

# APPENDIX 11

## OFFSET CALCULATIONS

# 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	Western Ringtail Possum
EPBC Act status	Critically Endangered
Annual probability of extinction Based on IUCN category definitions	6.8%

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	Total direct and indirect impact to WRP habitat	Area	2.61	Hectares	Fauna Assessment (Harewood 2020a)
			Quality	5	Scale 0-10	
			Total quantum of impact	1.31	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)	0.0	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0											
								20	4.5													20%	5%		
								1	6													3.6	4.3	0.67	90%
Area of habitat	yes	1.31	Adjusted hectares	4.5	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	Risk of loss (% without offset)	Risk of loss (% with offset)	3.6	Future area without offset (adjusted hectares)	3	Future area with offset (adjusted hectares)	7	4.00	90%	3.60	3.37	1.33	101.73%	Yes				
								20	4.5															20%	5%
								1	6															3.6	4.3
<i>Threatened species habitat</i>																									
<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	1.305	1.33	101.73%	Yes	\$0.00	N/A	\$0.00
Area of community	0				\$0.00		\$0.00
					<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

# 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	SWAFCT10b
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	Yes	Indirect drawdown impacts to SWAFCT10b	Area	0.34	Hectares	Flora and vegetation surveys (Ecoedge)
			Quality	6	Scale 0-10	
			Total quantum of impact	0.20	Adjusted hectares	
<i>Threatened species habitat</i>						
Area of habitat	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species</i>						
Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact	Units	Information source	
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
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	Yes	0.20	Adjusted hectares	0.7	20	Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	20%	Risk of loss (% with offset)	5%	0.11	80%	0.08	0.07	0.22	109.51%	Yes		
								Future area without offset (adjusted hectares)	0.6	Future area with offset (adjusted hectares)	0.7									
								Time until ecological benefit	1	Start quality (scale of 0-10)	6									
<i>Threatened species habitat</i>																				
Area of habitat	No					Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)		Risk of loss (% with offset)										
								Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0									
								Time until ecological benefit		Start quality (scale of 0-10)										
<i>Threatened species</i>																				
Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start value		Future value without offset		Future value with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value	% of impact offset	Minimum (90%) direct offset requirement met?	Cost (\$ total)	Information source
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
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	0				\$0.00		\$0.00
Area of community	0.204	0.22	109.51%	Yes	\$0.00	N/A	\$0.00
					<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

# 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
EPBC Act status	Endangered
Annual probability of extinction <small>Based on IUCN category definitions</small>	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	Black Cockatoo potential breeding habitat trees (canopy area of 102 trees)	Area	1.78	Hectares	Fauna Survey (Harewood, 2020a and 2020b)
			Quality	5	Scale 0-10	
			Total quantum of impact	0.89	Adjusted hectares	
<i>Threatened species</i>						
<b>Protected matter attributes</b>						
Number of features <small>e.g. Nest hollows, habitat trees</small>	Yes	Habitat trees	102		Count	Fauna Survey (Harewood, 2020a and 2020b)
Condition of habitat <small>Change in habitat condition, but no change in extent</small>	No					
<i>Threatened species</i>						
Birth rate <small>e.g. Change in nest success</small>	No					
Mortality rate <small>e.g. Change in number of road kills per year</small>	No					
Number of individuals <small>e.g. Individual plants/animals</small>	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)	Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0														
																					Time until ecological benefit	Start quality (scale of 0-10)	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	0.89	Adjusted hectares	3.5	Time over which loss is averted (max. 20 years)	20	Start area (hectares)	3.5	Risk of loss (% without offset)	20%	Risk of loss (% with offset)	5%	Future area without offset (adjusted hectares)	2.8	Future area with offset (adjusted hectares)	3.3	0.52	90%	0.47	0.37	0.97	109.03%	Yes				
																								Time until ecological benefit	Start quality (scale of 0-10)	Future quality without offset (scale of 0-10)	Future quality with offset (scale of 0-10)
<i>Threatened species</i>																											
<b>Protected matter attributes</b>																											
Number of features <small>e.g. Nest hollows, habitat trees</small>	Yes	102	Count	365			365		250	365		115	90%	103.50	103.50	101.47%	Yes										
Condition of habitat <small>Change in habitat condition, but no change in extent</small>	No																										
<i>Threatened species</i>																											
Birth rate <small>e.g. Change in nest success</small>	No																										
Mortality rate <small>e.g. Change in number of road kills per year</small>	No																										
Number of individuals <small>e.g. Individual plants/animals</small>	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	102	103.50	101.47%	Yes	\$0.00	N/A	\$0.00
Condition of habitat	0				\$0.00		\$0.00
Area of habitat	0.89	0.97	109.03%	Yes	\$0.00	N/A	\$0.00
Area of community	0				\$0.00		\$0.00
					<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>

