

30 September 2019

Daniel Nay
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Dear Dan,

Re: 16 Chapman St, Werrington – 7 Part Test Assessment of Significance of impacts to Cumberland Plain Woodland (Niche ref. #5111)

As requested, we have undertaken an assessment of the significance of potential impacts to Cumberland Plain Woodland (CPW), a critically endangered ecological community (CEEC) listed under the *Biodiversity Conservation Act 2016* (BC Act) and former *Threatened Species Conservation Act 1995* (TSC Act), in relation to the proposed development of 16 Chapman Street Werrington NSW (the 'Site').

Pursuant to the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* (BC Regs 2017), the Site occurs within a Western Sydney Interim Designated Area and therefore, the former planning provisions apply (former section 5A of the *Environmental Planning and Assessment Act 1979* and *Threatened Species Conservation Act 1995*). As such, a 7-Part Test was undertaken to assess the significance of the impacts associated with the Project.

As discussed, we have assessed impacts to CPW based on the following:

- Assuming the CPW within the E2 Environmental Conservation zone located adjacent to the Site is adequately protected due to the intent of the ecological conservation zoning.
- The retention and long-term protection of 1.6 hectares of CPW within the E2 conservation zone and RE1 open space area.

The result of the assessment indicates that the Project is unlikely to have a significant impact on the CEEC. In this instance, an SIS would not be required.

I trust that the information and supporting figures presented in this letter report provide the information you require.

Yours sincerely,

Amanda Griffith
Ecologist
Niche Environment and Heritage
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1. Background

Penrith City Council (PCC) have requested that a new biodiversity assessment be completed to accompany the proposed modification of an existing Development Application (DA) that was previously approved by PCC for the Site on 12 February 2016 (DA14/0627). The assessment is being undertaken in relation to proposed development at the Site, referred to as the South Werrington Urban Village, as identified in the PCC Development Control Plan (DCP) (PCC 2014) (the Project).

The previous ecological impact assessment (Ambecol 2014) submitted as part of the approved DA identified and mapped areas of remnant vegetation at the Site as Cumberland Plain Woodland (CPW). The vegetation at the Site was identified as *Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest*, a Critically Endangered Ecological Community (CEEC) as listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and also the CEEC *Cumberland Plain Woodland in the Sydney Basin Bioregion* as listed under the former NSW *Threatened Species Conservation Act 1995* (TSC Act).

The previous flora and fauna assessment (Ambecol 2014) assessed the impacts to a total of 4.8 hectares of CPW at the Site. This included the removal of 2.5 hectares of CPW and the retention/modification of 2.3 hectares within a dedicated reserve and other open space areas. An assessment of the significance of this impact was undertaken according to relevant NSW legislation (7-Part Test under the TSC Act). Ambecol (2014) concluded that the proposed development was unlikely to significantly impact on the status of CPW or its habitats. The justification for this conclusion included the retention of some areas of CPW within the Project, the removal of a relatively small proportion of CPW compared to that present across the Cumberland Plain and Penrith LGA, and that the Site was considered to represent/contribute a negligible proportion of the total gene pool of CPW and that its removal would not impact on the genetic diversity of the local occurrences of the community.

An assessment of the significance of impacts to CPW according to the Commonwealth impact assessment guidelines (DoE 2013) was not undertaken by Ambecol (2014). Similarly a Referral to the Commonwealth Minister for the Environment for consideration of impacts to CPW was not made.

Lendlease recently engaged Eco Logical Australia to undertake a Due Diligence Biodiversity and Bushfire Assessment of the Site (Eco Logical Australia 2018). Native vegetation at the Site was mapped as Cumberland Plain Woodland; Plant Community Type (PCT) 849; *Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion*. It was present in two condition categories: moderate condition and derived native shrubland. The vegetation in moderate condition was determined to constitute the CEEC as listed under the EPBC Act.

