



Biodiversity Offset Strategy and Addendum to the Flora and Fauna Assessment for the Bringelly Road Business Hub State Significant Development (SSD 6324)

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Project Manager	Rebecca Dwyer T: 02 8536 8634 Suite 4, 2-4 Merton St, Sutherland NSW 2232
Prepared by	Rebecca Dwyer,
Reviewed by	Robert Humphries and Bruce Mullins
Approved by	Robert Humphries
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Abbreviations

Abbreviations	Description
BBAM	BioBanking Assessment Methodology
BOS	Biodiversity Offset Strategy
BVT	Biometric Vegetation Type
DGRs	Director General Requirements
ENV	Existing Native Vegetation
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
FBA	Framework for Biodiversity Assessment
GB-FRG	Grey Box - Forest Red Gum grassy woodland
SSD	State Significant Development
TEC	Threatened Ecological Community
The Trust	Western Sydney Parklands Trust
TSC Act	<i>Threatened Species Conservation Act 1995</i> (NSW)

1 Introduction

This report provides a Biodiversity Offset Strategy (BOS) in the form of an addendum to the Flora and Fauna Assessment (FFA) prepared by EcoLogical Australia (ELA) (2014) for a proposed superlot subdivision and development at the 'Bringelly Road Business Hub', Bringelly Road, Leppington. The proposal is listed as a State Significant Development (SSD) under Part 4 (Division 4.1) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1 Subject site

The subject site is located within the South Western Growth Centre (SWGC), which is subject to the Sydney Regions Growth Centres Biodiversity Certification under the NSW *Threatened Species Conservation Act 1995* (TSC Act). The subject site is located within both certified and non-certified land. The proposal will impact on 17.182 ha of biodiversity certified land and 3.878 ha of non-certified land. No Existing Native Vegetation (ENV) will be impacted as a result of the proposal. The 'study area' for this report includes the area mapped as non-certified land only (**Figure 1**).

The Growth Centres SEPP has been 'biocertified' by the order of the NSW Minister for Planning and Environment under section 126G of the TSC Act. The mechanism for achieving this is outlined in the Growth Centres Conservation Plan and the conditions for the biocertification are documented in the Minister's order for consent. Biocertification negates the requirement to conduct impact assessments under section 5A of the EP&A Act, thus turning off the requirements for Assessments of Significance or species impact statements. The Biocertified land is, therefore, exempt from further environmental assessment under the TSC or EPBC Acts. For those areas that will impact on non-certified land, the requirements of the TSC and EPBC Acts will continue to apply (**Figure 1**).

1.2 Director General Requirements

Specific matter 13 – Flora and Fauna of the Director Generals Requirements (DGRs) states:

Undertake a fauna and flora survey of the site in accordance with the OEH Threatened Species Survey and Assessment Guidelines. Address impacts on flora and fauna, including threatened species, populations and endangered ecological communities and their habitats and any draft/final recovery plans. Identify steps to be taken to avoid, mitigate or offset any impacts to the environment, threatened species, populations and endangered ecological communities. The NSW offset principles for major projects (SSD & SSI) are to be used in assessing and determining the adequacy of any offsets, refer to:
[\(<https://www.environment.nsw.gov.au/biocertification/offsets.htm>\)](https://www.environment.nsw.gov.au/biocertification/offsets.htm).

Assess the impacts of the proposal in regards to the Biodiversity Certification Order for the Sydney Region Growth Centres. Identify removal of any 'existing native vegetation' (as defined under the Order) and address provisions of the Order regarding removal of such vegetation. Note: the development is located within the South West Growth Centre which is subject to Biodiversity Certification under the Threatened Species Conservation Act 1995. The subject land is pre-dominantly within a 'non-certified' area.

1.3 The aim of the report

This document will support a Development Application that will be submitted to the DP&E, as part of the Response to Submissions, consistent with Specific matter 13 of the DGRs.

