

Appendix D – DoEE Offset Assessment Guide and WA Offset Template, Proposed Albemarle Kemerton Plant

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Black cockatoos (Carnaby's)
EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	1.2%

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
<i>Ecological communities</i>						
Area of community	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species habitat</i>						
Area of habitat	Yes	23.05ha foraging habitat (16.5ha Pinus sp. canopy & 6.55ha Euc/Banksia, also potentially suitable for breeding). Incl 1 potential breeding tree, no hollow	Area	23.05	Hectares	ELA 'Desktop Assessment of Selected Lots Within KSLA' 2017 ELA 'KSLA Spring Flora and Fauna Survey' 2017 GHD 'Memo - Additional Area Assessment' 2017
			Quality	7	Scale 0-10	
			Total quantum of impact	16.14	Adjusted hectares	
<i>Threatened species</i>						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g. Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator																												
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start area and quality	Future area and quality without offset	Future area and quality with offset	Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source												
<i>Ecological Communities</i>																												
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% with offset)																				
					Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0																		
							Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)																			
<i>Threatened species habitat</i>																												
Area of habitat	Yes	16.14	Adjusted hectares	Land parcel within the Kemerton Strategic Industrial Park Buffer area	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	67	Risk of loss (% without offset)	30%	Risk of loss (% with offset)	5%	Raw gain	16.75	Confidence in result (%)	90%	Adjusted gain	15.08	Net present value	11.88	% of impact offset	100.35%	Minimum (90%) direct offset requirement met?	Yes				
					Time until ecological benefit	1	Start quality (scale of 0-10)	7	Future area without offset (adjusted hectares)	46.9	Future area with offset (adjusted hectares)	63.7	Future quality without offset (scale of 0-10)	5	Future quality with offset (scale of 0-10)	7	Raw gain	2.00	Confidence in result (%)	85%	Adjusted gain	1.70	Net present value	1.68				
<i>Threatened species</i>																												
Birth rate e.g. Change in nest success	No																											
Mortality rate e.g. Change in number of road kills per year	No																											
Number of individuals e.g. Individual plants/animals	No																											

Summary							
Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)		
					Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
Birth rate	0				\$0.00		\$0.00
Mortality rate	0				\$0.00		\$0.00
Number of individuals	0				\$0.00		\$0.00
Number of features	0				\$0.00		\$0.00
Condition of habitat	0				\$0.00		\$0.00
Area of habitat	16.135	16.19	100.35%	Yes	\$0.00	N/A	\$0.00
Area of community	0				\$0.00		\$0.00
					\$0.00	\$0.00	\$0.00

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Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
<i>Ecological communities</i>						
Area of community	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species habitat</i>						
Area of habitat	Yes	22.68ha low value foraging habitat (scattered pines and Eucalyptus rudis).	Area	22.68	Hectares	ELA 'Desktop Assessment of Selected Lots Within KSLA' 2017 ELA 'KSLA Spring Flora and Fauna Survey' 2017 GHD 'Memo - Additional Area Assessment' 2017
			Quality	4	Scale 0-10	
			Total quantum of impact	9.07	Adjusted hectares	
<i>Threatened species</i>						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g. Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator																														
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)	Start area and quality	Future area and quality without offset	Future area and quality with offset	Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source														
<i>Ecological Communities</i>																														
Area of community	No				Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% with offset)																						
					Time until ecological benefit	Start quality (scale of 0-10)	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0																				
							Future quality without offset (scale of 0-10)		Future quality with offset (scale of 0-10)																					
<i>Threatened species habitat</i>																														
Area of habitat	Yes	9.07	Adjusted hectares	Land parcel within the Kemerton Strategic Industrial Park Buffer area	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	38	Risk of loss (% without offset)	30%	Risk of loss (% with offset)	5%	Raw gain	9.50	Confidence in result (%)	90%	Adjusted gain	8.55	Net present value	6.74	% of impact offset	9.18	101.22%	Minimum (90%) direct offset requirement met?	Yes	Cost (\$ total)		Information source		
					Time until ecological benefit	1	Start quality (scale of 0-10)	7	Future area without offset (adjusted hectares)	26.6	Future area with offset (adjusted hectares)	36.1	Future quality without offset (scale of 0-10)	5	Future quality with offset (scale of 0-10)	7	Raw gain	2.00	Confidence in result (%)	85%	Adjusted gain	1.70	Net present value	1.68						
<i>Threatened species</i>																														
Birth rate e.g. Change in nest success	No																													
Mortality rate e.g. Change in number of road kills per year	No																													
Number of individuals e.g. Individual plants/animals	No																													

Summary							
Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost (\$)		
					Direct offset (\$)	Other compensatory measures (\$)	Total (\$)
Birth rate	0				\$0.00		\$0.00
Mortality rate	0				\$0.00		\$0.00
Number of individuals	0				\$0.00		\$0.00
Number of features	0				\$0.00		\$0.00
Condition of habitat	0				\$0.00		\$0.00
Area of habitat	9.072	9.18	101.22%	Yes	\$0.00	N/A	\$0.00
Area of community	0				\$0.00		\$0.00
					\$0.00	\$0.00	\$0.00