2. Current assessment

2.1 Vegetation validation

Niche undertook a vegetation assessment on 17 June 2019 to validate the vegetation occurring at the Site. This included a random meander throughout the Site and also targeted collection of floristic data within five plots across the Site. Floristic plot data was collected as per the Biodiversity Assessment Method (BAM) and BioBanking methodology (BBAM) to ensure the data would cover any potential further assessment.

requirements under NSW biodiversity legislation. The summarised floristic field data is provided in Appendix 1. Figure 1 shows validated vegetation mapping at the Site.

Our results concur with those of the previous assessments that the remnant native vegetation at the Site constitutes Cumberland Plain Woodland (PCT 849) in two condition states: a relatively intact community in moderate condition and a derived native shrubland form of the community. The vegetation patches in moderate condition met the EPBC listing criteria for the CEEC, as specified in the identification guidelines provided in DoE (2010) *Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest Policy Statement*, due to the following:

1. Native trees occupy greater than 10% cover – as evident in plot data collected (Appendix 1).
2. The patch is greater than 0.5 hectares in size.
3. Of the perennial groundcover present, >30% is made up of native species – as evident in plot data collected (Appendix 1).

The smaller patches of vegetation in the central portion of the Site that are dominated by *Acacia elongata* and *Bursaria spinosa* (Figure 1) do not meet the EPBC listing criteria for the CEEC as the native trees do not occupy greater than 10% cover (see Appendix 1).

All CPW at the Site constitutes the CEEC under the BC Act as described in the NSW Threatened Species Scientific Committee Final Determination: Cumberland Plain Woodland in the Sydney Basin Bioregion Critically Endangered Ecological Community Listing (OEH 2010).

2.2 Impact assessment

A total of 6.6 hectares of CPW occurs across the Site. **Error! Reference source not found.** shows the area of each condition type at the Site and proposed development footprint. Table 1 details the area of CPW to be removed/retained at the Site.

The CPW at the Site occurs in a number of distinct, loosely connected patches running from the north-west and through the central and southern portion of the Site. The patches are surrounded in the south, east and west by cleared exotic grassland. The CPW in the north-west of the Site (within the designated reserve) is continuous with a linear patch of CPW habitat adjacent to the Site (OEH 2015, Figure 1) on land under the ownership and control of the University of Western Sydney, approximately 8.7 hectares in size. 7.5 hectares of this contiguous patch of CPW is zoned E2 Environmental Conservation; the tenure and security of the other 1.2 hectares (which appear as scattered patches of trees) on the southern side of the E2 zone is unknown. The CPW within the Site and continuous with the habitat to the west of the Site (about 15.3 hectares in total) is considered the local occurrence of CPW. As such, the Site supports about 43 per cent of the local occurrence of the community. Of the 6.6 hectares of BC Act listed CPW at the Site, approximately 0.7 hectares of the CPW is to be retained, managed and rehabilitated within a protected 1.2 hectare reserve in the north of the Site (Figure 1). As part of the DA approval conditions, a Vegetation Management Plan (Horticultural Management Services 2016) was developed to provide for the protection, conservation, management and rehabilitation/revegetation of CPW in this area. This area constitutes land zoned as E2 Environmental Protection (PCC 2014).

In addition to the 1.2 hectare reserve mentioned above, the Project includes a 1.8 hectare designated open space area in the central-northern portion of the Site. This area is zoned RE1 Public Recreation (PCC 2014).

Approximately 1.1 hectares of CPW occurs in this area.. In line with the aims and objectives of the DCP “*To conserve the biodiversity of the site by incorporating woodland areas into the open space system and protecting riparian corridors*” (PCC 2014), and also the principle of avoiding impacts to biodiversity, this area has been designed to maximise the area of CPW retained in this space, while minimising the potential for indirect impacts (i.e. fencing off areas of CPW, allowing passive use such as walking and bike riding along established paths only; signage educating the community about the value of the woodland, weed management and control and restoration planting where possible). This space includes a water detention basin (dry most of the time, but subject to short-term periods (about half a day) of inundation after rain), walking paths and some children’s play areas.

