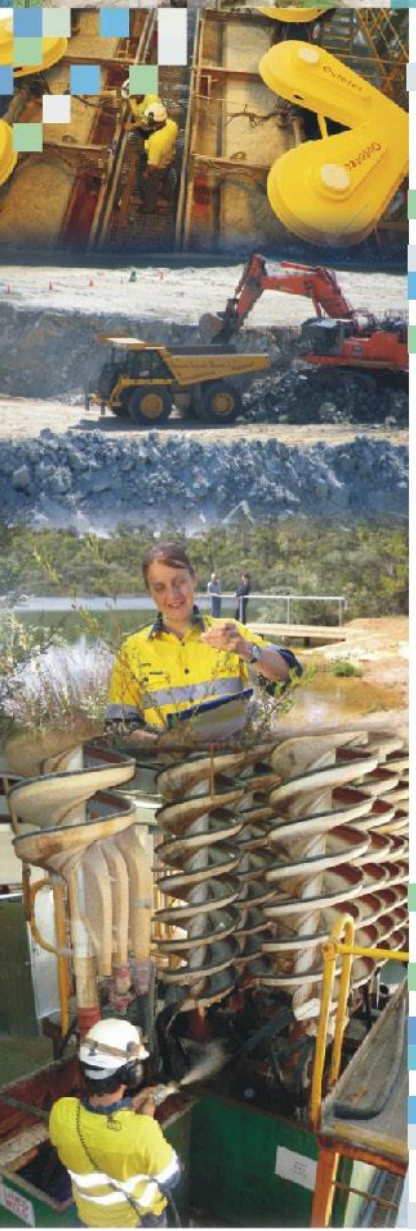
Appendix L – Talison Greenbushes Mine Expansion Offset Proposal (Talison Lithium Pty Ltd)

Talison Lithium Pty Ltd

Offset Proposal



TALISON
GREENBUSHES
OPERATIONS

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1 Introduction

1.1 Background

Talison Lithium Pty Ltd (Talison) owns and operates an operational lithium mine near the town of Greenbushes in the south west of Western Australia (WA). The mine is located within WA *Mining Act 1978* (Mining Act)mining leases, and predominately within State forest vested in the Conservation and Parks Commission of WA that is managed under the *Conservation and Land Management Act 1984* (CALM Act). The Mine Development Envelope (MDE) also includes; freehold land, unallocated crown land and Mining Reserve

The Greenbushes operation represents the world's largest known lithium reserve and has been producing lithium for 25 years, contributing to Australia's position as one of the two top global producers of lithium. Talison is proposing to undertake an expansion at the Greenbushes Mine, aimed at increasing supply of lithium to the market (the Proposal). The mine expansion will require the current approved (authorised under the Mining Act)operational boundary (MDE) to be extended to the south, with a small extension also to the north, increasing the current (approved) area of 1,591 hectare (ha) to a 1,989 ha MDE. The MDE will include additional areas of State Forest 20 and agricultural land. Up to 350 ha of native vegetation clearing (outside existing approved areas) is required within the MDE for the expansion. The vegetation comprises known and potentially suitable habitat for a number of fauna species listed as Matters of National Environmental Significant (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) *(*EPBC Act) and specially protected under the *Wildlife Conservation Act 1950* (WA) (WC Act).

In 2018, Talison referred its proposal to expand the existing Mine to the WA Environmental Protection Authority (EPA) under Section 38 of the *Environmental Protection Act 1986* (EP Act) and the Federal Department of the Environment and Energy (DotEE) for assessment under the Commonwealth EPBC Act. The referral was made primarily on the basis that the expansion would require the clearing of 350 ha of native vegetation known to contain or represent habitat for MNES and specially protected (WC Act) fauna species, namely:

- Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* (Vulnerable Cwth and WA; confirmed as present);
- Baudin's Cockatoo *Calyptorhynchus baudinii* (Endangered Cwth and WA; secondary evidence recorded);
- Carnaby's Cockatoo *Calyptorhynchus latirostris* (Endangered Cwth and WA; secondary evidence recorded);
- Western Quoll/Chuditch *Dasurus geoffroii* (Vulnerable Cwth and WA; confirmed as present);
- Western Ringtail Possum Pseudocheirus occidentalis (Critically Endangered Cwth and WA; possible secondary evidence recorded); and
- Wambenger Brush-tailed Phascogale *tapoatafa wambenger* (Conservation Dependant WA; confirmed as present)

Removal of habitat for fauna species specially protected under the WC Act and/or listed as threatened species under the EPBC Act is considered a significant residual impact which will require an offset if the Proposal is deemed environmentally acceptable by the EPA and the DotEE.

Talison intends to counterbalance the significant residual impact of the Proposal through implementation of an environmental offset strategy that is relevant and proportionate to the significance of the environmental impact.

1.2 Purpose

The purpose of this document is to provide details of the offsets proposed to counteract the significant residual impacts associated with the Mine expansion. The proposed offsets have been developed with consideration of the requirements of the WA Government's Environmental Offset Policy (GoWA, 2011) as well as the Australian Government's EPBC Act Environmental Offsets Policy (DSEWPAC, 2012a).

2 Impact Mitigation

Up to 350 ha of native vegetation clearing (outside existing approved areas) is required within the MDE for the expansion. The clearing is required for the development of a new tailings storage facility (TSF4), expansion of Floyd's Waste Rock, construction of two new processing plants, and miscellaneous infrastructure including a new Mine Services Area, explosives infrastructure and linear infrastructure corridors.