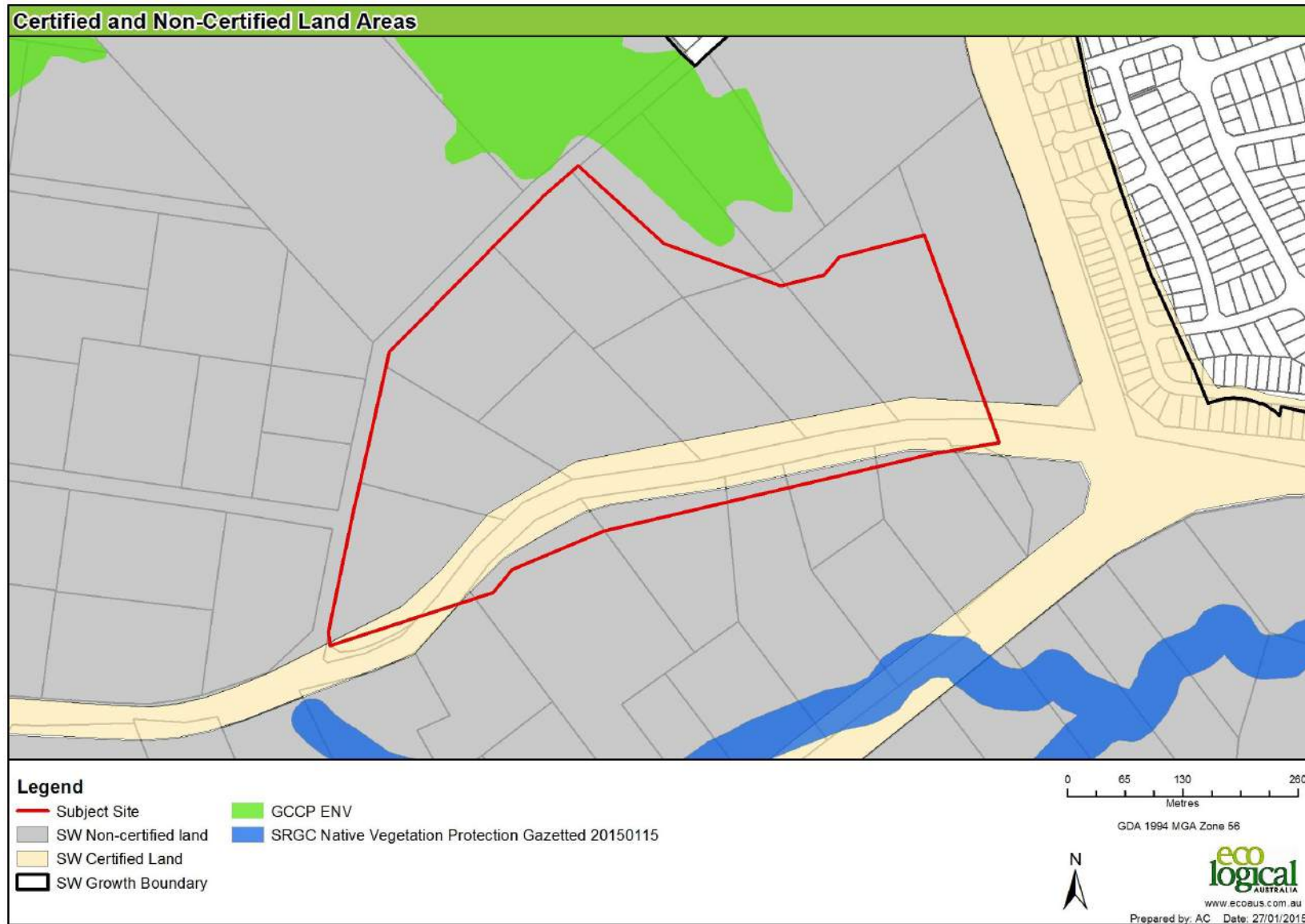


Figure 1: Location of the subject site in relation to biodiversity certified lands

2 Biodiversity Offset Strategy

2.1 Introduction

This Biodiversity Offset Strategy (BOS) delivers a Biodiversity Offset Package (BOP) using the BioBanking Assessment Methodology (BBAM 2014a) to inform the offset required for impacts to 1.096 ha of Cumberland Plain Woodland, listed as critically endangered under the TSC Act. As discussed in the Flora and Fauna Assessment (ELA 2014) the vegetation onsite does not meet condition thresholds to be considered under the EPBC Act. Only impacts to native vegetation within non-certified land have been assessed under this strategy.

The DGRs state that *‘where impacts to vegetation and habitat have not been avoided or mitigated, the NSW offset principles for major projects (SSD & SSI) are to be used in assessing and determining the adequacy of any offsets’*.

The NSW offset principles require that: *‘offsets must be quantifiable and the impacts and benefits must be reliably estimated... based on quantitative assessment of the loss in biodiversity from the clearing or other development and the gain in biodiversity from the offset’* (Principle 9). In NSW, the most appropriate methodology for quantifying impacts and benefits reliably is the NSW BioBanking Assessment Methodology (BBAM) (OEH 2014a).

The recently released Framework for Biodiversity Assessment (FBA) was not used for this assessment as the Director-Generals requirements for the assessment were issued prior to this policy taking effect. Further, the offset required using the BBAM (2014a) will be equivalent to or higher than that required under the FBA as BBAM (2014a) requires offsets for all biodiversity, including vegetation types with a site value condition score less than 17.