Approximately 0.2 hectares of CPW will be removed in this area and approximately 0.9 hectares of CPW in this area will be retained. In line with the VMP that was developed for the E2 reserve in the north of the Site, it is proposed that a VMP would be developed for this area to minimise potential indirect impacts to CPW and manage it for its long-term conservation.

The Project will result in the removal of up to 5.0 hectares of BC Act listed CPW at the Site (Table 1): 0.7 hectares would be retained, protected and managed within the on-site E2 reserve and 0.9 hectares would be retained, protected and managed within the 1.8 hectare RE1 recreation area.

Table 1: CPW across the Site

Status under State and Commonwealth legislation	Total CPW (ha)	To be retained in E2 reserve (ha)	To be retained in RE1 recreation area (ha)	To be removed (ha)
EPBC Act and BC Act listed CPW (moderate condition)	5.9	0.7	0.9	4.3
BC Act-only listed CPW (derived native shrubland)	0.7	0	0	0.7
Total	6.6	0.7	0.9	5.0

2.3 Assessment of Significance

Pursuant to the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* (BC Regs 2017), the Site occurs within a Western Sydney Interim Designated Area and therefore, the former planning provisions apply (former section 5A of the *Environmental Planning and Assessment Act 1979* and *Threatened Species Conservation Act 1995*). As such, a 7-Part Test was undertaken to assess the significance of the impacts associated with the Project.

Note in the BC Regs (Part 7, clause 27 (f)) it states that “*the application for development consent under Part 4 of the Environmental Planning and Assessment Act 1979 (or for the modification of such a development consent) is required to be made on or before 24 November 2019 (but only if any species impact statement that is to be submitted in connection with the application is submitted on or before 24 May 2020)*”.

The assessment concluded that, assuming the CPW within the E2 Environmental Conservation zone located adjacent to the Site is adequately protected due to the intent of the ecological conservation zoning, and that areas of retained CPW within the RE1 open space area and conservation zones are retained and

managed for long-term conservation values, then the Project is unlikely to have a significant impact on the CEEC. In this instance, an SIS would not be required.

2.4 Recommendations

The following mitigation measures would be employed across the Site and within the open space area during construction to ensure potential indirect impacts to retained CPW are minimised:

- A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.
- A site specific Erosion and Sediment Control Plan/s will be prepared and implemented as part of the Soil and Water Management Plan. The Plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.
- Machinery will be washed following best practice hygiene protocols prior to being brought to site to prevent the spread of weed seed, pathogens and fungi.
- Landscaping will use local native species where possible.
- An emergency spill kit is to be kept on Site at all times. All staff are to be made aware of the location of the spill kit and trained in its use.
- If an incident (e.g. spill) occurs, the Site and Project manager is to be notified as soon as practicable.
- Installation of signage at the reserve and open space areas educating the Community about the value of CPW.
- Establishment of exclusion zones around the CPW within the reserve and open space areas during construction works.