The location of the Proposal is restricted due to the constraints of the surrounding landscape (existing mining and public infrastructure, and landforms), and the position of the ore body therefore the proposed clearing of 350 ha of fauna habitat for the Proposal cannot be avoided as it is required to enable the mine expansion to occur. Wherever practicable Talison will use existing cleared or disturbed and rehabilitated areas for the development in preference to clearing remnant vegetation.

Talison will minimise impact to conservation significant fauna and their habitat through implementation of the Talison Lithium Pty Ltd Conservation Significant Fauna Management Plan and associated Conservation Significant Flora Management Plan and Weed and Hygiene Management Plan. The Plans are part of the Talison Greenbushes Lithium Mine Environmental Management System (EMS), which is certified to International Standard ISO 14001:2015. Further detail on mitigation measures to avoid and minimise impacts to fauna associated with the Proposal are described in the plans and within the Greenbushes Lithium Mine Expansion Environmental Referral Additional Information (GHD 2018).

3 Significant Residual Impact

After application of mitigation measures, Talison believes the Proposal will have a significant residual impact due to direct impacts to conservation significant fauna species through removal of up to 350 ha of native vegetation, which is considered suitable or known habitat for these species. The majority of the native vegetation which will be removed is State Forest (275 ha), removal of which is also considered a significant residual impact. Significant residual impacts associated with the Proposal have been determined through application of the residual impact significance model detailed in the WA Environmental Offsets Guidelines (GoWA 2014). The following significant residual impacts will occur as a result of the Proposal and require an offset if the Proposal is deemed environmentally acceptable:

- Loss of 275 ha of State Forest in predominantly very good (or good condition due to clearing for the mine expansion. The Proposal occurs within State Forest 20 and will result in the removal of 275 ha of protected vegetation within the South West Region. The State Forest is currently managed in accordance with the 2014-2023 Forest Management Plan under the Regional Forest Agreement for the South-West Forest Region of WA.
- Loss of 350 ha of known foraging and potential breeding habitat for three species of threatened black cockatoo declared as specially protected under the WC Act and also listed as threatened species under the EPBC Act. The clearing will also result in the loss of 7 known and an additional 7 suitable breeding hollows. It is unconfirmed which species utilise the hollows but based on foraging evidence is most likely to be the Forest Red-tailed Black Cockatoo. The three black cockatoo species are:
    - Carnaby's Cockatoo (Endangered, Cwth and WA);
    - Forest Red-tailed Black Cockatoo (Vulnerable, Cwth and WA); and
    - Baudin's Cockatoo (Endangered, Cwth and WA);
- Loss of 350 ha of known habitat for the following species listed as threatened species under the EPBC Act, and/or declared as specially protected under the WC Act:
    - Western Quoll/Chuditch - Vulnerable (Cwth and WA);
    - Wambenger Brush-tailed Phascogale – Conservation Dependent (WC Act, WA);

Additional to the above, the following significant residual impacts will occur as a result of the Proposal which may require an offset if the Proposal is deemed environmentally acceptable:

- Loss of 18 ha of habitat which has been assessed as poor to marginal habitat for the Western Ringtail Possum (Critically Endangered, Cwth and WA) which is declared as specially protected under the WC Act and listed as a threatened species under the EPBC Act. There are no confirmed records of WRP or hollows confirmed as suitable for WRP within the MDE, however the species possibly occurs at a low density.

4 Environmental Offsets

Environmental offsets are conservation actions which provide environmental benefits intended to counterbalance the significant residual environmental impacts associated with a Proposal (EPA 2014). Offsets differ to mitigation measures in that they are undertaken outside of the area of development/impact (Mine Development Envelope). Environmental offsets for the Proposal have been developed with consideration of the Principles of the WA Government's Environmental Offset Policy (GoWA, 2011) as well as the Australian Government's EPBC Act Environmental Offsets Policy (DSEWPAC, 2012a).

4.1 Application of the EPBC Environmental Offsets Policy (DSEWPAC, 2012)

Australian Government policy specifies direct offsets should make up at least 90% of the required offset package (DSEWPaC 2012a). Deviation from this 90% will be considered where it can be demonstrated that there will likely be a greater benefit to the protected matter, through increasing the proportion of indirect offsets or where scientific uncertainty is so high that it is not possible to determine a direct

offset likely to benefit the protected matter.

The EPBC Environmental Offsets Policy (DSEWPAC, 2012a) also requires the following Principles are met by an offset:

- Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter.
- Suitable offsets must be built around direct offsets but may include other compensatory measures.
- Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter.
- Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter.
- Suitable offsets must effectively account for and manage the risks of the offset not succeeding.
- Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs.
- Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable.
- Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.

Talison has considered these Principles in development of this offset Proposal.

4.2 Application of the WA Environmental Offsets Policy (GoWA 2011)

The WA Environmental Offsets Policy (GoWA 2011) requires the following Principles are considered when developing an offset proposal:

- Environmental offsets will only be considered after avoidance and mitigation options have been pursued.
- Environmental offsets are not appropriate for all projects.
- Environmental offsets will be cost effective, as well as relevant and proportionate to the significance of the environmental value being impacted
- Environmental offsets will be based on sound environmental information and knowledge
- Environmental offsets will be applied within a framework of adaptive management.
- Environmental offsets will be focussed on longer term strategic outcomes.