2.2 Methodology

The BBAM (OEH 2014) has been used to ‘inform’ the offset required for the project. The BBAM utilises ‘ecosystem credits’ as a surrogate for habitat loss / or gain during the offsetting process. The number of ecosystem credits required for an offset is determined by both the area and condition of the vegetation being impacted at the development site.

The BioBank impact assessment followed the BBAM 2014a and was undertaken by an accredited BioBank Assessor (Rebecca Dwyer Accreditation Number 0095). It included mapping the biometric vegetation types and their respective biometric condition across the study area and collecting the minimum number of biometric condition plots in each of the resulting vegetation zones, the identification of management zones (development footprint with complete loss of all biodiversity) and a landscape and connectivity assessment, to give an accurate indication of the amount of biodiversity to be impacted.

2.2.1 Vegetation plots/transects

Vegetation plots/transect were undertaken by ELA Ecologist / Accredited Biobanking Assessor Rebecca Dwyer and Ecologist / Botanist Brian Towle on 6 January 2015. The number of transect/plots undertaken for each vegetation zone is outlined in **Table 2**. Information was collected from the required number of transect/plots for all vegetation zones. **Figure 2** shows the location of each plot/transect for each vegetation zone.



Figure 2: Biometric Vegetation Types, Certified Land and Biobanking Plot Locations

2.2.2 Targeted threatened flora surveys

Targeted searches for *Pimelea spicata* (Spiked Rice-flower), *Pultenaea pedunculata* (Matted Bush-pea), *Marsdenia viridiflora* subsp. *viridiflora* and *Pterostylis saxicola* were undertaken in areas of potential habitat on 8 July 2014 and 6 January 2015. In the latter survey, two ELA ecologists traversed areas of potential habitat slowly on foot in parallel transects approximately five metres apart. Any plants not flowering and unable to be identified in the field were collected and later identified. Survey effort is shown in **Figure 3**. Survey timing under the BBAM are shown in **Table 1**.

Table 1: Survey timing for threatened flora under BBAM

Species/ Population	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i> endangered population	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Pterostylis saxicola</i>	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No
<i>Pimelea spicata</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Pultenaea pedunculata</i>	No	No	No	No	No	No	No	No	Yes	Yes	Yes	No

2.3 Results

2.3.1 Biometric Vegetation Types (BVT)

The field survey determined that 1.096 ha of the Biometric Vegetation Type (BVT), 'Grey Box – Forest Red Gum (GB-FRG) grassy woodland on flats', in varying states, was present within non-certified land within the study area (**Table 2**). **Appendix A** lists the plant species recorded in each plot, while **Appendix B** outlines the transect/plot data entered into the tool.

Table 2: Vegetation types found within the study area showing the condition and area

Veg Zone ID	Vegetation type	Condition	Ancillary Code	Area (ha)	Plots req.	Plots completed
1	Grey Box - Forest	Moderate to good	Disturbed	0.715	1	1
2	Red Gum grassy woodland on flats of the Cumberland	Moderate to good	Scattered Paddock Trees (SPT)	0.226	1	1
3	Plain, Sydney Basin (GB-FRG)	Moderate to good	Derived Native Shrubland (DNS)	0.155	1	1
			Total	1.096	3	3

2.3.1 Threatened flora

No threatened flora species were observed within the study area during field surveys. ELA feel that sufficient survey has been undertaken for all potential threatened flora species within the study area according to the BBAM (2014a), with the exception of *Pultenaea pedunculata*.

Although targeted surveys were undertaken outside the recommended survey period for *Pterostylis saxicola*, the species is most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. There are no rock shelves or cliff lines within the study area, therefore, the *P. saxicola* is unlikely to occur. No further assessment is required.

Whilst there is potential habitat for *Pultenaea pedunculata* within areas mapped as Grey Box Forest Red Gum (GB-FRG) disturbed and Derived Native Shrubland (DNS) in the subject site, a survey of the study area has been undertaken twice; in July (ELA 2014) and January (ELA 2015), and no prostrate shrub resembling *Pultenaea pedunculata* were recorded. Therefore, an expert report has been prepared for the assumed absence of *Pultenaea pedunculata* in accordance with Section 6.6.2 of the Framework for Biodiversity Assessment (OEH 2014b).

The expert report concluded that *Pultenaea pedunculata* is NOT considered to occur within the subject site for the following reasons:

- A survey of the study area has been undertaken twice; in July and January.
- All prostrate shrubs were identifiable to species level and none were *Pultenaea pedunculata*.
- Two highly qualified and experienced ecologists/botanists, Rebecca Dwyer and Brian Towle undertook targeted surveys within the subject site.
- The species is present year round, and is obvious by its habitat (growth form).
- *Pultenaea pedunculata* appears to be a coloniser of disturbed areas, however requires open habitat conditions with limited development of the ground and shrub layers. The areas of potential habitat within the subject site are heavily shadowed by tall shrubs and/or exotic grasses.