3. Assessment of Significance - 7 Part Test

Cumberland Plain Woodland (CPW)	
a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	n/a
b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction	n/a
c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:	<p>Extent and composition</p> <p>6.6 hectares of CPW occurs within the Site.</p> <p>The CPW at the Site occurs in a number of distinct, loosely connected patches running from the north-west and through the central and southern portion of the Site. The patches are surrounded in the south, east and west by cleared exotic grassland. The CPW in the north-west of the Site (within the designated reserve) is continuous with a linear patch of CPW habitat adjacent to the Site (OEH 2015, Figure 1), approximately 8.7 hectares in size. 7.5 hectares of this contiguous patch of CPW is zoned E2 Environmental Conservation; the tenure and security of the other 1.2 hectares (which appear as scattered patches of trees) on the southern side of the E2 zone is unknown.. The CPW within the Site and continuous with the habitat to the west of the Site (about 15.3 hectares in total) is considered the local occurrence of CPW in this instance. As such, the Site supports about 43 per cent of the local occurrence of the community.</p> <p>0.7 hectares of CPW in the designated reserve will be retained, restored and expanded within the 1.2 hectare area as per the existing VMP. 0.9 hectares of CPW which currently occurs within the proposed 1.8 hectare central open space area of the Site will be retained and managed for conservation (approximately 0.2 hectares of CPW within the space would be removed/impacted). This area has been designed with the aim of retaining as much CPW as possible; maximising the area retained and minimising the potential for indirect impacts (i.e. fencing off areas of CPW, allowing passive use such as walking and bike riding along established paths only; signage educating the community about the value of the woodland). It is proposed that a VMP would be developed with the aim of managing, protecting and conserving the retained CPW in this area.</p> <p>The Project would result in the removal of about 5.0 hectares of the community occurring in the southern half of the Site and within the open space area. The CPW in these patches is not connected to any other areas of CPW in the east, west or south. This represents about 32 per cent of the local occurrence of the community.</p>
i. Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or ii. Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction	

Cumberland Plain Woodland (CPW)

The 0.9 hectares of CPW to be retained within the 1.8 hectare open space area, may be subject to indirect impacts such as weed incursion, human disturbance and edge effects. As mentioned above, a VMP would be developed to manage and mitigate potential indirect impacts to CPW in this area to ensure the long-term survival of the community in this area.

As such the Project will result in the removal/modification of approximately 32 per cent of the local occurrence of the community.

Assessment

The action proposed is considered unlikely to have an adverse effect on either the extent or composition of CPW such that its local occurrence is placed at risk of extinction as:

- 0.7 hectares of CPW, that adjoins a larger patch of CPW adjacent to the Site (currently zoned E2 Environmental Conservation), would be conserved, managed and expanded within a 1.1 hectare reserve in the north-west of the Site.
- 0.9 hectares of CPW within the 1.8 hectare open space recreation area would be retained and managed for conservation value.
- Implementation of the existing VMP for the reserve in the north of the Site will ensure CPW in this area is protected, conserved and managed in the long-term.

- d) In relation to the habitat of a threatened species, population or ecological community:
- The extent to which habitat is likely to be removed or modified as a result of the action proposed, and
 - Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and
 - The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Extent of impact on habitat

The local occurrence of CPW, as determined above, is approximately 15.3 hectares.

Approximately 3223 hectares of CPW is mapped as occurring within 10 kilometres of the Site (OEH 2015). However, this is likely to be an over-estimate as review of aerial imagery in relation to this mapping clearly indicates that some areas identified as supporting CPW are cleared/have been developed (e.g. patch of CPW to the west of the Western Sydney University Werrington Campus, adjacent to the western side of the Site).

Approximately 5.0 hectares of CPW would be directly impacted by the Project. This constitutes about 32 per cent of the local occurrence of the community and 0.2 per cent of that mapped within the 10 kilometres of the Site. An additional 0.9 hectares (7 per cent) (within the proposed open space area) may be subject to some indirect impacts.

However, 0.7 hectares would be retained, protected and managed within the 1.2 hectare reserve in the north of the Site. Similarly, approximately 0.9 hectares of CPW would be retained, protected and managed within the 1.8 hectare open space area.

Habitat fragmentation

The CPW at the Site occurs in a number of distinct, loosely connected patches running from the north-west and through the central and southern portion of the Site. The patches are surrounded in the south, east and west by cleared exotic grassland. The CPW in the north-west of the Site is continuous with CPW habitat adjacent to the Site. The CPW in the designated reserve will be retained, restored and expanded within the 1.2 hectare area as per the existing VMP. The Project would result in the removal of about 5.0 hectares of the community occurring in the southern half of the Site and some indirect impacts to 0.9 hectares in the central portion of the Site. The CPW in these patches is not connected to any other areas of CPW in the east, west or south.