Project Name: Albemarle Kemerton Plant, Kemerton Strategic Industrial Area

Existing environment/ Impact	Mitigation			Significant Residual Impact	Offset Calculation Methodology				
	Avoid and minimise	Rehabilitation Type	Likely Rehab Success		Type	Risk	Likely offset success	Time Lag	Offset Quantification
87.7 ha of clearing (comprising 54.31 ha of native vegetation and 33.39 ha area of former pine plantation (equates to 16.5ha of canopy))									
6.37 ha of Banksia woodlands of the Swan Coastal Plain TEC listed as Endangered under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) and listed as the Priority 3 'Low lying <i>Banksia attenuata</i> woodlands or shrublands' PEC under the <i>Wildlife Conservation Act 1950</i> . The vegetation is in mostly good condition but has been impacted by past clearing and past and current grazing activity.	The Plant site was selected to avoid an area of relatively intact vegetation representative of the Banksia woodlands TEC vegetation to the south of the Proposal area. An ecological investigation was undertaken between an east and west option for the Proposal location and the east site option was chosen primarily due to the area only having a small impact on TEC in comparison to the west site option which was dominated by TEC (~81%) and in better condition than the east option.	Rehabilitation of the plant site cannot be undertaken until the Plant is decommissioned (>25 years). This is subject to the agreement of the landowner (LandCorp) as the Proposal area is zoned industrial therefore rehabilitation may not align with the proposed use of the site following the end of the Albemarle Plant's life. Rehabilitation will be undertaken if no further industrial use of the site is proposed when the Plant is removed. If areas which are cleared for construction within the Proposal area are no longer required they will be rehabilitated with a representative selection of native species. The species mix will be based on the pre-existing vegetation communities present. Advice will be sought from an appropriately qualified and experienced botanist to make an appropriate selection of species.	<u>Can the environmental values be rehabilitated/Evidence?</u> Yes, there has been much research into rehabilitation of the Banksia woodlands of the Swan Coastal Plain which can be drawn upon to inform rehabilitation. <u>Operator experience in undertaking rehabilitation?</u> Albemarle does not have rehabilitation experience within Australia as the company is based in America and this is their first Australian project. <u>What is the type of vegetation being rehabilitated?</u> Will be based on the Banksia Woodlands of the Swan Coastal Plain community <u>Time lag?</u> More than the plant life which is at least 25 years <u>Credibility of the rehabilitation proposed (evidence of demonstrated success)</u> Unknown at this stage	<u>Extent</u> 6.37 ha of Banksia Woodlands of the Swan Coastal Plain TEC/PEC for the life of the Plant <u>Quality</u> Vegetation condition is mainly Good (97.1%) with small areas of excellent (1.4%) and completely degraded (1.5%). The area has been impacted by previous clearing, and past and current grazing. <u>Conservation Significance</u> EPBC listed TEC which is Endangered under the EPBC Act, State listed PEC (Priority 3) under the WC Act <u>Land Tenure</u> Freehold land <u>Time Scale</u> 25 years or more According to the agreed significance framework, residual impact is considered to be significant because removal of vegetation representative of a TEC listed under the EPBC Act and PEC (Priority 3) listed under the WC Act is required.	Land acquisition - acquisition of suitable land which will then be vested with the Department of Biodiversity, Conservation and Attractions (DBCA) conservation estate. If the offset area cannot be vested with DBCA, an alternate landcare group will be identified to undertake the management of the offset site. Albemarle will agree on funding of the offset site management with the land manager selected. Albemarle intends to preferentially identify an offset area within the Kemerton Strategic Industrial Area (KSIA) buffer.	Low Albemarle has commenced the process of identifying an appropriate offset site (within the KSIA buffer) and has undertaken an initial assessment of Part Lot 509 (Certificate of Title Volume 2649 Folio 98) to confirm it contains appropriate environmental values and is of a sufficient area to counterbalance the residual impact of the loss of 6.37 ha of Banksia woodlands of the Swan Coastal Plain TEC and 45.73 ha of Black Cockatoo habitat. Albemarle is liaising with the landowner (LandCorp) in relation to acquisition of the site and LandCorp has indicated they are supportive of this Proposal.	The likelihood of offset success is considered to be high given that a land acquisition offset is proposed which would be transferred to the conservation estate (DBCA) for protection in perpetuity or alternatively a conservation covenant will be placed over the land. A large proportion of the KSIA buffer is already vested with the DBCA and the proposed offset site could be added to this management area. DBCA has established land management practices that are implemented to ensure appropriate protection of areas. The practices are adapted over time in accordance with developments in environmental knowledge. Albemarle has already commenced the process of identification of a potential offset site which has sufficient environmental values, and area, to counterbalance the significant residual impacts of the Proposal.	Up to 12 months to arrange for the purchase and vesting of the land with the DBCA or placement of a conservation covenant.	The DoEE Offset Assessment Guide has been used to assess the quantum of residual impact associated with the Proposal and quantify offset requirements. The calculator predicts a residual impact of 3.19 ha associated with the loss of 6.37 ha of Banksia Woodland TEC/PEC. An area of 18 ha of Banksia woodland TEC in Good condition or better can achieve a direct offset of >100% of this impact. As the 'Banksia Woodlands of the SCP' TEC provides suitable breeding and foraging habitat for all three Black Cockatoo species, this vegetation type will be targeted for the offset site. The selected site will comprise at least 18 ha of this vegetation type to ensure the loss of both 'Banksia Woodlands of the Swan Coastal Plain' TEC / 'Low lying Banksia attenuata woodlands or shrublands' PEC, and Black Cockatoo habitat is covered by the offset. The Proposed Offset site contains 84.26ha of 'Banksia Woodlands of the Swan Coastal Plain' TEC which is also suitable Black Cockatoo foraging habitat.
