffic controllers or aircraft in transit.

The Camden Airport does not host any CNS facilities as listed in Guideline G.

3.8 Guideline H: Protecting Strategically Important Helicopter Landing Sites

Guideline H provides guidance to State/Territory and local government decision makers as well as the owners/operators of identified strategically important Helicopter Landing Sites (SHLS) for the ongoing operations and to ensure SHLS are not compromised by any propose development. For the purposes of this Guideline, an SHLS is an area not located on an aerodrome. The HLS on Camden Airport is discussed in **Section 3.6.1**.

A SHLS is that as identified as being of strategic importance as well as associated with a hospital, elevated in a populated area and/or subject to instrument flight procedures. The flight path protection areas extend 3.5 km from the SHLS. Camden Hospital is approximately 3 km from the southern end of the subject land but does not appear to include HLS facilities.

3.9 Guideline I: Managing the Risk in Public Safety Zones at the Ends of Runways

Guideline I provides guidance on approaches for the application of Public Safety Areas (PSA) planning framework in Australian jurisdictions. The Guideline is intended to ensure there is no increase in risk from new development and assist land-use planners to better consider public safety when assessing development proposals, rezoning requirements and when developing strategic land use plans.

The Guideline acknowledges that the UK and Queensland approaches to the development of PSA contours are of most relevance to Australia. The dimensions of the Queensland PSA template were determined with reference to the UK methodology for determining third party risk.

Camden Airport Master Plan 2020 has identified Public Safety Areas at the end of each runway. The south eastern end of the subject land is within the Runway 24 PSA as illustrated on **Figure M21116/09** (Refer to Appendix “H”).

Any proposals for development on the Residue Site will need to take into consideration Guideline I *Table 1: General guidance for new/proposed developments on compatible and incompatible activities within PSA risk contours.* As a general guide, the types of new or changed development considered compatible or incompatible are included in Table 1 of the Guideline, which is reproduced as Appendix "I".

4. CONCLUSION

REHBEIN Airport Consulting has completed an assessment of the subject land at 229 Macquarie Road Grove, Cobbitty against the NASF Guidelines A through I. The assessment against each Guideline is summarised below:

- **Guideline A**: The majority of the subject land is outside the 20 ANEF contour. Part of the land identified as the Residue Site, Conservation and Mater Dei School and Curtilage lie within the 20 to 25 ANEF zone. Any proposed development within these areas will need to consider AS2021:2015. The likely implications are that land use authorities may consider that the incorporation of noise control features in the construction of residences or schools is appropriate;

- **Guideline B:** The western half of the subject land is within the building generated windshear and turbulence assessment trigger area. Guideline B is applicable to buildings only, as such should any building developments be proposed within the assessment trigger area, they will be subject to the 1 in 35 surface. The likely implications are that where proposed buildings infringe the 1 in 35 surface further assessment will be required in accordance with the Guideline. Further assessment involves a qualified wind engineer or other suitably qualified wind professional to assess the proposed structure using wind tunnel testing or computational fluid dynamics in order to satisfy the approval authority/decision maker that the structure is acceptable;

- **Guideline C**: The subject land is within the 3 km wildlife buffer zone. Conservation area – dryland is a 'moderate' risk under Attachment 1 to Guideline C with 'mitigation' is required. Consultation with the airport operator is required to maintain vegetation and any future vegetation from infringing the Camden Airport protected airspace. The likely implications are that there is limited height restrictions depending on location as low as 2 m above the ground, specifically the Residue Site;

- **Guideline D**: No wind turbines or wind monitoring towers are proposed;

- **Guideline E:** The subject land is within the 6 km radius and the primary area light control zones A, B, C and D. Coloured lights, flashing lights or lasers within the 6 km radius must be referred to CASA. Lighting associated with any proposals within the corresponding zone must therefore meet the restrictions associated with that Zone. The lighting designer will need to ensure that the lights meet the requirements prescribed in the CASA *Part 139 (Aerodromes) Manual of Standards 2019 Section 9.144: Lights – requirements for zones*. Compliance within each zone is expected to be manageable given the proposed land is for environmental conservation (E2) and rural landscape (RU2).

- **Guideline F**: The subject land is within the Camden Airport OLS and PANS-OPS extents. The OLS limit ranges from approximately 78 m AHD over the Conservation area at the southern end of the subject land across the Residue Site to 113.0 m AHD over the majority of the subject land. The helicopter OLS ranges from approximately 107 m AHD to 163 m AHD across the south eastern quadrant of the subject land. The PANS-OPS is estimated at approximately 200 m AHD over the subject land. The likely implications are any development proposals on the subject land will need to stay below the OLS and vegetation will also need to be managed to remain below the OLS.

- **Guideline G**: Camden Airport does not host any CNS facilities as listed in Guideline G;

- **Guideline H**: The Camden Hospital is the only hospital within 3.5 km of the subject land however, does not appear to have an HLS and therefore has no implications for the subject proposal; and

- **Guideline I**: the south east portion of the subject land is within the Public Safety Area in accordance with Guideline I. Any proposals for development will need to take into consideration Guideline I *Table 1: General guidance for new/proposed developments on compatible and incompatible activities within PSA risk contours.* The principal implications for the proposal will be to prevent residential development or other activities which encourage the congregation of large numbers of people within the PSA.

For further information in relation to the above, please contact the undersigned.

Yours faithfully
For and on behalf of
LAMBERT REHBEIN (VIC) PTY LTD

[redacted]

BRIDGET WOUTS MPIA
PRINCIPAL CONSULTANT

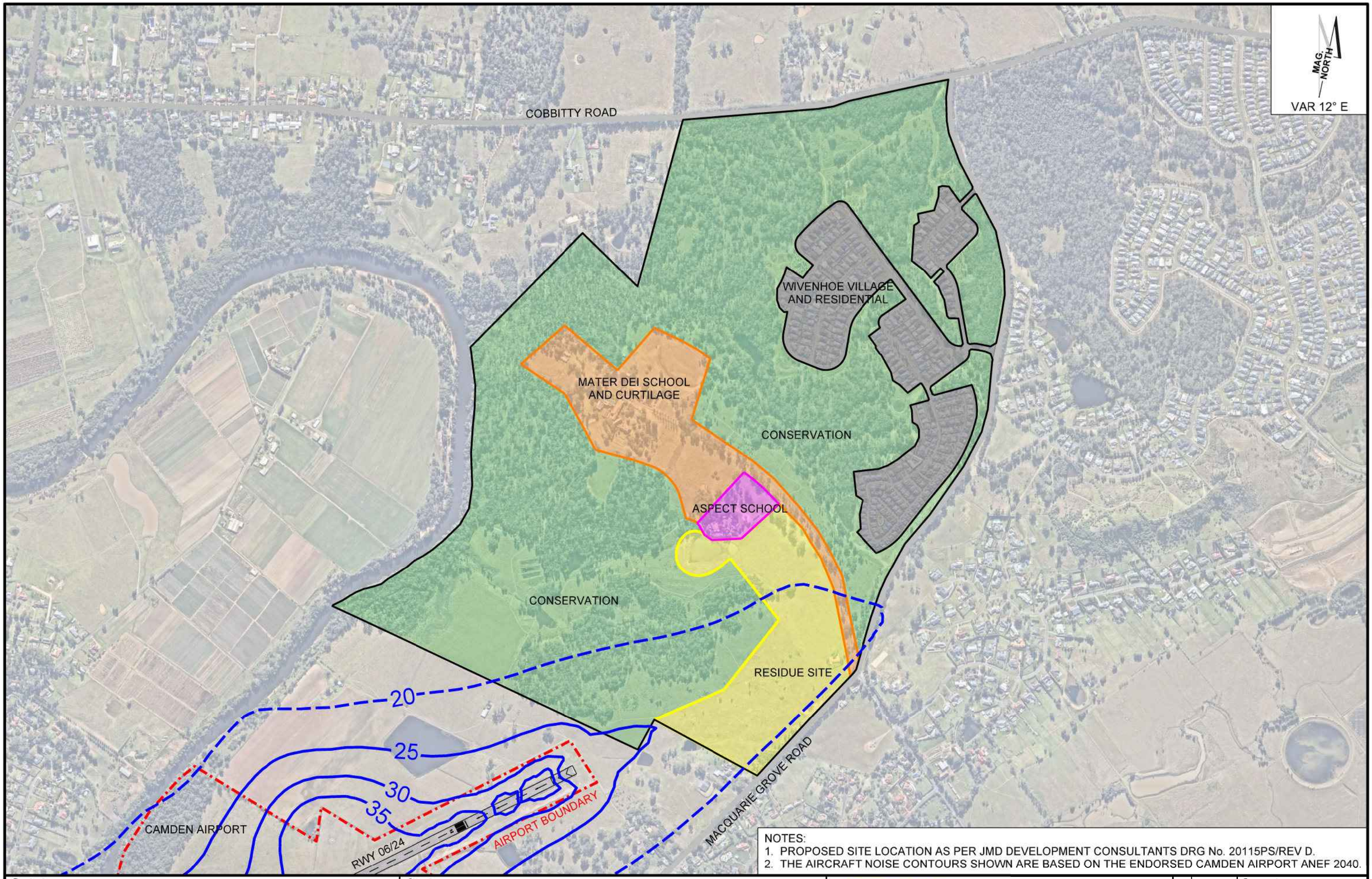
Enc: Appendix A - I

APPENDIX A

NASF Guideline A – Aircraft Noise

Camden Airport Endorsed ANEF 2040

(Figure M21116/01)



NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. THE AIRCRAFT NOISE CONTOURS SHOWN ARE BASED ON THE ENDORSED CAMDEN AIRPORT ANEF 2040.

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE A
CAMDEN AIRPORT
ENDORSED ANEF 2040

REHBEIN Airport Consulting
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

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APPENDIX B

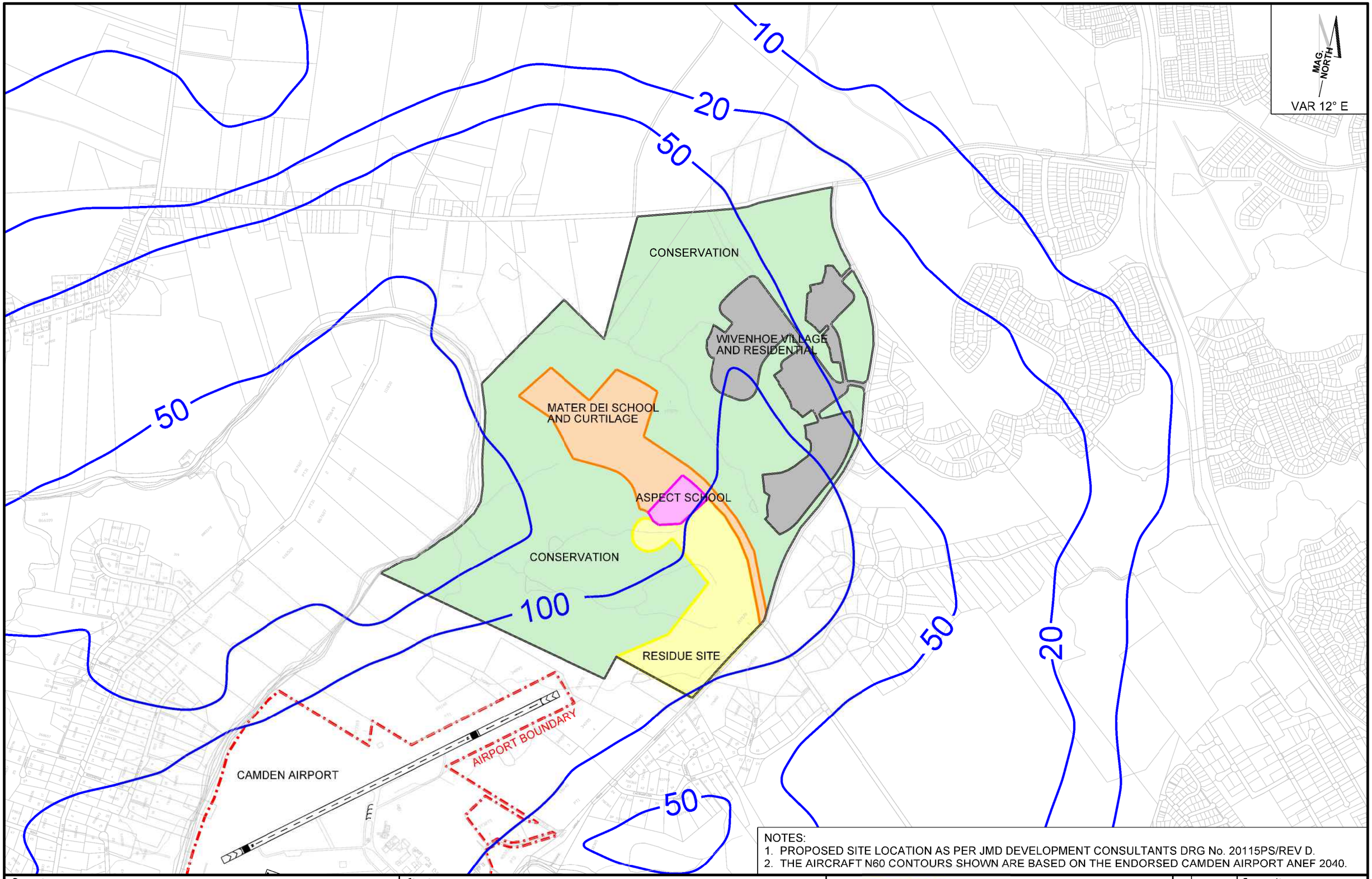
NASF Guideline A – Aircraft Noise

Camden Airport - N60 Contour ANEF 2040

(Figure M21116/02)

Camden Airport - N70 Contour ANEF 2040

(Figure M21116/03)



NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. THE AIRCRAFT N60 CONTOURS SHOWN ARE BASED ON THE ENDORSED CAMDEN AIRPORT ANEF 2040.

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE A
N60 CONTOUR ANEF 2040

REHBEIN Airport Consulting
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

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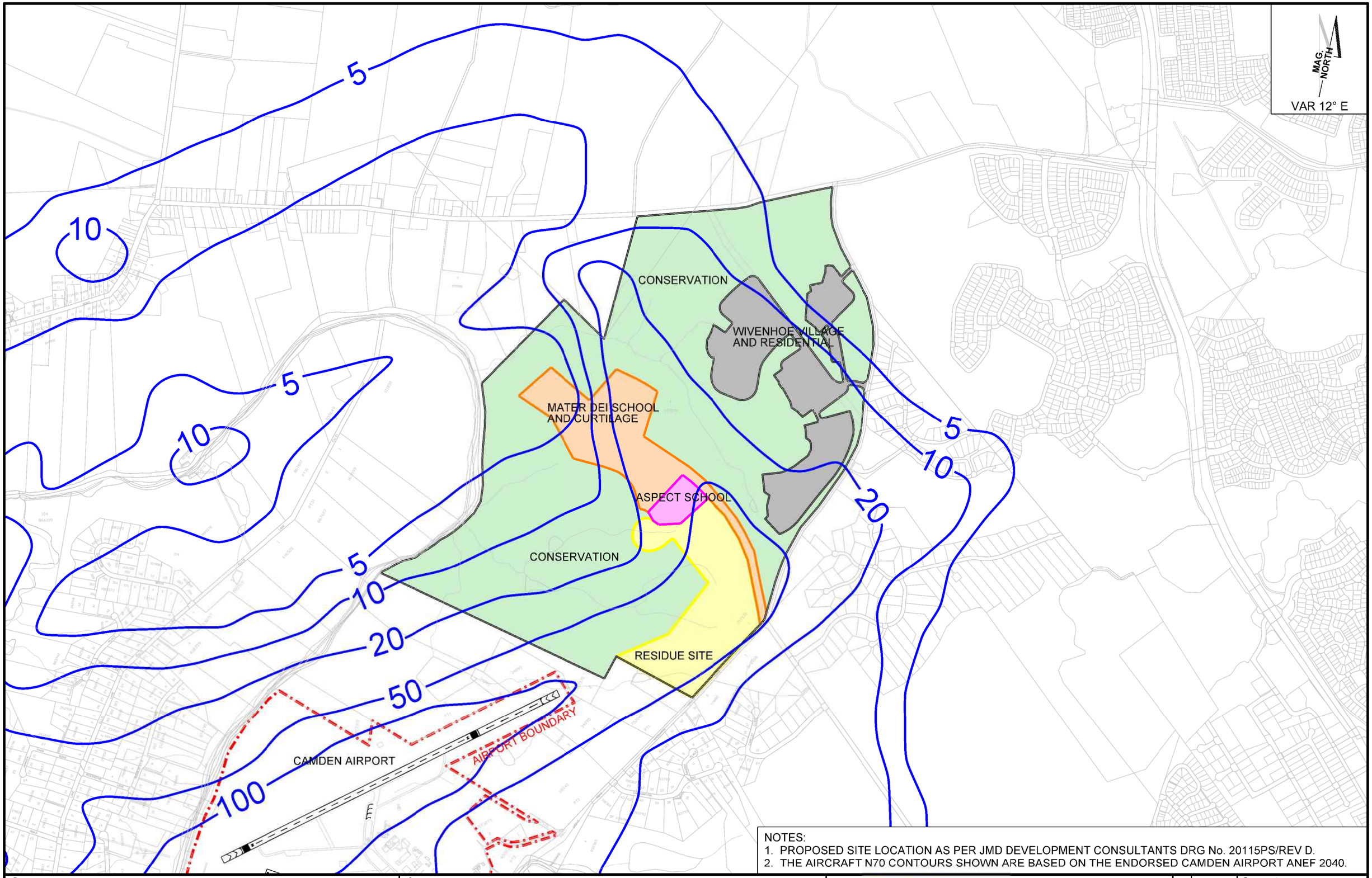

NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. THE AIRCRAFT N70 CONTOURS SHOWN ARE BASED ON THE ENDORSED CAMDEN AIRPORT ANEF 2040.

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE A
N70 CONTOUR ANEF 2040

REHBEIN Airport Consulting
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

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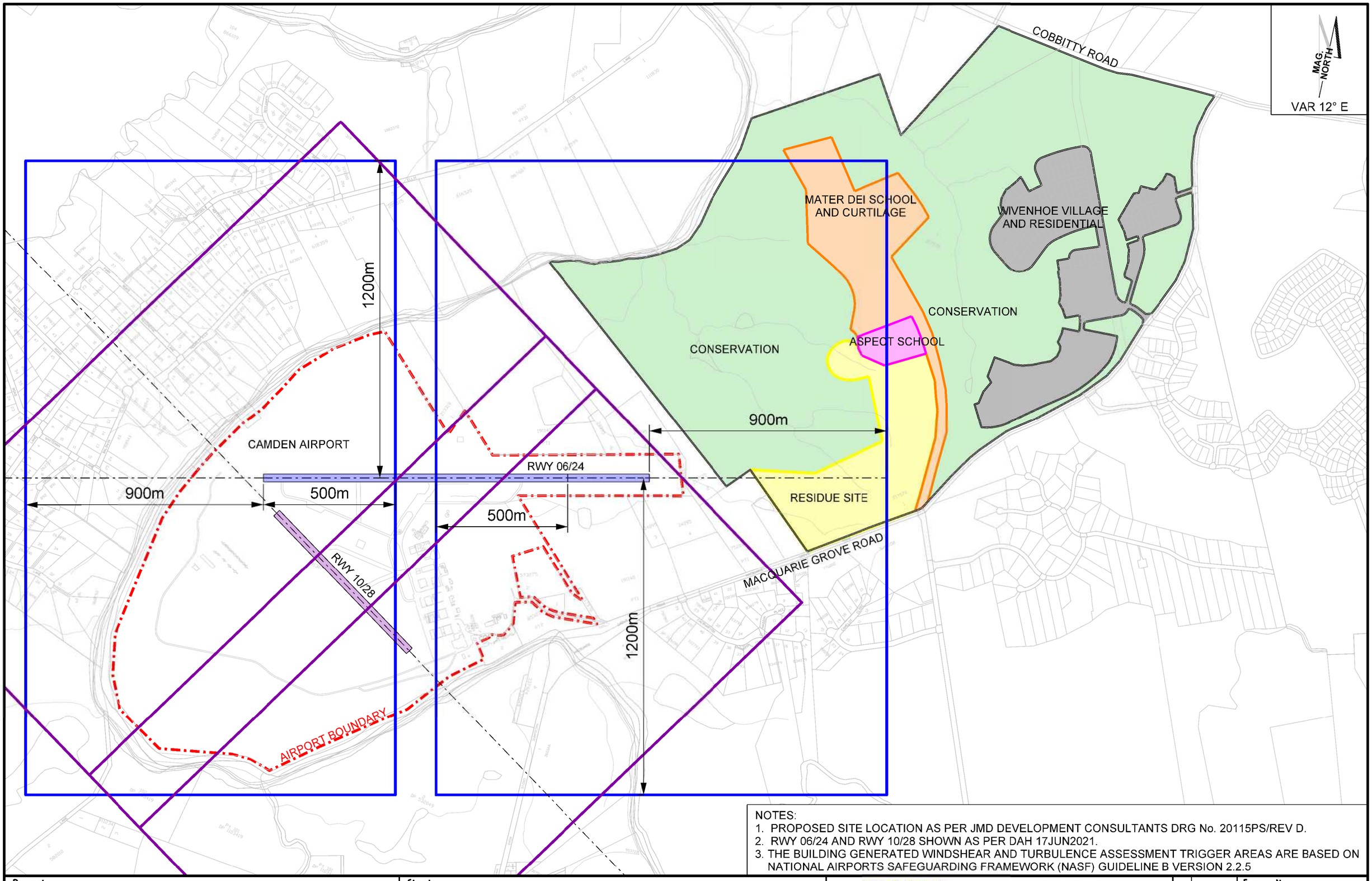
APPENDIX C

NASF Guideline B – Building Generated Windshear & Turbulence Assessment Trigger Areas

(Figure M21116/04)



NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. RWY 06/24 AND RWY 10/28 SHOWN AS PER DAH 17JUN2021.
3. THE BUILDING GENERATED WINDSHEAR AND TURBULENCE ASSESSMENT TRIGGER AREAS ARE BASED ON NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK (NASF) GUIDELINE B VERSION 2.2.5

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE B
BUILDING GENERATED WINDSHEAR & TURBULENCE ASSESSMENT TRIGGER AREAS

REHBEIN Airport Consulting
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

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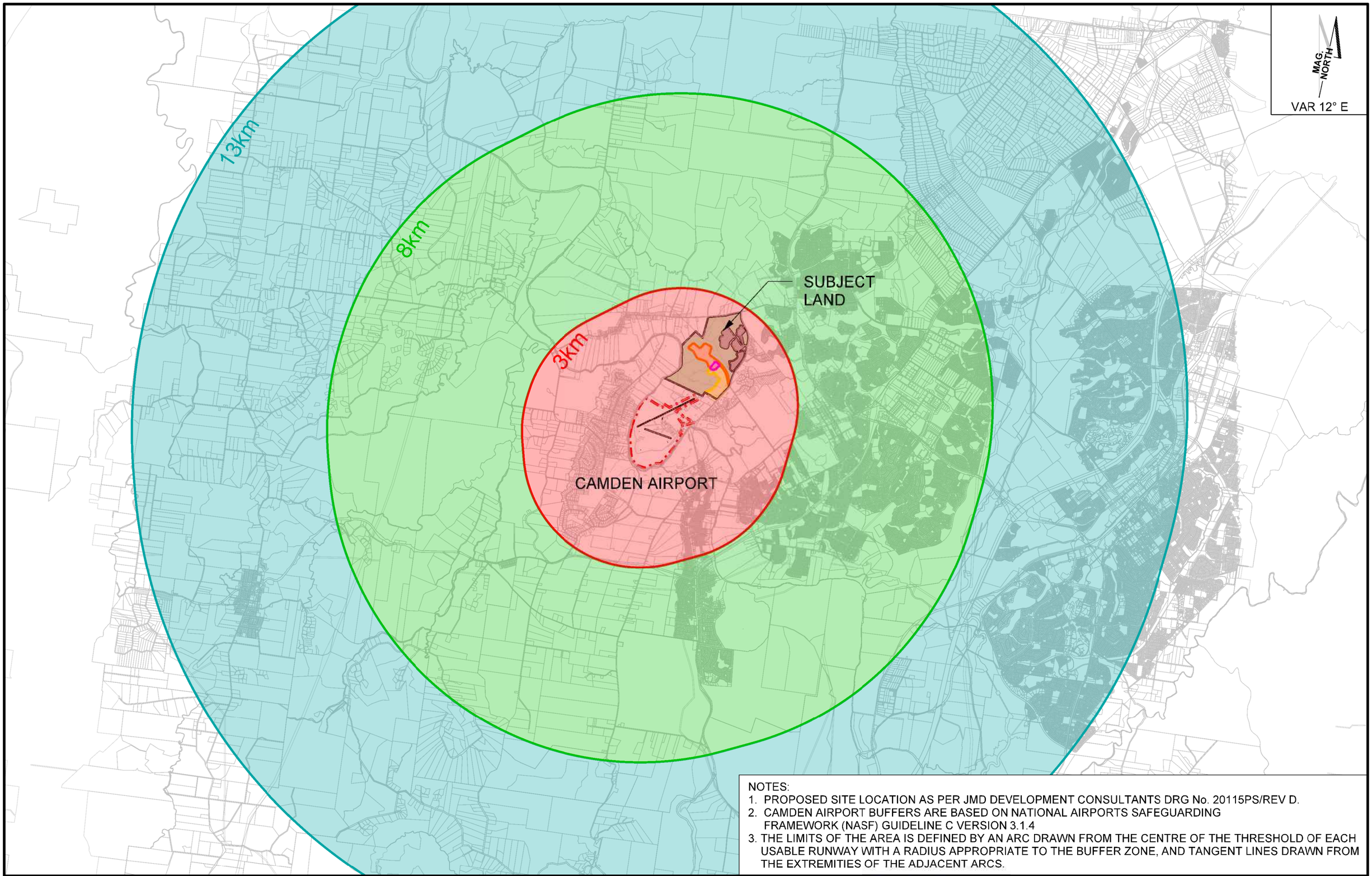
APPENDIX D

NASF Guideline C – Wildlife Buffer Zones

Wildlife Buffer Zones - Camden Airport

(Figure M21116/05)

Attachment 1 to Guideline C



NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. CAMDEN AIRPORT BUFFERS ARE BASED ON NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK (NASF) GUIDELINE C VERSION 3.1.4
3. THE LIMITS OF THE AREA IS DEFINED BY AN ARC DRAWN FROM THE CENTRE OF THE THRESHOLD OF EACH USABLE RUNWAY WITH A RADIUS APPROPRIATE TO THE BUFFER ZONE, AND TANGENT LINES DRAWN FROM THE EXTREMITIES OF THE ADJACENT ARCS.