Talison has considered these Principles in development of this offset Proposal.

5 Offset for Significant Residual Impact to Conservation Areas

As per section 3 the Proposal is located within the Greenbushes State Forest (State Forest 20) therefore clearing of 275ha of state forest for the Proposal will result in a reduction in the area of protected vegetation within the South West Region. Talison's tenement conditions require that "*The lessee shall pay to the Executive Director, CALM, compensation for forest destroyed by or in connection with mining. The rate of compensation being $3,089.11 per hectare as from 15 February 1991 to 14 February 1996. After this expiry date the clearing rate will again be subject to CPI adjustment on an annual basis*". The rate of compensation has increased through CPI adjustments to the current rate of $5,167.91/ha. Monetary compensation for the destruction of forest in connection with mining has been a requirement of the Greenbushes mining tenements since 1984.

Talison is proposing to offset the significant residual impact associated with the direct removal of 350 ha of conservation significant fauna habitat through acquisition of suitable land containing native vegetation with very similar fauna habitat values to the clearing footprint and transfer the land to DBCA to manage consistent with the CALM Act. This is described in more detail within this Offset Proposal (section 7) As the area of land required to offset the significant residual impact to conservation significant fauna is in excess to the 275 ha of state forest which will be removed there will be no net loss of state forest.

As Talison has an existing requirement for monetary compensation for the destruction of state forest, and there will be no net loss of state forest due to direct offset requirements for conservation significant fauna, Talison is not proposing a further offset for the clearing of 275 ha of state forest.

6 Quantum of Significant Residual Impact to Fauna

In order to quantify the offset required to counterbalance the significant residual impact of the Proposal, the quantum of the impact first needs to be determined. The quantum of impact is based on the area and quality of habitat which will be removed by the Proposal for each fauna species that will have a significant residual impact. The DotEE Offset Assessment Guide has been used to assess the quantum of residual impact associated with the Proposal and quantify offset requirements. The following sections describe the assessment of the quantum of impact for fauna species listed as threatened species under the EPBC Act and/or declared as specially protected under the WC Act will be impacted by the Proposal.

6.1 Habitat quality

The EPBC Offsets Policy considers an impact on habitat not only in terms of spatial extent (ha) but also considers the relative quality of that habitat. Under the Policy's tools, the term 'Quantum of Impact' is used to describe the integrated consideration, and is a numerical value that is calculated as follows:

Quantum of Impact (ha) = Area of impact (ha) x Habitat quality score

Habitat Quality (DSEWPAC, 2012b) is defined by:

- condition (ability to meet ecological requirements);
- context (regional importance); and
- stocking rate (utilisation).

The Habitat Quality score is on a scale out of 10, with a higher score representing more ideal, critical and utilised habitat than areas with a lower score.

6.2 Black Cockatoo quantum of impact

The MDE is within the modelled distribution for three species of threatened black cockatoo (Carnaby's, FRTBC and Baudin's) and evidence of all three species using the area (and surrounding State Forest 20) has been recorded (Biologic 2011 and 2018a, Kirkby 2018a and 2018b, and Harewood 2018a). The Jarrah/Marri forest and Jarrah/Marri forest over Banksia habitats within the MDE are suitable foraging and potential breeding habitat for the three black cockatoo species. Few feeding residues from the Carnaby's Cockatoo have been observed within the MDE

indicating it is most likely an intermittent and non-breeding visitor. The age of Baudin's feeding residues indicates this species may only be present in the non-breeding season also. The number and varying age of FRTBC feeding residues indicate this species uses the area throughout the year and although it has not been confirmed which species utilises the breeding hollows within the MDE, based on the sedentary nature of the FRTBC, and the varying age of FRTBC foraging debris observed, it is highly likely to be the FRTBC.

Table 1 summarises the Black Cockatoo habitat quality assessment and the quantum of impact calculated using the DotEE Offset Assessment Guide based on the habitat quality, and the 350 ha area of Black Cockatoo habitat which will be lost as a result of the Proposal. The impact of removal of seven known and seven suitable black cockatoo breeding hollows is also included.

Table 1: Habitat Quality score and Quantum of Impact for Black Cockatoo habitat

Habitat Attribute	**Score**	**Basis of Score**
Condition	9	The high score reflects that the proposed clearing contains most if not all of the ecological requirements for all three species of Black Cockatoo, although the site has been heavily logged, with relatively few suitable hollows remaining in comparison to areas further away from the Mine. Due to the site being on a ridgeline it also has limited natural water supply other than the manmade dams which supply the mine.
Context	6	Habitat resources within the MDE are valuable but are not constraining the populations of different species of Black Cockatoo. Talison has demonstrated the values of the proposal area are fairly consistent with those from across the region (e.g. Biologic 2011, 2018a, Onshore 2018). The mine is in proximity to known roosting habitat both within the MDE and nearby at the Schwenke's wetland.
Stocking Rate	6	There is evidence of recent activity for all three species of black cockatoo but available resources (e.g. hollows, known forage trees) are not being fully utilised therefore a lower stocking rate has been used.
Overall Score	**9**	The overall score has been weighted predominantly toward the condition of the habitat present as the area contains breeding hollows (known and suitable), foraging habitat with evidence of use and is in proximity to known roosting habitat.
Carnaby's Cockatoo Quantum of Impact		**315 ha foraging and potential breeding habitat**
Forest Red-tailed Black Cockatoo Quantum of Impact		**315 ha foraging and breeding habitat inclusive of 7 known and 7 suitable (14 total) breeding hollows**
Baudin's Cockatoo Quantum of Impact		**315 ha foraging and potential breeding habitat**

6.3 Chuditch quantum of impact

Chuditch are found in varying densities throughout the Jarrah Forest and South Coast of Western Australia. Chuditch use a range of habitats including forest, mallee shrublands, woodland and desert. The densest populations have been found in riparian Jarrah Forest (DEC, 2012). The MDE contains preferred habitats of the

species and is located well within the species core-range. The Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia habitats within the MDE are considered suitable habitat for the species. At least one individual Chuditch has been recorded within the MDE.