Cumberland Plain Woodland (CPW)

Importance of habitat to be impacted

The Site supports a remnant 6.6 hectare patch of CPW, the majority of which (5.9 hectares) meets the condition thresholds for listing under the EPBC Act. The EPBC Act Policy Statement 3.31 (DEWHA 2010) states that “About 70 per cent of the remaining ecological community occurs in patches that are less than five hectares. The retention of small patches that meet the condition thresholds is vital to the future of this ecological community, particularly where they link other patches in the broader landscape. Additional reconnection of these patches will be important to improve the extent and function of the ecological community in the future”. Similarly, patch size is one of the key diagnostic features and condition thresholds for the community; a patch size of 5 hectares or greater is considered an important threshold for designation as the community. The CPW within the Site (6.6 hectares) is connected to a slightly larger patch (approximately 8.7 hectares) to the northwest of the Site.

According to the definitions above, given its size, the fact that it meets the condition thresholds for listing as the EPBC Act community, and its connectivity to CPW in the locality, the CPW at the Site may be considered vital to the future of the ecological community and is likely to be valuable to the ongoing persistence of the community in the locality.

The CPW at the Site currently allows for the persistence of a relatively good quality patch of CPW within the locality. The areas supporting the better quality habitat (moderate condition) support a diversity of native flora species within the ground, mid-level and upper strata of the community.

The quality of the remaining 57 per cent of the CPW in the locality that occurs outside of the Site is unknown. Based on aerial imagery it appears to have an intact canopy, with likely greater than 10% cover. The majority of this patch (7.5 hectares/86 per cent) is currently zoned E2 Environmental Conservation. As such it may be assumed to be adequately protected due to the intent of the environmental conservation zoning.

While 0.9 hectares of the community in the 1.8 hectare open space area will be retained and 0.7 hectares will be protected and managed within the reserve in the north-west of the Site, these will be subject to indirect impacts (human disturbance, edge effects, weed invasion, altered hydrology) which have the potential to adversely affect the quality, integrity and longevity of the CPW in this area. However, implementation of the VMPs to manage and mitigate indirect impacts will ensure the long-term survival and viability of the community in these areas.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat, as identified on the critical habitat register, is present within the Site or would be affected by the Project.

f) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

The four key objectives of The Cumberland Plain Recovery Plan (DECCW 2011) and how the Project aligns with those are described below:

- *To build a protected area network, comprising public and private lands, focused on the priority conservation lands.* The Project will conserve and manage 0.7 hectares of CPW within a 1.2 hectare reserve that is contiguous with CPW adjacent to the Site. An additional 0.9 hectares of CPW would be retained within an open space recreation area.
- *To deliver best practice management for threatened species, populations and ecological communities across the Cumberland Plain, with a specific focus on the priority conservation lands and public lands where the primary*

Cumberland Plain Woodland (CPW)