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE C
WILDLIFE BUFFER ZONES - CAMDEN AIRPORT

REHBEIN Airport Consulting
CONSULT AUSTRALIA
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

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Land Use	Wildlife Attraction Risk	Actions for Existing Developments			Actions for Proposed Developments/ Changes to Existing Developments		
		3 km radius (Area A)	8 km radius (Area B)	13 km radius (Area C)	3 km radius (Area A)	8 km radius (Area B)	13 km radius (Area C)
Agriculture							
Turf farm	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Piggery	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fruit tree farm	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Fish processing /packing plant	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Cattle /dairy farm	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Poultry farm	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Forestry	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Plant nursery	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Conservation							
Wildlife sanctuary / conservation area - wetland	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Wildlife sanctuary / conservation area - dryland	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Recreation							
Showground	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Racetrack / horse riding school	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Golf course	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Sports facility (tennis, bowls, etc)	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Park / Playground	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Picnic / camping ground	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Commercial							
Food processing plant	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Warehouse (food storage)	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Fast food / drive-in / outdoor restaurant	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Shopping centre	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action
Office building	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Hotel / motel	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Car park	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Cinemas	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Warehouse (non-food storage)	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Petrol station	Very Low	Monitor	No Action	No Action	Monitor	No Action	No Action
Utilities							
Food / organic waste facility	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Putrescible waste facility - landfill	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Putrescible waste facility - transfer station	High	Mitigate	Mitigate	Monitor	Incompatible	Mitigate	Monitor
Non-putrescible waste facility - landfill	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Non-putrescible waste facility - transfer station	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Sewage / wastewater treatment facility	Moderate	Mitigate	Monitor	Monitor	Mitigate	Mitigate	Monitor
Potable water treatment facility	Low	Monitor	Monitor	No Action	Monitor	Monitor	No Action

APPENDIX E

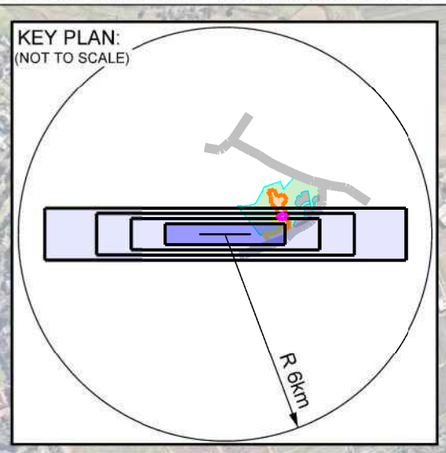
NASF Guideline E – Lighting in the Vicinity of Airports

Maximum Lighting Intensity Zones

(Figure M21116/06)

NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. THE MAXIMUM INTENSITY OF LIGHT SOURCES SHOWN ARE BASED ON NATIONAL AIRPORTS SAFEGUARDING FRAMEWORK (NASF) GUIDELINE E VERSION 5.1.4 AND CASA PART 139 (AERODROMES) MANUAL OF STANDARDS 2019 SECTION 9.144: LIGHTS - REQUIREMENTS FOR ZONES.

KEY PLAN:
(NOT TO SCALE)



MAG. NORTH
VAR 12° E

Maximum Intensity of Light Sources Measured at 3° Above the Horizontal	
Zone A	0 cd
Zone B	50 cd
Zone C	150 cd
Zone D	450 cd

*cd = Candela (the common candle emits light at an intensity of roughly one candela)

COBBITTY ROAD
CONSERVATION
CONSERVATION
MATER DEI SCHOOL AND CURTILAGE
WIVENHOE VILLAGE AND RESIDENTIAL
ASPECT SCHOOL
ZONE D
ZONE C
ZONE B
ZONE A
RESIDUE SITE
MACQUARIE GROVE ROAD
CAMDEN AIRPORT
RWY 06/24
AIRPORT BOUNDARY
600m
900m
1200m
00m
1000m
2000m

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE E
MAXIMUM LIGHTING INTENSITY ZONES

REHBEIN Airport Consulting
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

Drawn MK | Checked BMW | Approved BMW

Rev	Date
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Figure No
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Scale 1:11,000
A3
File Ref M21116
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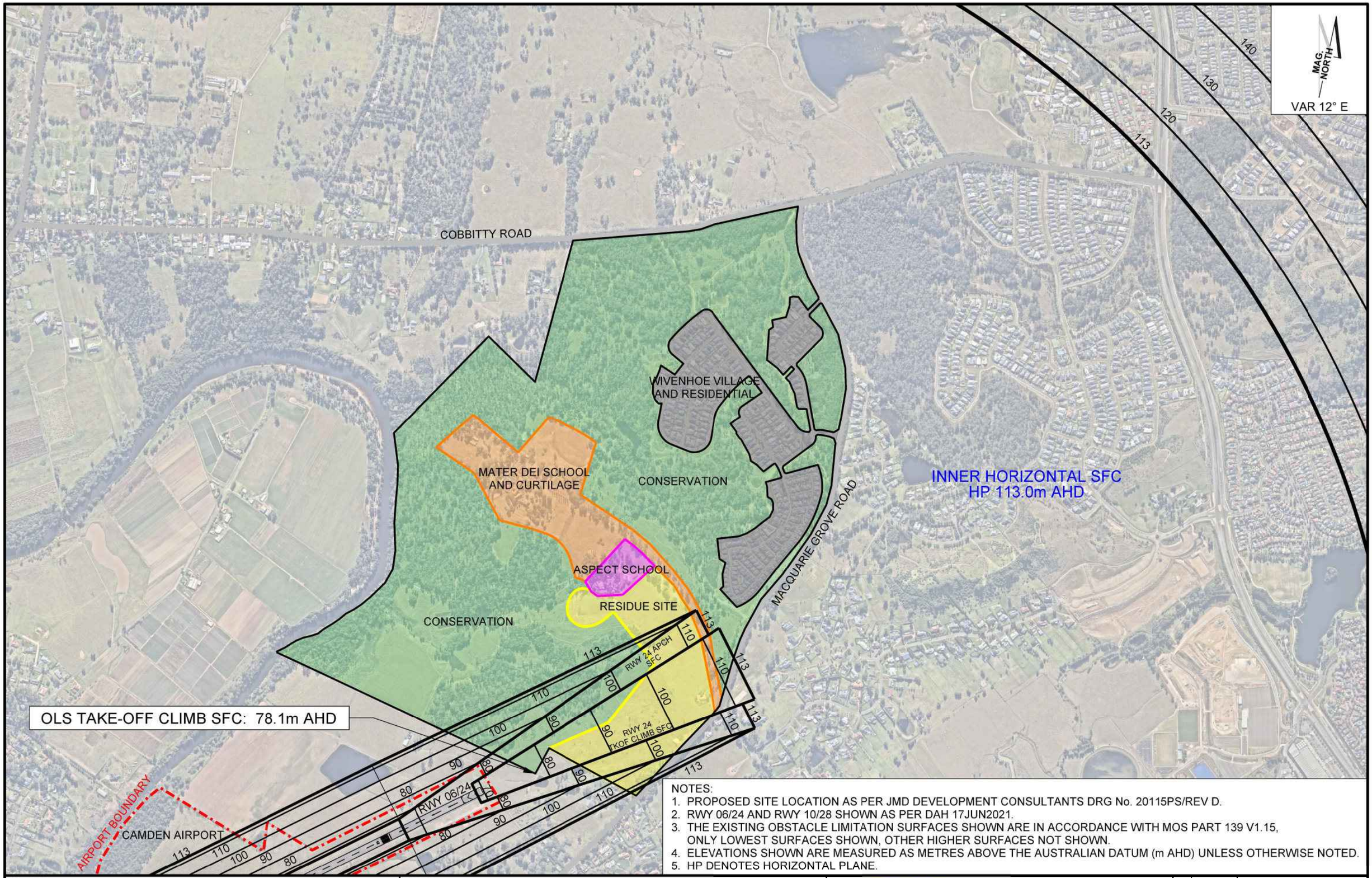
APPENDIX F

NASF Guideline F – Protected Operational Airspace

Obstacle Limitation Surfaces

(Figure M21116/07 & Figure M21116/7.1)



NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. RWY 06/24 AND RWY 10/28 SHOWN AS PER DAH 17JUN2021.
3. THE EXISTING OBSTACLE LIMITATION SURFACES SHOWN ARE IN ACCORDANCE WITH MOS PART 139 V1.15, ONLY LOWEST SURFACES SHOWN, OTHER HIGHER SURFACES NOT SHOWN.
4. ELEVATIONS SHOWN ARE MEASURED AS METRES ABOVE THE AUSTRALIAN DATUM (m AHD) UNLESS OTHERWISE NOTED.
5. HP DENOTES HORIZONTAL PLANE.

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE F
OBSTACLE LIMITATION SURFACES

REHBEIN Airport Consulting
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

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Rev	Date
0	18 09 21

Figure No
M21116/07

Scale 1:13,000 | A3 Sheet Size

File Ref M21116

TitleSheet-V00

NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. RWY 06/24 AND RWY 10/28 SHOWN AS PER DAH 17JUN2021.
3. THE EXISTING OBSTACLE LIMITATION SURFACES SHOWN ARE IN ACCORDANCE WITH MOS PART 139 V1.15, ONLY LOWEST SURFACES SHOWN, OTHER HIGHER SURFACES NOT SHOWN.
4. ELEVATIONS SHOWN ARE MEASURED AS METRES ABOVE THE AUSTRALIAN DATUM (m AHD) UNLESS OTHERWISE NOTED.
5. HP DENOTES HORIZONTAL PLANE.
6. GROUND LEVELS SHOWN ACROSS THE SUBJECT LAND ARE APPROXIMATE AND INTENDED TO INDICATE THE GENERAL VARIATION IN GROUND ELEVATION ONLY

ASPECT SCHOOL
WIVENHOE VILLAGE AND RESIDENTIAL
CONSERVATION
RESIDUE SITE
MAG. NORTH
VAR 12° E
MACQUARIE GROVE ROAD
CONSERVATION
INNER HORIZONTAL SFC
HP 113.0m AHD
RWY 24 APCH SFC
RWY 24 TKOF CLIMB SFC
INNER HORIZONTAL SFC
HP 113.0m AHD
RWY 06/24
OLS TAKE-OFF CLIMB SFC: 78.1m AHD

Project: 'WIVENHOE' 229 MACQUARIE ROAD GROVE, COBBITTY AVIATION ASSESSMENT	Client: Trustees of the Sisters of the Good Samaritan Title: NASF GUIDELINE F OBSTACLE LIMITATION SURFACES	REHBEIN Airport Consulting SUITE 1, GROUND FLOOR 55 WALSH STREET WEST MELBOURNE VIC 3003 TELEPHONE (03) 9328 4166 EMAIL info@rehbein.aero WEB www.rehbein.aero Drawn MK · Checked BMW · Approved BMW	Figure No M21116/7.1 Scale 1:3,250 A3 Rev 0 · Date 18.09.21 File Ref M21116

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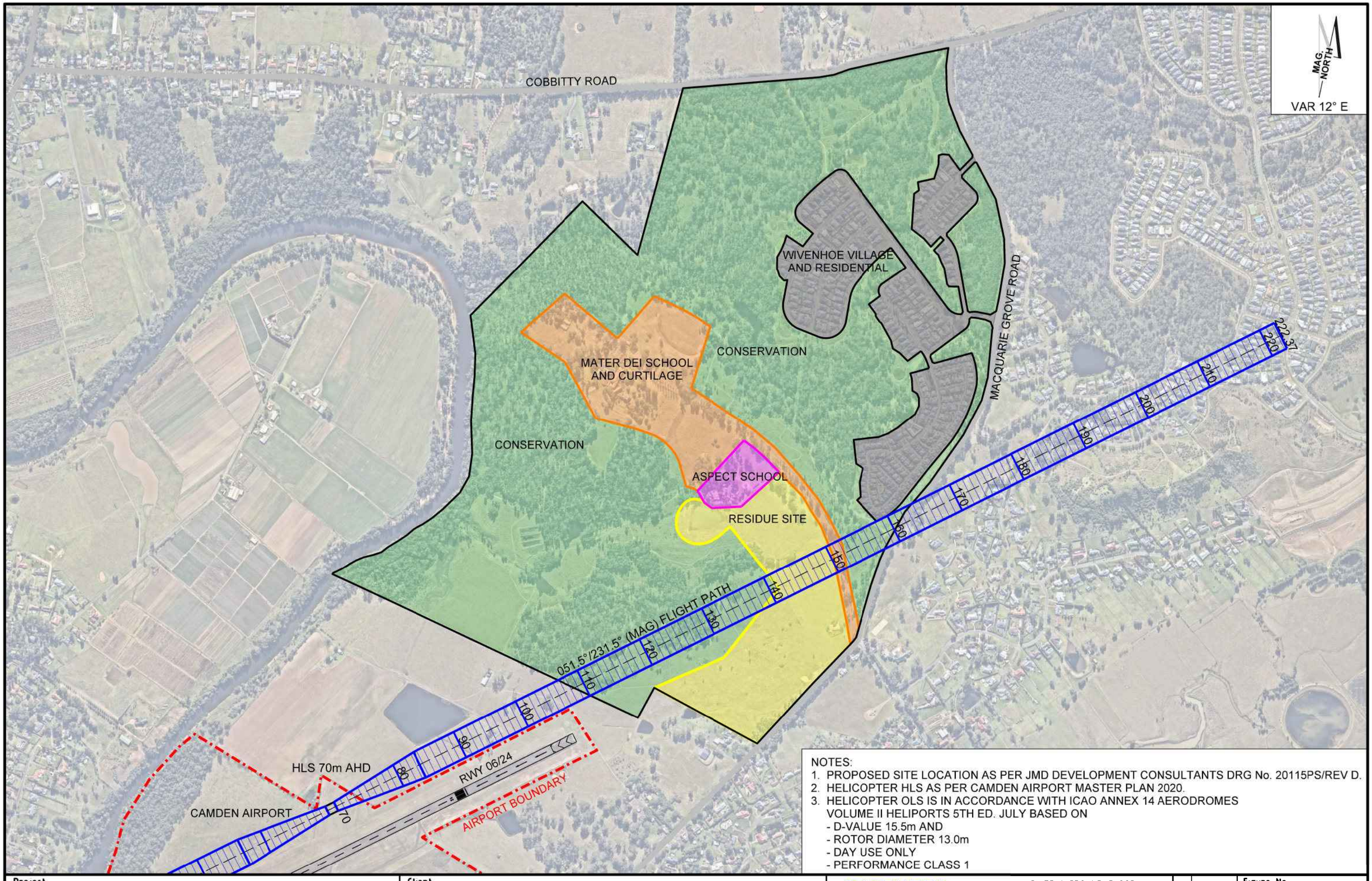
APPENDIX G

NASF Guideline F – Protected Operational Airspace

Helicopter OLS

(Figure M21116/08)



NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. HELICOPTER HLS AS PER CAMDEN AIRPORT MASTER PLAN 2020.
3. HELICOPTER OLS IS IN ACCORDANCE WITH ICAO ANNEX 14 AERODROMES VOLUME II HELIPORTS 5TH ED. JULY BASED ON
   - D-VALUE 15.5m AND
   - ROTOR DIAMETER 13.0m
   - DAY USE ONLY
   - PERFORMANCE CLASS 1

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE F
HELICOPTER OLS

REHBEIN Airport Consulting
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

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Rev	Date
0	18 09 21

Figure No M21116/08
Scale 1:11,000 A3
File Ref M21116 Sheet Size

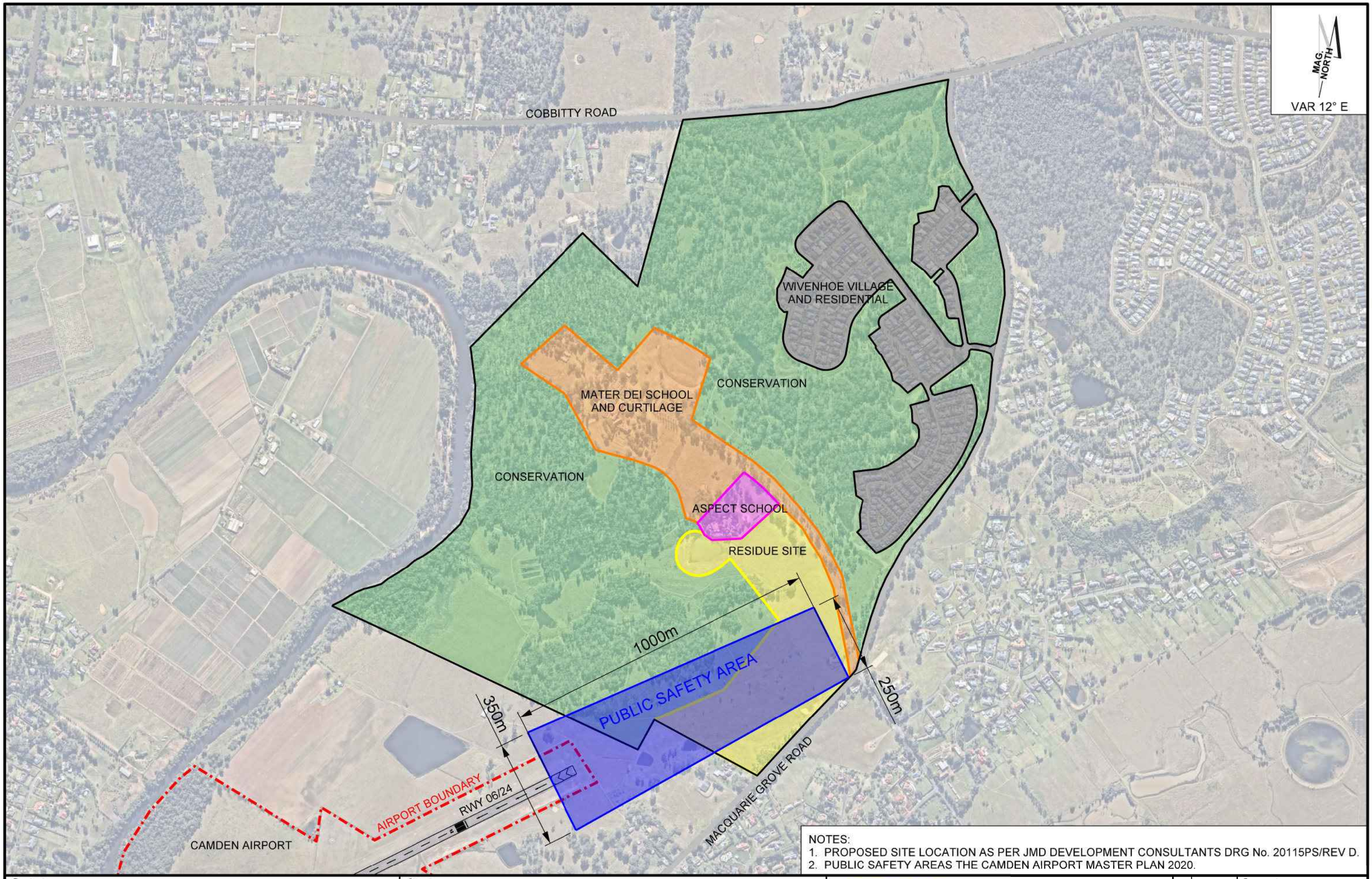
TitleSheet-V00

APPENDIX H

NASF Guideline I – Public Safety Areas

Camden Airport – Public Safety Areas MP 2020

(Figure M21116/09)



NOTES:
1. PROPOSED SITE LOCATION AS PER JMD DEVELOPMENT CONSULTANTS DRG No. 20115PS/REV D.
2. PUBLIC SAFETY AREAS THE CAMDEN AIRPORT MASTER PLAN 2020.

Project
'WIVENHOE'
229 MACQUARIE ROAD GROVE, COBBITTY
AVIATION ASSESSMENT

Client
Trustees of the Sisters of the Good Samaritan

Title
NASF GUIDELINE I
PUBLIC SAFETY AREA
CAMDEN AIRPORT MP2020

REHBEIN Airport Consulting
SUITE 1, GROUND FLOOR
55 WALSH STREET
WEST MELBOURNE VIC 3003
TELEPHONE (03) 9328 4166
EMAIL info@rehbein.aero
WEB www.rehbein.aero

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Rev	Date
0	18 09 21

Figure No
M21116/09

Scale 1.11,000 | A3 Sheet Size

File Ref M21116

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APPENDIX I

NASF Guideline I – Table 1

Table 1: General guidance for new/proposed developments on compatible and incompatible activities within PSA risk contours

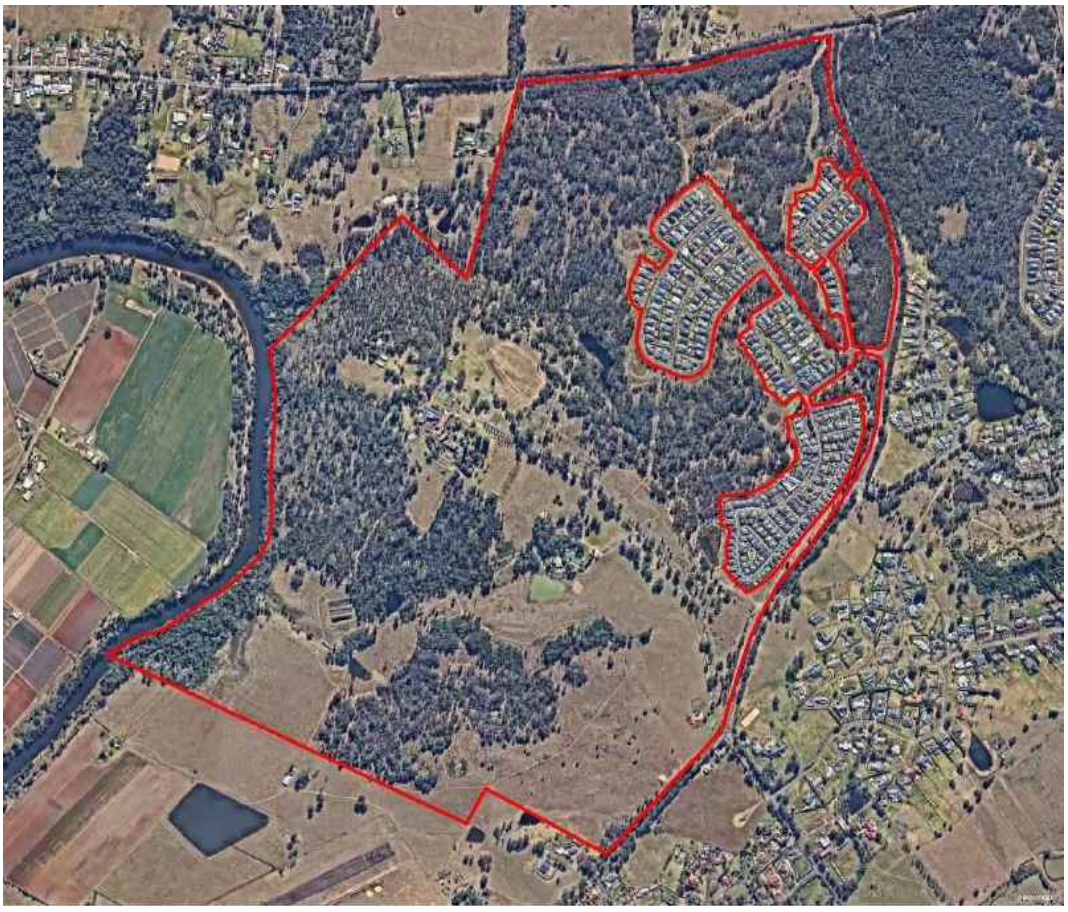
PSA	COMPATIBLE USES	INCOMPATIBLE USES/ACTIVITIES
OUTER AREA - 1 in 100,000	• **Long stay and employee car parking** (where the minimum stay is expected to be in excess of six hours) • **Shorter stay car parking** (with a safety case – depends on intensity of use) • **Built development for the purpose of housing plant or machinery** and would require **no people** on site on a regular basis, such as electricity switching stations or installations associated with the supply or treatment of water • **Golf courses, but not club houses** (provided appropriate mitigation measures are in place to reduce wildlife attraction risk - see NASF Guideline C) • **Open storage and types of warehouses with a very small number of people on site.** The planning authority could consider imposing conditions to prevent future intensification of the use of the site and limit the number of people to be present on the site • **Developments which require few or no people on site on a regular basis** such as buildings housing plant or machinery • **Low intensity public open space**	• **Accommodation activities:** This includes dwelling houses, multiple dwellings, resort complexes, tourist park, hostels, retirement villages or other residential care buildings • **Community activities**: educational establishment, community centres, hospitals, theatres, child-care and playgrounds, detention facilities, place of worship • **Recreation activities:** This includes parks, outdoor recreation and sport, major sport and entertainment facilities • **Entertainment and centre activities:** Shopping centres, service stations, showrooms, markets, hotels, theatres, tourist attraction, garden centres • **Industrial and commercial uses involving large numbers of workers or customers:** Intensive uses such as high impact, medium and low impact industry, warehousing, services industry • **Manufacture or bulk storage of flammable, explosive or noxious materials** • **Public passenger transport infrastructure:** This includes bus, train and light rail stations
INNER AREA – 1 in 10,000	• **Long stay and employee car parking** (where the minimum stay is expected to be in excess of six hours) • **Built development for the purpose of housing plant or machinery** and would require **no people** on site on a regular basis, such as electricity switching stations or installations associated with the supply or treatment of water • **Golf courses, but not club houses** (provided appropriate mitigation measures are in place to reduce wildlife attraction risk - see NASF Guideline C)	• **Accommodation activities:** This includes dwelling houses, multiple dwellings, resort complexes, tourist park, hostels, retirement villages or other residential care buildings • **Community activities**: educational establishment, community centres, hospitals, theatres, child-care and playgrounds, detention facilities, place of worship • **Recreation activities:** This includes parks, outdoor recreation and sport, major sport and entertainment facilities • **Entertainment and centre activities:** Shopping centres, service stations, showrooms, markets, hotels, theatres, tourist attraction, garden centres • **Industrial and commercial uses involving large numbers of workers or customers:** Intensive uses such as high impact, medium and low impact industry, warehousing, services industry • **Manufacture or bulk storage of flammable, explosive or noxious materials** • **Public passenger transport infrastructure:** This includes bus, train and light rail stations

Annex I

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "I"
Transport Assessment
(Transport Planning Partnership)

October 2021

"Wivenhoe" Planning Proposal Request
229 Macquarie Grove Road, Cobbitty

Preliminary Transport Assessment

Prepared for:

Pascoe Planning Solutions

13 September 2021

The Transport Planning Partnership

E: info@ttpp.net.au

"Wivenhoe" Planning Proposal Request
229 Macquarie Grove Road, Cobbitty

Preliminary Transport Assessment

Client: Pascoe Planning Solutions

Version: V03

Date: 13 September 2021

TTPP Reference: 21192

Quality Record

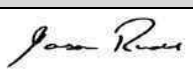
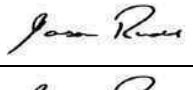
Version	Date	Prepared by	Reviewed by	Approved by	Signature
V01	20/08/21	CH/SR	JR	JR	
V02	10/09/21	SR	JR	JR	
V03	13/09/21	SR	R	Jr	

Table of Contents

Tables

Figures

1 Introduction

The Trustees of the Sisters of the Good Samaritan as owners of the "Wivenhoe" property at 229 Macquarie Road Cobbitty, are seeking to prepare a Planning Proposal Request (PPR) for the Wivenhoe site.

