

BUSHLAND ASSESSEMENT AND ACTION PLAN

BULLSBROOK NATURE REVERVE (Bush Forever Site 292)

February 2010

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Department of
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Our environment, our future 

Bushland Assessment and Action Plan - Introduction

The Department of Environment and Conservation's Urban Nature Program provides technical advice and on-ground support for land managers working to protect, manage and restore bushlands and wetlands in DEC's Swan Region and beyond.

Bushland Assessment and Action Plans are developed as part of the services provided by Urban Nature program. They aim to compile existing information on values and on disturbance history as well as outlining and addressing major threatening processes to a bushland. A suggested works program is presented in an easy to follow action plan calendar.

The plans are by no means comprehensive and meant to be working documents which at any time can be modified and updated as soon as new information/data becomes available to the land manager. They are based on one or two field trips/surveys to the bushland area where major threats and general bushland conditions are noted. This is further supplemented through a literature review on the area and any other information available on the study site.

Works Program and Action Calendar for 2010 onwards for Bullsbrook Nature Reserve

WORKS PROGRAM	Priority	Action Required	Methods	Nov	Dec 09	Jan 10	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Person Responsible	Date Completed	Cost	Contractor code	Funding Source	
Weed Management Mapping		Woody weeds mapping – western boundary	Done, Nov 2009 with DGPS	X														PHD & UN	Nov 2009				
	High	Cape tulip mapping	Western boundary (along GNH) cover densities mapped, Nov 2009. <u>To do:</u> individual plants observed along northern boundary track and near old rubbish dump. Map in August 2010.	X									X						UN	Nov 2009			
	High	Geraldton Carnation mapping	Two GC locations mapped in Oct (within old rubbish dump) and Nov 2009 (along GNH). <u>To do:</u> Search and resurvey known locations in June/July /September/October 2010	X							X	X			X	X			UN	Nov 2009			
		Arum lilies mapping	October/November 2010													X	X						
		Figs mapping	Summer 2009-2010, when dry; mainly northern part of the reserve			X	X	X															
		Pampas grass mapping	Summer 2009-2010, when dry; northern part of the reserve (some plants mapped in Nov 2009)			X	X	X															
		Sharp rush mapping	Anytime																				
		Tagasaste mapping (northern boundary)	Anytime																				
	High	Veldt grass mapping	May/June/2010 as cover densities (suggested cover classes: <5%, (individual plants) 6-75%, >75%) In Oct/Nov 2009 scattered plants were noted along eastern, southern and western parts of the reserve and along internal tracks.									X									\$3,000		Threatened flora project State NRM
	High	<i>Sparaxis bulbifera</i>	Mentioned in the Floristics of Bullsbrook Nature Reserve (1997). Survey and map in spring												X								
		<i>Dipogon lignosus</i> (Dolichos Pea)	A single plant mapped in Nov 09 on the west boundary, along GNH verge. Resurvey as it can spread into the wetlands	X																			Nov 2009
		<i>Holcus lanatus</i> (Yorkshire Fog)	Occurrence noted in Nov 09 survey along the western boundary, GNH. Map the extent of the infestation	X												X	X						
	<i>Gladiolus caryophyllaceus</i> (Pink gladiolus)	Occurrence of few plants noted in Nov 09 survey along north-south internal track.	X																			Nov 2009	
Weed Management Control		Organise all weed control contracts																					
		Arum lilies (<i>Zantedeschia aethiopica</i>) control	Spot spray metsulfuron methyl or chlorsulfuron 0.4 g/15 L of water + Pulse® or 5g /ha + Pulse®. Herbicide application can send some tubers into dormancy therefore any control program needs to continue for five years. Apply any time between June and September.									X	X	X									

WORKS PROGRAM	Priority	Action Required	Methods	Nov	Dec 09	Jan 10	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Person Responsible	Date Completed	Cost	Contractor code	Funding Source
					High	Cape tulip control	Spot spray metsulfuron methyl 0.2 g/15 L or chlorsulfuron 0.2 g/15 L + Pulse® or 2.5-5 g/ha + Pulse® or 2,2 DPA 55 g/10 L + Pulse®. Apply just on flowering at corm exhaustion. Note: known to occur in wetter areas, spray when the areas are dry										X	X	X			
		Figs control	Hand remove seedlings. Stem inject with 50% glyphosate and foliar spray regrowth with 10% glyphosate. Stems less than 30 cm diameter apply 250 ml Access® in 15 L of diesel to basal 50 cm of trunk (basal bark).		X	X	X										X					
	High	Geraldton carnation control	Spot spray large infestations with metsulfuron methyl 0.1 g/15 L or metsulfuron methyl + 1 % glyphosate before flowering. Follow-up with hand removal for at least five years. Ensure adequate personal protective clothing worn to avoid contact with sap									X	X	X	X			Bob	Nov 2009 – hand removal			
		<i>Gladiolus caryophyllaceus</i> (Pink gladiolus)	Wipe individual leaves with glyphosate 10 % or spray dense infestations in degraded areas with 1 % glyphosate just on flowering at corm exhaustion									X	X	X								
		Pampas grass control	Cut out plants; remove flower heads and any uprooted parts as they can resprout – slash clumps and spray regrowth with 1% glyphosate																			
		Sharp rush (<i>Juncus acutus</i>) control	Physical removal of small or isolated plants (take care during disposal not to disperse seed) – follow up control required. Liaise with Main Roads																			
		Woody weed control	Feral eucalypts & bottle brush (<i>Callistemon</i> sp.)– fell mature trees and remove (especially fruits). <i>Eucalyptus camaldulensis</i> and <i>E. conferruminata</i> : Hand pull or dig out seedlings ensuring removal of all roots. Try cut and paint or inject root crown using 50% glyphosate. Foliar spray regrowth with 1.5% glyphosate. Due to dieback – control to be undertaken during drier months			X	X	X	X								X	X				
			<i>Schinus terebinthifolia</i> (Japanese paper) – Hand pull seedlings ensuring removal of all root material. Stem inject older plants using 50% glyphosate or basal bark with 250 ml Access® in 15 L of diesel to bottom 50 cm of trunk during summer. Avoid root disturbance until trees are confirmed dead.		X	X	X	X										X				