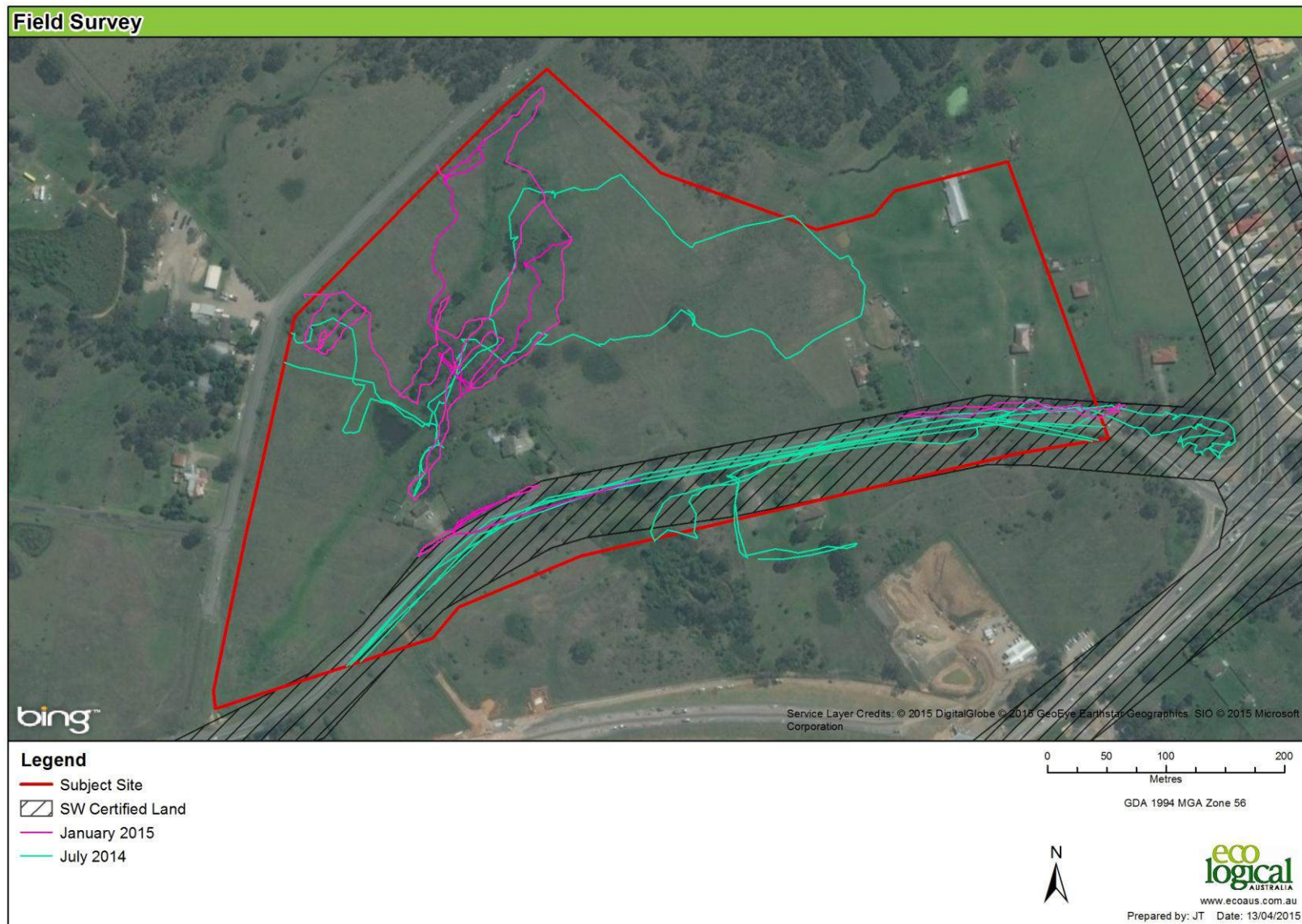


Figure 3: Target survey effort within the subject site

2.4 Ecosystem credits required at the offset site

A summary of the ecosystem credits required to offset the impact of the proposal is provided in **Table 3**. Using the BBAM (2014a), impacts to 1.096 ha of Grey Box - Forest Red Gum on flats (GB-FRG) will require 35 ecosystem credits to be retired to meet a full improve or maintain outcome. A copy of the BioBank Credit Report outlining credit requirements and credit profiles is included as **Appendix C**.