The Wivenhoe site currently provides a range of existing educational and environmental land uses including the special needs Mater Dei School and Autism Spectrum Australia school.

The purpose of the PPR is to rationalise the existing land uses on the site, namely education and environmental uses to create a residual parcel of land and to amend the zoning provisions under the Camden Local Environmental Plan that would allow alternate or complementary land uses to be provided on the site.

The Transport Planning Partnership (TTPP) has prepared this report to assess and understand the impacts of existing and limited development land use precincts comprising the site on the existing road network and any consequential implications for road and access infrastructure.

1.1 Report Structure

The report is structured as follows:

- Section 2 outlines the existing transport conditions for the site
- Section 3 provides a summary of the transport planning context for the site
- Section 4 provides a preliminary analysis and assessment of traffic generating scenarios for the site, implications to vehicle access and road network improvements
- Section 5 summarises the findings of the study.

1.2 Limitations

This assessment has been prepared under the lock down conditions as part of the Covid-19 Pandemic. We therefore have not been able to collect comprehensive existing traffic data to facilitate detailed traffic modelling for the potential land use scenarios for the site.

The conclusions from the analysis undertaken are however, deemed to suitably robust for a planning proposal.

2 Existing Conditions

2.1 Site Context

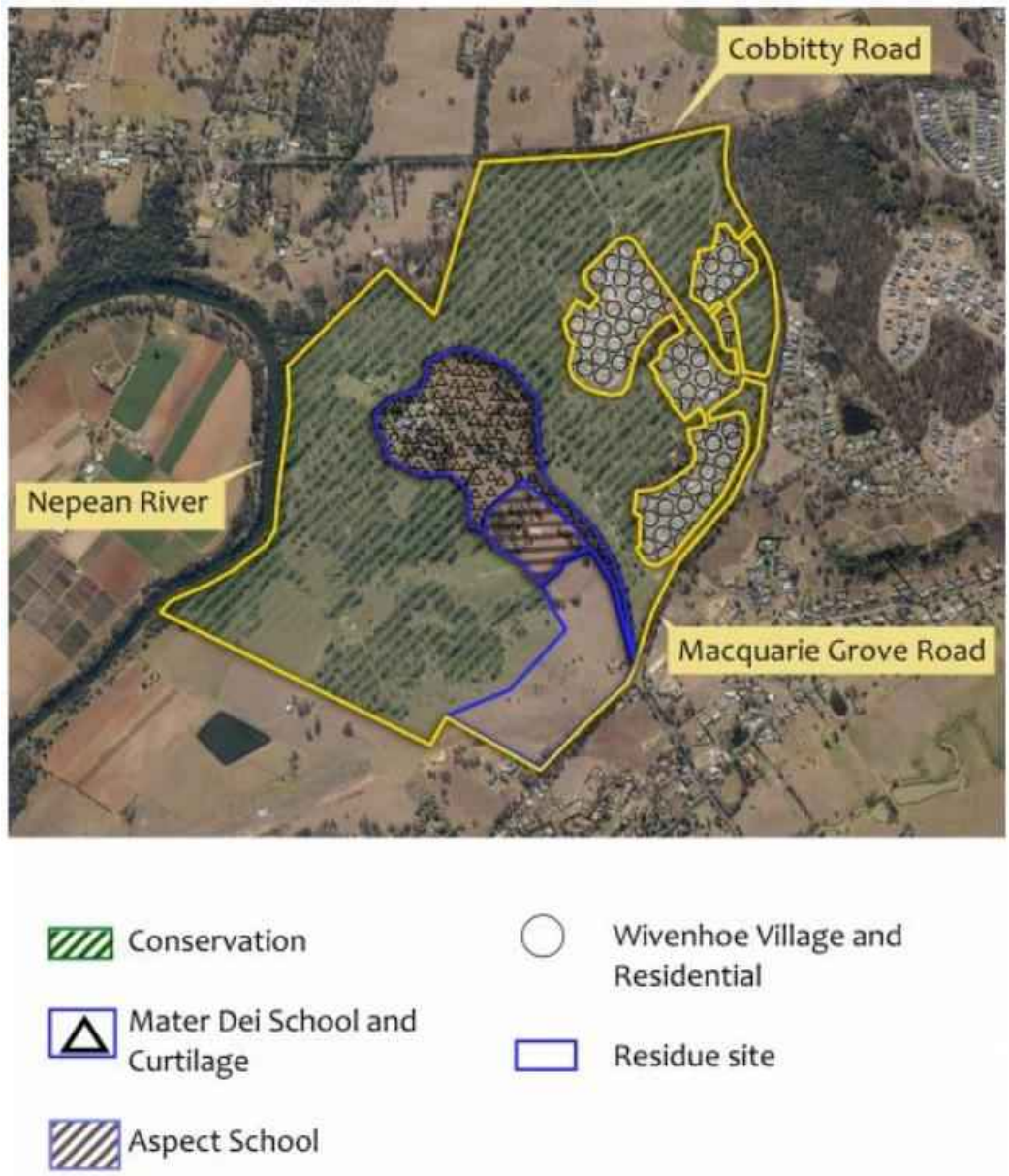
The site comprises approximately 250 hectares and is located at 229 Macquarie Road, Cobbitty, approximately 49 km southwest of the Sydney CBD. Figure 2.1 shows the location of the site on a map.

Figure 2.1: Site Location

Base Map Source: Carto Voyager

The existing site currently includes extensive natural environment conservation lands, educational precincts and vacant rural land (residue) sites. The Wivenhoe Village and residential estate does not comprise part of the site under consideration (refer to Figure 2.2).

Figure 2.2: Site Context



Source: Pascoe Planning Solutions

2.2 Road Network

2.2.1 Macquarie Grove Road

Macquarie Grove Road is a two-way two-lane local road which runs along the east and southern boundaries of the site. The road has a posted speed limit of 70 km/h which is reduced to a school zone speed limit of 40 km/h within the vicinity of the Mater Dei school. The road provides a connection between Cobbitty in the north and Camden in the south. Macquarie Grove Road intersects with Cobbitty Road in the north and is the minor road of this intersection, governed by a STOP sign control.

2.2.2 Cobbitty Road

Cobbitty Road is a two-way, two-lane local road which runs in an east-west direction within the vicinity of the site. The road runs along the northern boundary of the site. Cobbitty Road has a posted speed limit of 80 km/h. The road provides a connection between Harrington Park and Brownlow Hill.

2.2.3 Kirkham Lane

Kirkham Lane is a two-way, two-lane local road which runs in a northwest-southeast direction within the vicinity of the site. The road has a posted speed limit of 70 km/h which is reduced to a school zone speed limit of 40 km/h within the vicinity of the Mater Dei school. Kirkham Lane intersects with Macquarie Grove Road southeast of the site. Kirkham lane is the minor road at this intersection and is governed by a 'STOP' sign control.

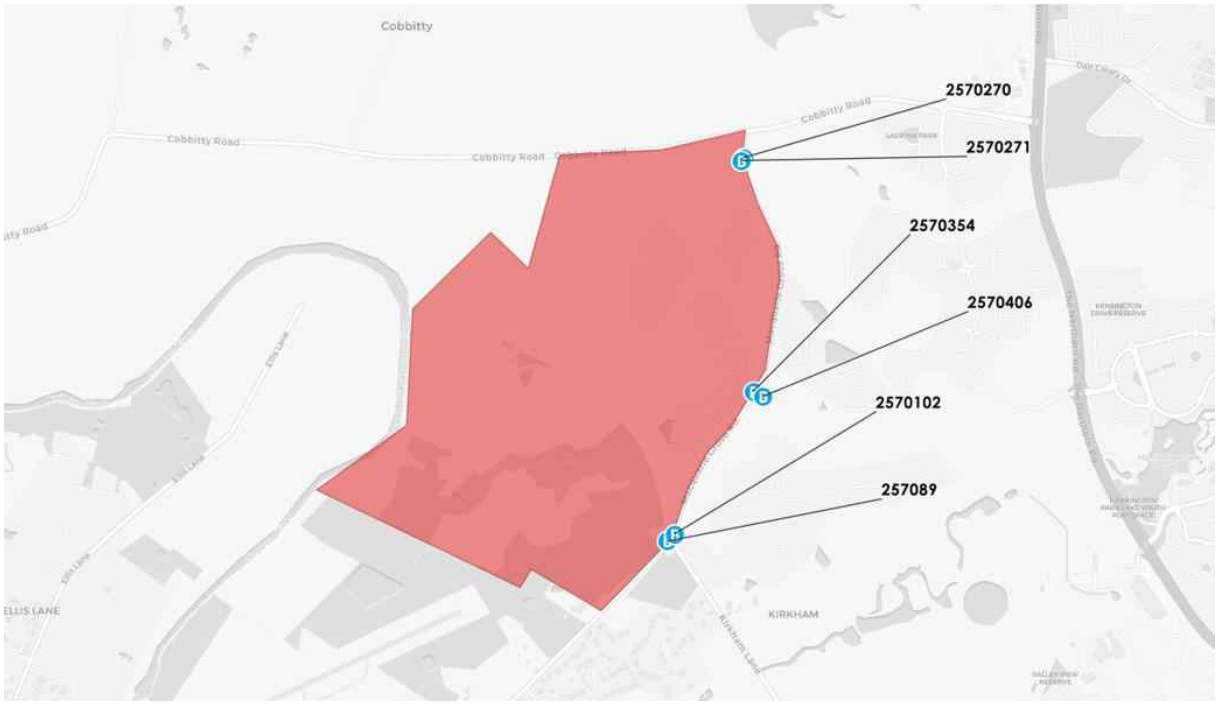
2.2.4 Mater Dei Accessway

Mater Dei accessway is a two-way two-lane private road which runs through the site. The accessway has a posted speed limit of 40 km/h. Mater Dei Road intersects with Macquarie Grove Road at the southern end of the site and is the minor road at this intersection. Vehicles on Mater Dei accessway are required to give way to vehicles along Macquarie Grove Road when leaving the site. The accessway has no kerb and gutters, unformed shoulders and does not have a formal pedestrian path.

2.3 Public Transport

The site has limited access to buses with Figure 2.3 indicating the location of nearby bus stops which service the site. These bus stops are unmarked and have no defined waiting areas.

Figure 2.3: Bus Stops (Stop IDs) along boundary of Subject Site



Base Map Source: Carto Voyager

Most of the bus routes that operate on Macquarie Grove Road are school buses. Public buses that use Macquarie Grove Road are route 31 and 32 which operate limited services in the morning and evening peak periods. These services are presented in Table 2.1. Bus routes were confirmed with Busabout to be still operational however changes to regular services due to Covid-19 may have affected some services.

Table 2.1: Bus Services within vicinity of Subject Site

Route Number	Route Direction	Bus Type	Bus Provider
6007	Elderslie HS to Magdalene HS	School Bus	Busabout
6008	Belgenny & Kelloway to St Benedicts College	School Bus	Busabout
6045	Camden to Mater Dei	School Bus	Busabout
6051	Arcadian Hill Estate to Cobbitty PS	School Bus	Busabout
6505	Magdalene HS to Camden	School Bus	Busabout
6517	St Benedicts College to Cowper Dr	School Bus	Busabout
6540	Elderslie HS to Silverdale Rd	School Bus	Busabout
6541	Elderslie HS to Warragamba PS	School Bus	Busabout
6545	Camden South PS to Tramway Dr	School Bus	Busabout

6565	Mater Dei to Camden	School Bus	Busabout
6570	Cobbitty PS to Arcadian Hills Estate	School Bus	Busabout
31	Cut Hill Rd, Cobbitty to Camden via Coates Park Rd	Public Bus	Busabout
31	Camden to Cut Hill Rd, Cobbitty via Coates Park Rd	Public Bus	Busabout
32	Warragamba to Camden via Werombi & Theresa Park	Public Bus	Busabout
32	Camden to Warragamba via Theresa Park & Werombi	Public Bus	Busabout

Reference: TTPP Reference

2.4 Pedestrian Infrastructure

The pedestrian network surrounding the site is limited with neither of the roads fronting the site providing any pedestrian infrastructure.

2.5 Cyclist Infrastructure

The cyclist network surrounding the site is limited with neither of the roads fronting the site allowing for any off- or on-road cycleways or routes.

2.6 School Traffic Generation

The site is currently used by both Mater Dei School and Autism Spectrum Australia (ASPECT). Both these schools are considered to be special needs schools.

Through discussions with the schools' representative, it has been identified that both schools operate very differently to typical schools in terms of vehicle access and traffic generation associated with student arrival and departure arrangements.

It is noted that there are currently no public coaches or large school bus services to or from the site.

Each student is either transported directly to the school by private car or by small commuter buses (taxis) owned by the relevant school.

2.6.1 Mater Dei School

It is understood that students and staff arrive at the school as follows:

- 115 students in taxis, spread over 15 taxis

- 30 students transported in family cars
- 3 mini buses for post school program
- Another 10 family cars for the post school program
- 20 family cars bringing early childhood clients per day

In addition, there would be:

- 80 family cars per day bringing therapy clients.
- 80 staff cars.

2.6.2 Aspect School

It is understood that on a normal day there are 65 people on-site in relation to the APECT school. It is assumed that this would generate in the order of 50 vehicles per hour in the morning peak including staff and students.

2.6.3 Existing Traffic Generation

Based on information provided the estimated traffic generation for the site is shown in Table 2.2. A vehicle trip is defined movement in or out of the school so that a parent dropping off a student is counted as two trips.

Table 2.2: Morning Peak Estimated Traffic Generation

	Morning Peak Trips	In	Out
Mater Dei School	246	168	88
Aspect School	50	30	20
Total	**296**	**198**	**108**

The site is estimated to generate some 296 vehicles per hour of which 108 are estimated to travel in and out in the peak hour. The afternoon peak is assumed to be close to the reciprocal although staff typically stagger their exits, and the peak occurs outside the normal road network commuter peak.

2.7 Vehicular Access

Vehicular access to the site is provided via Mater Dei accessway which intersects with Macquarie Grove Road along the southern boundary of the site. Figure 2.4 shows said access.

Figure 2.4: Site Access off Macquarie Grove Road

Source: Google Maps Street View (facing north from Macquarie Grove Drive)

2.8 Crash History Data

Crash history data in the immediate vicinity of the site for a period of five years, between 2015 and 2019 has been reviewed. A total of ten crashes were recorded throughout the five-year crash period, the breakdown of crashes has occurred as follows:

- 2019 – 0 crashes
- 2018 – 5 crashes (0 casualties, 1 injured)
- 2017 – 3 crashes (0 casualties, 0 injured)
- 2016 – 2 crashes (0 casualties, 1 injured)
- 2015 – 0 crashes

A summary of the crash types between 2015 and 2019 is shown in Table 2.3, with the associated crash data map illustrated in Table 2.3.

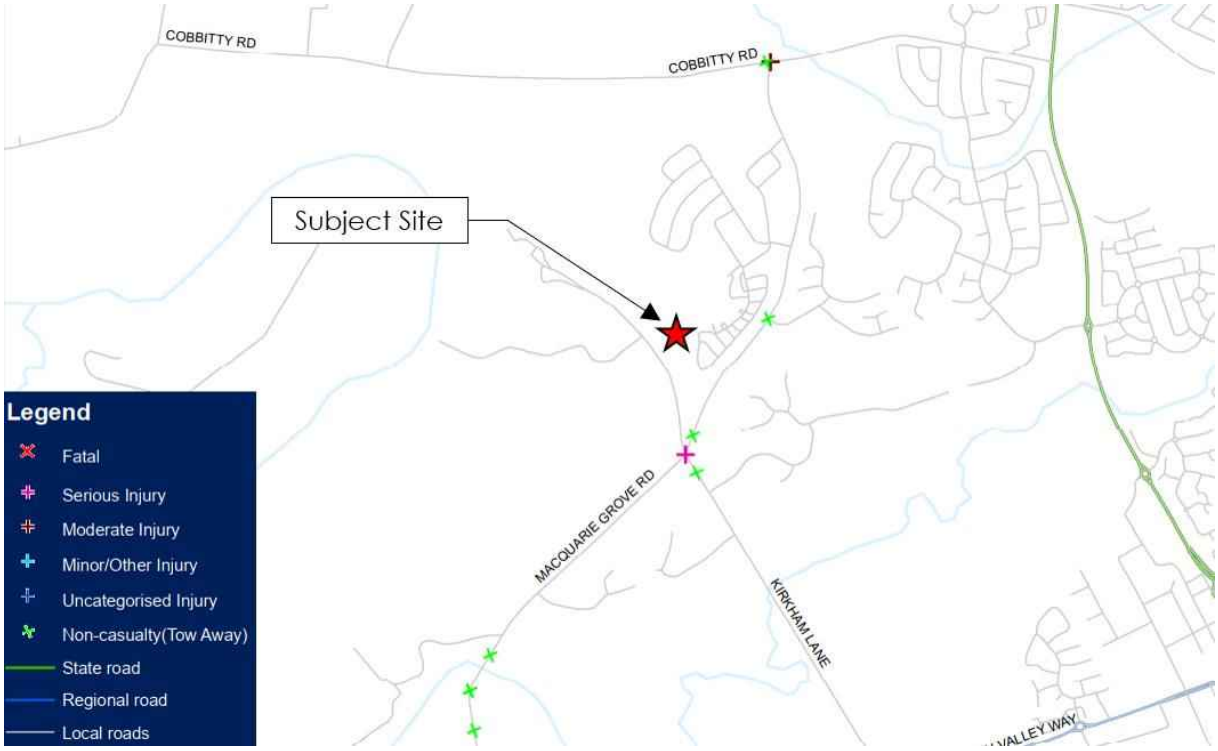
Table 2.3: Summary of Crash Data

Crash Type	No. of recorded crashes
Vehicles from adjacent direction	1
Vehicles from opposing direction	2

Crash Type	No. of recorded crashes
Vehicles from same direction	1
Manoeuvring	1
On path	1
Off path, on straight	2
Off path, on curve or turning	2
Total	**10**

There were no crashes related to pedestrians. Half the crashes involved single vehicle indicating both speed and road geometry as a factor. Figure 2.5 presents the locations of the abovementioned crashes on a map.

Figure 2.5: Historical Crash Locations



There was one serious crash that occurred at the intersection of Kirkham Lane and Macquarie Grove Road where a vehicle turning right from Kirkham Lane to Macquarie Grove Road was struck by a car travelling north in Macquarie Grove Road.

There was only one moderate injury crash at Macquarie Grove Road and Cobbitty Road when a vehicle turning right from Cobbitty Road was struck by a vehicle head on. The remaining crashes were minor crashes reported to police.

The crash record does not identify significant trends with most crashes being relatively minor and only one serious crash in the last five (5) years. It was also noted that a 40km/h school zone is in place in the morning and afternoon school periods.

Notwithstanding a site inspection was undertaken on 27 July 2021, where road safety of the access road was considered. The following road safety issues were identified.

- It was noted that sight distance to the intersection of Kirkham Lane and Macquarie Grove Road was restricted by crests from the southern (Macquarie Grove Road) and eastern (Kirkham Lane) approaches. (see Figure 2.6 and Figure 2.7)
- There are mature trees located in the clear zone. The clear zone is an area beside the road that is supposed to be maintained free from hazards. (see Figure 2.8)
- Utility poles located in the clear zone on Kirkham Lane. (see Figure 2.9)
- The Mater Dei School access driveway is slightly offset from Kirkham Lane which creates geometry of closely spaced intersections. Closely spaced intersections generally increase the rate of crashes.

Figure 2.6: Kirkham Lane (looking west 100m east of Macquarie Grove Road)

Figure 2.7: Macquarie Grove Road (looking north 150m south of Kirkham Lane)

Figure 2.8: Mature Trees in Macquarie Grove Road (200m south of Kirkham Lane)

Figure 2.9: Utility Poles in Kirkham Lane

The intersection of Macquarie Grove Road and Cobbitty Road was also investigated. This intersection has a right turn bay. There are sight distance restrictions at this location due to the vegetation and trees. A lack of shoulder or left turn lane from Cobbitty Road may increase the risk of rear end type crashes.

Figure 2.10: Cobbitty Road at Macquarie Grove Road (looking east)

3 Strategic Planning Context

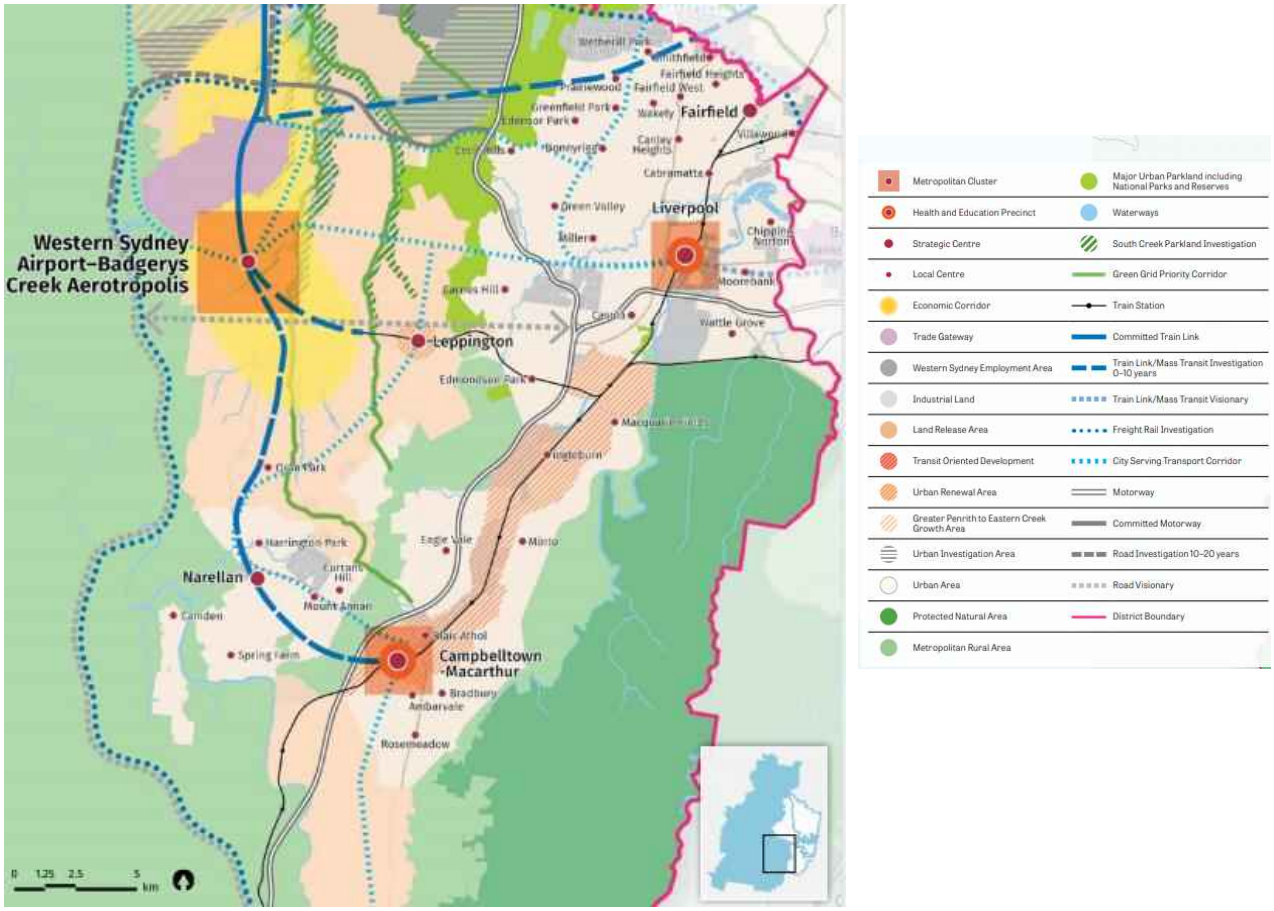
The site is located in an area that is expected to rapidly develop over the next 10 to 20 years. The following section reviews the location with respect to the various strategic transport plans in the area.

3.1 Western City District Plan

The Western City District Plan is part of the Greater Sydney Commission's plan for the greater Sydney Area. The commission has identified three cities within Greater Sydney including the Western City.

The Western City encompasses a large area west of Liverpool that includes the Western Sydney Airport 'aerotropolis. The proposed infrastructure is shown in Figure 3.1.

Figure 3.1: Western City District Plan



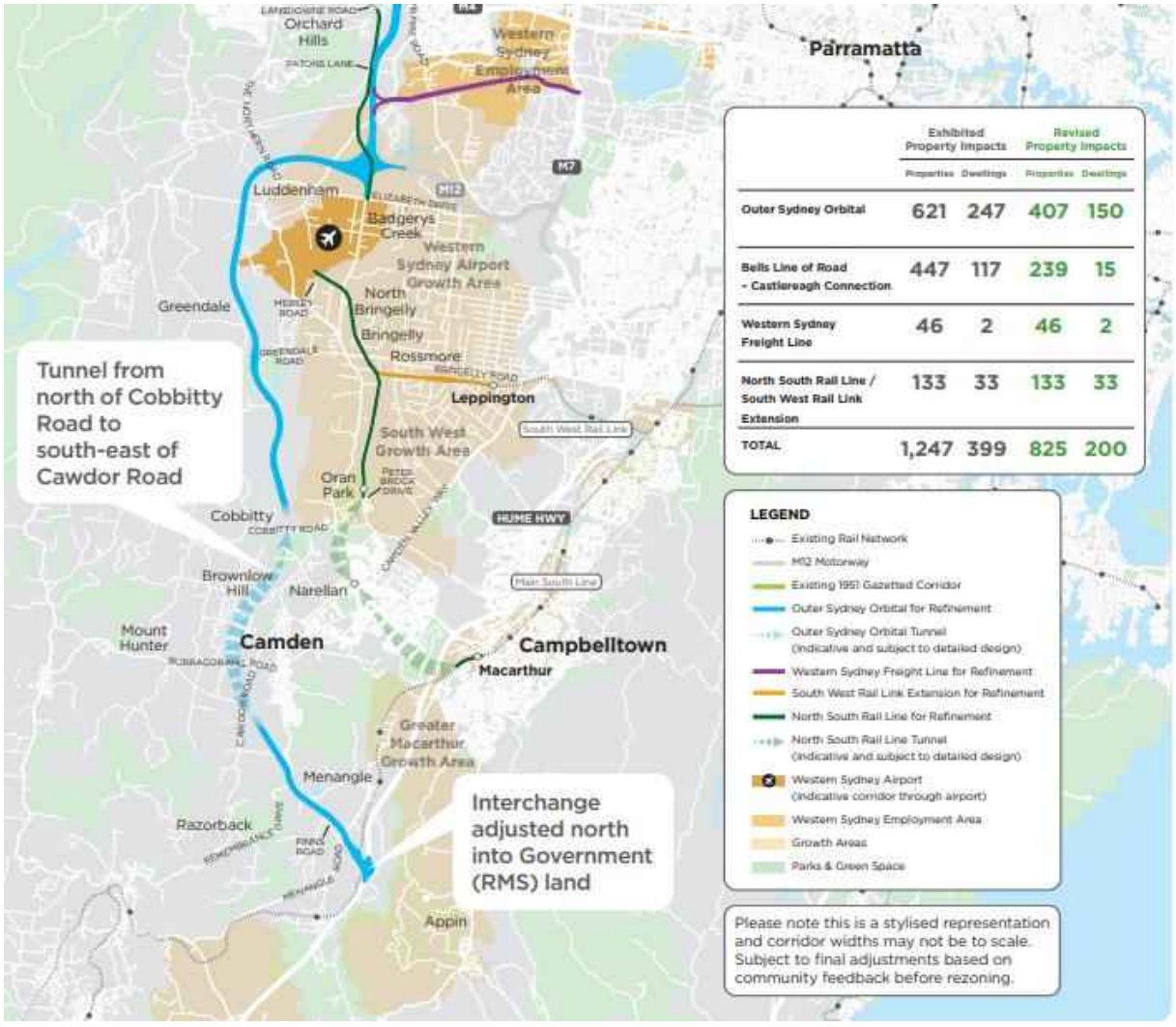
The plan shows the Outer Sydney Orbital Road for which the Government is reserving the corridor that would run to the north of the site. The plan also shows urban land release areas to the north-east of the site.