Table 2 summarises the Chuditch habitat quality assessment and the quantum of impact calculated using the DotEE Offset Assessment Guide based on the habitat quality and the 350 ha area of Chuditch habitat which will be lost as a result of the Proposal.

Table 2: Habitat Quality score and Quantum of Impact for Chuditch habitat

Habitat Attribute	Score	Basis of Score
Condition	8	The high score reflects that the proposed clearing contains most if not all of the ecological requirements for the Chuditch, although the site has been heavily logged and portions fragmented, the habitat remains usable and has connectivity to larger remnant areas.
Context	5	The habitat resources in the area are valuable but are not constraining the Chuditch populations in the area or region. Chuditch are a species with a large home range (Females – 55-120 ha and males – 400 ha), therefore few individuals would be utilising the area. Talison has demonstrated the values of the proposal area are fairly consistent with those from across the region (e.g. Biologic 2018a, Onshore 2018).
Stocking Rate	4	Based on Biologic 2018a potentially only one Chuditch was recorded utilising the MDE. Due to the area of available suitable habitat within the MDE (~ 670 ha) is consistent with up to two males or up to 6 females. However due to the historical use (logging, fire, resource extraction, weeds and clearing) of the area, portions fragmented few animals may persist as demonstrated via Biologic 2018a. Therefore, a representation of a below average stocking rate.
Overall Score	6	Equal weighting has been assigned to each attribute, and the overall score is the average score rounded (up) to the nearest whole number.
Chuditch Quantum of Impact		**210 ha habitat**

6.4 Western Ringtail Possum quantum of impact

The MDE falls within the Southern Forest Management Zone of the known distribution of the Western Ringtail Possum (DPaW, 2017). The WRP has a known preference for Jarrah, Wandoo and Marri forest in inland localities (Biologic, 2018b). It feeds on the leaves of Jarrah and Marri trees in inland areas where such vegetation predominates. The species shelters in tree hollows in inland areas, with hollows providing up to 70% of the refugia available to the species in the Jarrah forests (DPaW, 2017). Within the clearing footprint, 18 ha of remnant vegetation has been mapped as poor to marginal habitat for the species and therefore may provide habitat the species. There is no confirmed evidence of WRP within the MDE.
Table 3 summarises the WRP habitat quality assessment and the quantum of impact calculated using the DotEE Offset Assessment Guide based on the habitat quality and the 18 ha area of poor to marginal WRP habitat which will be lost as a result of the Proposal.

Table 3: Habitat Quality score and Quantum of Impact for Western Ringtail Possum habitat

Habitat Attribute	Score	Basis of Score
Condition	5	The moderate score reflects that the proposed clearing area contains large old Eucalyptus trees but lacks mid-story structure and canopy connectivity that WRPs require, and therefore is considered poor to marginal habitat for the species (Onshore Environmental 2018b). Additionally it does not contain any suitable hollows for WRP.
Context	4	Biologic 2018a recorded scats (potentially belonging to WRP) only during the systematic fauna survey and concluded only the north western and south eastern areas of the MDE were potentially suitable for the species. Further field assessment of the MDE by Onshore Environmental (2018b) and Harewood (2018b) found only a small fragment (18 ha) of the MDE remains which is considered poor to marginal habitat for the species. The remainder is considered unsuitable for WRP due to the lack of dense well-connected mid-story and upper-story vegetation, and/or lack of mature trees due to a history of disturbance via fire, logging, clearing, and resource extraction. No other evidence of habitat use by WRP was recorded during the assessments. Six records of WRP have been recorded within 20 km of the Mine (DBCA, 2018). Two records of the species approximately 320 m north and the remaining four records >5km away.
Stocking Rate	4	The Jarrah Forest is well known to have low stocking rates of WRP (pers comm Adrian Wayne) and in this region only 4 records are present surrounding the MDE, with old dreys recorded outside of the MDE and potential WRP scats in the North-western corner (Biologic 2018a). Biologic 2018a concluded only the north western and south eastern areas were suitable for the species.
Overall Score	5	Equal weighting has been assigned to each attribute, and the overall score is the average score rounded (up) to the nearest whole number.
Western Ringtail Possum Quantum of Impact		**9ha habitat**

6.5 Wambenger Brush-tailed Phascogale quantum of impact

Habitat for the Wambenger Brush-tailed Phascogale (*Phascogale tapoatafa wambenger*) is forest areas with sparse ground cover most commonly dry sclerophyll forests and open woodlands with access to hollow-bearing trees. The Wambenger Brush-tailed Phascogale is listed under Schedule 6 (S6) (conservation dependant) of the WC Act, meaning the species is dependent on ongoing conservation intervention. It is not listed under the EPBC Act. The Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia habitats within the MDE are considered suitable habitat for the species. Fifteen sightings of the Wambenger Brush-tailed Phascogale were recorded during the Biologic (2018a) survey of the MDE.