Table 3: Ecosystem credits required

Vegetation Type	Condition Class	Cleared area (ha)	Credits Required / ha	No. of credits required
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin (GB-FRG)	Moderate to Good	1.096	31.93	35
Total		1.096	31.93	35

2.5 Offset package

An offset of 35 ME020 Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin ecosystem credits are required to address the loss of vegetation as a result of the proposal.

This offset can be met by the purchase and retirement of 35 ME020 or ME018 (Forest Red Gum – Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain) credits as indicated by the credit profile in **Appendix D**. The offset can also be met by the purchase and retirement of equivalent vegetation types in the Hawkesbury-Nepean CMA, including HN526 or HN528, due to the proximity of the subject site to the two catchment boundaries.

It is proposed that 35 ecosystem credits (HN526) will be purchased and retired from an already registered Western Sydney Parkland Trust Biobanking site within South West Growth Centre certification boundary. The proposed offset is equivalent to a full improve or maintain outcome to meet the requirements of the NSW Offset Principles.

3 Conclusions

As identified in the DGRs, the project has been assessed '*in regards to the Biodiversity Certification Order for the Sydney Region Growth Centres*'. The proposal will impact on 0.771 ha of native vegetation within 'certified land' and 1.096 ha of native vegetation within 'non-certified land' (**Figure 1**). As discussed in **Section 1.1**, the certified land is exempt from further environmental assessment under the TSC or EPBC Act's. For those areas that will impact on non-certified land, the requirements of the TSC and EPBC Act will continue to apply.

No threatened flora species were observed within the site study area during field surveys. ELA acknowledges targeted surveys were undertaken outside the recommended survey period under the BBAM for *Pultenaea pedunculata*. Whilst there is potential habitat for *Pultenaea pedunculata* within areas mapped as Grey Box Forest Red Gum (GB-FRG) disturbed and Derived Native Shrubland (DNS) in the subject site, a survey of the study area has been undertaken twice; in July (ELA 2014) and January (ELA 2015). Therefore, an expert report has been prepared for the assumed absence of *Pultenaea pedunculata* in accordance with Section 6.6.2 of the Framework for Biodiversity Assessment (OEH 2014b). It is in our expert opinion that *Pultenaea pedunculata* does NOT occur within the subject site.

The DGRs require, '*steps to be taken to avoid, mitigate or offset any impacts to the environment, threatened species, populations and endangered ecological communities*'. Based on the potential direct and indirect impact of the proposal on the environment, ways to avoid, mitigate and offset potential impacts have been identified in the Flora and Fauna Assessment (ELA 2014). Where impacts could not be avoided, it is a requirement of the DGRs that '*the NSW offset principles for major projects (SSD & SSI) are to be used in assessing and determining the adequacy of any offsets*' (OEH 2014).

In NSW, the most appropriate methodology for quantifying impacts and benefits reliably is the NSW BioBanking Assessment Methodology (BBAM) (OEH 2014). Based on the offset calculations undertaken using the OEH Credit Converter, an offset of 35 ecosystem credits is required to address the loss of vegetation as a result of the proposal. It is proposed that the required 35 ecosystem credits will be purchased and retired from a Western Sydney Parkland Trust Biobanking site with a matching vegetation profile. The proposed offset is equivalent to a full improve or maintain outcome to meet the requirements of the NSW Offset Principles. .

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Appendix A Flora species recorded at the study area