Additionally, the plan also shows an aspirational public transport link from the Western Sydney Airport to Campbelltown which is not committed. This would form an extension of the proposed Aerotropolis metro line.

3.2 Outer Sydney Orbital

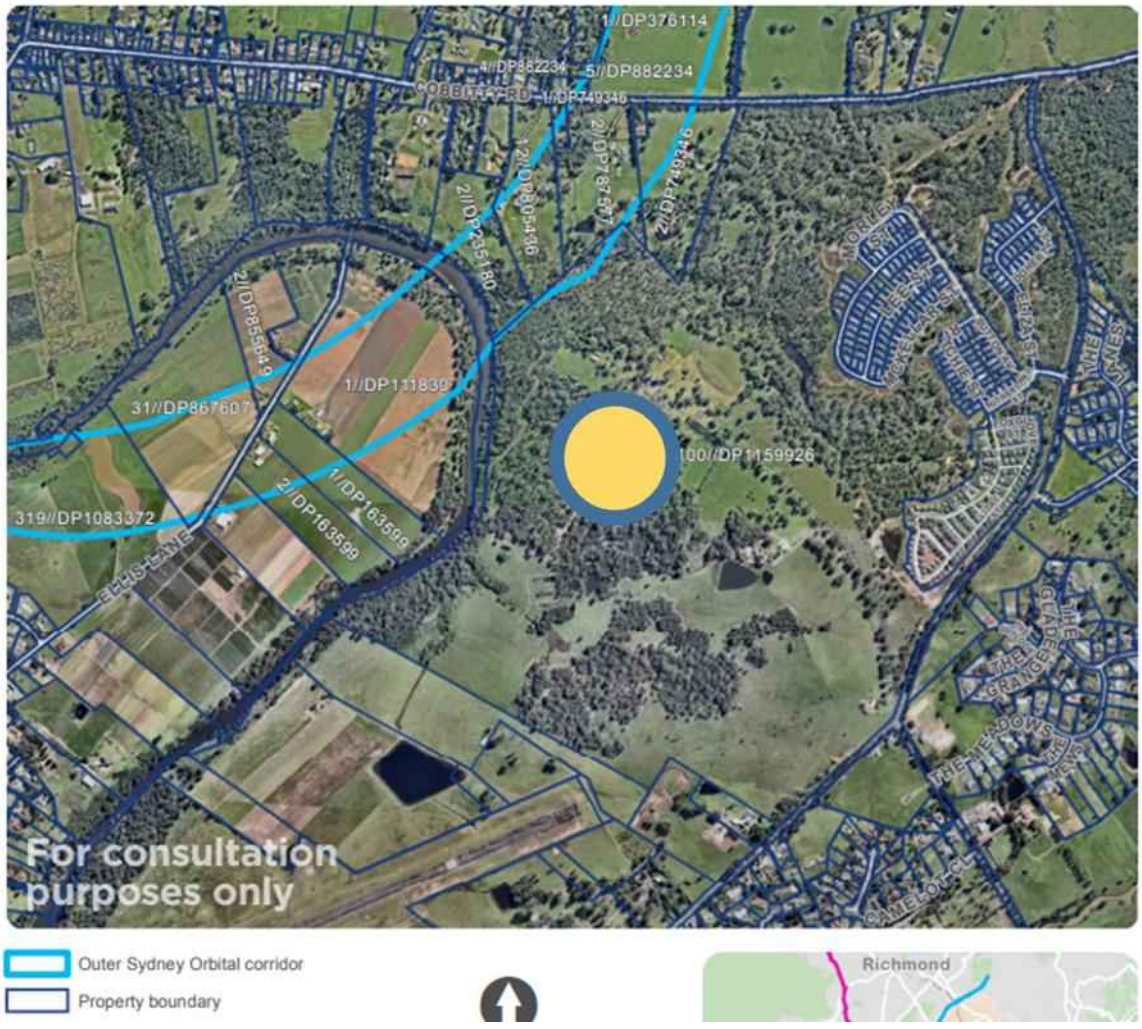
The Outer Sydney Orbital Road is a planned future road in the early stages of planning. The Outer Sydney Orbital would link the Greater Macarthur Area to the Western Sydney Airport and then north to Windsor Road. The latest plans show a tunnel that starts around the Cobbitty area and would travel under Camden.

Figure 3.2: Outer Sydney Orbital



The proposed corridor would travel to the north of the site and is likely to be in a tunnel at this section. The proposed corridor reservation is shown in Figure 3.3 and depicts bordering the northern property boundary of the site.

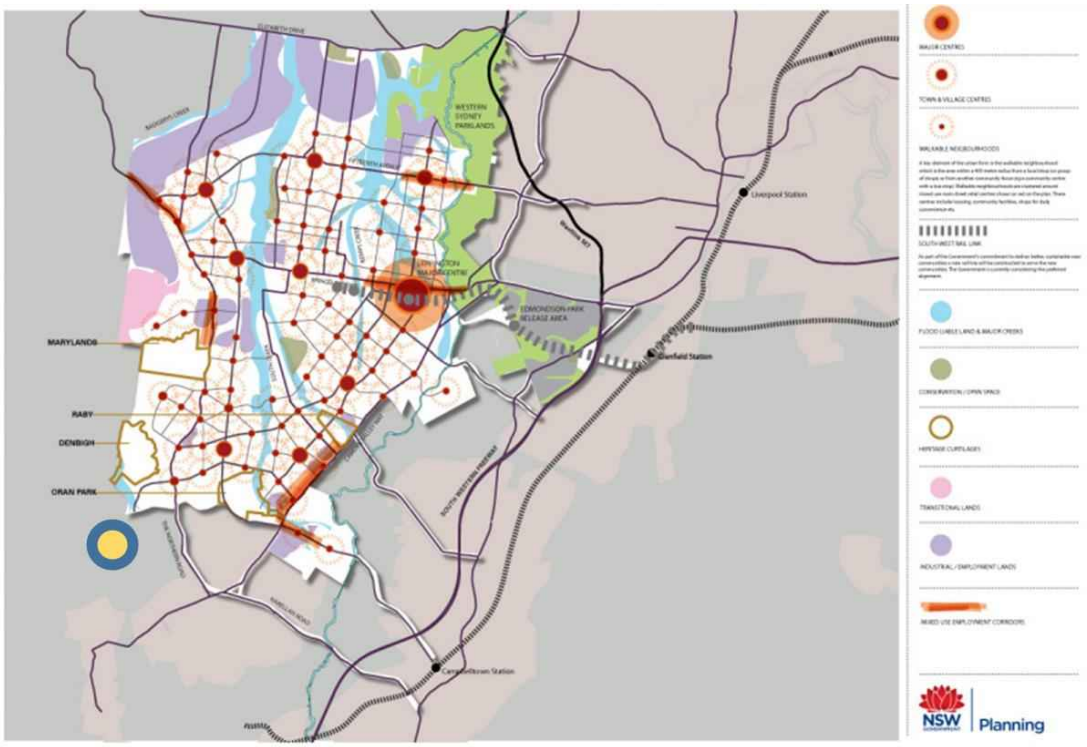
Figure 3.3: OSO Corridor Reservation



3.3 South-West Growth Area

The South-West Growth Area along with the North-West Growth Area is an area within Sydney that has been identified for development of population and employment centres. The area is substantially development planned on 'green fields' sites and allows for planning of the structure and infrastructure requirements for the area. The subject site is just outside the south-western corner of the area.

Figure 3.4: South West Growth Area



The south-west growth area is focussed on development of Leppington which is the outer terminus of the south-west rail link. The south-west growth area is likely to see a significant amount of urban development in the Oran Park area that is already seen the creation of new residential subdivisions.

Oran Park development in relation to the site is shown in Figure 3.5 and the structure plan is shown in Figure 3.6.

The structure plan shows that there will be development north of Cobbitty Road. In addition, the plan shows there would be a road that would extend north that connects to the Northern Road.

Figure 3.5: Oran Park Relative to the Site

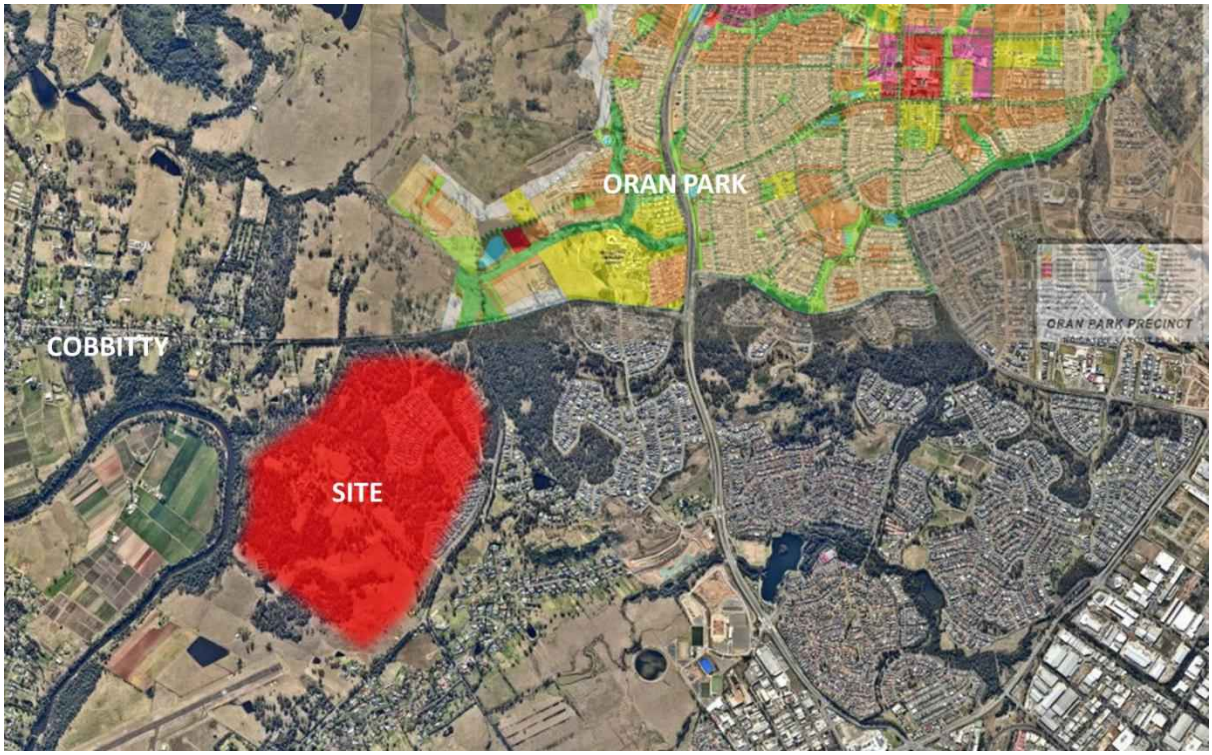
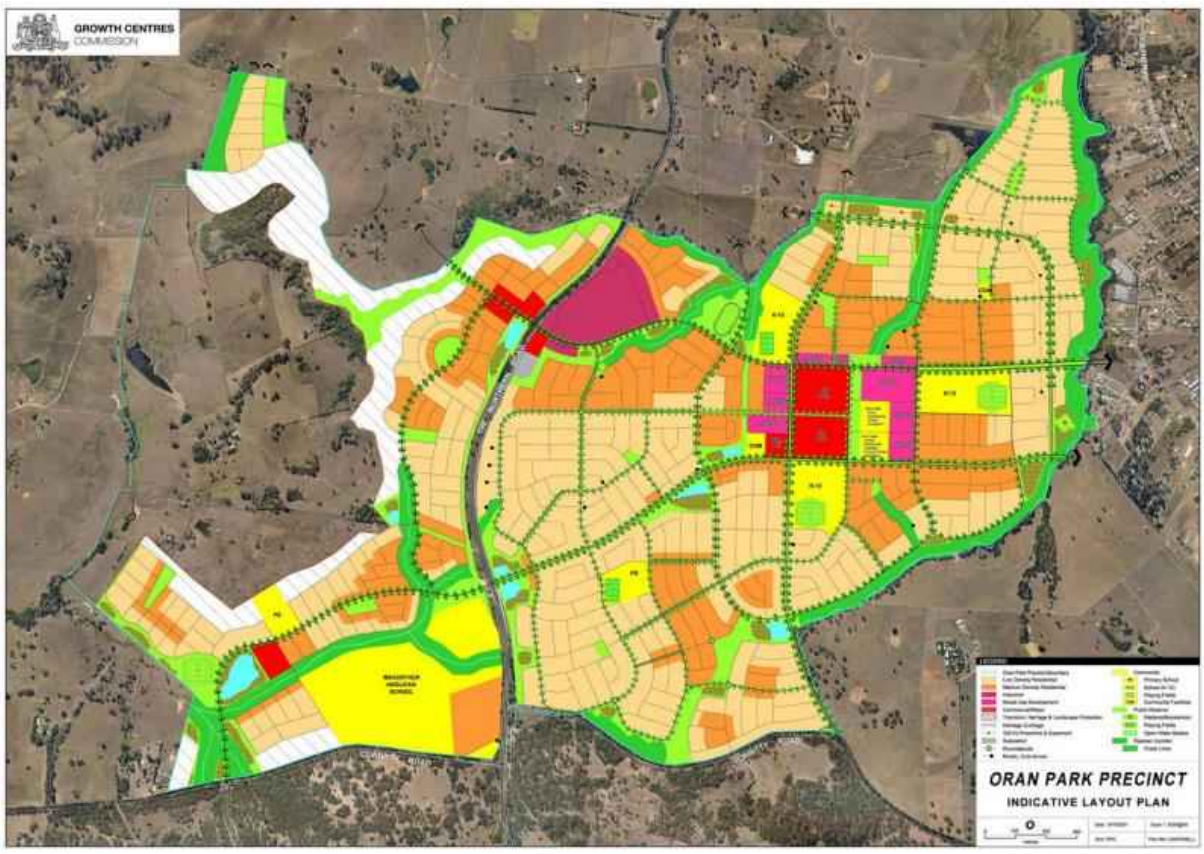


Figure 3.6: Oran Park Structure Plan

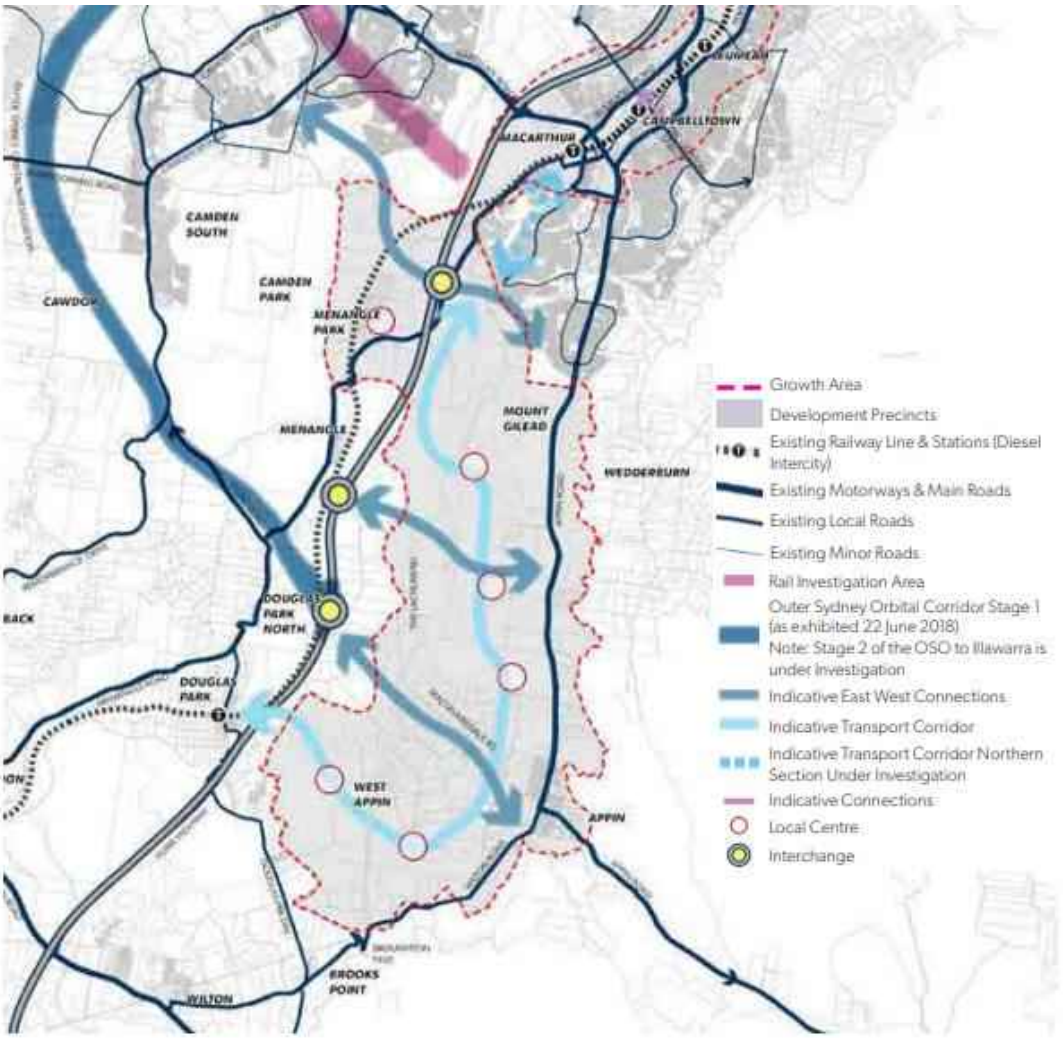


3.4 Greater Macarthur Investigation Area

The Greater Growth Area is an area south of Campbelltown that has been identified for significant land releases for urban development, that includes the West Appin, Mount Gilead and Wilton areas. The planning includes additional connections to the Hume Motorway including the Spring Farm Parkway and the Outer Sydney Orbital Road.

The Greater Macarthur Growth Area infrastructure structure plan is shown in Figure 3.7.

Figure 3.7: Greater Macarthur Growth Area



3.5 Spring Farm Parkway

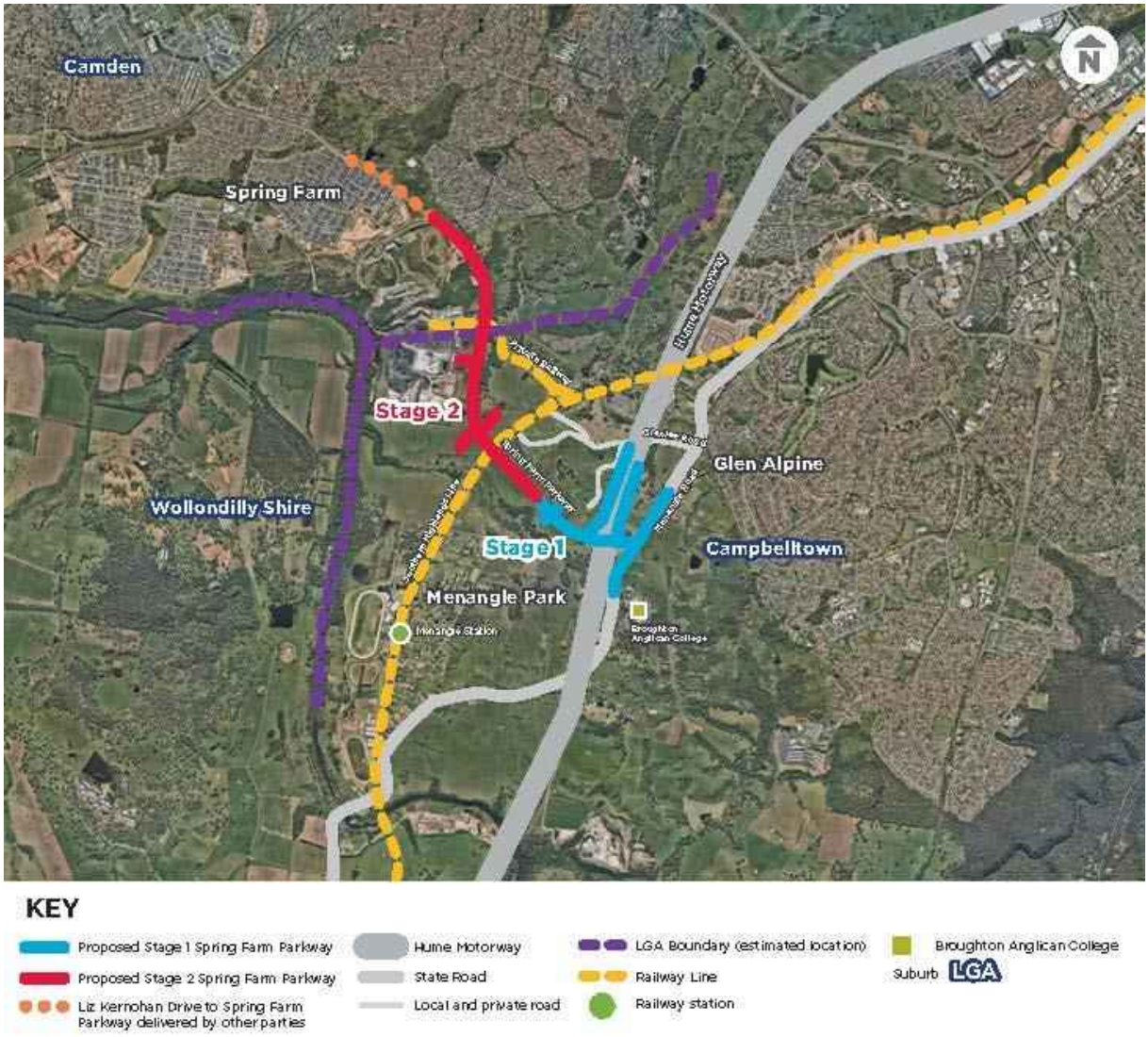
Spring Farm Parkway is a proposed east-west arterial road that would connect Camden to the Hume Motorway. Stage 2 of Spring Farm Parkway is about three kilometres long and would link Camden Bypass with Stage 1 of the Parkway. This would provide access to the

Hume Motorway and Menangle Road and would provide another east-west link in addition to Narellan Road.

Future planning as part of the Greater Macarthur Growth Area indicates that Spring Farm Parkway could be further extended through to Appin Road.

Stage 1 and 2 of the Spring Farm Parkway is shown in Figure 3.8.

Figure 3.8: Spring Farm Parkway

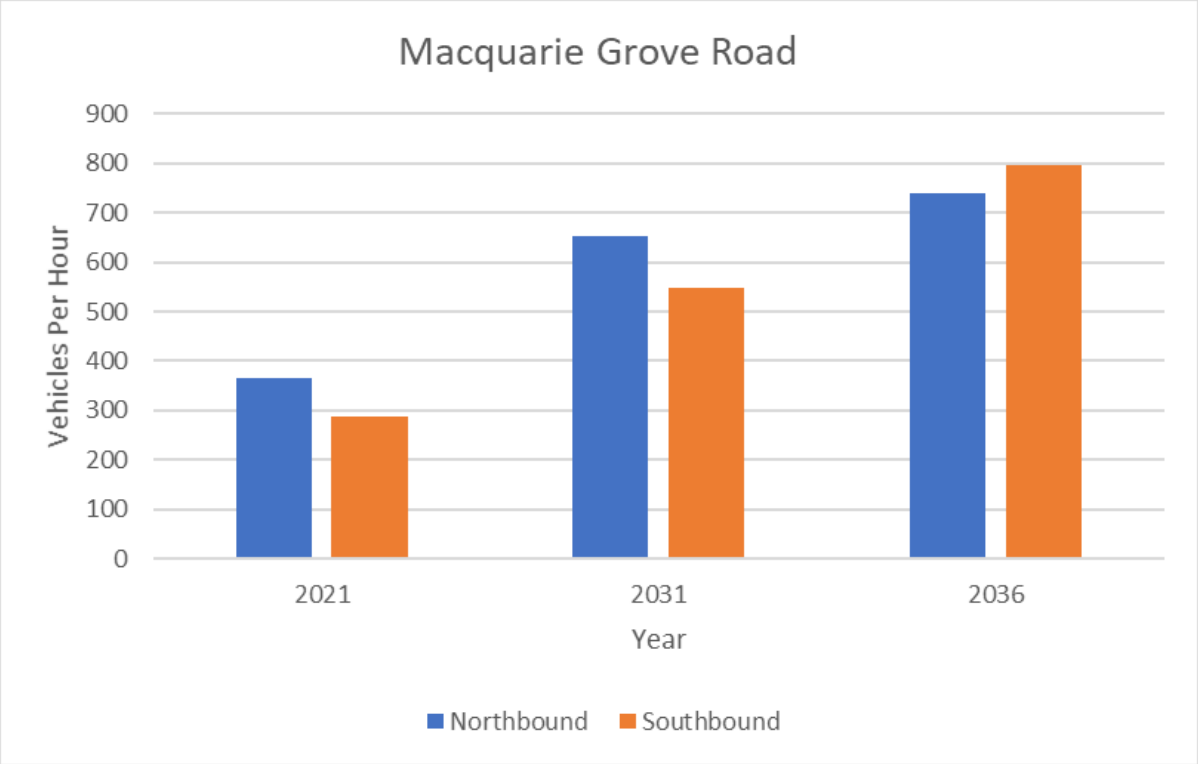


3.6 Traffic Forecasts

Traffic forecasts were requested from Transport for NSW (TfNSW). The traffic forecasts are from the STFM model which forecasts traffic volumes based on projected population and employment.