WORKS PROGRAM	Priority	Action Required	Methods	Nov	Dec 09	Jan 10	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Person Responsible	Date Completed	Cost	Contractor code	Funding Source
			<i>Tamarix aphylla</i> (Tamarix) - Inject 100% glyphosate into root crown. Alternatively use frill method - cut small notches 50 mm apart into bark to reach white sap, immediately inject 100% glyphosate. For smaller trees without rough bark, try basal bark with 250 ml Access® in 15 L of diesel to base 50 cm of trunk. In pasture, manually removal and follow up control. In sensitive environments, cut stump down to ground level, immediately paint with Access® 17ml/L in diesel or triclopyr 600g/L at 17 to 35ml/L in diesel. Liaise with Main Roads			X	X	X	X	X	X	X	X	X	X	X	X					
			<i>Tagasaste</i> - Hand pull seedlings where possible. For mature plants apply 250 ml Access® in 15 L of diesel to basal 50 cm of trunk (basal bark). Foliar spray with 0.5 g/10 L metsulfuron methyl + Pulse®.					X	X	X	X	X	X	X	X							
			<i>Leptospermum laevigatum</i> (Victorian Tea Tree) - Hand pull seedlings. Fell mature plants. Resprouting has been recorded in some areas. Where resprouting has been observed, apply 250 ml Access® in 15 L of diesel to bottom 50 cm of trunk (basal bark).									X	X	X	X							
			<i>Agonis flexuosa</i> (Peppermint) – either cut and paint with glyphosate or basal bark using Access																			
			<i>Lonicera japonica</i> (Japanese honeysuckle) Climber Hand pull seedlings; scrape and paint stems – 100% glyphosate; spray regrowth 1.5% glyphosate																			
	High	Veldt grass control	Spot spray with Fusilade forte applied at a rate of 3.3L-6.6L/ha + wetting agent in dry conditions or Pulse®								X	X								\$6,000		Threatened flora project State NRM
Access Management		Internal track closure	Assess which internal tracks can be closed and how (brush, physical barriers, etc)																			
		Boundary along Great Northern Hwy (Main Roads?)	Find out who is responsible for the road verge management. How to minimise weed invasion into the reserve? Mowing/ herbicide treatment timing/? ? (near water drain)? Any other alternatives?																			

WORKS PROGRAM	Priority	Action Required	Methods	Nov	Dec 09	Jan 10	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Person Responsible	Date Completed	Cost	Contractor code	Funding Source	
Management Dieback		Treatment	2 treatment options: Option 1: 15 m phosphate buffer of all uninfected/protectable vegetation (3.2 km front) Option 2: 15 m phosphate buffer of all known infestations adjoining uninfected/protectable vegetation (2.2 km front)																				
		Signs	Install DEC dieback status signs at all points on tracks where the dieback status changes (see map). Place 'clean on entry' signs at all vehicle entrances to uninfected areas Place general information signs at all pedestrian areas/tracks																				
		Access Control – horse riding , Vehicle access	See under Maintenance – Internal track closure																				
		Implementation of Phytophthora cinnamoni Management Plan 2007	As part of the April 2007 disease interpretation report done by Mike Pez (DEC)																				
		Re-mapping every 3 to 5 years	Periodic re-mapping is recommended for the presence of disease by interpreters (contact Mike Pez, DEC, on 9423 2961, for more information)																				
Management Fire		Fire Response Plan	Check if there is a plan. If not prepare one																				
		Fire history map	Research and compile a fire history map for the area. Map any subsequent fires using DGPS																				
Tip management		Control weeds and contain them to the area	Existing weed control follow up																				
		See long term restoration																					
		Dieback hygiene	Make sure dieback hygiene is followed up																				
Monitoring		Establish base-line maps for the reserve	Map the current weed occurrences as specified under Weed Management – Mapping. Compile Dieback map and Fire history map.																				
	Medium	Prepare vegetation condition map	Map vegetation condition in Spring											X	X			Urban Nature					

WORKS PROGRAM	Priority	Action Required	Methods	Nov	Dec 09	Jan 10	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Person Responsible	Date Completed	Cost	Contractor code	Funding Source	
				Long term bushland restoration		Seed collecting (provenance)	Only seed collected within the reserve should be used for future restoration projects within the reserve. The seed collection should employ the collecting protocols used by the DEC Threatened Flora Seed Centre (TFSC). It is important to get seed from a range of plants. This ensures genetic diversity rather than taking lot of seed one to two plants. No more than 20% of all the seed is taken from a single plant. The collected seed should be stored at TFSC (contact the centre on 9334 0500 for more information).			X	X	X									X	X	
Other issues/ Additional recommendations		TEC boundary	Needs ground-truthing															Urban Nature					
		Weed control near DRF flora (<i>Verticordia plumosa</i> var. <i>pleiobotrya</i> and <i>Grevillea althoferorum</i>)	Check if Application for a Permit to take Declared Rare Flora in Departmental Management Operation is required prior to undertaking weed control.																				
		Extend the survey to the whole reserve	Refer to map 3 for the survey trip to see areas included in the current assessment																				

Maps

Map 1. Bullsbrook Nature Reserve – Vegetation map.

Map 2. Bullsbrook Nature Reserve – Heddle Vegetation Complexes.

Map 3. Bullsbrook Nature Reserve – base map information on vegetation, plots, DRF & TEC (sensitive information).

Map 4. Bullsbrook Nature Reserve – Initial surveys October & November 2009, weed points.

Map 5. Bullsbrook Nature Reserve – Woody weeds along western boundary Nov 2009.

Map 6. Bullsbrook Nature Reserve – Cape tulip distribution Nov 2009.