				Plot number	BB01	BB02	BB03	BB04
				BioMetric Vegetation Type	GBFRG on flats	GBFRG on flats	GBFRG on flats	GBFRG on flats
				Ancillary Code	DNS	Intact	SPT	Intact
Family	Genus	Species	Exotic / Native	CommonName				
Acanthaceae	<i>Brunoniella</i>	<i>australis</i>	Native	Blue Trumpet	2	3		1
Amaranthaceae	<i>Alternanthera</i>	<i>nana</i>	Native	Hairy Joyweed		2		
Amaranthaceae	<i>Alternanthera</i>	<i>denticulata</i>	Native			1		
Anthericaceae	<i>Chlorophytum</i>	<i>comosum</i>	Exotic	Spider Plant				1
Anthericaceae	<i>Tricoryne</i>	<i>elator</i>	Native	Yellow-rush Lily	3			
Apiaceae	<i>Centella</i>	<i>asiatica</i>	Native	Pennywort	2			
Apiaceae	<i>Cyclospermum</i>	<i>leptophyllum</i>	Exotic	Slender Cherry		1		
Apiaceae	<i>Foeniculum</i>	<i>vulgare</i>	Exotic	Fennel	2			
Asclepiadaceae	<i>Araujia</i>	<i>sericiflora</i>	Exotic	Moth Plant	3	2		3
Asteraceae	<i>Bidens</i>	<i>pilosa</i>	Exotic	Cobblers Pegs	1	1		
Asteraceae	<i>Bidens</i>	<i>subalternans</i>	Exotic					1
Asteraceae	<i>Calotis</i>	<i>lappulacea</i>	Native	Yellow Burr-daisy				1
Asteraceae	<i>Cirsium</i>	<i>vulgare</i>	Exotic	Spear Thistle	1	2	2	
Asteraceae	<i>Conyza</i>	sp.	Exotic		1	1		
Asteraceae	<i>Hypochaeris</i>	<i>radicata</i>	Exotic	Catsear	2			
Asteraceae	<i>Lantana</i>	<i>camara</i>	Exotic	Lantana	1	1	1	
Asteraceae	<i>Pseudognaphalium</i>	<i>luteoalbum</i>	Native	Jersey Cudweed		1		
Asteraceae	<i>Senecio</i>	<i>madagascariensis</i>	Exotic	Fire Weed		3		
Asteraceae	<i>Senecio</i>	<i>pterophorus</i>	Exotic		2			
Asteraceae	<i>Taraxacum</i>	<i>officinale</i>	Exotic	Dandelion	1		1	
Asteraceae	<i>Vittadinia</i>	<i>muelleri</i>	Native					1
Basellaceae	<i>Anredera</i>	<i>cordifolia</i>	Exotic	Madeira Vine				2
Brassicaceae	<i>Brassica</i>	<i>fruticulosa</i>	Exotic	Twiggy Turnip		2	3	1
Brassicaceae	<i>Lepidium</i>	<i>pseudohyssopifolium</i>	Native	Peppercress		2		1

				Plot number	BB01	BB02	BB03	BB04
				BioMetric Vegetation Type	GBFRG on flats	GBFRG on flats	GBFRG on flats	GBFRG on flats
				Ancillary Code	DNS	Intact	SPT	Intact
Family	Genus	Species	Exotic / Native	CommonName				
Cactaceae	<i>Opuntia</i>	<i>stricta</i>	Exotic	Prickly Pear		3		
Carophyllaceae	<i>Paronychia</i>	<i>brasiliana</i>	Exotic	Chilean Whitlow Wort		3		
Chenopodiaceae	<i>Atriplex</i>	<i>semibaccata</i>	Native	Creeping Saltbush		2	2	
Chenopodiaceae	<i>Chenopodium</i>	<i>album</i>	Exotic	Lamb's Quarters		1		1
Chenopodiaceae	<i>Einadia</i>	<i>hastata</i>	Native				3	
Chenopodiaceae	<i>Einadia</i>	<i>polygonoides</i>	Native			3	2	2
Chenopodiaceae	<i>Einadia</i>	<i>trigonos</i>	Native		1	3	3	2
Clusiaceae	<i>Hypericum</i>	<i>perforatum</i>	Exotic		3			
Commelinaceae	<i>Commelina</i>	<i>cyanea</i>	Native	Native Wandering Trad		2		
Convolvulaceae	<i>Dichondra</i>	<i>repens</i>	Native	Kidney Weed	2	3	2	3
Cyperaceae	<i>Carex</i>	<i>inversa</i>	Native			1	1	2
Epacridaceae	<i>Leucopogon</i>	<i>juniperinus</i>	Native	Prickly Beard-heath	1			
Fabaceae (Faboideae)	<i>Desmodium</i>	<i>varians</i>	Native	Slender Tick-trefoil	2			
Fabaceae (Faboideae)	<i>Glycine</i>	<i>tabacina</i>	Native		3	2	2	2
Fabaceae (Faboideae)	<i>Hardenbergia</i>	<i>violacea</i>	Native	Purple Coral Pea	1			
Fabaceae (Faboideae)	<i>Vicia</i>	<i>sativa</i>	Exotic		1			
Geraniaceae	<i>Geranium</i>	<i>sp.</i>	Exotic	Geranium				1
Lamiaceae	<i>Mentha</i>	<i>satureioides</i>	Native	Creeping Mint	2			
Lamiaceae	<i>Plectranthus</i>	<i>sp.</i>	Exotic					3
Lamiaceae	<i>Stachys</i>	<i>arvensis</i>	Exotic	Stagger Weed		1		
Lomandraceae	<i>Lomandra</i>	<i>filiformis</i>	Native			2		
Malvaceae	<i>Malvastrum</i>	<i>coromandelianum</i>	Native	Prickly Malvastrum		1		
Malvaceae	<i>Modiola</i>	<i>caroliniana</i>	Exotic			1		
Malvaceae	<i>Sida</i>	<i>rhombifolia</i>	Exotic	Paddy's Lucerne	3		3	3
Myrtaceae	<i>Eucalyptus</i>	<i>moluccana</i>	Native	Grey Box		4b		5
Myrtaceae	<i>Eucalyptus</i>	<i>tereticornis</i>	Native	Forest Red Gum		4b	4b	
Oleaceae	<i>Olea</i>	<i>europaea</i> subsp. <i>cuspidata</i>	Exotic	African Olive	3	2	2	4b
Oxalidaceae	<i>Oxalis</i>	<i>perennans</i>	Native		2	2		