	<p><i>management objectives are compatible with conservation.</i> The Site is not mapped as priority conservation land or public land. The CPW to be retained and restored at the Site within the 1.2 hectare reserve will be managed in accordance with the existing VMP. The CPW within the 1.8 hectare open space area will be retained within the passive recreation area.</p> <ul style="list-style-type: none"> • <i>To develop an understanding and enhanced awareness in the community of the Cumberland Plain's threatened biodiversity, the best practice standards for its management, and the recovery program.</i> Signage educating the community about the value of the woodland would be installed within the retained reserve and open space areas. • <i>To increase knowledge of the threats to the survival of the Cumberland Plain's threatened species, populations and ecological communities, and thereby improve capacity to manage these in a strategic and effective manner.</i> The Project will increase knowledge regarding threats to CPW through installation of signage regarding the value of the community at the Site. <p>The Project satisfies three of the four objectives of the CPW Recovery Plan.</p>
g) Whether the action proposed constitutes or is part of a Key Threatening Process (KTP) or is likely to result in the operation of, or increase the impact of, a KTP	<p>The Project has the potential to increase the impact of the following KTPs listed in NSW:</p> <ul style="list-style-type: none"> • Clearing of native vegetation - Approximately 5.0 hectares of habitat would be directly impacted by the Project; a further 0.9 hectares may be indirectly impacted by the Project in the central open space area. • Loss of hollow-bearing trees • Loss of dead wood and dead trees • Alteration to the natural flow regimes of rivers, streams, floodplains & wetlands – The Project would impact on surface flows over the Site. A water detention basin is proposed within the central open space area which will support remnant CPW. The basin will be dry most of the time, but subject to short-term periods (about half a day) of inundation after rain • Invasion of native plant communities by exotic perennial grasses – two of the exotic grasses mentioned in the KTP were recorded at the Site: <i>Eragrostis curvula</i> and <i>Nasella trichotoma</i>. These species are evident throughout the Site invading areas of CPW. The Project is not likely to exacerbate the occurrence of these grasses as they are already prevalent in the area, provided weed management is undertaken during clearing and post construction in accordance with the VMPs, to minimise introduction and spread of weed species. • Invasion of native plant communities by African Olive <i>Olea europaea</i> L. subsp. <i>cuspidata</i>. African Olive is a weed problem at the Site and is currently impacted on areas of habitat for CPW. The Project is not likely to exacerbate the African Olive invasion provided weed management is undertaken in accordance with the VMPs and weed management practices and erosion/sedimentation control measures (as detailed above) are implemented during construction. • Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants – Escaped or dumped garden plants from nearby residences may impact on retained CPW at the Site. Management of these areas according to the VMPs will include regular monitoring and management of weeds in these areas.

Cumberland Plain Woodland (CPW)

Conclusion

The local occurrence of CPW is considered unlikely to be significantly impacted by the Project due to the following:

- 54 per cent of the local occurrence of the community (7.5 hectares off-site and 0.7 hectares on-site) occurs within the E2 Environmental Conservation Zone which should ensure the long-term protection and survival of the local occurrence of the community.
- The retention, management and restoration of 1.6 hectares of CPW within the reserve and open space areas on the Site will ensure the long-term survival of this important patch of CPW in the locality.

References

Ambecol (2014). Flora and Fauna Assessment, Proposed South Werrington Urban Village, Penrith Local Government Area Dated 14 January 2014. Ambrose Ecological Services Pty Ltd.

DECC (2007). Threatened Species Assessment Guidelines. The assessment of Significance. NSW Department of Environment and Climate Change.

DEWHA (2010). Cumberland Plain Shale Woodlands and Shale Gravel Transition Forest. A guide to identifying and protecting the nationally threatened ecological community. EPBC Act 1999. Policy Statement 3.31. Commonwealth of Australia.

Department of Environment and Energy Species Profile and Threats (SPRAT) Database
<http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>. Accessed June 2019.

DoE (2013). Matters of National Environmental Significance. Significant Impact Guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999.

Eco Logical Australia (2018). Werrington Biodiversity Due Diligence. Prepared for Lendlease Communities (Australia) Pty Ltd.

Horticultural Management Services (2016). Vegetation Management Plan. Proposed Residential subdivision development. South Werrington Urban Village, Penrith NSW. Prepared for Universal Property Group Pty Ltd.

NSW Office of Environment and Heritage Threatened Species Profiles database.
<https://www.environment.nsw.gov.au/threatenedSpeciesApp/>. Accessed June 2019.

OEH (2015). Remnant Vegetation of the western Cumberland subregion, 2013 Update. VIS_ID 4207. NSW Office of the Environment and Heritage.

PCC (2014). Penrith City Council Development Control Plan.