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Phascogale habitat quality assessment and the quantum of impact calculated using the DotEE Offset Assessment Guide based on the habitat quality and the 350 ha area of Wambenger Brush-tailed Phascogale habitat which will be lost as a result of the Proposal.

Table 4: Habitat Quality score and Quantum of Impact for Wambenger Brush-tailed Phascogale habitat

Habitat Attribute	Score	Basis of Score
Condition	8	The high score reflects that the proposed clearing contains most if not all of the ecological requirements for the Wambenger Brush-tailed Phascogale, although the site has been heavily logged and portions fragmented, the habitat remains usable and has connectivity to larger remnant areas.
Context	8	The habitat resources within the area are valuable but are not constraining the species populations in the area or region. There are 62 records of this species within a 20 km radius (Biologic 2018b). The Wambenger Brush-tailed Phascogale has a moderately sized home range of 20 to 70 ha for females (DEC, 2010) therefore several individuals could potentially utilise the habitat. Talison has demonstrated the values of the proposal area are fairly consistent with those from across the region (e.g. Biologic 2018a, Onshore 2018).
Stocking Rate	9	The survey by Biologic (2018a) recorded this species at 15 locations across the MDE. Based on area of available suitable habitat within the MDE (671 ha), and connectivity with adjacent suitable habitat, the site could conservatively support approximately 9 individuals. Historical land use (logging, fire, resource extraction, weeds and clearing) of the area have the cumulative effect of reducing stocking rate, however given the numerous records both within the site, and local database records, stocking rate is considered to be moderately high.
Overall Score	9	Equal weighting has been assigned to each attribute, and the overall score is the average score rounded (up) to the nearest whole number.
Wambenger Brush-tailed Phascogale Quantum of Impact		**315 ha habitat**

7 Offsets proposal

7.1 Overview

Talison proposes the following offsets to counteract the significant residual impact of the Proposal:

A. Direct Offsets

1. Acquisition of three properties identified by Talison and the DBCA which have native vegetation containing identical or very similar fauna habitat values to the MDE. Following acquisition Talison proposes to transfer the title of each property to the DBCA for management consistent with the CALM Act 1984 which includes

management for the purposes of conservation.

B. Indirect Offsets

1. Provide $250,000 funding toward a partnership program managed by Talison in conjunction with the Blackwood Basin Group (BBG) and the Greenbushes community. The objective of the program will be to enhance Black cockatoo, Chuditch and WRP habitat values in areas surrounding the town of Greenbushes. This will include further enhancement of Schwenke's water bird project precinct to the west of the town and mine site.
2. Provide $250,000 funding as part of the mitigation plan to counteract the impact of the clearing of Known and Suitable Black Cockatoo breeding hollows, Talison will fund research into the use of natural and artificial hollows in the Greenbushes region

These offsets will be formalised through the preparation of a **Talison Expansion Project Offsets Management Strategy**, to be submitted to and approved by the DotEE and EPA within twelve months of approval for the Proposal to proceed. Talison will use the EPBC Offsets Assessment Guide, together with advice from professional specialists and officers from DotEE, DBCA and DWER-EPA Services to ensure that the above three offsets together meet or exceed the calculated Quantum of Impact, in equivalent terms, for specially protected (under the WA Act) and threatened fauna (under the EPBC Act) impacted by the Proposal.

7.2 Direct Offset

7.2.1 Proposal objectives

The objective of Talison's land acquisition proposal is to identify and secure suitable properties within proximity to the mine (150 km) that contain native vegetation with the same or very similar fauna habitat values to the proposed clearing area within the MDE.

Talison proposes to acquire the land and transfer the title to the DBCA for management consistent with the CALM Act 1984 which includes management for the purposes of conservation.

7.2.2 Assessment of Proposed Offset Properties

Through a desktop review, Talison has worked with the DBCA to identify over twenty (20) properties with environmental qualities that may contribute to satisfying the offset requirements of the Mine Expansion Proposal.

After a preliminary site inspection of the most prospective sites an initial three (3) properties have been selected as proposed offset properties which will be subject to further assessment. The properties are:

- Property L : Adjoining the Beaton State Forest, approximately 50 km southwest of the mine;
- Property R: Tone Bridge region, approximately 80 km east of the mine; and
- Property S : Enclave of State forest, 20 km northeast of the mine;

The three properties have been assessed at various levels of detail, with the results of the assessments included in Appendix 1. The preliminary assessment details (in conjunction with the quantum of impact calculations) have been used to determine the potential offset value of each property using the Offset Assessment Guide (DSEWPAC, 2012b). Completed calculators are also included for each property in Appendix 1. The rationale behind the inputs to the offset calculator are included in Table 5.