				Plot number	BB01	BB02	BB03	BB04
				BioMetric Vegetation Type	GBFRG on flats	GBFRG on flats	GBFRG on flats	GBFRG on flats
				Ancillary Code	DNS	Intact	SPT	Intact
Family	Genus	Species	Exotic / Native	CommonName				
Phormiaceae	<i>Dianella</i>	<i>longifolia</i>	Native	Blue Flax-lily	1			
Phyllanthaceae	<i>Phyllanthus</i>	<i>virgatus</i>	Native		2			
Pittosporaceae	<i>Bursaria</i>	<i>spinosa</i>	Native	Native Blackthorn	4b			
Pittosporaceae	<i>Plantago</i>	<i>lanceolata</i>	Exotic	Lamb's Tongues	3	3	3	3
Poa`	<i>Avena</i>	<i>barbata</i>	Exotic					3
Poaceae	<i>Briza</i>	<i>subaristata</i>	Exotic	Shivery Grass	3	1		3
Poaceae	<i>Bromus</i>	<i>catharticus</i>	Exotic			2	3	3
Poaceae	<i>Chloris</i>	<i>ventricosa</i>	Native	Windmill Grass		3		2
Poaceae	<i>Chloris</i>	<i>gayana</i>	Exotic	Rhodes Grass	3		2	2
Poaceae	<i>Cynodon</i>	<i>dactylon</i>	Native	Common Couch	5	3	5	
Poaceae	<i>Dactylis</i>	<i>glomerata</i>	Exotic		2			
Poaceae	<i>Ehrharta</i>	<i>erecta</i>	Exotic	Panic Veldtgrass				3
Poaceae	<i>Eragrostis</i>	<i>curvula</i>	Exotic	African lovegrass				3
Poaceae	<i>Eragrostis</i>	<i>leptostachya</i>	Native	Paddock Lovegrass		1		
Poaceae	<i>Lachnagrostis</i>	<i>filiformis</i>	Native			2		
Poaceae	<i>Microlaena</i>	<i>stipoides</i>	Native		3	3	4b	2
Poaceae	<i>Nassella</i>	<i>neesiana</i>	Exotic	Chilean Needle Grass				2
Poaceae	<i>Panicum</i>	<i>simile</i>	Native					1
Poaceae	<i>Paspalum</i>	<i>dilatatum</i>	Exotic	Paspalum	4b	3	4b	
Poaceae	<i>Pennisetum</i>	<i>clandestinum</i>	Exotic	Kikuyu Grass	3	3	6	2
Poaceae	<i>Rytidosperma</i>	<i>racemosum</i>	Native			3		
Poaceae	<i>Rytidosperma</i>	<i>tenuis</i>	Native			3		3
Poaceae	<i>Setaria</i>	<i>gracilis</i>	Exotic	Pigeon Grass			2	
Poaceae	<i>Themeda</i>	<i>australis</i>	Native	Kangaroo Grass	3			
Polygonaceae	<i>Rumex</i>	<i>brownii</i>	Native	Swamp Dock		1	1	
Primulaceae	<i>Anagallis</i>	<i>arvensis</i>	Exotic			1		
Rosaceae	<i>Rubus</i>	<i>fruticosus</i>	Exotic	Blackberry	1			
Sapindaceae	<i>Dodonaea</i>	<i>viscosa</i>	Native					1

				Plot number	BB01	BB02	BB03	BB04
				BioMetric Vegetation Type	GBFRG on flats	GBFRG on flats	GBFRG on flats	GBFRG on flats
				Ancillary Code	DNS	Intact	SPT	Intact
Family	Genus	Species	Exotic / Native	CommonName				
Solanaceae	<i>Lycium</i>	<i>ferocissimum</i>	Exotic	African Boxthorn		3	4b	3
Solanaceae	<i>Solanum</i>	<i>americanum</i>	Exotic			1		
Solanaceae	<i>Sonchus</i>	<i>oleraceus</i>	Exotic	Common Sowthistle		2	1	
Verbenaceae	<i>Verbena</i>	<i>bonariensis</i>	Exotic	Purpletop	1	1	2	
Xanthorrhoeaceae	<i>Aloe</i>	<i>maculata</i>	Exotic		1			3