The model predicts that there would be a significant future increase in traffic on Macquarie Grove Road. Traffic flows are predicted to increase from 655 vehicles per hour to 1536 vehicles per hour in the 15 years from 2021 to 2036. This equates to an increase in traffic volumes of 9% per annum. The traffic forecasts are shown in Figure 3.9.

Figure 3.9: Forecast Traffic Volumes



Likewise, volumes in Kirkham Lane area also predicted to grow at a similar rate.

The rural land fronting Macquarie Grove Road forms part the metropolitan rural area with Council opposed to its future urbanisation. Pressure for upgrading Macquarie Grove Road occasioned by the traffic associated with the immediate urban release area and desired movements to the Camden and Narellan town centres in particular.

3.7 Strategic Implications to Subject Site

The planning context of the site has implications for how the site is currently used and how the site could potentially be used in the future.

Strategically, the broader development will have implications on how the site is accessed in the future and the need for infrastructure upgrades to accommodate the broader development.

The site is currently in a rural context but in the future would be in a more urban setting (Oran Park and Cobbitty urbanisation precincts), notwithstanding the natural environment reserve that currently occupies most of the site and would continue into the future.

The area is likely to see increased urbanisation especially to the north in Oran Park. Urbanisation would see the demand for supporting services such as schools and may drive demand for expanded schools in the area, including the special needs school.

The urbanisation would also increase the demand for public transport with the potential for increased bus services feeding into major centres such as the Oran Park Town Centre, Camden and Campbelltown. The creation of the Aerotropolis to the north is likely to lead to changed travel patterns with employment attractions to the north with establishment of Sydney's third city.

As these land uses (beyond the immediate precinct) intensify it is likely that the character of Macquarie Grove Road and Kirkham Lane will change. The roads are expected to change from being a two lane, two-way rural road and become an urban collector road or sub-arterial road. These changes will unlikely be occasioned by urbanisation of the Macquarie Grove Road / Kirkham Lane precinct as such forms of development are opposed by Council.

The character of the roads may change as the road is upgraded to include:

- Street lighting,
- Formalised bus stops.
- Footpaths and cycle paths.
- Speed limits along Macquarie Grove Road may also be decreased to 60km/h.

To support the forecast increases in traffic volumes it is likely that existing intersections would need upgrading to increase capacity and reduce delays that would occur with increasing traffic volumes. This may include intersection widening and inclusion of turning lanes. Ultimately capacity of Macquarie Grove Road may need to be increased with additional lanes.

The intersection of Macquarie Grove Road and Kirkham Lane may need to be upgraded to accommodate future traffic volumes. While the intersection of Macquarie Grove Road and Cobbitty Road would need to be upgraded to accommodate a road extension to the north into the broader Oran Park urbanisation release area. This may ultimately take the form of a signalised intersection or a large roundabout in the interim.

It is in this longer term context that the existing driveway access intersection may need to be upgraded to improve road safety.

4 Potential Site Development Scenarios

4.1 Overview

As noted previously in this report, the purpose of the PPR is to rationalise the existing land use provisions. It is envisaged that the natural environment conservation area will remain unchanged in perpetuity and the schools will experience limited incremental growth / diversification. Additionally, a residue site with limited development potential will be created.

With regard to the future traffic demands for the site, the existing educational and environmental uses will continue largely as per their existing traffic demands in the immediate future. Limited incremental growth in educational programs will create reflect in commensurate movement needs.

The existing and proposed zonings for the Wivenhoe site are presented in Figure 4.1 whilst the indicative superlot division is presented in Figure 4.2.

Figure 4.1 is noted to show the following proposed changes to the site's zoning:

- a significant proposed expansion of the existing E2 Environmental Conservation area within the site (201 ha)
- formalisation of the existing education precinct on the site with the introduction of the SP2 Education Establishment zoning (25 ha)
- creation of a residual parcel of land zoned RU2 Rural Landscape (25 ha).

As referenced above the site has been identified to comprise a number of land use precincts (refer to Figure 2.2 and Figure 4.1) and indicative superlots (refer Figure 4.2). Future immediate development potential under such planning regime has been identified by Project Planners and Client to comprise the following:

- Conservation Precinct
  - On-going conservation
  - Future potential interpretive facilities
- Special Education Precinct
  - Additional 100 pupils / children (including preschool and childcare)
  - Expansion of the Aspect School (or similar) 50 pupils
- Residue Rural Precinct
  - Rural allotment with dwelling house

The following section of this preliminary traffic assessment has estimated the traffic generation potential of precinct.

The assessment has considered the most probable future development potential of each precinct for the purpose of considering the intensity of traffic generation and the ability of the surrounding road network to accommodate such traffic in its current state or with potential improvements. It is noted that the development potential of each precinct is constrained by its inherent qualities and / or external impacts as is summarised below.

4.1.1 Conservation Precinct

Future development of this precinct (201ha) beyond interpretive and educational activities is severely constrained by the threatened species classification of the habitat present, bush fire hazard impact, the fixed affected nature of part, the commitment to Biodiversity Agreement and some airport related operational restrictions.

A maximum of ten (10) vehicle trips per day are likely to be associated with such precinct at times that generally not coinciding with peak school related traffic movements.

4.1.2 Special Purposes Education Precinct

The Mater Dei education precinct (proposed 23ha) is constrained by the presence of heritage listed stables, farmhouse and Wivenhoe Villa and their respective curtilage / setting requirements, sensitive ecological communities and bush fire hazard impacts and asset protection zone requirements.

Further educational premise is likely to be limited in such context and additional limited by the "special education" focus. Mater Dei School precinct may see an increase in the order of 100 maximum persons.

The Aspect School precinct (proposed 2ha) is constrained size, vegetation, typography bush fire hazard (associated asset protection zones) and relationship to the Wivenhoe heritage curtilage influence.

The Camden Airport also exerts certain limitations as detailed in the specialist NASF assessment aviation services report prepared by Rehbein Consulting.

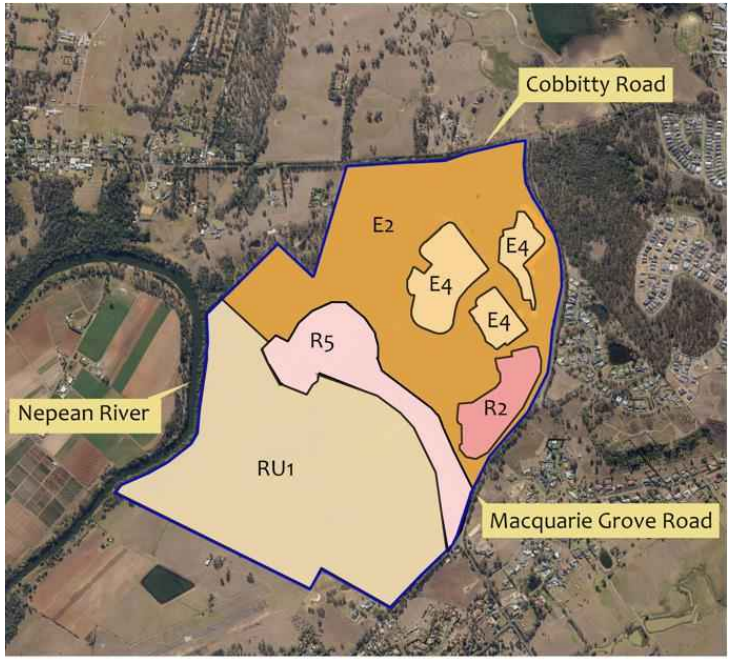
Enhanced specialised special education programs may see a maximum increase of 50 people in the foreseeable future, with associated transport reflecting current practices as previously described (refer to section 2.6.2)

4.1.3 Residual Rural Land Parcel

The residue parcel of land with a proposed area of 25 ha is intended to be zoned RU2 rural landscape, with a 20 ha minimum subdivision lot size. Such land is significantly constrained in terms of the range of permissible uses attached to the proposed zoning and the physical limitations of the site in respect of access, bush fire hazard management and the operational parameters of the Camden Airport.

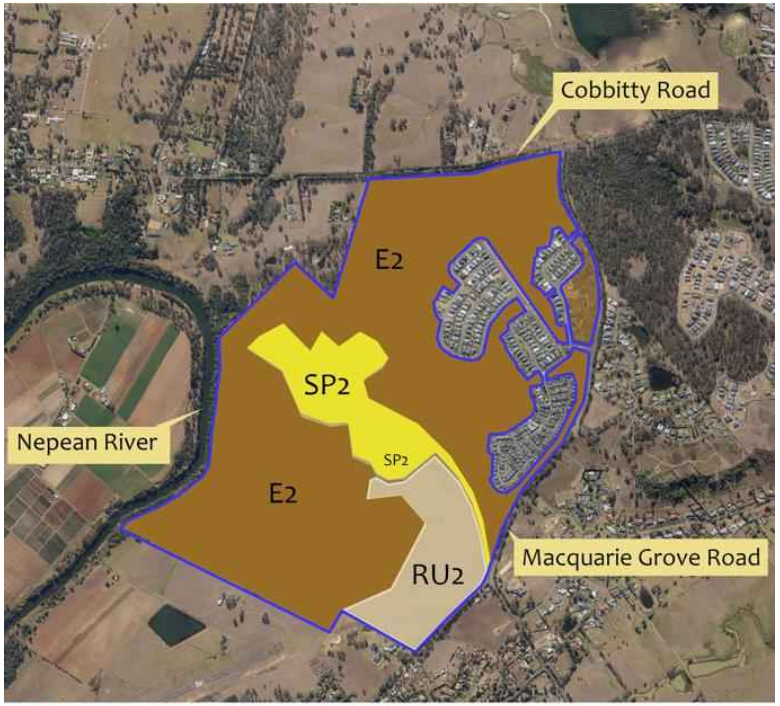
It is assumed that typical rural and limited occupancy of one dwelling on the site could generate a maximum of 10 daily vehicle movements.

Figure 4.1: Existing and Proposed Zoning of Wivenhoe Site



EXISTING ZONING

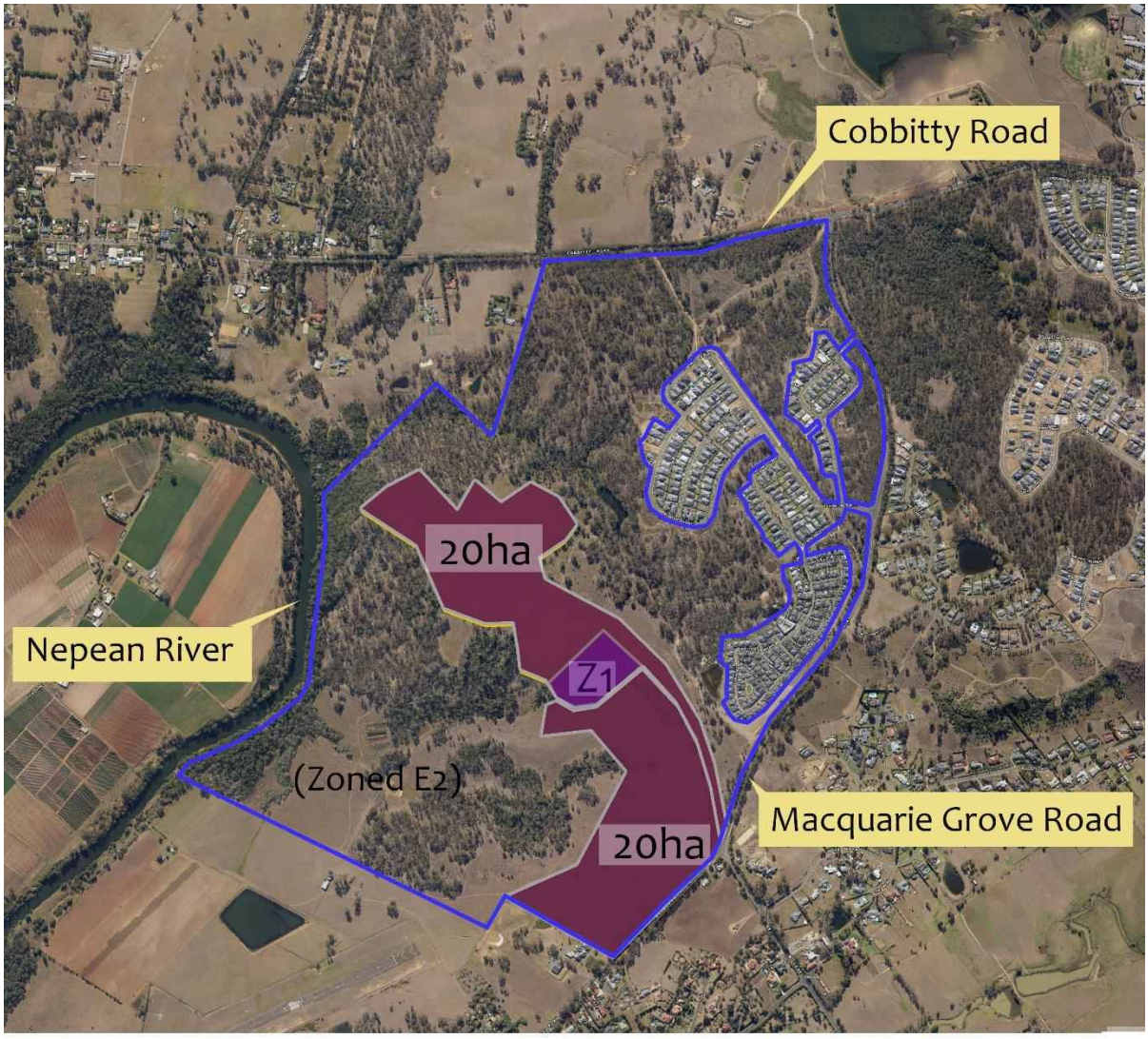
- E2 Environmental Conservation
- E4 Environmental Living
- R2 Low Density Residental
- R5 Large Lot Residential
- RU1 Primary Production



PROPOSED ZONING

- E2 Environmental Conservation
- SP2 Educational Establishment
- RU2 Rural Landscape

Figure 4.2: Indicative Superlot Subdivision



PROPOSED MINIMUM LOT SIZE

Z1 20000 (2ha)

200000 (20ha)

Not applicable (area proposed to be zoned E2 within the area outlined in blue)

4.2 Potential Traffic Generation Associated with Proposed Planning Provisions

The following estimates the potential traffic generation characteristics of the development scenarios for each proposed precinct. Potential traffic generation has been estimated using published traffic generation rates from the Roads and Maritime Services technical direction (TD2013/04a) Guide to Traffic Generating Developments, Updated Traffic Surveys 2013.

4.2.1 Scenario 1 – Conservation Precinct

The conservation precinct is not expected to generate a significant amount of traffic. Possible educational and interpretive facilities are likely to generate traffic outside the peak periods. Notwithstanding, it has been assumed that 5 vehicle trips during the peak periods and a total of 10 movements per day.

4.2.2 Scenario 2 – Special Education Precinct

As described above it has been considered that the Mater Dei School could increase by 100 pupils and the Aspect School by another 50 people. The traffic generation associated with these schools is significantly different to typical schools therefore traffic generation has been assumed to be pro-rated at a rate of:

- 1.7 trips per student Mater Dei School
- 1 per student for the Aspect School

This is based on 296 trips for 141 students for the Mater Dei School and 50 trips per 50 students for the Aspect School.

4.2.3 Scenario 3 – Residual Rural Precinct

The residual rural precinct would be restricted to 1 low density dwelling. Based on the TfNSW Guide to Traffic Generating Developments (TDT 2013/04b) the trip rate for a low density dwelling would be 1.32 trips per dwelling would result in 2 additional trips allowing for rounding up.

4.3 Traffic Generation Scenarios

Trip generation has been estimated for each scenario based on published rates as follows:

- Conservation – 5 trips
- Special Education trips
  - 1.7 trips per student (Mater Dei School)
  - 1.0 trips per student (Aspect School)

- Residual Rural Precinct 2 trips per dwelling

A vehicle trip is defined as a movement to site or from site. For example, a vehicle dropping off a student is equivalent to two trips.

The morning distribution of trips has been assumed as follows:

- Conservation Precinct 100% in
- Special Education trips 60% to site and 40% from site
- Rural Residential 90% from site and 10% to site.

A comparison of the trip generation from each scenario is shown in Table 4.1.

Table 4.1: Morning Peak Indicative Traffic Generation

Scenario	Rate	Unit	Morning Peak Vehicle Trips (veh/hr)	In (veh/hr)	Out (veh/hr)
Existing	-	-	296	198	108
Conservation	-	-	5	5	0
Special Education	1.7 trips per student	100 students	170	102	68
Special Education	1 trip per student	50 students	50	30	20
Rural	2 per dwelling	1 dwelling	2	-	2
			523	335	198

In each scenario a single access (as currently provided) should be able to accommodate the modest increase in in traffic with limited implication for traffic the access entrance intersection. Improvements to the access entrance and immediate road network. The limited enhancements are likely to involve the rationalisation of the entrance internally on the Mater Dei Site including:

- Widening of the accessway to allow vehicles to pass, especially buses
- Improvement to pavements.

The need for the upgrade of the Macquarie Grove Road / Kirkham Lane intersection including a possible roundabout and related intersection enhancement would not be required (refer to section 4.4).

4.4 Road Network Implications for Foreshadowed Development

To assess the road network's ability to accommodate traffic volumes forecasts from Transport for NSW were obtained and compared to the Level of Service criteria from the RTA Guide to

Traffic Generating Developments for rural roads. Capacity for a rural road is generally considered to be in the order of 2500 vehicles per hour (combined directions) through for urban roads with interrupted flow it is 1800 vehicles per hour (two lane, two way). Level of Service is used to categorise traffic flow conditions. It is a scale from A to F with Level of Service A indicating free flowing traffic with no delays and Level F is slow moving traffic, long queues and frequent stopping. In general level of service C is considered an appropriate target though Level of Service D is commonly accepted in Sydney.

The forecast volumes on Macquarie Grove Road north of Kirkham Lane are shown in Table 4.2. The volumes are derived from the two hour STFM forecasts with the peak 1 hour flow assumed to be 60% of the two hour forecast and rounded to the nearest 50 vehicles per hour so that a greater level of accuracy is not implied.

Table 4.2: STFM Forecast Volumes on Macquarie Grove Road

Year	Northbound (veh/hr)	Southbound (veh/hr)	Combined (veh/hr)	Level of Service
2021	*350*	*300*	*650*	*C*
2031	650	550	1200	D
2036	750	750	1500	D

The forecasts indicate that Macquarie Grove Road would be level of service D by 2031 and remain at that level in 2036. Without any contribution of traffic from the site it likely that Macquarie Grove Road would require widening to increase capacity by 2036.

Traffic from further development on the site is likely to be particularly modest and not contribute to bringing the need to upgrade Macquarie Grove Road forward before the 2036 time horizon.

Improvements to the immediate road network occasioned by possible future development are likely to be limited to road shoulder enhancement including:

- Road widening
- Additional capacity at intersections
- Street lighting at intersections.

The need to reconfigure the entrance with a realignment of the Macquarie Grove Road / Kirkham Lane intersection is not warranted, nor would the need for a roundabout be triggered at such a point in time

4.5 Vehicle Site Access Arrangements

The site currently has a single access point to the school from Macquarie Grove Road. The access alignment is offset from Kirkham Lane which is not desirable from a road safety

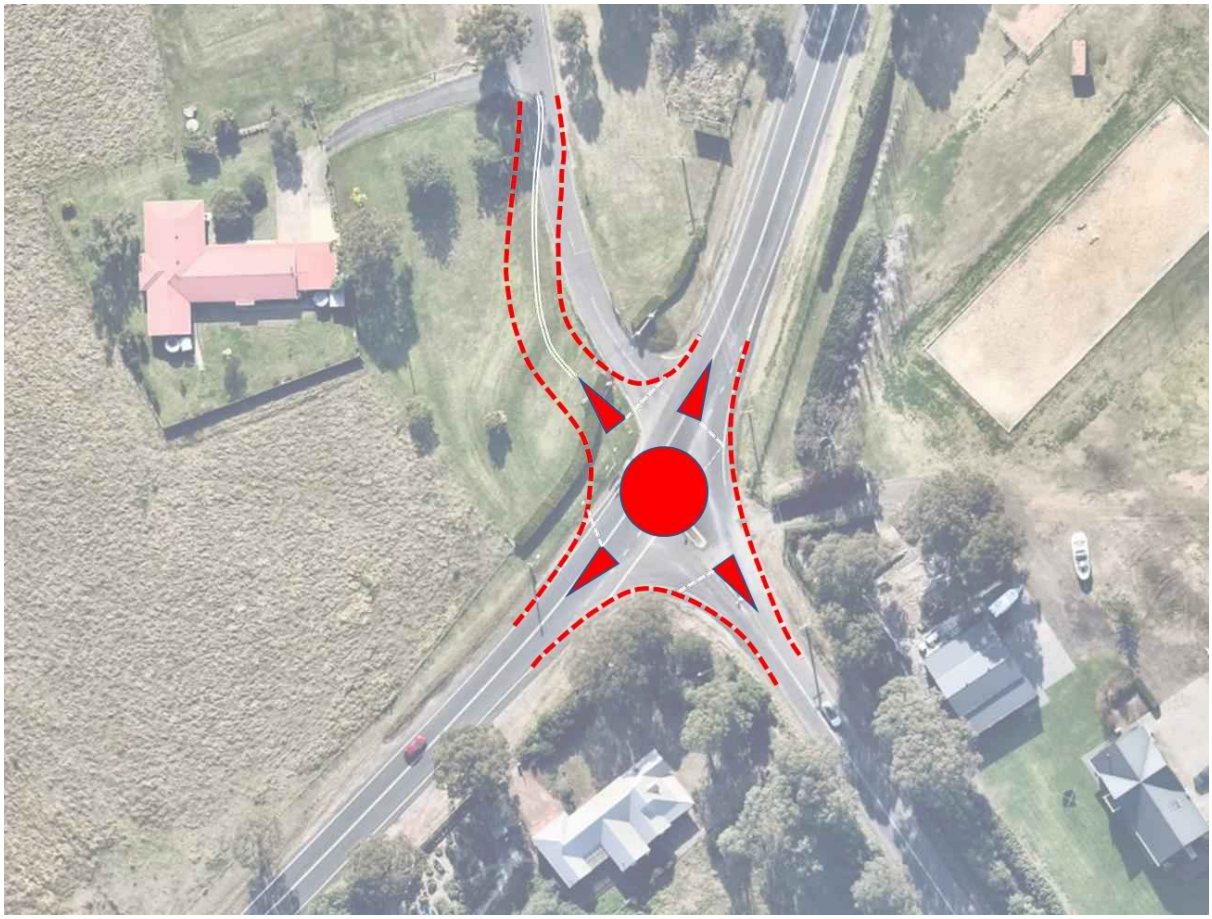
perspective. Together with predicted significant increases in local / district traffic movements and modest increases associated with further development of the site it may be that the access could be upgraded to improve road safety and capacity of the intersection.

Further development of the site would importantly be at scale that would likely catalyst for a major upgrade of the intersection. Both the local / district traffic level of traffic growth would, in years to come, likely trigger the need for an upgrade of the Macquarie Grove Road and Kirkham Lane intersection possibly in the form of a roundabout further a second access for bush fire and emergency situations generally removed from the existing school driveway. A second access is limited by the typography that restricts sight distance, if required.

Alterations to the current access could occur as part of such works with any monetary contribution limited to the traffic impact nexus.

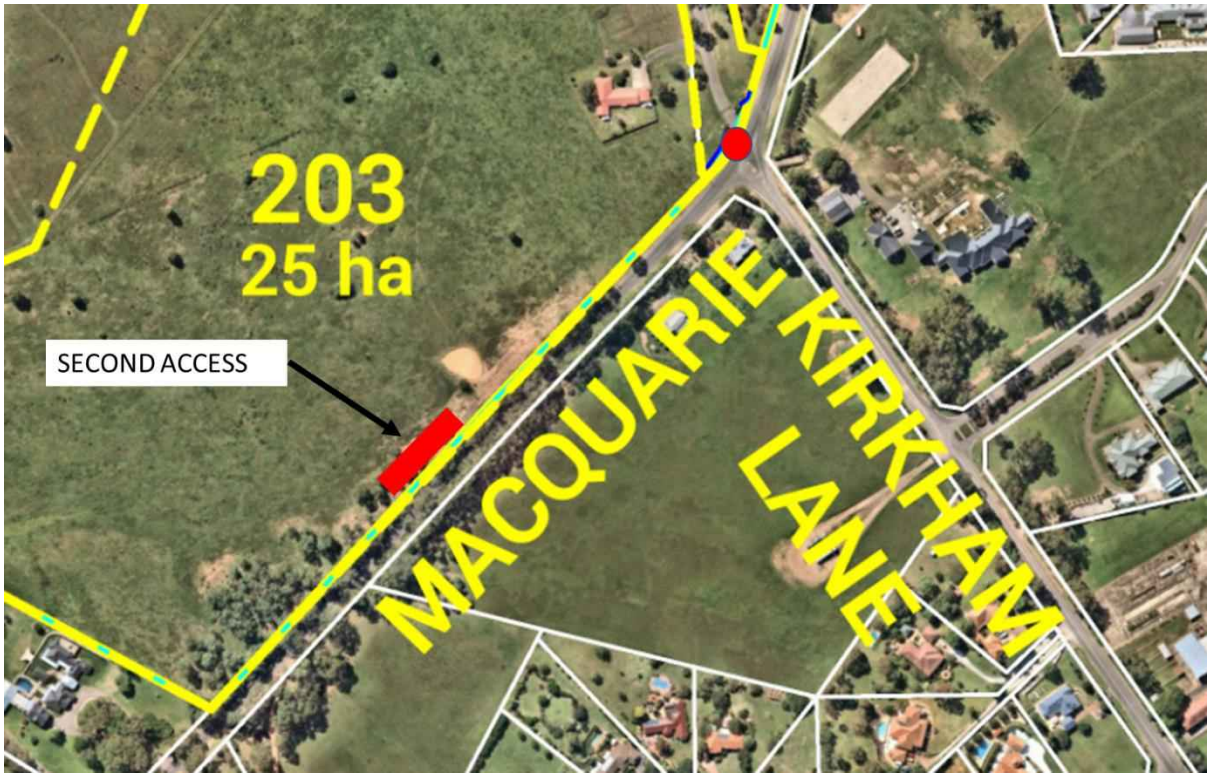
A suggested access could be a roundabout could be installed as shown in Figure 4.3. The layout shown partially include a realignment of the accessway so that the access aligns with Kirkham Lane. This would have the added advantage of performing a traffic calming function for the road network as well as access. This intersection modification would also reflect that the area is become increasingly urbanised.

Figure 4.3: Roundabout Access



It is recommended that a second access could be investigated at a location placed midway between the crests to allow for sight distance, if required.

Figure 4.4: Second Access Location



Additionally, a future reduction in speed limit from 70km/h to 60km/h may need to be considered to improve road safety generally in recognition of the increasing urbanisation of the broader area and escalation of local and district level of traffic movements on the immediate road network.