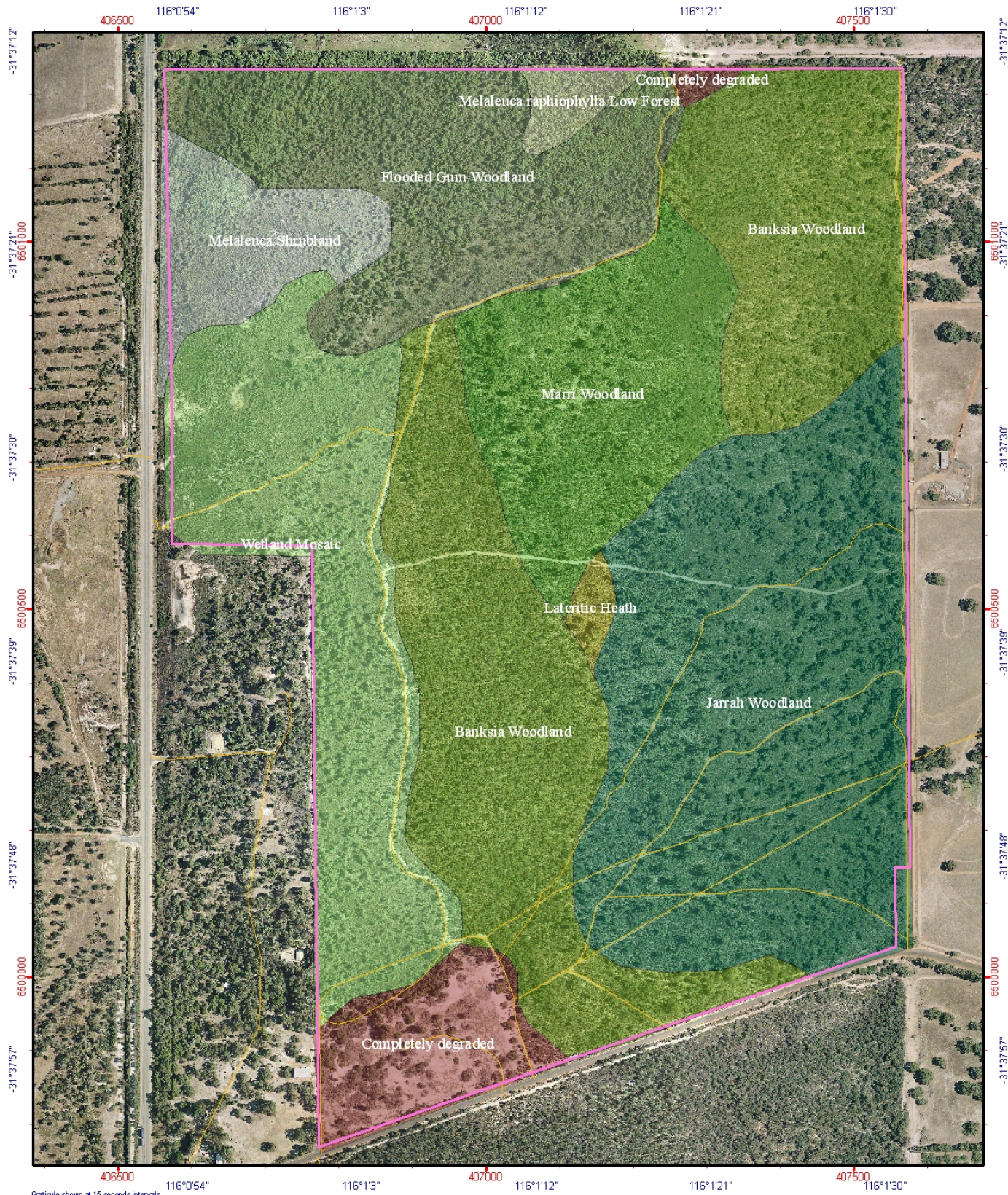
Map 7. Bullsbrook Nature Reserve – Dieback mapping 2007

Map 8. Bullsbrook Nature Reserve – Phosphite Treatment Options

Map 9. Bullsbrook Nature Reserve – known fire history

Map 10. Bullsbrook Nature Reserve – Simplified geology from Environmental Geology Series - Muchea

Map 11. Bullsbrook Nature Reserve –Geology from Environmental Geology Series – Muchea

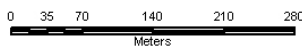


Ordnance shown at 15 seconds intervals
Grid shown at 500 metre intervals

Bullsbrook NR - Vegetation Map (Keighery, Keighery & Gibson, 1997)



1:6,630 (A4)