Table 5 Offset Calculator Input Values for three proposed offset properties identified in collaboration with DBCA

Attribute	Property	Value	Rationale
Start quality of the offset area	Property - L	9	*Black Cockatoo* All three species of BC are known from the general area of the property and are known to breed in Blackwood River National Park and Jalbarragup area, approximately 20 km to the west. Native vegetation is predominantly Excellent or Very Good condition and disturbance is limited. Initial draft comments for BC breeding hollow shows good coverage. The property contains water sources and has not been logged for some time. Three well chewed hollows in Marri have previously been located on the site. Native vegetation appears to be dieback free.
		8	*Chuditch, Phascogale and WRP* Native vegetation is predominantly Excellent or Very Good condition and disturbance is limited. The property contains water sources and has not been logged for some time. Native vegetation appears to be dieback free.
	Property -R	7	*Black Cockatoo* Initial draft comments for BC breeding hollow shows good coverage. Excluding the completely degraded areas, remnant native vegetation is predominantly rated as very good (371.9 ha or 69%).
		6	*Chuditch, Phascogale and WRP* Remnant native vegetation within the study area was predominantly rated as very good with localised areas (5%) of thicket and heath vegetation rated as excellent. Good fauna water sources and riverine habitat.
	Property - S	6	*Black Cockatoo* Remnant native vegetation within the study area was predominantly rated as good (221.3 hectares or 74%) in response to recent logging and associated impact to vegetation structure. Some tall, large, evenly spaced, potential nesting trees remain across the site. Overall property appears suitable for Black Cockatoo species for foraging, roosting and nesting and there is evidence of FRTBC foraging. Initial draft comments for BC breeding hollow shows good coverage.
		5	*Chuditch, Phascogale* Remnant native vegetation is predominantly in good condition but much of the site has had its brush and understorey removed due to logging and lacks a

			second strata of trees. The property has good water sources and riverine and wetland habitats are present. Native vegetation appears to be dieback free.
		4	*WRP* Some limited potential for WRP due to ongoing disturbance of the remnant vegetation impacting the mid-storey.
Future Quality without Offset	Property - L	6	*All species* The fencing for the property is in poor condition, the vegetation carries a high fuel load, and is in a high-risk bushfire zone therefore habitat quality is at risk. It is currently dieback free, but dieback could be introduced if access is not properly restricted. The landowner is able to clear limited areas of the property and the land is currently for sale. There are surrounding sub-divided properties which could occur if the land is sold.
	Property -R	5-6	*All species* The property is currently managed for plantation; therefore the remnant vegetation is at increased biosecurity risk such weed, pests and hygiene including dieback. The fencing is also in poor condition, and there is a high risk of bush fire due to the high fuel load increasing the risk to the existing remnant vegetation.
	Property - S	3	*All species* The property is currently managed for commercial timber production and the property is likely to continue to decline in quality because there is an existing clearing permit in place for the property issued for the purpose of thinning for commercial timber production.
Future Quality with Offset	Property - L	8-10	Protection of the proposed offset areas through vesting with DBCA in conjunction with active management of the properties consistent with the CALM Act, which includes management for the purposes of conservation, is expected to at least maintain but more than likely improve the quality of all of the proposed offset properties. Property S is in an enclave totally surrounded by State forest which will provide a buffer from impacts and increase the likelihood of improved offset quality.
	Property -R	7-8	
	Property - S	6-7	
The following apply to all fauna species			
Time Horizon Over which loss is averted	ALL	20 years	All offset properties are proposed to be protected for 20 years as a minimum. To achieve this the offset area will be vested with the DBCA for conservation purposes.
Time until ecological benefit	ALL	2 years	It is anticipated to take approximately 2 years to suitably protect each proposed offset site. In some cases this will provide an immediate ecological benefit by protecting an area and preventing clearing from occurring. If an offset site requires management to improve the quality of the offset the ecological benefit may occur over a longer period of time.

Risk of loss without offset	Property – L, R	15%	There is no existing protection to prevent development of these properties and land owners may apply to clear the remaining vegetation. Given the properties are considered to have a high environmental value it is considered that approval to remove all habitat from the properties would be difficult to obtain therefore a lower risk of loss has been assigned.
	Property - S	80%	The property has an existing clearing permit in place for thinning for commercial timber production therefore the risk of loss of this habitat is considered to be high.
Risk of loss with offset	ALL	5%	There is considered to be minimal risk of loss of the fauna habitat values of the offset properties as it is intended that the properties will be vested with DBCA for inclusion in the conservation estate. There is still a slight chance of loss as a result of the potential for natural disaster impacts (bushfire, severe storm damage) within the area.
Confidence in result (averted loss)	ALL	100%	The likelihood of offset success (and therefore confidence in result) 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. Talison is in direct consultation with the DBCA in relation to suitable offset sites who has agreed that the three properties proposed are suitable for inclusion in the conservation estate. Talison has commenced consultation with the landholders in regards to acquiring the properties. Given the experience of DBCA in managing land for conservation purposes, Talison is confident the offset areas can be appropriately managed to maintain or improve their quality.
Confidence in result (habitat quality)	ALL	90%	The offset properties will be vested with the DBCA and managed consistent with the CALM Act, which includes management for the purposes of conservation. The properties adjoin existing State Forest areas or are of suitable size so can be incorporated into current land management practices. This gives a high degree of confidence in the ability to protect, maintain and potentially improve the quality of the offset areas.