5 Conclusion

The Transport Planning Partnership has been commissioned to assess the traffic and transport impacts of a Planning Proposal Request (PPR) to rationalise the land use zoning and minimum lot size provisions under the Camden Local Environmental Plan 2010 and ultimately result in a "super lot" subdivision and further precinct related activities.

The key findings are:

- The site is located in an area of Sydney that is undergoing significant urbanisation being on the boundary of the South West Sydney Growth Area.
- The urbanisation of Oran Park along with the general uplift in population and employment is forecast to significantly increase traffic volumes on the surrounding road network with traffic volumes along Macquarie Grove Road and Kirkham Lane forecast to increase by 9% per year for the next 15 years.
- The development of Oran Park and the structure plan show development north of Cobbitty Road with an extension of Macquarie Grove Road beyond Cobbitty Road.
- A review of the 5 year crash history along Macquarie Grove Road identified that there was only one serious crash and no significant road safety trends. A road safety review identified that the access driveway for the school has restricted sight distance from the south and east that may contribute to crashes at the intersection of Macquarie Grove Road and Kirkham Lane.
- Three precinct limited development scenarios were considered:
  - Conservation Precinct (201 ha)
  - Special Education Precinct (25 ha)
  - Residual Precinct (25 ha).
- Traffic forecasts from STFM indicate that traffic volumes on Macquarie Grove Road would be approaching capacity by 2036. Traffic generation in the order of 250 vehicles per hour is likely to be able to be satisfactorily accommodated with minor works to the access on-site.
- Each scenario assessed is considered to be able to access through one access point, however access enhancement works should be evaluated at future development application stage and could include:
  - Widening of the accessway to allow for more two-way traffic.
  - Line marking
  - Raised Reflective Pavement Markers
  - Guide posts
- A second vehicular access principally for emergency events could be considered from Macquarie Grove Road in a limited location on Macquarie Grove Road, due to sight

distance limitations. No other locations on the perimeter of the site readily lend themselves to a supplementary point of limited access.

- Macquarie Grove Road / Kirkham Lane intersection will need to be upgraded in response to nearby urban growth and local / district level traffic impacts in the future. Any such upgrade is likely to lead to the installation of a roundabout and realignment of the intersection. In such scenario it would be expected that the Mater Dei access may be realigned and integrated with Mater Dei potentially contributing in a limited sense to the cost of such element.

The Transport Planning Partnership
Suite 402 Level 4, 22 Atchison Street
St Leonards NSW 2065

P.O. Box 237
St Leonards NSW 1590

02 8437 7800

info@ttpp.net.au

www.ttpp.net.au

transport planning

Our Ref: 21192

20 January 2022

Pascoe Planning Solutions
PO Box 349
Mittagong NSW 2575

Attention: Mr Graham Pascoe

Dear Graham,

RE: ADDENDUM TO TRAFFIC AND TRANSPORT ASSESSMENT
"WIVENHOE" PLANNING PROPOSAL REQUEST 229 MACQUARIE GROVE ROAD, COBBITTY

As requested, please find herein The Transport Planning Partnership (TTPP) addendum to the traffic and transport assessment for the above project. This is in response to Council's comments on the planning proposal which state:

4. *The Transport Assessment report provides the following inconsistencies: - p.30 states "the need to reconfigure the entrance with a realignment of the Macquarie Grove Road / Kirkham Lane intersection is not warranted, nor would the need for a roundabout be triggered at such point in time".*
    - *the report then states on p. 34 that Mater Dei would contribute "…in a limited sense to the cost of such element".*
    - *then on p.33 it states that "a road safety review identified that the access driveway for the school has restricted sight distance from the south and east that may contribute to crashes at the intersection of Macquarie Grove Road and Kirkham Lane".*

    Please update this report to reflect the need for an intersection treatment i.e. a roundabout (with realigned access) to improve the intersection operation, traffic flow and safety.

TTPP have reviewed Council's comments and maintain that:

- The proposed rezoning of Wivenhoe, in isolation of other potential background traffic growth, would not generate an increase in site based traffic such as to warrant the upgrade of the Macquarie Grove Road and Kirkham Lane intersection.
- Although sight distance was acknowledged as an issue, converting the intersection to a roundabout would not ameliorate the sight distance issues on approach to the

intersection. It is suggested that reduction of the speed limit could be implemented that would reduce the sight distance requirement.

- A review of the 5 year crash history for the site access did not identify that there was an issue with road safety at this location.

Any significant changes to the use of the subject site would also be the subject of detailed traffic and transport assessment as part of the development application which would identify traffic impacts.

Notwithstanding the above, TTPP recognises that there is potential for growth in background traffic in the vicinity of the site resulting from the significant residential growth area to the north of the site.

This background traffic growth has been forecast in the Transport for NSW strategic models and as such are likely to require capacity upgrade measures at the Macquarie Grove Road and Kirkham Lane intersection in the future without the planning proposal for the Wivenhoe site.

At the point when capacity upgrades are required at some stage in the future, this is the time when there is an opportunity to potentially construct a roundabout and for the location of the Wivenhoe site access driveway to be adjusted so as to align with the new intersection geometry.

Any such upgrade of the Macquarie Grove Road and Kirkham Lane intersection should not be at the expense of Mater Dei as it would primarily serve the increase background traffic on Kirkham Lane and Macquarie Grove Road. Mater Dei could contribute "in a limited sense" for the adjustment of the location of the driveway.

We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,

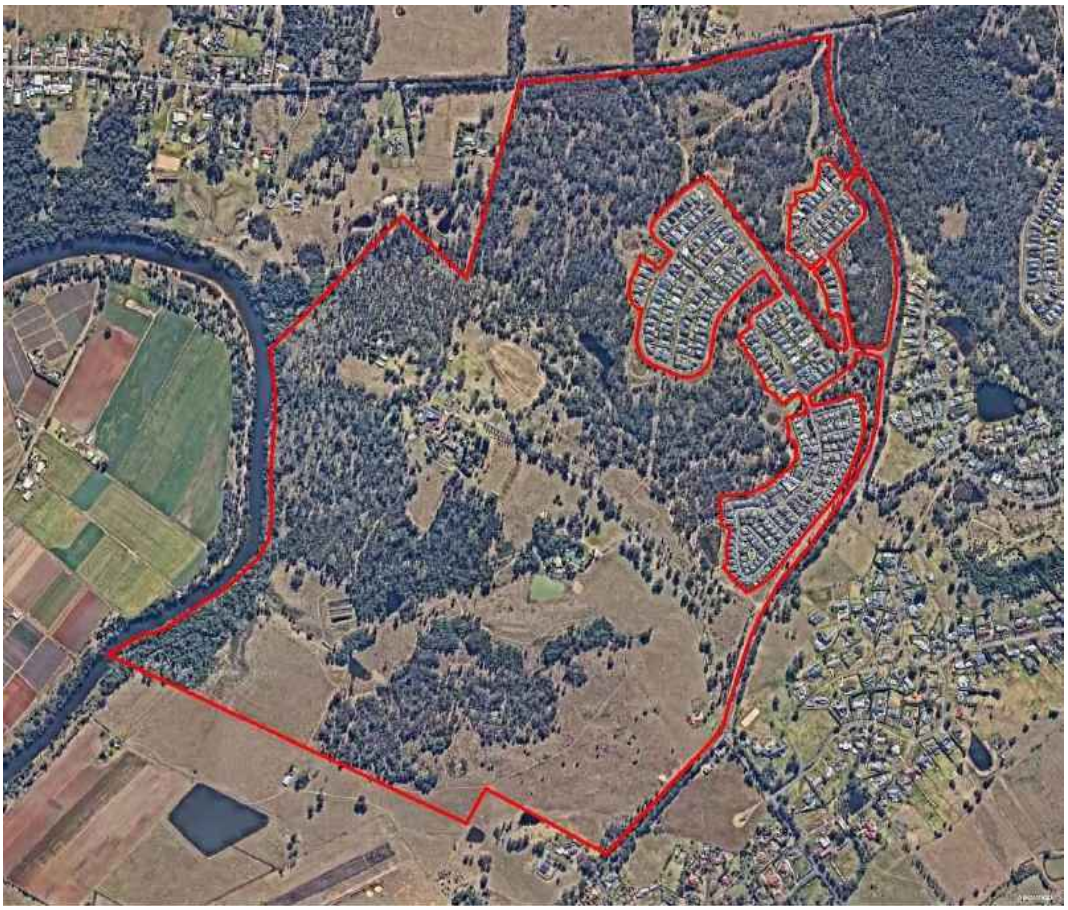
Stephen Read
Associate

Annex J

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "J"
Council Pre-Lodgement Advice
(Camden Council)

October 2021

camden council

Council Reference: SC8019
Record Number: 21/78428

10 March 2021

Graham Pascoe
Pascoe Planning Solutions
PO Box 774
Camden NSW 2570

Re: Pre-lodgement Meeting for Planning Proposal - Mater Dei and Wivenhoe (229 Macquarie Grove Road COBBITTY)

Dear Graham,

Thank you for attending the pre-lodgement meeting for the property held on 30 November 2020, which was attended by Dea Kandasamy and Josh Pownell (Strategic Planning), Geoff Green and Sister Catherine McCahill and yourself. I'd also like to thank you for arranging the site inspection held on 22 January 2021. Please find the summary of the meetings below outlining key concerns, the requirements for lodgement and current fees.

The pre-lodgement meeting was arranged in response to the proponent's request to discuss a Planning Proposal to consider appropriate mechanisms to future-proof the site for the following:

- adaptive reuse of Wivenhoe Villa, to enable the Mater Dei and Aspect schools to continue to provide a range of activities that support their educational visions;
- allow for the ongoing preservation of conservation areas;
- amendment to minimum lot size for convent precinct;
- facilitate the separation of existing and future land uses; and
- consider appropriate land uses that would support the eventual sale of the Convent Precinct.

Planning Proposals submitted to Council will be assessed against a range of local and state plans and strategies. These include, but are not restricted to, the Greater Sydney Region Plan, Western City District Plan, Camden Community Strategic Plan (CSP), the Rural Lands Strategy (RLS), and the draft Local Strategic Planning Statement (LSPS).

Council officers advise that any Planning Proposal submitted will need to be reviewed by the Camden Local Planning Panel (CLPP) prior to being reported to Council. The CLPP comprises of three independent experts and a community representative.

The Planning Proposal should follow the Department of Planning, Industry and Environment's (DPIE) A Guide to Preparing Planning Proposals. This guide can be accessed on DPIE's website.

Subject Site and Context

The subject site is approximately 245ha in size. To the north of the site is the rural lands associated with Cobbitty. To the east and south east are the estates of Harrington Grove and Kirkham. To the south is Camden Airport and the site is bound to the west by the Nepean River and Camden Local Government Area Boundary.

Located within the boundary of the site are several local heritage items including Wivenhoe Villa, stables, church and former orphanage. Current uses of the site include Mater Dei School and Aspect Macarthur School and a sisters convent.

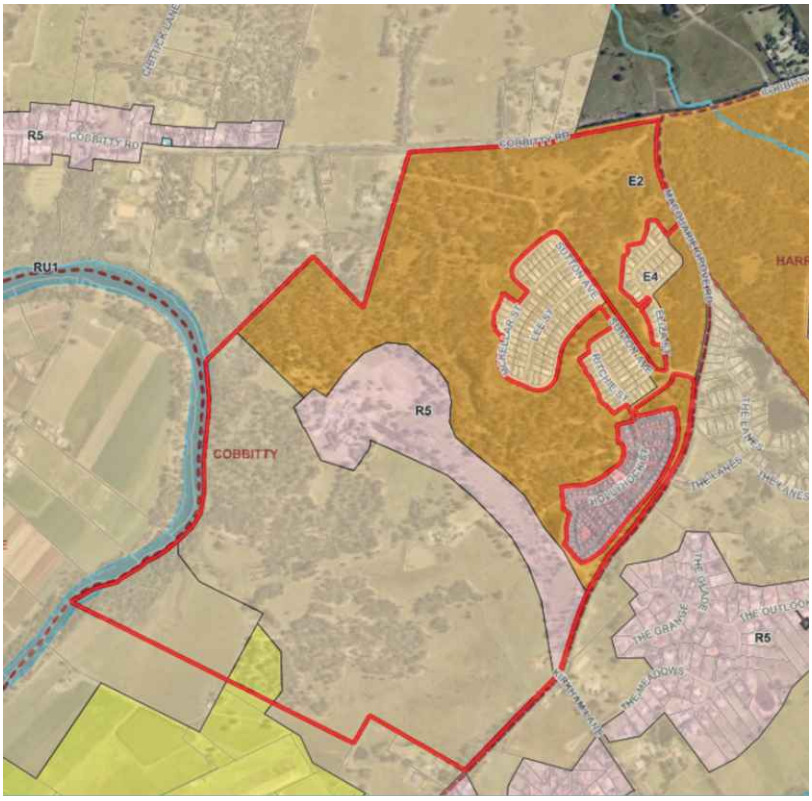
Kirkham Rise and Wivenhoe are separate estates integrated within the site. The Wivenhoe Estate caters for retirees, and Kirkham Rise contains detached dwellings on individual lots.

A significant portion of the site is zoned E2 Environmental Conservation. Part of the site has been bio-banked and conservation efforts are ongoing to remove invasive vegetation coupled with the replanting of native flora. Part of the site is zoned RU1 Primary Production, is partly vegetated and is generally used for agistment.

Camden Local Environmental Plan 2010 (LEP)

Under the *Camden Local Environmental Plan 2010* (LEP), the subject site is zoned as follows:

- RU1 Primary Production zoned land (48.7%);
- E2 Environmental Conservation (39%);
- R5 Large Lot Residential land (11%); and
- SP2 Special Infrastructure (1.3%).



Where prescribed, the maximum building height is 9.5m. No height of building has been prescribed for the E2 portion of the site. The entire site is impacted by Camden Airport and is subject to building height limitations. The Convent Precinct to the south east of the site is located within the approach surface of the runway and any additional development would be subject to additional conditions.

Where prescribed, the site has a minimum lot size of 40ha. No minimum lot size has been prescribed for the E2 portion of the site

Key Discussion Items

Initial conversations regarding this proposal have raised the need for more detail to be provided as discussed below.

Adaptive reuse of heritage items

Adaptive reuse for the Wivenhoe Villa, Chapel, the Stables and Farmhouse is generally supported as a method to further conserve the heritage site. The R5 Large Lot Residential land use zoning for the site outlines permitted and prohibited uses. No specific additional land use has been specified.

Further information is required to determine what potential additional permitted uses are required to support future conservation of the heritage items through adaptive reuse. In addition, any additional permitted uses for the site should be generally consistent with the objectives of the R5 Large Lot Residential zone.

Mater Dei and Aspect School

Mater Dei and Aspect schools are both permitted and existing uses on the site. Further information is required to determine what potential additional permitted uses are required to support future operation and development of the school. Any additional permitted uses for the site should be generally consistent with the objectives of the R5 Large Lot Residential zone.

Further investigation into possible land use zoning amendment to a SP2 Infrastructure zone for education should be explored.

Conservation

This proposal seeks the long-term preservation of existing conservation lands. The site contains approximately 96ha of E2 Environmental Conservation lands and approximately 84.5ha of bio-banked land that is zoned RU1 Primary Production.

There are limited permissible uses for E2 Environmental Conservation lands that do not conflict with the preservation of E2 zoned land. The remaining RU1 zoned land is currently bio-banked. There are existing limitations on the level of disturbance that is permissible on bio-banked land.

The long-term conservation strategy of these lands should be articulated within the Planning Proposal and may require further consideration as to how this can be effectively managed in perpetuity.

General subdivision requirements

The proposal seeks to create a super lot for Kirkham Rise and Wivenhoe residents. There is no minimum lot size for subdivision applicable to the lands surrounding Kirkham Rise and the subdivision of this land may not be subject to a Planning Proposal on this basis alone. It is noted that these lands may be subject to conditions of a Voluntary Planning Agreement (VPA) and impacts to this agreement will need to be considered.

The land surrounding Kirkham Rise and Wivenhoe Village Estates is currently zoned E2 Environmental Conservation. Any impacts to the local ecology of this land as a result of the creation of a super lot will need to be considered.

The proposal also seeks to create a separated lot surrounding the Convent. The minimum lot size for subdivision applicable to the lands immediately surrounding the Convent Precinct is 40ha. Further information should be provided regarding the intended size of subdivision for appropriate advice. Any proposed subdivision over 40ha would be subject to Development Assessment, rather than a Planning Proposal.

Any proposal to amend the minimum lot size to under 40ha would need to demonstrate planning merit, consistency with Camden Councils Rural Land Strategy and preservation of the Metropolitan Rural Area (MRA) as per the Western City District Plan.

Additional permitted land uses for Convent Precinct

The Convent Precinct is adjacent to Macquarie Grove Drive, to the south of the entrance to the Aspect and Mater Dei Schools. The intent is to separate this parcel from the rest of the site for potential sale.

Potential additional permitted uses were discussed to enable compatible development with surrounding lands including land use constraints imposed by the nearby Camden Airport. One potential use discussed was that of a lawn cemetery. This is currently a permitted use, and subject to obtaining development approval.

Initial community consultation may yield other potential additional permitted uses suited to the site and surrounding land. Any additional permitted land uses would need to demonstrate consistency with Camden Councils Rural Land Strategy and preservation of the Metropolitan Rural Area (MRA) as per the Western City District Plan.

Any additional permitted uses for the site should be generally consistent with the objectives of the RU1 Primary Production land use zone. These potential uses will need to be clearly specified in the Planning Proposal to enable them to be captured as an amendment to the Camden LEP.

Camden Airport

The Convent Precinct is located under the flight path of the Camden Airport, and is beneath the approach surface of the airport. Any additional permitted uses sought in the Covent Precinct will need to consider potential limitations imposed by the prescribed Obstacle Limitation Surface (OLS) and require advice from the Civil Aviation Safety Authority (CASA).

Any potential land uses will also need to consider acoustic conflicts with Camden Airport.

Pre-Gateway Assessment

Should the proponent proceed with this Planning Proposal, the following documents will be required at lodgement:

- Planning Proposal Lodgement Checklist;
- Application Form (includes owners' consent); and
- Declaration of Interest and /or any gifts or political donations.

Additional reports and supporting studies should include those listed in the table below.

Reports and supporting studies	Additional information to include
Planning Proposal	• Clearly identify proposed lot sizes for subdivision, including any proposed subdivision and impacts to Minimum Lot Size should be addressed. • Articulate specific additional permitted uses required for various parts of the site • Demonstrate consistency with local (i.e. Camden Rural Lands Strategy 2018) and regional policies (i.e. District and Region Plans)
Ecological Assessment and Bushfire Report	• Articulate the conservation work that has been completed and the continued works schedule proposed. • Identify bushfire affected lands on the site
European and Indigenous Heritage Assessment	• Show the condition of the existing heritage items located on the site • Inform potential adaptive re-use suitability
Land Use Conflict Risk Assessment	• Potential land use conflicts with Camden Airport, specifically the OLS and acoustic impacts. • Potential land use conflicts with local residential development
Traffic Report	• Pending on proposed additional permitted uses, and if there is a likely increase in traffic through the site as a result

As discussed, further studies may be required if a Gateway Determination to proceed is received.

Fees and Charges

Pre-lodgement meeting and written advice is **$1,500.00** and is required to be provided at your earliest convenience.

An initial processing fee of **$4,900.00** is required to be paid when submitting a Planning Proposal to Council. This fee is non-refundable.

A further processing fee is required if Council resolves to send the proposal for Gateway Determination. Depending on whether Council officers deem the proposal as minor or major, the second processing fee will be **$10,300.00** or **$27,600.00**.

Additionally, all studies required for the proposal must be funded by the proponent. All fees are current as of 9 March 2021.

If you have any queries regarding this matter, please do not hesitate to contact me on 4654 7606 or Josh Pownell – Team Leader Strategic Planning on 4654 7801.

Yours sincerely,

[redacted]

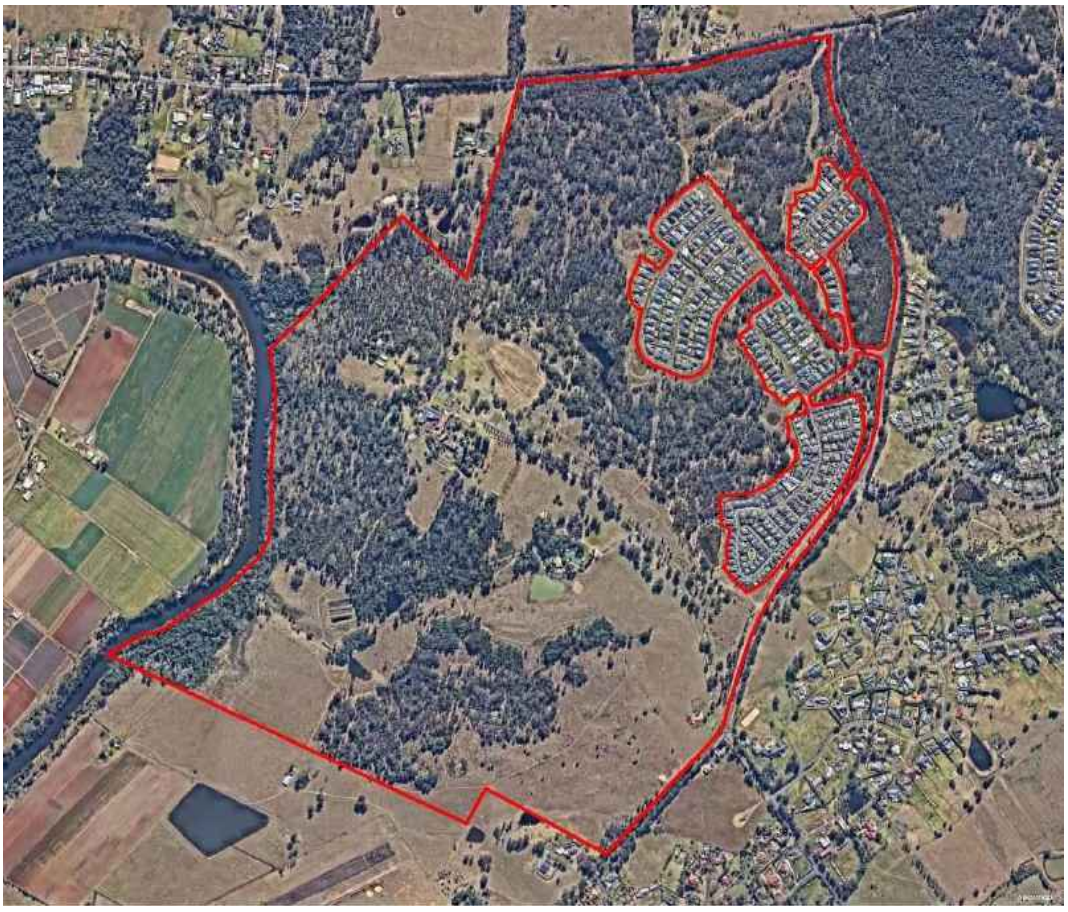
Deaelle Kandasamy
Strategic Planner

Annex K

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "K"
Kirkham Rise and Wivenhoe Residential
Precincts VPA Implications

October 2021

Planning Agreement
229 Macquarie Grove Road, Kirkham (Wivenhoe)

The Council of Camden (ABN 31 117 341 764) (**Council**)

Trustees of the Sisters of the Good Samaritan (ABN 42 062 542 036) (**Developer**)

Prepared by:

MARSDENS LAW GROUP

Level 1
49 Dumaresq Street
CAMPBELLTOWN NSW 2560

Tel: 02 4626 5077
Fax: 02 4626 4826

DX: 5107 Campbelltown

Ref: 02 34 1914 JRT JHM

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Planning Agreement

229 Macquarie Grove Road, Kirkham (Wivenhoe)

Parties

Council	**Name**	The Council of Camden
	Address	37 John Street CAMDEN NSW 2570
	ABN	31 117 341 764
Developer	**Name**	The Trustees of the Sisters of the Good Samaritan
	Address	1A Harris Road FIVE DOCK NSW 2046
	ABN	42 062 542 036

Background

A The Developer is the registered proprietor of the land contained in certificate of folio identifier 1/217570 and known as 229 Macquarie Grove Road, Kirkham (**Land**).

B The Developer has lodged the Development Application with Council.

C The Developer has offered to provide the Contributions in accordance with this agreement if the Development Consent is granted.

Operative Provisions

1 Agreement

The agreement of the parties is:

(1) made in consideration of, amongst other things, the mutual promises contained in this agreement; and

(2) set out in these Operative Provisions.

2 Definitions

2.1 Defined terms

In this agreement, words beginning with a capital letter that are defined in Part 1 of **Schedule 1** have the meaning ascribed to them in that schedule.

2.2 Interpretation

The interpretational rules contained in Part 2 of **Schedule 1** apply in the interpretation of this agreement.

3 Application and operation of agreement

3.1 Planning agreement

The parties agree that this agreement is a planning agreement:

(1) within the meaning set out in section 93F of the Act; and

(2) governed by Subdivision 2 of Division 6 of Part 4 of the Act.

3.2 Application

This agreement applies to the Development.

3.3 Operation

(1) Unless set out in paragraph (2) this agreement operates upon the Developer obtaining any Construction Certificate with respect to the Development Consent, within the meaning set out in clause 109C(1)(b) of the *Environmental Planning and Assessment Act 1979* (NSW).

(2) This agreement does not operate to require the Developer to make any Contributions unless and until the Council grants the Development Consent.

3.4 Heads of Planning Agreement

The parties agree that on the date that this agreement is entered into the Heads of Agreement is terminated.

4 Provision of Contributions

4.1 Provision

The Developer acknowledges that if this agreement were not entered into, the Council would have been entitled to impose conditions in the Development Consent pursuant to section 94 of the Act.

4.2 Contribution Works

The Developer must, at its cost:

(1) obtain development consent, and any other form of consent required by a relevant Authority, for the construction and use of the Works;

(2) carry out and complete the Works to the satisfaction of the Council by the time specified in Part B of **Schedule 2**;

(3) carry out and complete the Works:

(a) in accordance with any relevant development consent;

(b) in accordance with the requirements of any consent or approval required for the Works by any Authority;

(c) in accordance with any Australian Standards applicable to works of the same nature as each aspect of the Works; and

(d) in a proper and workmanlike manner complying with current industry practice and standards relating to each aspect of the Works.

4.3 Embellishment

As soon as possible after the date of this agreement the parties will negotiate in good faith concerning any embellishments to be carried out by the Developer in the proposed parks set out in Part B of **Schedule 2**.

4.4 Financial Contributions

The Developer must pay the Financial Contributions by the time specified in Part A of **Schedule 2**.

4.5 Indexation of amounts

The Financial Contributions are to be adjusted (with the calculation to be made as from the date any such amount is due to be paid under this agreement) in accordance with the following formula:

A = B x C/D

where:

A = the adjusted amount;

B = the relevant amount as set out in this agreement;

C = the CPI most recently published before the date that the relevant payment or the calculation with respect to the relevant amount is to be made; and

D = the CPI most recently published before the date of this agreement.