Projection: Universal Transverse Mercator
MGA Zone 50. Datum: GDA94

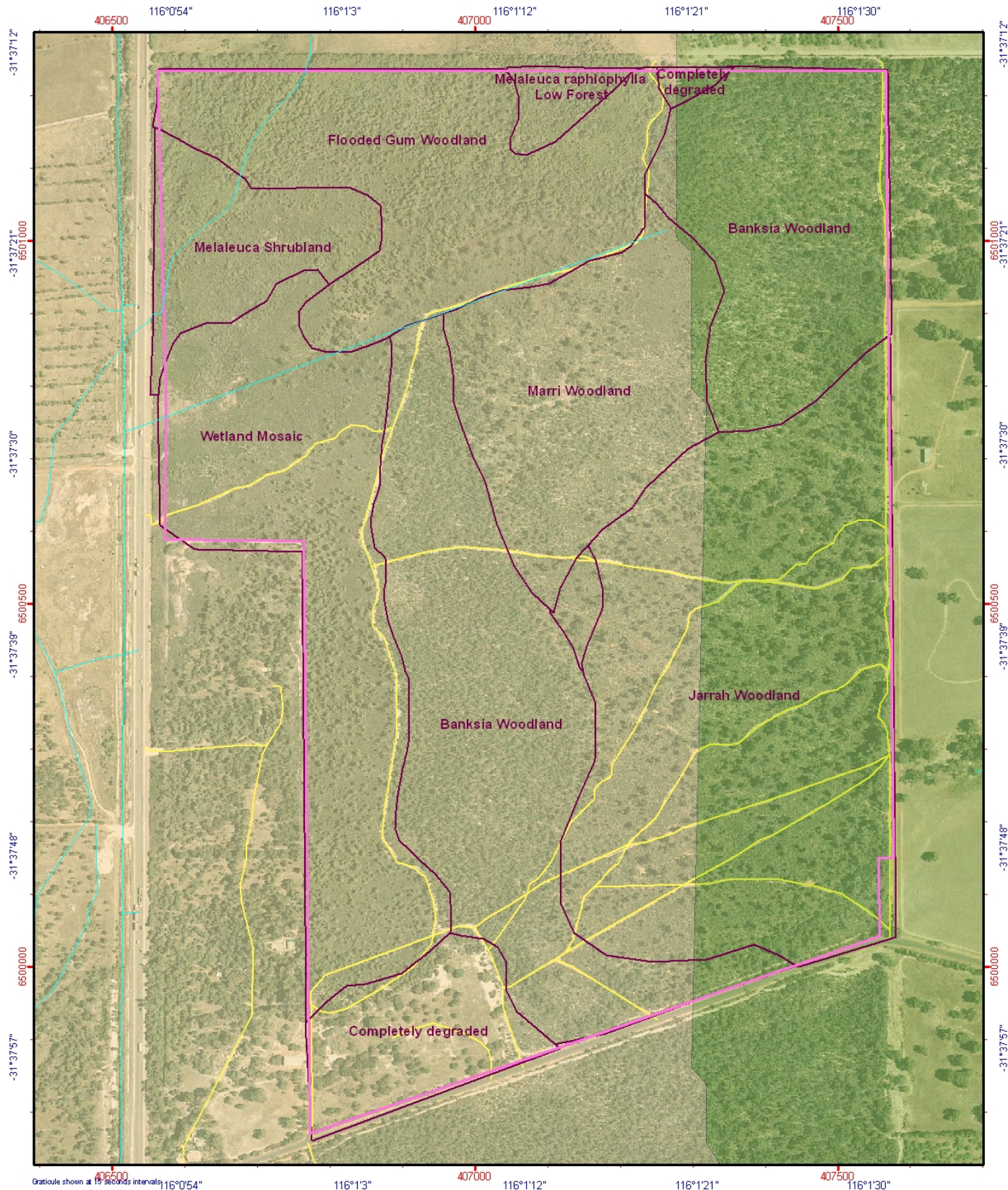


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Map 1. Bullsbrook Nature Reserve – Vegetation map.

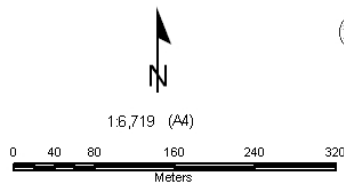


Bullsbrook NR - vegetation complexes

Heddle Vegetation Complexes

VEGTYPE

- Beermullah Complex
- Reagan Complex
- Veg Map (Keighery, Keighery & Gibson, 1997)
- SWAN Minor Hydrography
- Bullsbrook_boundary
- Bullsbrook tracks

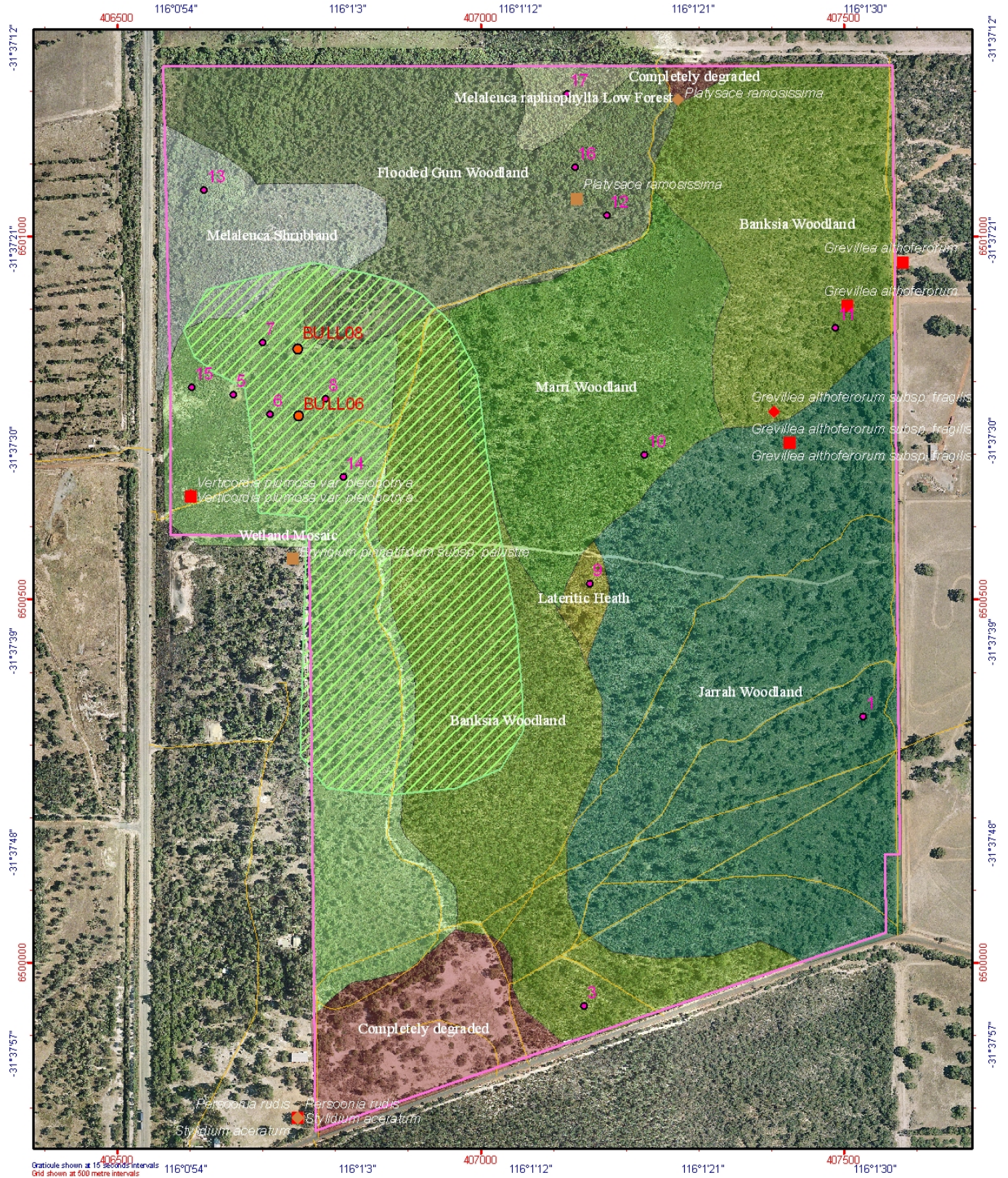


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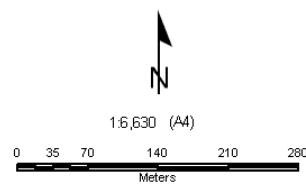
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Map 2. Bullsbrook Nature Reserve – Heddle Vegetation Complexes.