Based on the preliminary assessment of the proposed offset properties using the DotEE **Offset Assessment Guide the equivalent hectares of each species habitat which can be offset by the proposed properties is included in**

Table 6. **The NPV from this initial assessment indicates that the required offset is likely to be attainable utilising the three properties however this will be subject to review following completion of detailed assessments of each proposed offset property.**

Table 6: Outcomes of the preliminary assessment of offset areas identified in collaboration with DBCA

Offset Site	Actual Ha	Preliminary NVP of site in Ha					
		Carnaby's BC	Baudin's BC	FRTBC	Chuditch	WRP	Phascogale
Calculated quantum of impact (ha) (% of impact offset)							
Property 'L'	145.6	54.97 *(17.45%)*	54.97 *(17.45%)*	58.37 *(18.53%)*	33.38 *(15.90%)*	22.66 *(251.72%)*	33.92 *(10.77%)*
Property 'R'	563	119.59 *(37.96%)*	119.59 *(37.96%)*	129.07 *(40.97%)*	123.66 *(58.89%)*	86.09 *(956.58%)*	125.55 *(39.86%)*
Property 'S'	297.4	143.90 *(45.68%)*	143.90 *(45.68%)*	171.35 *(54.40%)*	144.58 *(68.85%)*	50.76 *(564.05%)*	149.62 *(47.50%)*
TOTAL (% of quantum of impact)	**1006**	**318.46 *(101.09%)***	**318.46 *(101.09%)***	**358.79 *(113.90%)***	**301.62 *(143.62%)***	**159.91 *(1776.78%)***	**309.09 *(98.12%)***

Talison and DBCA are undertaking further assessment of these properties in respect to:

a) Fauna habitat values;

b) Conservation value; and

c) Availability and suitability for inclusion in the state conservation estate.

Detailed assessments of the fauna habitat values of each proposed offset property will be completed prior to acquisition to confirm suitability as an offset property and reassess the quantum of impact which can be offset. The assessments and revised calculation of the offset value of the properties will be provided to the EPA and DotEE for comment prior to acquisition of each property. The updated assessments will be included in the Talison Expansion Project Offsets Management Strategy.

As a detailed assessment of each offset property have not yet been completed, the number of suitable breeding hollows within the properties is unknown, and it is also therefore difficult to assess the value of hollows as a direct offset. Talison proposes to offset the loss of 7 known and 7 suitable breeding hollows as a result of the Proposal, in part through suitable hollows located on the direct offset properties and in part through indirect offsets (refer to section 7.3.2). The number of suitable breeding hollows within each property (and their risk of loss) will be confirmed during the detailed assessments which will include a survey of potential black cockatoo breeding trees.

7.2.3 Delivery timeframe

Talison and DBCA have commenced discussions with the owners of the identified properties to determine conservation value and if a viable agreement to acquire the properties identified as suitable offsets can be reached. Following submission of detailed assessment of the proposed offset properties to the DotEE and DWER-EPA Services, the parties will finalise purchase of the agreed properties. Talison are committed and confident that suitable offset properties can be acquired prior to commencing clearing for the Proposal.

7.2.4 Reporting

In consultation with DBCA, who will be the land manager for the offset properties, Talison will develop management plans for each offset property acquired detailing the management measures to be implemented to provide immediate protection of each property.

Over the course of the implementation of the direct offset program, Talison will report to the DotEE, the EPA and the DBCA on the status of each offset property, until they have been incorporated in the WA Conservation Estate and are under the management of the DBCA.

These reports will be made publicly available at the time of submission.

7.3 Indirect offsets

Talison proposed direct offset land acquisition program will include purchase and protection of Land in the region with an estimated average cost of $5,000 per hectare. Talison proposes to acquire over 1,000 ha of native fauna habitat to offset the significant residual impacts of the proposal. Subject to final assessment of the conservation value of each of these land parcels, this area represents 90 to 100 % of the significant residual impact of the Proposal. Based on the land value of the proposed offset, a $500,000 indirect offset will offset 10% of the impact of the Proposal. This is proposed to be implemented through the 2 programs below.

7.3.1 Blackwood Basin Group (BBG) Partnership

Talison proposes to contribute $250,000 funding towards Citizen Science, environmental restoration and maintenance projects within the local region in partnership with the BBG as an indirect offset for the Proposal. Talison has sought advice from the BBG as to suitable projects that will provide improved understanding of Black cockatoo species within the local region and their habitat to support the survival of the species. The objective of the Programme coordinator, the BBG, will be to improve the leadership, strategic direction and coordination of citizen science relating to Black cockatoos in the local region. 'Citizen Science' involves community volunteers using practical field monitoring tools, that meet scientific best practice, to report on the state of their local environment.

Key projects proposed to be supported through the BBG Partnership Program funding are outlined in the following sections.

7.3.1.1 Citizen Science

Citizen science involves engaging members of the public and community in scientific work undertaken in collaboration with or under the direction of professional scientists and scientific institutions. For the research community this allows for increased scale of data collection, new or greater access to resources, access to private lands and information. The following then evolve from this:

- growing support for citizen science in the local area;
- determining the scope and availability of citizen science monitoring tools and training;
- investigating approaches for enabling and expanding community-based environmental monitoring;
- promoting more effective use of data from community monitoring; and
- sharing findings through a regional symposium.

The program will promote the plight of the black cockatoo and provide an improved understanding of their foraging and nesting requirements. It will collaborate with the breeding hollow research (section 7.3.2) to maximise return.

The funding will be administered by Talison in conjunction with the established steering committee / board to provide governance. Steering committee/board members are proposed to include:

- Community members elected x2;
- BBG Chairman;
- BBG Elected Representative;
- DBCA Representative; and
- Talison Representatives x2.