# 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	SWAFCT02
EPBC Act status	Endangered
Annual probability of extinction <small>Based on IUCN category definitions</small>	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	Yes			Direct and indirect impacts to DBCA listed TEC (not MNES)	Area	2.44	Hectares	Flora and vegetation surveys (Ecoedge)
								Quality	6	Scale 0-10	
Total quantum of impact			1.46	Adjusted hectares							
<i>Threatened species habitat</i>											
Area of habitat	No		Area								
			Quality								
			Total quantum of impact				0.00				
Protected matter attributes											
Number of features <small>e.g. Nest hollows, habitat trees</small>		Attribute relevant to case?				Information source					
		No									
Condition of habitat											
Change in habitat condition, but no change in extent		Attribute relevant to case?				Information source					
		No									
<i>Threatened species</i>											
Birth rate <small>e.g. Change in nest success</small>		Attribute relevant to case?				Information source					
		No									
Mortality rate <small>e.g. Change in number of road kills per year</small>		Attribute relevant to case?				Information source					
		No									
Number of individuals <small>e.g. Individual plants/animals</small>		Attribute relevant to case?				Information source					
		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	Yes	1.46	Adjusted hectares	6	Risk-related time horizon (max. 20 years)	20	Start area (hectares)	6	Risk of loss (% without offset)	20%	Risk of loss (% with offset)	5%	0.90	80%	0.72	0.57	1.48	101.00%	Yes		
						Time until ecological benefit		1	Start quality (scale of 0-10)	6	Future area without offset (adjusted hectares)	4.8									
					Future quality without offset (scale of 0-10)		3	Future quality with offset (scale of 0-10)		6											
<i>Threatened species habitat</i>																					
Area of habitat	No				Time over which loss is averted (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 quality without offset (scale of 0-10)			Future quality with offset (scale of 0-10)													
Protected matter attributes																					
Number of features <small>e.g. Nest hollows, habitat trees</small>		Attribute relevant to case?																			
		No																			
Condition of habitat																					
Change in habitat condition, but no change in extent		Attribute relevant to case?																			
		No																			
<i>Threatened species</i>																					
Birth rate <small>e.g. Change in nest success</small>		Attribute relevant to case?																			
		No																			
Mortality rate <small>e.g. Change in number of road kills per year</small>		Attribute relevant to case?																			
		No																			
Number of individuals <small>e.g. Individual plants/animals</small>		Attribute relevant to case?																			
		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	0				\$0.00		\$0.00
Area of community	1.464	1.48	101.00%	Yes	\$0.00	N/A	\$0.00
					\$0.00	\$0.00	\$0.00

# 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	SWAFCT01b
EPBC Act status	Vulnerable
Annual probability of extinction <small>Based on IUCN category definitions</small>	0.2%

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	Yes	DBCA listed TEC (not MNES)	Area	0.17	Hectares	Flora and Vegetation surveys (Ecoedge)
			Quality	6	Scale 0-10	
			Total quantum of impact	0.10	Adjusted hectares	
<i>Threatened species habitat</i>						
Area of habitat	No		Area			
			Quality			
			Total quantum of impact	0.00		
<i>Threatened species</i>						
<b>Protected matter attributes</b>						
Number of features <small>e.g. Nest hollows, habitat trees</small>	No					
Condition of habitat <small>Change in habitat condition, but no change in extent</small>	No					
<i>Threatened species</i>						
Birth rate <small>e.g. Change in nest success</small>	No					
Mortality rate <small>e.g. Change in number of road kills per year</small>	No					
Number of individuals <small>e.g. Individual plants/animals</small>	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	Yes	0.10	Adjusted hectares	0.4	20	Risk-related time horizon (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)	20%	Risk of loss (% with offset)	5%	0.06	80%	0.05	0.05	0.10	102.27%	Yes			
								Future area without offset (adjusted hectares)	0.3	Future area with offset (adjusted hectares)	0.4										
								Time until ecological benefit	1	Start quality (scale of 0-10)	6										Future quality without offset (scale of 0-10)
<i>Threatened species habitat</i>																					
Area of habitat	No					Time over which loss is averted (max. 20 years)	Start area (hectares)	Risk of loss (% without offset)		Risk of loss (% with offset)											
								Future area without offset (adjusted hectares)	0.0	Future area with offset (adjusted hectares)	0.0										
								Time until ecological benefit		Start quality (scale of 0-10)											
<i>Threatened species</i>																					
<b>Protected matter attributes</b>																					
Number of features <small>e.g. Nest hollows, habitat trees</small>	No																				
Condition of habitat <small>Change in habitat condition, but no change in extent</small>	No																				
<i>Threatened species</i>																					
Birth rate <small>e.g. Change in nest success</small>	No																				
Mortality rate <small>e.g. Change in number of road kills per year</small>	No																				
Number of individuals <small>e.g. Individual plants/animals</small>	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	0				\$0.00		\$0.00
Area of community	0.102	0.10	102.27%	Yes	\$0.00	N/A	\$0.00
					<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>