Bullsbrook NR - Vegetation Map (Keighery, Keighery & Gibson, 1997)

- Plots Bullsbrook (Keighery, Keighery & Gibson 1997)
- tec_pec_sites_31032009
- ▨ tec_pec_boundaries_31032009
- DEFL_GCS_GDA94
- CONSVCODE
- ◆ ◆ ◆ ◆ ◆
- WAHerbGCS_GDA94
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- ◆ ◆ ◆ ◆ ◆
- P1 P2 P3 P4 P5



Projection: Universal Transverse Mercator
MGA Zone 50. Datum: GDA94

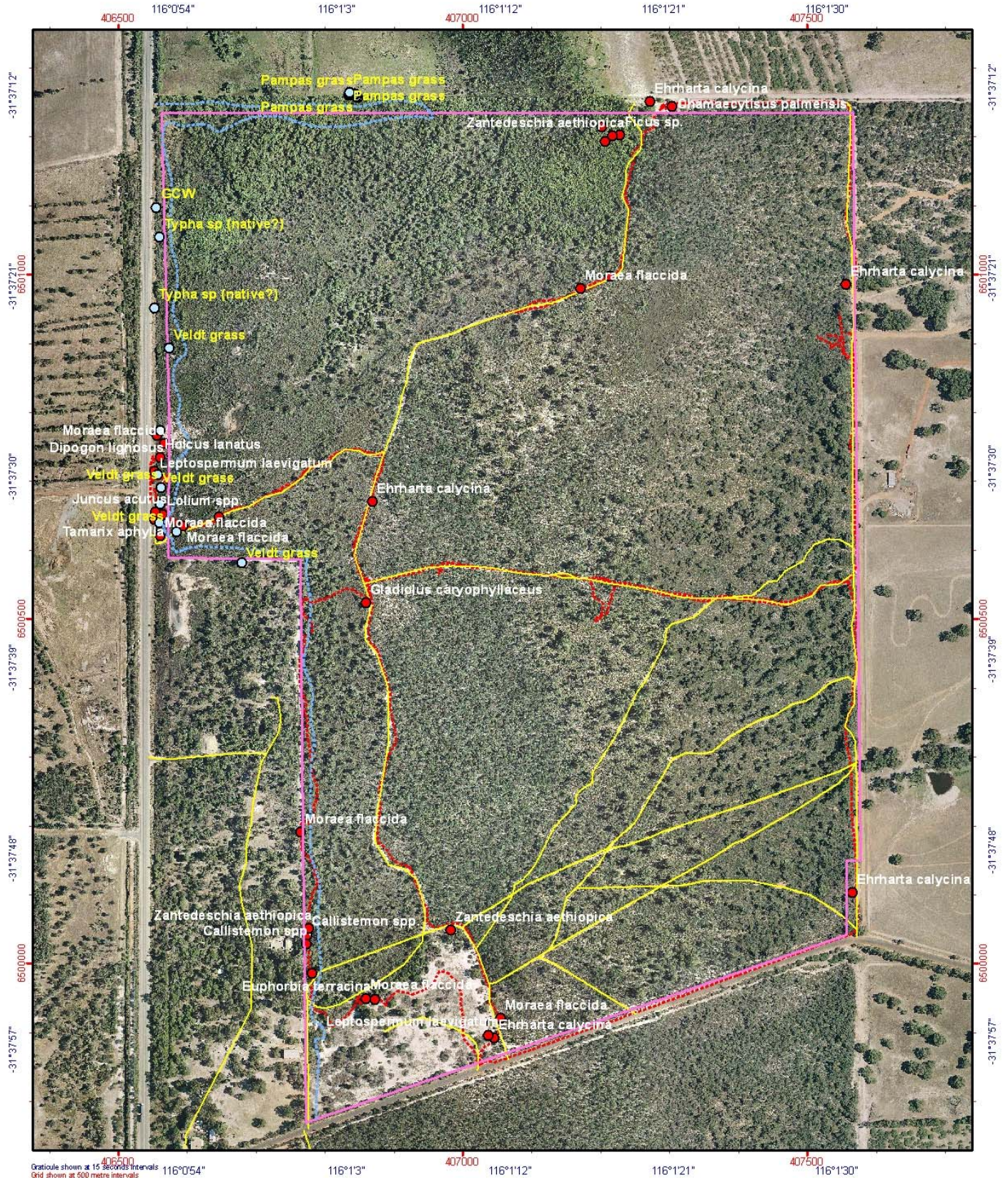


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Map 3. Bullsbrook Nature Reserve – base map information on vegetation, plots, DRF & TEC (sensitive info).

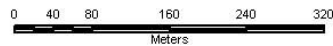


**Bullsbrook Nature Reserve - Initial surveys
October and November 2009**

- Weed Points 19 Oct 09
- Weed Points 10 Nov 09
- Bullsbrook NR tracks
- - - Survey Trip 19 Oct 09
- - - Survey Trip 10 Nov 09



1:7,000 (A4)



Projection: Universal Transverse Mercator
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Map 4. Bullsbrook Nature Reserve – Initial surveys October & November 2009, weed points.