4.6 Public Facilities

(1) The Developer must allow public access to the:

(a) sporting field in the general proximity of Wivenhoe (set out at Item 4 of Part B in **Schedule 2**) (**Sportsground**) at reasonable times:

(i) on weekdays outside normal school hours (which are agreed to be between 8am and 4pm); and

(ii) on weekends; and

(b) multipurpose community facilities being the Wivenhoe stables (set out at Item 5 of Part B in **Schedule 2**) (**Stables**) as a minimum during 9am to 6pm from Monday to Friday (by appointment and for approved uses only),

(**Public Facilities**).

(2) If required by the Council, the Developer will do all things necessary to register a public positive covenant on the title of that part of the Land that contains the Public Facilities that will provide for:

(a) the Developer providing public access to the relevant facility at reasonable times; and

(b) the Developer undertaking the care and maintenance of the relevant facility. For the purpose of clarity the Developer will bear all risk associated with the relevant facility.

(3) Council will include the Sportsground and the Stables in its schedule of fees and charges to make the public aware of the availability of these facilities. Fees need to be negotiated with Council.

(4) If access to the Sportsground by the public is hindered to a substantial degree after the Sportsground is Complete, Council may, by notice in writing to the Developer, require the Developer to pay a financial contribution of $165,317 (to be indexed as per Clause 4.5) on account of the failure of the Developer to provide the relevant material public benefit required by Council under this agreement. Any such payment must be made within sixty (60) days of the date the relevant notice is served.

(5) If access to the Stables by the public is hindered to a substantial degree after the Stables are Complete, Council may, by notice in writing to the Developer, require the Developer to pay a financial contribution of $72,477 (to be indexed as per Clause 4.5) on account of the failure of the Developer to provide the relevant material public benefit required by Council under this agreement. Any such payment must be made within sixty (60) days of the date the relevant notice is served.

(6) The Developer may at any time and at its discretion:

(c) pay Council the amount referred to in paragraph 0, in which case it will be relieved of its obligation to make the Sportsground publicly available; or

(d) pay Council the amount referred to in paragraph 0, in which case it will be relieved of its obligation to make the Stables publicly available.

(7) If the Developer pays an amount referred to in paragraph 0 or 0 (either of its own accord or if required to do so by the Council) then the Council must do all things necessary to remove of any public positive covenant registered under paragraph (2) affecting the relevant facility from the title of the Land as and from the date the payment is made.

5 Application of s94 & s94A

For the purposes of section 93F(3)(d) of the Act, this agreement excludes the application of sections 94 & 94A of the Act to the Development.

6 Heritage Works

6.1 Heritage CMP and Scope of Works

The Developer warrants that it:

(1) has lodged the Heritage CMP and Scope of Heritage Works with Council as part of the Development Application;

(2) will be bound by the terms of the Heritage CMP and Scope of Heritage Works; and

(3) will carry out the Heritage Conservation Works in accordance with the terms of the Heritage CMP and Scope of Heritage Works.

6.2 Maintenance prior to commencement of Heritage Conservation Works

(1) Prior to the commencement of the Heritage Conservation Works the Developer will carry out any works on Wivenhoe that are necessary to ensure that it is maintained in its condition at the date the Development Consent is issued.

(2) Within one (1) month of the Development Consent being issued, the Developer will prepare and submit to Council a condition report detailing the condition of Wivenhoe as at the date the Development Consent is issued.

6.3 Timing of Heritage Conservation Works

(1) The Developer must commence the Heritage Conservation Works prior to the receipt of a Subdivision Certificate for the 81st Final Lot in that part of the Land zoned 7(d)(4) on the areas shown on the Indicative Plan.

(2) The Developer will complete the Heritage Conservation Works prior to the issue of the final Subdivision Certificate for the Development.

(3) Until the Developer complies with paragraph (1):

(a) the Developer undertakes to the Council not to make an application for; and

(b) Council may refuse to issue,

a Subdivision Certificate for any lots in the Development in excess of the first eighty (80) Final Lots in that part of the Land zoned 7(d)(4) on the areas shown on the Indicative Plan.

6.4 Certification of Completion of Heritage Conservation Works

(1) For the purpose of this clause a **Heritage Consultant** is a “qualified practising heritage consultant” appointed by the Developer and approved by Council.

(2) The Developer must serve a notice (**Heritage Works Completion Notice**) on the Council advising that, in the opinion of the Developer, the Heritage Conservation Works have been Completed.

(3) As soon as possible after a Heritage Works Completion Notice is served, Council must ensure that the Heritage Consultant inspects the Heritage Conservation Works to assess if they have been Completed.

(4) Within seventy two (72) days of the date a Heritage Works Completion Notice is served, Council must provide notice in writing to the Developer that the Heritage Conservation Works set out in the Heritage Works Completion Notice have, in the opinion of the Heritage Consultant:

(a) been Completed; or

(b) not been Completed, in which case the notice must also detail:

(i) those aspects of the Heritage Conservation Works which have not been Completed; and

(ii) the work the Council requires the Developer to carry out in order to rectify the deficiencies in those Heritage Conservation Works (**Rectification Notice**).

(5) If Council does not provide the Developer with a notice in accordance with paragraph (4), the Heritage Conservation Works will be deemed to have been Completed.

(6) Where Council serves a Rectification Notice on the Developer, the Developer must:

(a) rectify the Heritage Conservation Works in accordance with that notice within three (3) months from the date it is issued by Council; or

(b) serve a notice on Council that it disputes the matters set out in the Rectification Notice.

(7) Where the Developer:

(a) serves notice on Council in accordance with paragraph (6)(b), the dispute resolution provisions of this agreement apply; or

(b) rectifies the Heritage Conservation Works in accordance with paragraph (6)(a), it must serve upon Council a new Heritage Works Completion Notice for the Heritage Conservation Works it has rectified.

(8) The costs incurred in connection with the Heritage Consultant under this clause must be met by the Developer.

6.5 Ongoing Maintenance of Wivenhoe

After Completion of the Heritage Conservation Works, the Developer must continue to maintain and conserve Wivenhoe so as to ensure the continuity of outcomes set out in the Heritage CMP.

7 Bushland Conservation

7.1 Bushland CMS & Bushland CMP

The Developer warrants that it:

(1) has lodged the Bushland CMP with Council as part of its Development Application;

(2) will be bound by the terms of the Bushland CMS & Bushland CMP; and

(3) will carry out the Bushland Conservation Works in accordance with the terms of the Bushland CMS, the Bushland CMP and this agreement.

7.2 Maintenance prior to commencement of Bushland Conservation Works

(1) Prior to the commencement of the Bushland Conservation Works the Developer will carry out any works on the Bushland Areas that are necessary to ensure that those areas are not further degraded from their condition at the date the Development Consent is issued.

(2) The works referred to in paragraph (1) must not be inconsistent with the Bushland CMS and the Bushland CMP.

7.3 Timing of works

The Developer will adhere to the program for the completion of the Bushland Conservation Works set out in the Bushland CMP.

7.4 Annual reports

(1) The Developer must provide Council with a report on each anniversary of the date on which the Development Consent is issued by Council that sets out:

(a) the Bushland Conservation Works carried out in the preceding twelve (12) month period;

(b) any matters that may impact upon the Developer's ability to carry out further Bushland Conservation Works in accordance with the Bushland CMS and the Bushland CMP; and

(c) the extent to which the desired outcomes set out in the Bushland CMS and the Bushland CMP were achieved in the preceding twelve (12) months.

(2) The Developer will be discharged from its obligation under paragraph (1) upon completion of the Bushland Conservation Works.

7.5 Completion of the Bushland Conservation Works

(1) The Bushland Conservation Works are Complete when they have been completed in accordance with the Bushland CMP.

(2) Upon Completion of the Bushland Conservation Works, the Developer must ensure that it complies with any obligations imposed on it under the CMP in respect of the maintenance of the Bushland Areas retained in its ownership by the establishment of a National Heritage Trust or similar conservation trust (**Trust**).

(3) Once it is established, the Trust will:

(a) facilitate the funding requirements of the obligations imposed on the Developer pursuant to paragraph (2); and

(b) discharge any ongoing responsibility imposed on the Developer in respect of the maintenance of the Bushland Areas retained in the ownership of the Developer.

(4) For the purpose of clarity, nothing in this clause 7.5 relieves the Developer from any liability for the obligations referred to in paragraph (2), however the Council acknowledges and agrees that those obligations will be discharged by the Trust.

7.6 Alternative strategies

Council will give full and proper consideration to any proposal by the Developer to alter the methods by which the desired outcomes of the Bushland CMS and/or the Bushland CMP can be achieved.

8 Completion of Works

8.1 Issue of Completion Notice

If the Developer considers that any particular Item of Work is Complete it will serve a notice on Council which:

(1) is in writing;

(2) identifies the particular Item of Work to which it relates; and

(3) specifies the date on which, the Developer believes the relevant Item of Work was Completed;

(**Completion Notice**).

8.2 Inspection by Council

Council must inspect each Item of Work set out in a Completion Notice within fourteen (14) days of the receipt of that notice.

8.3 Rectification Notice

(1) Within twenty eight (28) days of the end of the time period referred to in clause 8.2, Council must provide notice in writing (**Rectification Notice**) to the Developer that the Items of Work set out in the Completion Notice:

(a) have been Completed; or

(b) have not been Completed, in which case the notice must also detail:

(i) those aspects of the Items of Work which have not been Completed; and

(ii) the work the Council requires the Developer to carry out in order to rectify the deficiencies in those Items of Work.

(2) If Council does not provide the Developer with a Rectification Notice in accordance with paragraph (1), the Items of Work set out in the Completion Notice will be deemed to have been Completed.

(3) Where Council serves a Rectification Notice on the Developer the Developer must:

(a) rectify the relevant Items of Work in accordance with that notice within three (3) months from the date it is issued by the Council; or

(b) serve a notice on the Council that it disputes the matters set out in the notice.

(4) Where the Developer:

(a) serves notice on Council in accordance with paragraph (3)(b), the dispute resolution provisions of this agreement apply; or

(b) rectifies the Works in accordance with paragraph (3)(a), it must serve upon the Council a new Completion Notice for the Works it has rectified.

8.4 Works-As-Executed-Plan

No later than sixty (60) days after an Item of Work is Complete, the Developer will submit to the Council a copy of a full Works-As-Executed-Plan in respect of that Item of Work.

8.5 Public Access

(1) The parties will do all things reasonably necessary to procure that public positive covenants (**Covenants**) are registered on the title of those parts of the Land:

(a) upon which an Item of Work set out in items 2, 6 and 7 of Part B of **Schedule 2** is erected; or

(b) which is zoned 7(d) under the New LEP,

as soon as possible after the relevant part of the Land is created as a separate lot.

(2) The parties will do all things reasonably necessary to procure that easements (**Easements**) are registered on the title of those parts of the Land upon which an Item of Work set out in item 3 of Part B of **Schedule 2** is erected as soon as possible after the relevant part of the Land is created as a separate lot.

(3) The terms of any Covenant or Easement will provide for:

(a) the Developer to provide public access to the relevant Item of Work or part of the Land at all reasonable times; and

(b) the Developer will undertake the care and maintenance of the relevant Item of Work or part of the Land. For the purpose of clarity the Developer will bear all risk associated with the relevant Item of Work or Part of the Land.

9 Defects Liability

9.1 Defects Notice

(1) Where any Item of Work has been Completed but that item contains a defect which adversely affects the ordinary use and/or enjoyment of the relevant item (**Defect**) Council may issue a defects notice (**Defects Notice**) concerning that item but only within the Defects Liability Period.

(2) A Defects Notice must contain the following information:

(a) the nature and extent of the Defect;

(b) the work Council requires the Developer to carry out in order to rectify the Defect; and

(c) the time within which the Defect must be rectified (which must be a reasonable time and not less than fourteen (14) days).

9.2 Developer to Rectify Defects

(1) The Developer must rectify the Defects contained within a Defects Notice as soon as practicable after receipt of the Defects Notice.

(2) The Developer must follow the procedure set out in clause 8 in respect of the satisfaction of the Defects Notice.

9.3 Right of Council to Step-In

Council may, at its absolute discretion, enter upon the Land for the purpose of satisfying the Defects Notice where the Developer has failed to comply with a Defects Notice but only after giving the Developer seven (7) days written notice of its intention to do so.

9.4 Consequence of Step-In

If Council elects to exercise the step-in rights granted to it under clause 9.3 then:

(1) Council may:

(a) enter upon any part of the Land that it requires access to in order to satisfy the obligations of the Developer in accordance with the Defects Notice; and

(b) rectify the relevant Defects in accordance with the Defects Notice; and

(2) the Developer must not impede or interfere with Council in undertaking that work.

9.5 Costs of Council

Where Council exercises its step-in rights all, costs incurred by Council in rectifying the relevant Defects may recover those costs as a debt due in a court of competent jurisdiction.

10 Indemnity and Insurance

10.1 Indemnity

The Developer indemnifies the Council, its employees, officers, agents, contractors and workmen against all Claims that arise in connection with the carrying out of the Contribution Works and any other obligation under this agreement except to the extent that any such Claim arose as a result of an act or omission of Council.

10.2 Insurance

(1) The Developer will take out and keep current the following insurances during the following periods in relation to the Works:

(a) contract works insurance, noting the Council as an interested party, for the full replacement value of the Works (including the cost of demolition and removal of debris, consultants' fees and authorities' fees), to cover the Developer's liability in respect of damage to or destruction of the Works until those works are Complete,

(b) public liability insurance for at least $20,000,000.00 for a single occurrence, which covers the Council, the Developer and any subcontractor of the Developer, for liability to any third party until those works are Completed and thereafter during any period that the Developer is required to provide public access to the relevant Work under this agreement,

(c) workers compensation insurance as required by law for any employee involved in the construction or maintenance of the Works until those works are Complete, and

(d) any other insurance required by law until those works are Complete.

(2) If the Developer fails to comply with paragraph (1), the Council may effect and keep in force such insurances and pay such premiums as may be necessary for that purpose and the amount so paid shall be a debt due from the Developer to the Council and may be recovered by the Council as it deems appropriate including:

(a) by calling upon the Security provided by the Developer to the Council under this Agreement, or

(b) recovery as a debt due in a court of competent jurisdiction.

(3) The Developer must not commence the Works unless it has first provided to the Council satisfactory written evidence of all the insurances specified in paragraph (1).

11 Force Majeure

11.1 Definition

In this clause 11, **Force Majeure** means any physical or material restraint beyond the reasonable control of a party claiming the Force Majeure and includes, without limitation, fire, and industrial disputes.

11.2 Delay by reason of Force Majeure

(1) If a party is unable by reason of Force Majeure to carry out wholly or in part its obligations under this agreement (except an obligation to pay money), it must:

(a) give to the other party prompt notice of the Force Majeure with reasonably full particulars; and

(b) suggest an alternative method, if any, of satisfying its obligations under this agreement.

(2) If a party is unable to satisfy its obligations under this agreement by an alternative method, the obligations of the parties so far as they are affected by the Force Majeure are then suspended during continuance of the Force Majeure and any further period as may be reasonable in the circumstances.

(3) The party giving such notice under this clause must use all reasonable effort and diligence to remove the Force Majeure or ameliorate its effects as quickly as practicable.

11.3 Dispute

If the parties are unable to agree on the existence of an event of Force Majeure or the period during which the obligations of the parties are suspended during the continuance of the Force Majeure, that dispute must be referred for determination under clause 14.

12 Security

12.1 Prohibition

Neither party may Assign their rights under this agreement without the prior written consent of the other party.

12.2 Assignment of Land

The Developer must not Assign its interest in the Land, other than a Final Lot, unless:

(1) Council consents to the Assignment, acting reasonably; and

(2) the proposed assignee enters into an agreement to the satisfaction of Council under which the assignee agrees to be bound by the terms of this agreement in relation to that part of the Land to be assigned.

12.3 Registration of this agreement

(1) This agreement will be registered on the title of the Land pursuant to s 93H of the Act.

(2) Council must do all things necessary to allow the Developer to remove this agreement from the title of any part of the Land:

(a) with respect to which the Developer has complied with its obligations to provide the Contributions; or

(b) upon the issue of a Subdivision Certificate for a plan that, when registered, would create Final Lots with respect to which the Developer has complied with its obligations to provide the Contributions.

12.4 Obligations of the Developer

The Developer must:

(1) do all things necessary to allow the registration of this agreement to occur under clause 12.3; and

(2) pay any reasonable costs incurred by Council in undertaking that registration.

12.5 Bond or Bank Guarantee

(1) The Developer will, within fourteen (14) days of being requested to do so by the Council, provide to Council a bank guarantee in an amount of thirty five thousand dollars ($35,000) to secure the obligations of the Developer under this Agreement.

(2) The parties acknowledge that the amount of the bond referred to in paragraph (1) has been requested by the Council on the basis that it will secure the payment of any legal costs incurred by the Council in instituting legal proceedings against the Developer as a result of any breach of this Agreement by the Developer.

13 Review & amendment

13.1 Negotiation of review

If either party requests a review of the whole or any part of this agreement then the parties must use their best endeavours, acting in good faith, to review this agreement in accordance with that request.

13.2 Amendment to be in writing

If the parties agree to amend this agreement as a result of a review conducted under clause 13.1 then any such amendment will only have effect if it:

(1) is in writing and signed by both parties; and

(2) complies with any requirements set out in the Act.

14 Dispute resolution

14.1 Notice of Dispute

If a party believes that there is a dispute in respect of this agreement (**Dispute**) then:

(1) that party must give notice (**Dispute Notice**) in writing to the other party stating that there is a Dispute; and

(2) the Dispute Notice must outline:

(a) what the party believes the dispute to be; and

(b) what the party wants to achieve; and

(c) what the party believes will settle the Dispute; and

(d) who will be the party's representatives to negotiate the dispute.

14.2 Consultation between the Representatives

Within fifteen (15) business days of a notice served in accordance with clause 14.1(1) the representatives (**Representatives**) of each of the parties must meet in order to resolve the Dispute.

14.3 Settlement of Dispute and mediation

(1) If the Dispute cannot be resolved by the Representatives within a further fifteen (15) business days of a meeting between the Representatives in accordance with clause 14.2 then the Dispute must be submitted to mediation by a mediator selected:

(a) by the parties; or

(b) if the parties cannot agree on a mediator, by the President of the Australian Commercial Disputes Centre.

(2) The parties are to appoint a mediator who is appropriately qualified and have practical experience in the area of the Dispute.

(3) Any costs incurred in the mediation of the Dispute are to be borne equally by the parties.

14.4 Exclusivity of dispute resolution procedure

(1) Both parties must adhere to the dispute resolution procedure set out in this agreement.

(2) The only time that either party may depart from the dispute resolution procedure set out in this clause is when urgent interlocutory relief is required to restrain a breach or threatened breach of this agreement.

15 Default

15.1 Events of default

The Developer commits an "Event of Default" if it:

(1) breaches a term of this agreement;

(2) fails to comply with the terms of the Heritage CMP;

(3) fails to comply with the terms of the Bushland CMP; or

(4) fails to comply with the terms and conditions of the Development Consent.

15.2 Consequences of Events of default

Where the Developer commits an Event of Default the Council may serve a notice on the Developer requiring the relevant breach to be rectified within a reasonable time (which must be no less than seventy two (72) days) of the date of the notice.

15.3 No restriction on rights

The rights vested in the Council pursuant to clause 15.2 do not prevent Council from exercising any other rights that it may possess at law.

16 Termination

16.1 Termination

This agreement terminates in the following events:

(1) the parties agree in writing to terminate the operation of this agreement at any time; or

(2) the Council serves notice on the Developer terminating this agreement where the Developer has failed to comply with a notice issued in accordance with clause 15.2.

16.2 Consequence of termination

Upon termination of this agreement:

(1) all future rights and obligations of the parties are discharged;

(2) the Council must do all things necessary to remove this agreement from the title of the Land;

(3) any security held under this agreement will be released; and

(4) all pre-existing rights and obligations of the parties continue to subsist.

17 Position of Council

17.1 Consent authority

The parties acknowledge that Council is a consent authority with statutory rights and obligations pursuant to the terms of the Planning Legislation.

17.2 Agreement does not fetter discretion

This agreement is not intended to operate to fetter, in any unlawful manner:

(1) the power of Council to make any Law; or

(2) the exercise by Council of any statutory power or discretion,

(**Discretion**).

17.3 Severance of provisions

(1) No provision of this agreement is intended to, or does, constitute any unlawful fetter on any Discretion. If, contrary to the operation of this clause, any provision of this

agreement is held by a court of competent jurisdiction to constitute an unlawful fetter on any Discretion, the parties agree:

(a) they will take all practical steps, including the execution of any further documents, to ensure the objective of this clause 17 is substantially satisfied; and

(b) in the event that paragraph (1)(a) cannot be achieved without giving rise to an unlawful fetter on a Discretion, the relevant provision is to be severed and the remainder of this agreement has full force and effect; and

(c) to endeavour to satisfy the common objectives of the parties on relation to the provision of this agreement which is held to be an unlawful fetter to the extent that it is possible having regard to the relevant court judgment.

(2) Where the Law permits Council to contract out of a provision of that Law or gives Council power to exercise a Discretion, then if Council has in this agreement contracted out of a provision or exercised a Discretion under this agreement, then to the extent of this agreement is not to be taken to be inconsistent with the Law.

17.4 No Obligations

Nothing in this agreement will be deemed to impose any obligation on Council to exercise any of its functions under the Act in relation to the Development Consent, the Land or the Development in a certain manner.

18 Confidentiality

18.1 Agreement not confidential

The parties acknowledge that this agreement:

(1) is not confidential;

(2) may be treated as a public document by the Council; and

(3) may be publicly exhibited and reported without restriction by either party.

18.2 Non-disclosure

(1) A party must not disclose Confidential Information disclosed to it by the other party except:

(a) with the prior written consent of the disclosing party; or

(b) in accordance with the terms of this agreement.

(2) A party may not unreasonably withhold its consent to disclosure in accordance with paragraph 18.2(1)(a) where:

(a) the requested disclosure is made for the purpose of facilitating the proper performance of a party's obligations under this agreement; and

(b) the disclosure is to be made to persons who:

(i) reasonably require the disclosure of the information; and

(ii) are subject to a duty of confidentiality on the same or similar terms to that contained in this clause.

18.3 Use of Confidential Information

A party may use, copy, reproduce or otherwise deal with the Confidential Information disclosed to it only:

(1) during the term of this agreement; and

(2) in accordance with the terms of this agreement; and

(3) in a manner that is related to the proper and lawful conduct and performance of its obligations under this agreement.

18.4 Exceptions to non-disclosure

A party may disclose Confidential Information that has been disclosed to it:

(1) where such disclosure is made to those of its employees, advisers, related bodies corporate and shareholders who:

(a) have a need to know (and only to the extent each has a need to know); and

(b) are aware and agree that the information that is to be disclosed must be kept confidential; or

(2) which, at the time of disclosure, is within the public domain or after disclosure comes into the public domain other than by a breach or breaches by any party (whether the party to this agreement or a third party) of any obligation owed to the other party; or

(3) where:

(a) required by law or any order of any court, tribunal, authority, regulatory body or the rules of any securities exchange (whether in Australia or elsewhere) to be disclosed; and

(b) the party ensures that information is disclosed only to the extent reasonably and lawfully required.

18.5 Duration of confidentiality obligations

Unless otherwise agreed by the parties in writing the obligation of confidentiality set out in this agreement operates indefinitely and does not terminate on the expiry or earlier termination of this agreement.

19 GST

19.1 Defined GST Terms

Defined terms used in this clause 19 have the meaning ascribed to them in the GST Law.

19.2 GST to be added to amounts payable

(1) If GST is payable on a Taxable Supply made under, by reference to or in connection with this agreement, the party providing the Consideration for that Taxable Supply must also pay the GST Amount as additional Consideration.

(2) This clause does not apply to the extent that the Consideration for the Taxable Supply is expressly agreed to be GST inclusive.

(3) Unless otherwise expressly stated, prices or other sums payable or Consideration to be provided under or in accordance with this agreement are exclusive of GST.

19.3 GST obligations to survive termination

This clause 19 will continue to apply after expiration of termination of this agreement.

20 Change of Laws

If, at the time a Contribution is required to be made by the Developer under this agreement a New Law is in force that requires the Developer to make a monetary contribution, carry out work or provide a material public benefit;

(1) to any Authority;

(2) for a Public Purpose (as defined in the Act);

(3) that is the same as, or satisfies the same Public Purpose as, part of the Contributions,

(**New Contribution**) then the Developer's obligation to provide that part of the Contributions is discharged if it provides the New Contribution.

21 Miscellaneous

21.1 Obligation to act in good faith

The parties must at all times:

(1) cooperate and use their best endeavours to profitably and professionally give effect to the rights and obligations of the parties set out in this agreement; and

(2) not unreasonably delay any action, approval, direction, determination or decision which is required of it; and

(3) make approvals or decisions that are required of it in good faith; and

(4) be just and faithful in its activities and dealings with the other parties.

21.2 Consultation concerning development applications

If the Developer is required to lodge an application for development consent for any matter required to be carried out by it under this agreement then it will consult with Council in good faith in relation to the relevant works before lodging any such application.

21.3 Legal costs

Each party must bear its own legal costs in respect of the negotiation, preparation and execution of this agreement.

21.4 Taxes

The Developer must pay all taxes, duties and other governmental fees and charges payable in respect of this agreement.

22 Administrative provisions

22.1 Notices

(1) Any notice, consent or other communication under this agreement must be in writing and signed by or on behalf of the person giving it, addressed to the person to whom it is to be given and:

(a) delivered to that person's address; or

(b) sent by pre-paid mail to that person's address; or

(c) transmitted by facsimile to that person's address.

(2) A notice given to a person in accordance with this clause is treated as having been given and received:

(a) if delivered to a person's address, on the day of delivery if a Business Day, otherwise on the next Business Day; and

(b) if sent by pre-paid mail, on the third Business Day after posting; and

(c) if transmitted by facsimile to a person's address and a correct and complete transmission report is received, on the day of transmission if a Business Day, otherwise on the next Business Day.

(3) For the purpose of this clause the address of a person is the address set out in this agreement or another address of which that person may from time to time give notice to each other person.

22.2 Entire agreement

This agreement is the entire agreement of the parties on the subject matter. All representations, communications and prior agreements in relation to the subject matter are merged in and superseded by this agreement.

22.3 Waiver

The non-exercise of or delay in exercising any power or right of a party does not operate as a waiver of that power or right, nor does any single exercise of a power or right preclude any other or further exercise of it or the exercise of any other power or right. A power or right may only be waived in writing, signed by the parties to be bound by the waiver.

22.4 Cooperation

Each party must sign, execute and deliver all agreements, documents, instruments and act reasonably and effectively to carry out and give full effect to this agreement and the rights and obligations of the parties under it.

22.5 Counterparts

This agreement may be executed in any number of counterparts and all of those counterparts taken together constitute one and the same instrument.