Modified Braun-Blanquet scale: 1: <5% - rare, <3 individuals, 2: <5% - uncommon, >3 individuals, 3: <5% - common, scattered or locally common, 4a: <5% - very abundant, 4b: 5-25%, 5: 25-50%, 6: 50-75% 7: 75-100%

Appendix B : Transect Plot Data Entered into the Biobanking Tool

PlotName	NPS	NOS	NMS	NGCG	NGCS	NGCO	EPC	NTH	OR	FL	Easting	Northing	Zone
BB01	17	8	5.5	98	30	36	97	0	0	3	299587	6241547	56
BB02	25	19	0	36	0	40	59.5	0	1	11	299605	6241368	56
BB03	11	19.5	0	78	2	48	65	2	0	1	299651	6241475	56

Appendix C Credit Calculator Credit Report and Credit Profiles

BioBanking credit report



Office of
Environment
& Heritage

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

Date of report: 27/01/2015

Time: 2:04:47PM

Calculator version: v4.0

Development details

Proposal ID: 0095/2015/1538D
Proposal name: Bringelly Road Business Hub
Proposal address: Bringelly Road Leppington NSW

Proponent name: Western Sydney Parkland Trust
Proponent address: Level 7, 10 Valentine Avenue Parramatta NSW
Proponent phone: TBA

Assessor name: Rebecca Dwyer
Assessor address: PO Box 12 Sutherland NSW 1499
Assessor phone: 02 8536 8627
Assessor accreditation: 0095

Improving or maintaining biodiversity

An application for a red flag determination is required for the following red flag areas

Red flag	Reason
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	Vegetation type being > 70% cleared; or it contains an endangered ecological community;

The application for a red flag determination should address the criteria set out in the BioBanking Assessment Methodology. Please note that a biobanking statement cannot be issued unless the determination is approved.

Additional information required for approval:

- ☐ Change to percent cleared for a vegetation type/s
- ☐ Use of local benchmark
- ☐ Change negligible loss
- ☐ Expert report...
- ☒ Request for additional gain in site value
- ☐ Predicted threatened species not on site
- ☐ Change threatened species response to gain (Tg value)

Ecosystem credits summary

Plant Community type	Area (ha)	Credits required	Red flag
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	0.39	10.11	No
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion	0.72	25.00	Yes
Total	1.11	35	

Credit profiles**1. Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion, (ME020)**

Number of ecosystem credits created	35
IBRA sub-region	Cumberland - Sydney Metro

Offset options - vegetation types	Offset options - CMA sub-regions
Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion, (ME018)	Cumberland - Sydney Metro and any IBRA subregion that adjoins the IBRA subregion in which the development occurs
Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin Bioregion, (ME020)	

Species credits summary

**HEAD OFFICE**

Suite 4, Level 1
2-4 Merton Street
Sutherland NSW 2232
T 02 8536 8600
F 02 9542 5622

CANBERRA

Level 2
11 London Circuit
Canberra ACT 2601
T 02 6103 0145
F 02 6103 0148

COFFS HARBOUR

35 Orlando Street
Coffs Harbour Jetty NSW 2450
T 02 6651 5484
F 02 6651 6890

PERTH

Suite 1 & 2
49 Ord Street
West Perth WA 6005
T 08 9227 1070
F 08 9322 1358

DARWIN

16/56 Marina Boulevard
Cullen Bay NT 0820
T 08 8989 5601
F 08 8941 1220

SYDNEY

Level 6
299 Sussex Street
Sydney NSW 2000
T 02 8536 8650
F 02 9264 0717

NEWCASTLE

Suites 28 & 29, Level 7
19 Bolton Street
Newcastle NSW 2300
T 02 4910 0125
F 02 4910 0126

ARMIDALE

92 Taylor Street
Armidale NSW 2350
T 02 8081 2681
F 02 6772 1279

WOLLONGONG

Suite 204, Level 2
62 Moore Street
Austinmer NSW 2515
T 02 4201 2200
F 02 4268 4361

BRISBANE

Suite 1 Level 3
471 Adelaide Street
Brisbane QLD 4000
T 07 3503 7191
F 07 3854 0310

ST GEORGES BASIN

8/128 Island Point Road
St Georges Basin NSW 2540
T 02 4443 5555
F 02 4443 6655

NAROOMA

5/20 Canty Street
Narooma NSW 2546
T 02 4476 1151
F 02 4476 1161

MUDGEES

Unit 1, Level 1
79 Market Street
Mudgee NSW 2850
T 02 4302 1230
F 02 6372 9230

GOSFORD

Suite 5, Baker One
1-5 Baker Street
Gosford NSW 2250
T 02 4302 1220
F 02 4322 2897

1300 646 131
www.ecoaus.com.au