45.73 ha of native vegetation and former pine plantation which is suitable foraging habitat for threatened Black Cockatoo species listed under the EPBC Act and Wildlife Conservation Act 1950 (Carnaby's Black Cockatoo (Endangered), Forest Red-tailed Black Cockatoo (Vulnerable) and Baudin's Black Cockatoo (Endangered)). The area of foraging habitat comprises 23.05 ha considered to be of moderate to high value and 22.68 ha considered to be of low value. Within the area of foraging habitat there is 6.5 5ha of native vegetation which has moderate to high potential breeding value due to the presence of Jarrah and Marri trees which are preferred for breeding.	The Plant site was selected to avoid an area of high value Black Cockatoo habitat to the south of the Proposal area due to it containing – High value native vegetation foraging habitat for conservation significant Black Cockatoo species; – High value native vegetation breeding habitat for conservation significant Black Cockatoo species; and – Potential breeding trees with DBH >500 mm and hollows >100 mm. An ecological investigation was undertaken between an east and west option for the Proposal location and the east site option was chosen primarily due to having a smaller area and quality of suitable Black Cockatoo foraging and breeding habitat than the west option which has a higher density of vegetation, in particular native vegetation.	Rehabilitation of the plant site cannot be undertaken until the Plant is decommissioned (>25 years). This is subject to the agreement of the landowner (LandCorp) as the Proposal area is zoned industrial therefore rehabilitation may not align with the proposed use of the site following the end of the Albemarle Plant's life. Rehabilitation will be undertaken if no further industrial use of the site is proposed when the Plant is removed. If areas which are cleared for construction within the Proposal area are no longer required they will be rehabilitated with a representative selection of native species. The species mix will be based on the pre-existing vegetation communities present. Advice will be sought from an appropriately qualified and experienced botanist to make an appropriate selection of species.	<u>Can the environmental values be rehabilitated/Evidence?</u> Yes, there has been much research into rehabilitation of the Banksia woodlands of the Swan Coastal Plain which can be drawn upon to inform rehabilitation. <u>Operator experience in undertaking rehabilitation?</u> Albemarle does not have rehabilitation experience within Australia as the company is based in America and this is their first Australian project. <u>What is the type of vegetation being rehabilitated?</u> Will be based on the Banksia Woodlands of the Swan Coastal Plain community <u>Time lag?</u> More than the plant life which is at least 25 years <u>Credibility of the rehabilitation proposed (evidence of demonstrated success)</u> Unknown at this stage	<u>Extent</u> 45.73 ha of suitable Black Cockatoo foraging habitat which includes a single potential breeding tree >500 mm DBH (no visible hollows). <u>Quality</u> Overall the foraging habitat within the Proposal area is considered to be of moderate to low value to Black Cockatoos in the context of the surrounding area (which contains higher quality and density native vegetation suitable for foraging and breeding) due to the very scattered nature of suitable foraging trees and shrubs present in the. Small sections of the wider Proposal area are high value (areas of Banksia woodland and denser pines). The entire area has been impacted by grazing, clearing and plantation and therefore retains only one potential breeding tree (no hollow). <u>Conservation Significance</u> Provides suitable foraging habitat for threatened Black Cockatoo species listed under the EPBC Act and Wildlife Conservation Act 1950 (Carnaby's Black Cockatoo (Endangered), Forest Red-tailed Black Cockatoo (Vulnerable) and Baudin's Black Cockatoo (Endangered)) <u>Land Tenure</u> Freehold land <u>Time Scale</u> 25 years or more According to the agreed significance framework, residual impact is considered to be significant because impact is to a species listed under the WC Act and EPBC Act with a classification of endangered (IUCN criteria).					The DoEE Offset Assessment Guide has been used to assess the quantum of residual impact associated with the Proposal and quantify offset requirements. The calculator predicts a residual impact of 25.21 ha associated with the loss of 45.73 ha of foraging habitat as a result of the Proposal. An area of 105 ha of Black Cockatoo foraging habitat in Good condition or better could achieve a direct offset of >100% of this impact. The proposed Offset site, Part Lot 509 (total area 320 ha) contains 117.3 ha of suitable Black Cockatoo foraging habitat which is suitable as an offset for this Project. Some of the foraging habitat is suitable as potential breeding habitat. Of the 117.3 ha, 84.26 ha has also been identified as representative of the Banksia woodland TEC/PEC.