Figures

Figure 1: Location map



Appendix 1: Floristic data plot data

Species per cent cover

Species	Plot number				
	5111lb01	5111lb02	5111lb03	5111lb04	5111lb05
<i>Acacia elongata</i>					15
<i>Andropogon virginicus</i>		2			
<i>Araujia sericifera</i>		0.5	1	2	
<i>Araujia sericiflora</i>	0.1				
<i>Aristida ramosa</i>	25	20	50	25	50
<i>Aristida vagans</i>	5		5		20
<i>Aristida warburgii</i>			10		
<i>Asparagus aethiopicus</i>		2			
<i>Asparagus asparagoides</i>	0.1				
<i>Asperula conferta</i>		0.5	2		
<i>Axonopus fissifolius</i>					15
<i>Bidens pilosa</i>	0.5		1	2	
<i>Brunonia australis</i>	1		0.5	0.5	
<i>Bursaria spinosa</i>	30	10	35		5
<i>Centella asiatica</i>			1		
<i>Cheilanthes distans</i>	0.5				0.5
<i>Cheilanthes sieberi</i>		0.5			
<i>Cymbopogon refractus</i>			5		
<i>Cynodon dactylon</i>			5		
<i>Cyperus gracilis</i>		0.5			
<i>Cyperus imbecillis</i>			5		
<i>Dianella caerulea</i>	0.5	1	1		
<i>Dichelachne micrantha</i>	10	10	10	5	
<i>Dichondra repens</i>	0.5	1	2	1	
<i>Ehrharta erecta</i>	5				
<i>Einadia nutans</i>				0.5	
<i>Entolasia stricta</i>		5	2		
<i>Eragrostis brownii</i>			1		1
<i>Eragrostis curvula</i>	10	5	5	15	
<i>Eremophila debilis</i>		0.1			
<i>Eucalyptus moluccana</i>	10	10		25	
<i>Glycine tabacina</i>	0.5	0.5		0.5	
<i>Goodenia bellidifolia</i>					0.5
<i>Hakea sericea</i>					10
<i>Hypochaeris radicata</i>					1

Species	Plot number				
	5111lb01	5111lb02	5111lb03	5111lb04	5111lb05
<i>Juncus usitatus</i>			0.1		
<i>Kunzea ambigua</i>					1
<i>Ligustrum sinense</i>		1		1	
<i>Lomandra filiformis</i>		0.5			
<i>Melaleuca styphelioides</i>	10		5	10	
<i>Microlaena stipoides</i>	10	5	5		
<i>Nassella trichotoma</i>			1		
<i>Olea europaea</i>		1			
<i>Olea europaea subsp. africana</i>	0.1				
<i>Oxalis perennans</i>	0.5	0.5	1	0.5	0.5
<i>Paspalum dilatatum</i>	5	5	25	5	5
<i>Persicaria decipiens</i>			2		
<i>Plantago debilis</i>				1	
<i>Plantago lanceolata</i>		2	1	1	
<i>Pseuderanthemum variabile</i>	0.1				
<i>Pultenaea spp.</i>					1
<i>Rhytidosporum spp.</i>	5	5	15	5	
<i>Senecio madagascariensis</i>		1	1	2	
<i>Setaria gracilis</i>	5	10	10	10	25
<i>Sida rhombifolia</i>	0.5	1			
<i>Sporobolus creber</i>			5	10	5
<i>Thelymitra cyanea</i>		0.2			
<i>Themeda triandra</i>	0.1	2			
<i>Verbena bonariensis</i>			1		
<i>Wahlenbergia gracilis</i>		0.5	1	0.5	

BioBanking floristic data

plot_name	nps	nos	nms	ngcg	ngcs	ngco	epc	nth	or	fl
5111lb01	17	5	15	66	4	12	20	1	1	9.5
5111lb02	19	15	10	60	2	6	10	0	1	10.5
5111lb03	25	0	20	40	2	4	60	0	1	2
5111lb04	12	3	10	28	2	6	30	0	1	16
5111lb05	12	0	1	56	10	2	16	0	1	0

Nps = native plant species richness; nos = native over-storey; nms = native mid-storey; ngcg = native ground cover grasses; ngcs = native ground cover shrubs; ngco = native ground cover other; epc = exotic plant cover; nth = no. trees with hollows; or = over-storey regeneration; fl = length of logs.