Graticule shown at 15 seconds intervals
Grid shown at 500 metre intervals

Bullsbrook NR - woody weeds along western side Nov 2009

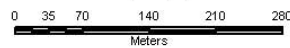
Species

- *Acornis flexuosa*
- *Callitriche sp.*
- *Eucalyptus camakutensis*
- *Eucalyptus sp.*
- *Leptospermum laevigatum*
- *Lonicera japonica*
- *Schinus terebinthifolia*
- *Taraxacum officinale*

Bullsbrook_boundary



1:7,000 (A4)



Projection: Universal Transverse Mercator
MGA Zone 50, Datum: GDA94



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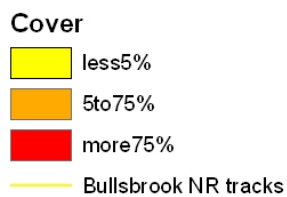
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Map 5. Bullsbrook Nature Reserve – Woody weeds along western boundary Nov 2009.

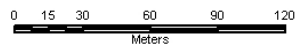


Graticule shown at 15 seconds intervals
Grid shown at 500 metre intervals

Bullsbrook Nature Reserve - Cape tulip distribution Nov 2009



1:3,000 (A4)



Projection: Universal Transverse Mercator
MGA Zone 50. Datum: GDA94



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Map 6. Bullsbrook Nature Reserve – Cape tulip distribution Nov 2009.

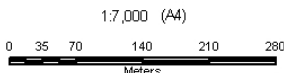


Graticule shown at 6 seconds intervals
Grid shown at 250 metre intervals

Bullsbrook Nature Reserve

Bullsbrook Dieback Mapping 2007 status

- Pc free
- Pc free (unprotectable)
- Pc infected
- Uninterpretatable
- Bullsbrook_boundary
- Bullsbrook_track



Projection: Universal Transverse Mercator
MGA Zone 50. Datum: GDA94



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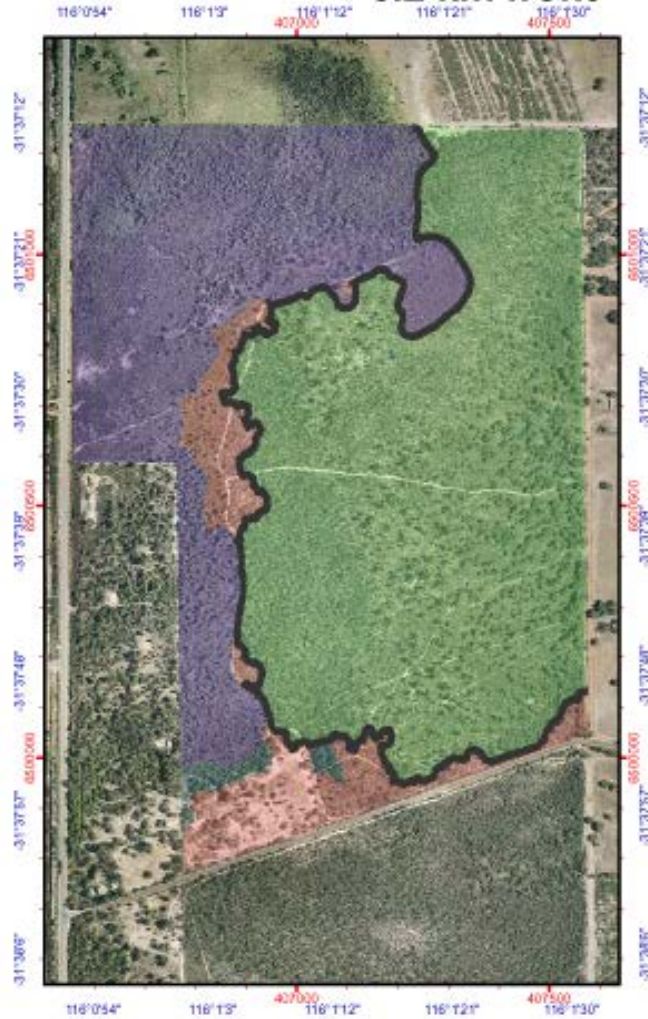
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Map 7. Bullsbrook Nature Reserve – Dieback mapping 2007

Treatment Option 1

15m phosphite buffer of all uninfected/protectable vegetation

3.2 km front



Treatment Option 2

15m phosphite buffer of all known infestations adjoining uninfected/protectable vegetation

2.2 km front



Phosphite Treatment Options for Bullsbrook Nature Reserve

Dieback Status

- Pc free
- Pc free (unprotectable)
- Pc infected
- Uninspectable

1:12,500 (A4)