22.6 Unenforceability

Any provision of this agreement which is invalid or unenforceable in any jurisdiction is to be read down for the purposes of that jurisdiction, if possible, so as to be valid or enforceable, and is otherwise capable of being severed to the extent of the invalidity or enforceability, without affecting the remaining provisions of this agreement or affecting the validity or enforceability of that provision in any other jurisdiction.

22.7 Power of Attorney

Each attorney who executes this agreement on behalf of a party declares that the attorney has no notice of:

(1) the revocation or suspension of the power of attorney by the grantor; or

(2) the death of the grantor.

22.8 Governing law

The law in force in the State of New South Wales governs this agreement . The parties:

(1) submit to the exclusive jurisdiction of the courts of New South Wales and any courts that may hear appeal from those courts in respect of any proceedings in connection with this agreement ; and

(2) may not seek to have any proceedings removed from the jurisdiction of New South Wales on the grounds of *forum non conveniens*.

Execution page

Executed as an agreement

Dated:

Executed by **CAMDEN COUNCIL** by its General Manager and Mayor by the affixing of the Common Seal of Council in accordance with a resolution of the Council dated

[redacted]

General Manager (Signature)

GREG WRIGHT

Name of General Manager (Print Name)

[redacted]

Mayor (Signature)

CR CHRIS PATTERSON

Name of Mayor (Print Name)

Executed by **the Developer**.

[redacted]

Trustee (Signature)

CLARE T CONDON

Name of Trustee (Print Name)

[redacted]

Trustee (Signature)

VERONICA JOAN HOEY

Name of Trustee (Print Name)

Schedule 1
Defined Terms and Interpretation

Part 1 - Definitions

Act	means the *Environmental Planning & Assessment Act 1979* (NSW).
Assign	as the context requires refers to any assignment, sale, transfer, disposition, declaration of trust over or other assignment of a legal and/or beneficial interest.
Authority	means (as appropriate) any: (1) federal, state or local government; or (2) department of any federal, state or local government; or (3) any court or administrative tribunal; or (4) statutory corporation or regulatory body.
Bushland Areas	means those areas of the Development that are subject to the Bushland CMP.
Bushland CMP	means the Bushland Conservation Management Plan attached as **Annexure 1,** or otherwise as approved by the Council from time to time.
Bushland CMS	means the Bushland Conservation Management Strategy attached as **Annexure 2,** or otherwise as approved by the Council from time to time.
Bushland Conservation Works	means the works required to be carried out under the Bushland CMP.
Claim	means against any person any allegation, action, demand, cause of action, suit, proceeding, judgement, debt, damage, loss, cost, expense or liability howsoever arising and whether present or future, fixed or unascertained, actual or contingent whether at law, in equity, under statute or otherwise.
Confidential Information	means: (1) **intellectual property**: any and all intellectual property relating to the Development; and (2) **financial information**: information regarding costs, profits, markets, sales and other financial information; and (3) **business information**: information regarding business relationships and strategies, development plans, marketing, product concepts, trade secrets and other business information the business of the disclosing party and the disclosing party's clients or third party suppliers; and (4) **personal information**: any personal information relating to the officers (as defined in s9 of the *Corporations Act*

2001 (Cth)), partners, employees, agents, contractors or clients of the disclosing party; and

(5) **information obtained through performance**: all information which becomes known to a party as a consequence of it performing the obligations under this agreement including (without limitation) all records, documents, accounts, plans, specifications, price lists, customer lists, correspondence, photos and papers of every description relating to the disclosing party; and

(6) **technical information**: information regarding designs, development processes and tools, hardware specifications, know-how, production, research, software specifications, data bases and software developed or used by a party whether as owner or under licence from any person and other technical information; and

(7) **disclosed information**: any other information disclosed by a disclosing party that:

(a) is identified as being confidential; or

(b) would be apparent to a reasonable person that such information was disclosed in confidence by the disclosing party.

Complete means, in relation to an Item of Work, that the item has been completed in accordance with this agreement.

Contribution Works means the:

(1) the Works; and

(2) the Bushland Conservation Works; and

(3) the Heritage Conservation Works.

Contributions means the Contribution Works and the Financial Contributions.

CPI means the Consumer Price Index (All Groups – Sydney) as published by the Australian Bureau of Statistics

Defects Liability Period means a period with respect to each Item of Work of six (6) months commencing on the date that the item is Completed.

Development means the subdivision and development of the Land in accordance with:

(1) the Development Consent (including any development consent under the Act giving effect to the Development Consent); and

(2) the Indicative Plan.

Development Application means the development application under the Act for the Development Consent and being application No DA 192/2008 lodged with the Council on 29 February 2008.

Development Consent means the development consent within the meaning of the Act granted for the Development Application, as modified from time

	to time.
Final Lot	means: (1) a lot in the Development that is capable of being occupied for residential purposes and which cannot be subdivided further under the New LEP; or (2) any other lot that the parties agree is a Final Lot, but excluding a lot that is required to be dedicated or transferred to the Council, either under this agreement or as a condition of the Development Consent.
Financial Contributions	means the monetary contributions set out in Part A of **Schedule 2**.
GST	means goods and services tax payable in accordance with the *A New Tax System (Goods and Services Tax) Act 1999* (Cth) and all incidental and ancillary legislation and regulations.
Heritage CMP	means the conservation management plan in relation to the restoration and maintenance of Wivenhoe attached as **Annexure 3**, or such other plan approved by Council from time to time.
Heritage Conservation Works	means the works the Developer will undertake to Wivenhoe in accordance with the Heritage CMP and the Scope of Heritage Works.
Heads of Planning Agreement	means the Heads of Planning Agreement – Mater Dei entered into between the parties.
Indicative Plan	means the plan attached as **Annexure 5**.
Item of Work	means an individual item of the Works.
Land	means the land contained in certificate of title folio identifier 1/217570 and known as 229 Macquarie Grove Drive, Kirkham.
Law	means all legislation, plans, regulations, by-laws, common law and other binding order made by any Authority.
New Law	means an amendment, variation or change made to a Law in force at the date of this agreement, or a Law that comes into force on or after the date of this agreement.
New LEP	means the Camden Local Environmental Plan 74 (as amended).
Planning Legislation	means the Act and the *Local Government Act 1993* (NSW).
Scope of Heritage Works	means the scope of heritage works attached as **Annexure 4**.
Subdivision Certificate	has the meaning ascribed to that term in the Act.
Wivenhoe	means the building and curtilage defined as “Wivenhoe” in the

	Heritage CMP.
Works	means the works set out in Part B of **Schedule 2**.

Part 2 – Interpretational Rules

Clauses, annexures and schedules	a clause, annexure or schedule is a reference to a clause in or annexure or schedule to this agreement.
Reference to statutes	a statute, ordinance, code or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them.
Singular includes plural	the singular includes the plural and vice versa.
Person	the word "person" includes an individual, a firm, a body corporate, a partnership, joint venture, an unincorporated body or association or any government agency.
Executors, administrators, successors	a particular person includes a reference to the person's executors, administrators, successors, substitutes (including persons taking by novation) and assigns.
Dollars	Australian dollars, dollars, $ or A$ is a reference to the lawful currency of Australia.
Calculation of time	if a period of time dates from a given day or the day of an act or event, it is to be calculated exclusive of that day.
Reference to a day	a day is to be interpreted as the period of time commencing at midnight and ending 24 hours later.
Accounting terms	an accounting term is a reference to that term as it is used in accounting standards under the Corporations Act or, if not inconsistent with those standards, in accounting principles and practices generally accepted in Australia.
Reference to a group of persons	a group of persons or things is a reference to any two or more of them jointly and to each of them individually.
Meaning not limited	the words "include", "including", "for example" or "such as" are not used as, nor are they to be interpreted as, words of limitation, and, when introducing an example, do not limit the meaning of the words to which the example relates to that example or examples of a similar kind.
Next day	if an act under this agreement to be done by a party on or by a given day is done after 4.30pm on that day, it is taken to be done on the next day.
Next Business Day	if an event must occur on a stipulated day which is not a Business Day then the stipulated day will be taken to be the next Business Day.
Time of day	time is a reference to Sydney time.

Headings	headings (including those in brackets at the beginning of paragraphs) are for convenience only and do not affect the interpretation of this agreement.
Agreement	a reference to any agreement, agreement or instrument includes the same as varied, supplemented, novated or replaced from time to time.
Gender	a reference to one gender extends and applies to the other and neuter gender.

Schedule 2
Contributions

Calculation of contributions per Final Lot

Calculation	Base rate	Indexed to December 2008
Plan administration	$297.00	$343.00
Community and recreation land acquisition	$2,157.00	$2,486.00
Community and recreation facilities	$3,192.00	$3,679.00
Total contribution per Final Lot	**$5,646.00**	**$6,507.00**

Summary of Contributions

Column 1	Column 2	Column 3
Item No.	**Public Facility**	**Timing of Completion**
Part A – Financial Contributions		
Item 1.	Monetary contribution in the amount of $6,507.00 per Final Lot.	The amount for each Final Lot must be paid prior to the issue of a Subdivision Certificate for the plan that, when registered at the NSW Department of Lands, will create that Final Lot.
Part B – Works		
Item 2.	District open space (passive component)	
	Park G (11,200 sqm)	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct A (as shown on the Indicative Plan).
	Park H (9,200 sqm)	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct C (as shown on the Indicative Plan).
Item 3.	District cycleway/pedestrian paths	
	Shared cycleways (2.5m wide) – Approx 4,700m^2	Simultaneously with the development of the Precinct (as shown on the Indicative Plan) that the cycleway, or the relevant part of it, passes through or adjoins.
	Concrete footpaths (1.5m wide) – Approx 3,200m^2	Simultaneously with the development of the Precinct (as shown on the Indicative Plan) that the footpath, or the relevant part of it, passes through or adjoins.
	Informal trails (1.5m wide) – Approx 4,500m^2	In accordance with the Bushland CMP.

Column 1	Column 2	Column 3
Item No.	**Public Facility**	**Timing of Completion**
Item 4	Sporting ground access	Currently public access is available and will continue to be available.
Item 5.	Multi purpose Community Centre (Stables access)	Currently public access is available and will continue to be available subject to Heritage Conservation Works being carried out.
Item 6.	Local open space	
	Park A – 5,500m^2	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct A (as shown on the Indicative Plan).
	Park B – 1,280m^2	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct A (as shown on the Indicative Plan).
	Park C – 1,280m^2	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct A (as shown on the Indicative Plan).
	Park D – 1,900m^2	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct A (as shown on the Indicative Plan).
	Park E – 760m^2	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct B (as shown on the Indicative Plan).
	Park F – 6,400m^2	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct D (as shown on the Indicative Plan).
Item 7	Local recreation	
	Children's play ground within Park D	Prior to the release of Subdivision Certificates for the creation of all Final Lots within Precinct A (as shown on the Indicative Plan).

Annexure 1
Bushland CMP

Annexure 2
Bushland CMS

Annexure 3
Heritage CMP

Annexure 4
Scope of Heritage Works

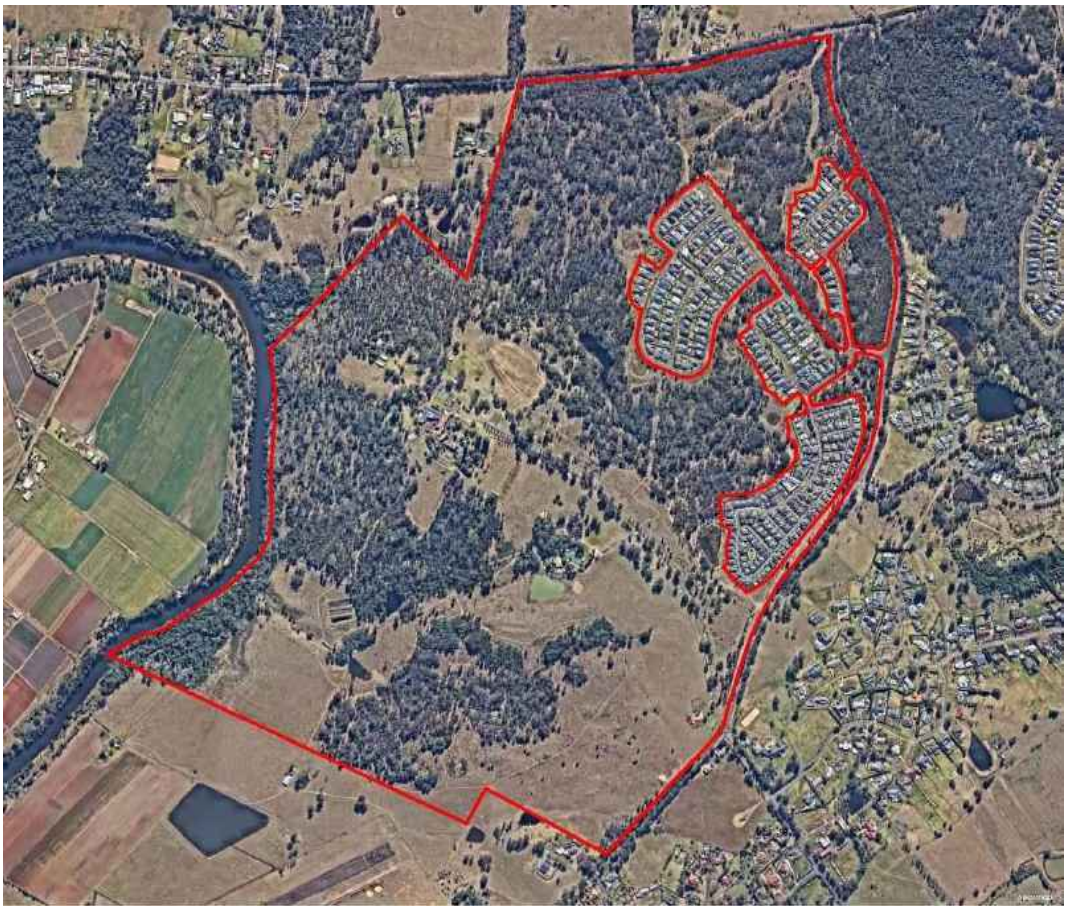
Annexure 5
Indicative Plan

Annex L

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "L"
Camden Rural Lands Strategy and
the Metropolitan Rural Area – the Mater Dei case

October 2021

Camden Rural Lands Strategy and the Metropolitan Rural Area – the Mater Dei case

(1) Introduction

Despite the laudable overarching conservation objectives of the Rural Lands Strategy (RLS) there are, however, some fundamental flaws in this body of information and moreover the conclusions derived; such being addressed briefly below. Further, the RLS should be considered in the broader context of the Metropolitan Rural Area (MRA) introduced in the Western City District Plan (WCDP).

(2) "Rural land" as a Concept

Initially, the term rural is synomously used to infer agricultural landuse. Yet by definition the term rural is noted to refer to areas away from towns and cities, ie. areas away from urban areas. Indeed, they are seen to constitute Non Urban Lands. In doing so not all non-urban lands by logical extension are devoted to agricultural production. Moreover, they are seen to represent the country (derived from the Latin word "rus") or in common parlance, the countryside.

Simply expressed, not all rural land constitutes agricultural land and "not all land with rural land qualities is zoned rural". (Refer to Booth Associates pg. 9)

(3) Agricultural Lands Classification and Agricultural Productivity.

3.1 – Overview

With the loss of large tracts of Classes 3 and 4 land and a small area of Class 2 land to the South West Priority Growth Area (3,964ha), only 15% of the balance of rural land in the Camden LGA comprises highly productive Class 1 or Class 2 arable (438ha) land suited for intensive cultivation (horticulture) or regular cultivation (1,229ha). (Booth Associates Pg. 29). This land generally comprises the highly fertile Nepean River floodplains and floodplains of the Nepean's tributaries.

Conversely, the majority (80%) of the balance of rural land in the Camden LGA is Class 3 and Class 4 land, suited to grazing and occasional cropping. (Booth Associates Pg. 29).

3.2 – Classes 1 and 2 Land

The highly productive Class 1 and 2 lands (also identified as Biophysical Strategic Agricultural Land by the NSW State Government – Booth Associates Pg. 31) will continue as the backbone of productive sustainable agriculture in the Camden LGA and must be preserved. Their largely flood affected nature will reinforce this prospect by negating speculative "land banking" activities. Council's energy in respect of these lands should be devoted to ensuring landuse compatibility with adjoining flood free urban and rural residential lands.

3.3 Classes 3, 4 and 5 Land

These lands comprise the bulk of the "remnant" rural lands. Such lands are initially noted to be significantly impacted by topographical (related geotechnical), vegetation and bushfire constraints. (Booth Associates Pgs. 38, 40 and 42) Further, they are highly fragmented in nature as is depicted on pages 44 and 45 Booth Associates.

The preceding landscape will not provide for viable rural activities on essentially constrained grazing lands. Industry analysis has noted that at a base case land value of $30,000 per hectare each hectare supports approximately 2 animals, thereby equating to $15,000 per animal per hectare per annum investment in a low intensity grass fed system. In comparison the industry maximum capital value per head is in the order of $7,000 per animal per hectare or approximately double the rate of return of the Camden example.

The viability is further adversely impacted by the availability and cost of supplementary feed.

Horse studs, horse agistment and spelling may produce greater returns than grazing of livestock. However, the number of such facilities are noted to have declined of recent times and/or are not being reinvested in.This situation is not addressed in the Booth Associates Study.

Intensive agriculture in the form of controlled environment poultry production and horticulture are not displaying signs of significant growth. The economic rent of the land seems to dictate against major capital investment in these farming forms in the Camden LGA. Further, the fragmented and relatively small scale of holdings increases the challenges of landuse conflict with rural retreaters/hobby-farmers/lifestyle aspirants. Wollondilly and Goulburn/Mulwaree Shires appear to be more highly sought out locations for these farming forms.

The suggested landuse compatibility strategies of Booth Associates despite optimism are likely to discourage investment in capital intensive agricultural forms.

(4) South West Priority Growth Area Rural Displacement

The larger productive agricultural enterprises with a genuine desire to remain in agriculture will largely relocate to Local Government Areas beyond Camden where land speculation ("land banking) is not widely evidenced in land costs.

Many of the smaller intensive horticultural activities are conducted on leased land of approximately 2 hectares. Such parties will find it almost impossible to relocate in Camden given the 40 hectare minimum lot size and the lack of access to reliable, economic water supplies. Owners reaping the rewards of urban land sales will largely retire from the industry or seek more viable land opportunities beyond the Camden Local Government Area.

The optimism/opportunities noted at Section 9 of the Booth Associates Study are considered to be poorly founded and not likely to be reflected in practice. Even Booth Associates concludes "Council cannot easily influence or facilitate agricultural enterprise relocation" (Pg. 64).

Whilst a peak industry agriculturalist has noted that :

"The proposition that existing agricultural businesses will relocate to RU1 land is fictitious at best. They will locate far and wide to more cost effective land. It would appear that there is a romantic unrealistic "agenda" in Council's terms of reference for Booth Associates to create an illusion of agricultural viability. This myth cannot be supported by any financial analysis."

(5) Rural- residential/Low density residential – Urban Transition

The need to manage the interface of the Priority Growth Centre and surrounding rural land is raised in the Booth Associates Study at page 69, with the concept of an RU6 – Transition zone suggested.

(6) Biobanking

The "biobanking" opportunities for many of the Class 3, 4 and 5 lands, having regard to their existing qualities and demand for local biodiversity offsets, may represent the future of many existing largely vegetated rural precincts and should be more comprehensively explored as a strategy for the long term conservation of such rural lands.

(7) Metropolitan Rural Area

The Metropolitan Rural Area (MRA) is a key plank in the WCDP's sustainability strategy. It seeks to assist in delivering the GSRP Objective 29 in "protecting and enhancing the environmental, social and economic values in rural areas".

It is importantly noted to highlight the multi-dimensional nature of the "rural area" including functions beyond agricultural productivity alone.

"The Western City District's rural areas contribute to habitat and biodiversity, support productive agriculture, provide mineral and energy resources and sustain local rural towns and villages" (Planning Priority W17)

(8) Conclusion

The initiative of the Rural Lands Study and Rural Lands Strategy are seen generally as having positive intent in seeking to largely preserve the declining local agricultural base and many related positive landscape images.

As detailed in the preceding critique, however, many of the conclusions and proposed strategies, upon further examination of the purported evidence base, are revealed to be flawed.

Preservation of the Class 1 and 2 lands is a given. The more marginal Classes 3, 4 and 5 lands have limited potential for long term sustainable productive enterprises given the prevailing topographical/geotechnical, vegetation and bushfire constraints. Biobanking opportunities and their attendant sustainable positive ecological and landscape impacts should potentially be explored in respect of many of the latter lands. (ie. Classes 3, 4 and 5).

Council has been encouraged in response to such conclusion/s to review the Camden Rural Lands Study (Booth Associates) evidence base and the Camden Rural Lands Strategy in the light of the foregoing. The suggestion of a review is reinforced having regard to the Mater Dei

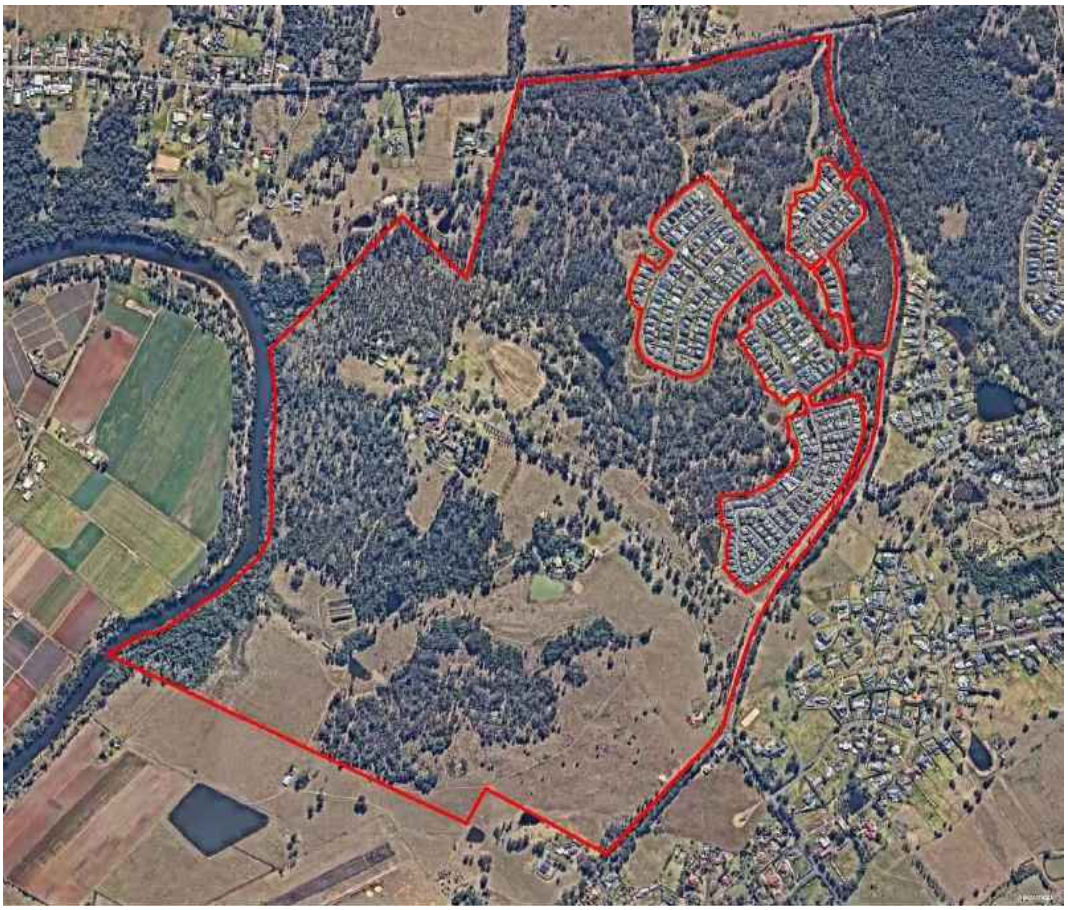
case as an exemplar of compliance with the principles of the MRA advanced in the WCDP and not agricultural productivity alone.

Annex M

PLANNING PROPOSAL REQUEST

No. 229 Macquarie Grove Road, Cobbitty

(Camden Council)



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

PPS PASCOE PLANNING SOLUTIONS

Volume 2
Annexure "M"
Landuse Compatibility Overview

October 2021

Landuse Compatibility Overview

The existing planning regime has been established, to amongst other things, assist in minimising landuse conflicts. This is achieved principally through landuse zoning and the range of permissible uses in a zone and importantly adjoining zones and the issuing of approvals in such context.

Conflicts may take many forms, however, in the subject circumstances the principal conflicts are likely to include those that impact on residential amenity, the operational efficiencies of the Camden Airport and vice versa, educational activities and local ecology and heritage conservation.

Typical adverse residential amenity impacts include:

- Acoustic impacts
- Light spillage impacts
- Stormwater/flooding impacts
- Vegetation removed
- View loss
- Heritage degradation

Typical constraining impacts on airport operations include:

- Introduction of more sensitive receptors, particularly residential premises
- Development breaching height limitations
- Vegetation breaching height limitations
- Increased bird strikes associated with wetland habitat species
- Introduction of uncontrolled lighting

In contrast the operation of the airport notwithstanding compliance with the operational parameters could still:

- Occasion adverse noise amenity impacts
- Adversely impact natural conservation initiatives through enhancement of restrictions on vegetation heights
- Restrict development of future educational facilities and the proposal RU2 zone.

More intensive agricultural pursuits geared toward enhanced commerciality could occasion:

- Noise complaints
- Odour complaints
- Adverse cultural landscape impacts
- Increased vehicle movements

The proposal will not of itself lead to elevated conflicts of the subject nature. The proposed superlot subdivision will not contribute to increased landuse/neighbourhood conflicts, including airport operations.

The introduction of the proposed E2 – environmental conservation zone occasions no increased adverse biodiversity impacts. The subject land is at present subject to conservation agreements and Vegetation Management Plan initiatives. Growth of vegetation of the proposed E2 – environmental conservation zone occasions no increased adverse biodiversity impacts. The subject land is at present subject to conservation agreements and vegetation Management Plan initiatives. Growth of vegetation will be subject to normal processes at the disposal of the airports corporation and standard bushfire hazard management protocols including the establishment and maintenance of asset protection zones, as appropriate.

The proposed SP2 – Educational establishment zone reflects the document use of the precinct and establishes an outline template for the design, assessment and development and operation of new facilities. Such environmental planning and assessment process is sufficiently rigorous to ensure potential adverse landuse impacts are appropriately managed.

The proposed RU2 – Rural Landscape zone like the prevailing zone is rural in focus but includes the added and relevant safeguard of enhanced future management of the significant cultural landscape it forms part of.

The reduction in land zoned RU1 – Primary production will reduce any attempts to intensify agricultural production would typically have attendant consequential adverse environmental impacts in terms of noise and/or odour, vehicle movements and prized rural landscape imagery.