Projection: Universal Transverse Mercator
MGA Zone 50. Datum: GDA94



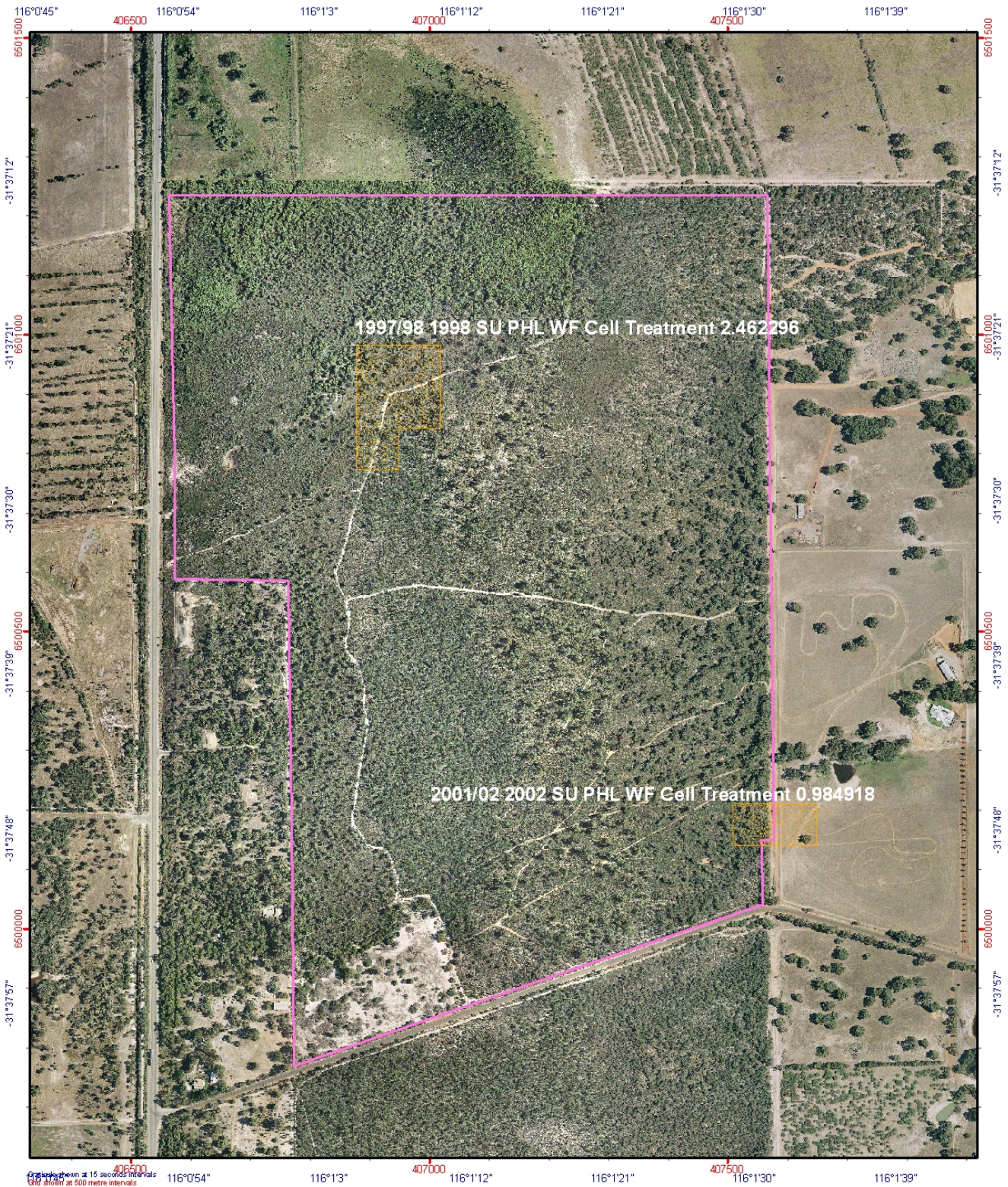
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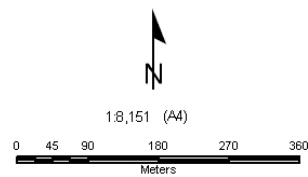
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Map 8. Bullsbrook Nature Reserve – Phosphite Treatment Options



Bullsbrook Nature Reserve - DEC Fire History

-  DEC_Fire_History
-  Bullsbrook_boundary



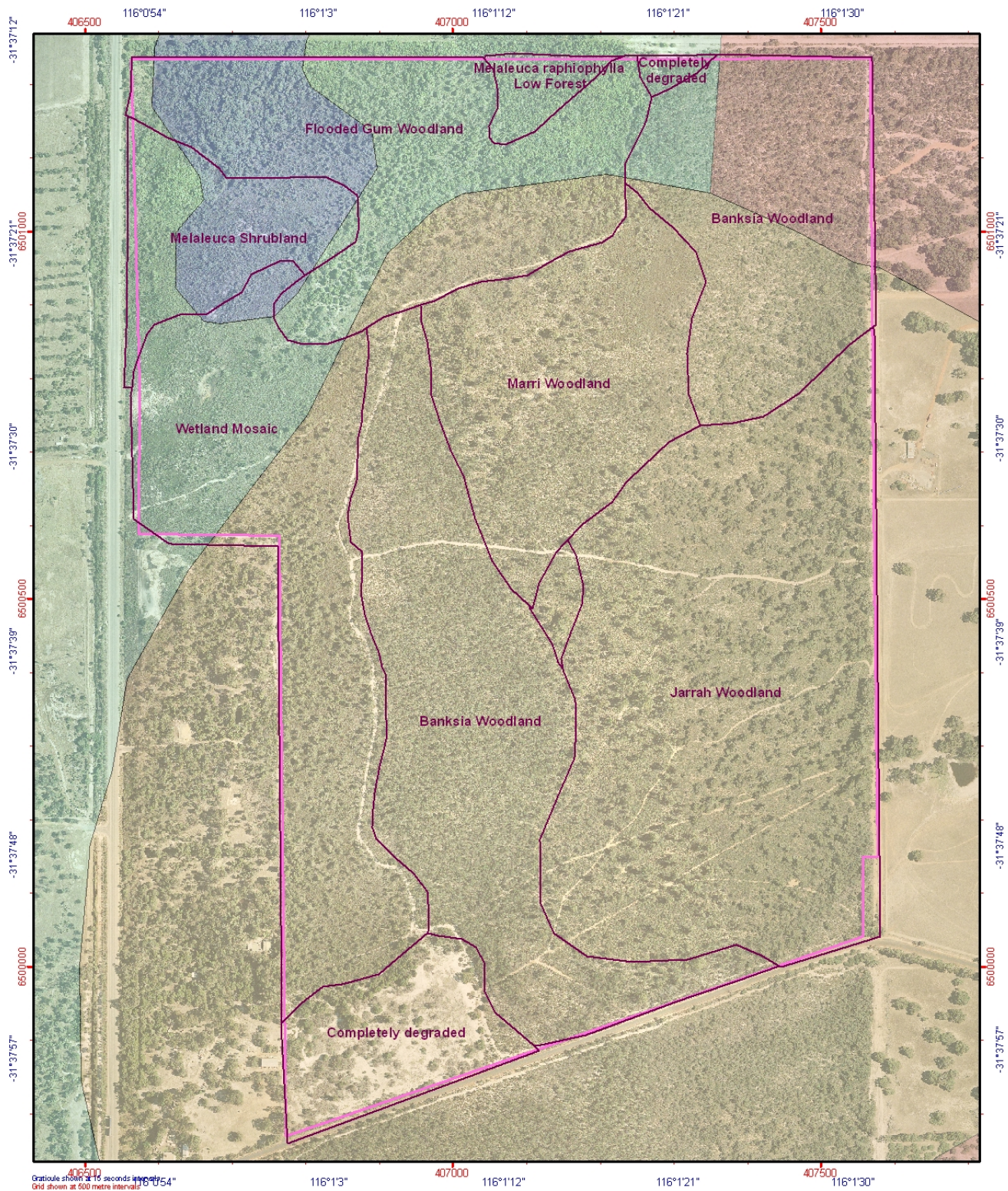
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Map 9. Bullsbrook Nature Reserve – known fire history

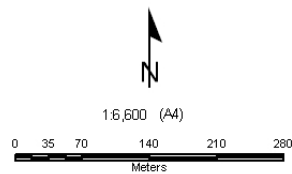


Bullsbrook NR - Environmental Geology Series

Environmental Geology Series - Muechea

Simplified geology

- Fan on colluvial slopes
- Colluvial slope
- Alluvial plain
- Marsh on alluvial plain
- Veg Map (Keighery, Keighery & Gibson, 1997)

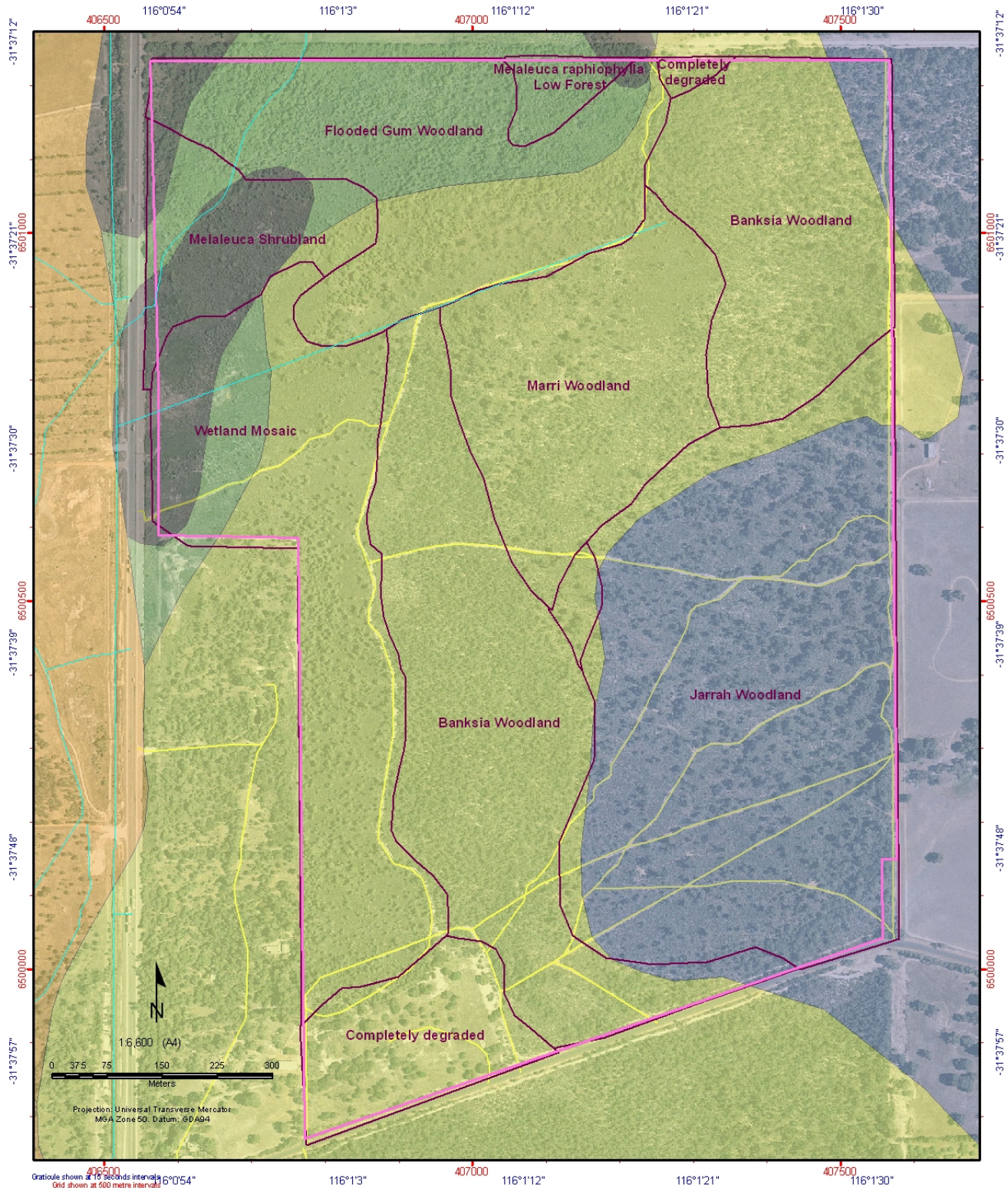


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Map 10. Bullsbrook Nature Reserve – Simplified geology from Environmental Geology Series – Muechea



Bullsbrook NR - Environmental Geology Series Muchea

- PEATY CLAY - dark grey and black with variable sand content, of lacustrine origin
- PEBBLY SILT - strong brown, silt with common fine to occasionally coarse grained, sub-rounded laterite quartz, heavily weathered granite pebbles, some fine to medium-grained quartz sand, of alluvial origin
- SAND - light grey, fine to coarse, angular to sub-rounded, quartz with some feldspar, moderately sorted, loose, of colluvial origin
- SAND - light grey, medium grained, sub-angular to rounded quartz and feldspar, moderately sorted
- SANDY SILT - strong brown, firm, friable, dispersive in part, occasional pebbly horizons with little matrix containing quartzite, quartz, granite, laterite, of colluvial origin
- SWAN Minor Hydrography
- Veg Map (Keighery, Keighery & Gibson, 1997)



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Map 11. Bullsbrook Nature Reserve –Geology from Environmental Geology Series - Muchea

References:

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Available on the web: <http://www.wapc.wa.gov.au/Publications/99.aspx>
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- Perth Region Plant Biodiversity Project (PRPBP) www.walga.asn.au/about/policy/pbp/prpbp. Information on Bullsbrook Nature Reserve (Bush Forever Site 292 under http://www.walga.asn.au/about/policy/pbp/prpbp/prpbp_bf_ref_sites/prpbpbf292/)