7.3.1.2 Improved access to water at Schwenke's Dam

Talison will collaborate with the BBG to install a black cockatoo drinking pontoon at the Schwenke's Dam to allow better access to water. The purpose of the installation of a drinking pontoon is to increase Black cockatoo use of the water resource which may increase the likelihood of use of artificial breeding hollows which have been installed in the area. To support increased use of breeding habitat in the area Talison will also provide funding to the BBG to monitor and maintain the artificial nest boxes at Schwenke's Dam and relocate boxes (if necessary) for a 5 year period after which time the outcomes of the program will be reviewed.

7.3.2 Black cockatoo breeding hollow research project

As per sections 7.2.2, Talison proposes to offset the loss of known and suitable black cockatoo breeding hollows through implementation of direct offsets (land parcels vested with the DBCA) which contain an adequate number of suitable breeding hollows to counteract the impact of the loss of hollows. As a complementary mitigation measure Talison proposed to support further research of Black cockatoo breeding.

Thirty artificial black cockatoo breeding hollows were installed in Greenbushes in 2014 and 2015 during the Priority Bittern and Waterbird Biodiversity Enhancement Project. The Project was undertaken in the Schwenke's area adjacent to the MDE. To date, observation of the hollows by the BBG have shown no utilisation of the artificial nest hollows by black cockatoos. Talison has committed to maintaining and monitoring the artificial nesting hollows while they are viable for up to 8 years from installation until at least the end of 2023. The monitoring and maintenance of artificial hollows is important as it can determine the effectiveness of the hollows, can detect the presence of any pest species, and can identify any maintenance or safety requirements. The BBG has been engaged by Talison to perform monitoring and maintenance of the artificial nesting hollows. The monitoring is scheduled to coincide with the peak breeding season of black cockatoos (between September and December).

The artificial hollows in the Schwenke's area are in a more suitable area than the MDE for the following reasons:

- There is a higher recorded presence of Cockatoos within the area;
- There is a higher density of roosting habitat within the area;

- The area has a more suitable water supply with 'safe beaches' the birds can drink from; and
- There is a much lower risk of vehicle strike to birds within the area.

The artificial hollows in the Schwenke's area have been established within a more suitable area than the MDE, and to date have shown no sign of use. Talison therefore does not see value in installing more artificial hollows to offset the loss of hollows associated with the Proposal without research to better understand the use of natural and artificial hollows.

Talison therefore believe a more effective mitigation measure, additional to direct hollow offsets within the acquired properties, is to support research into Black Cockatoo breeding in conjunction with a Western Australian University and the BBG into "*The use of natural breeding hollows in the south west region and the role of availability of artificial and natural water in determining what is considered by Black cockatoos as a suitable nesting hollow*". Limited research has been carried out to date in this area. Talison is prepared to commit funding up to $250,000 toward research and will engage with the BBG to help participants and refine the research project to fill knowledge gaps, drive implementation of recovery programs, and aid the threatened species recovery actions on the ground. Specifically, this will better improve knowledge of Black Cockatoo movements, feeding and roosting behaviour to better understand how they use water resources in respect to nesting and breeding. It will aid in confirming habitat preferences black cockatoo across the range of the research and will important in providing detail on habitat preference in the south west region. This research will provide data and information on known knowledge gaps regarding black cockatoos.

8 References

Citation	Reference
DSEWPaC, 2012a	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC), 2012. *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. Commonwealth of Australia, Canberra, October 2012.
DSEWPaC, 2012b	Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC), 2012. *Offsets Assessment Guide*. Commonwealth of Australia, Canberra, October 2012.
DBCA, 2018	Department of Biodiversity, Conservation and Attractions (DBCA) (2018). *Threatened and Priority Fauna Database*.
DPAW, 2017	Department of Parks and Wildlife (2017). *Western Ringtail Possum (Pseudocheirus occidentalis) Recovery Plan.* Wildlife Management Program No. 58.
GoWA 2011	Government of Western Australia (2011). WA Environmental Offsets Policy. Government of Western Australia, Perth September 2011.
GoWA 2014	Government of Western Australia (2014). WA Environmental Offsets Guidelines. Government of Western Australia, Perth 2014.
Harewood	Harewood (2018). Greenbushes - Preliminary Western Ringtail Possum Surveys – June 2018. Unpublished report to Talison Lithium Australia.
Onshore Environmental	Onshore Environmental Consultants (2018). *Targeted Western Ringtail Possum Survey Greenbushes Mine.* Unpublished report prepared for Talison Lithium Australia Pty Ltd.

Appendix 1: Assessment of the three prospective DBCA joint land acquisition sites

Appendix 1:
Assessment of the three prospective DBCA joint land acquisition sites

Preliminary Offset Site Assessment

Offset Site	**'Site L'**	
Locality	**Carlotta, Shire of Nannup**	
Size (total)	**204.7 ha**	
Land use	Native vegetation (mixed jarrah/marri/Flooded Gum)	**145.6 Ha**
	Commercial Blue Gum plantation	**59.1 ha**
Date	**1 Oct 2018**	

'Site L' consists of two adjoining freehold land titles, with a combined surveyed land total of

204.7 ha. The site has been assessed by Tony Kirkby (2015), Ennovate Consulting (2015), Onshore Environmental (2018) and DBCA[i] (2018). The Kirkby and Onshore Environmental Reports are attached. Note that Kirkby (2015) and Ennovate (2015) focussed specifically on the values of the titles as habitat for Black Cockatoo, and no consideration was given to their value as habitat for WRP and Chuditch. Accordingly, zoological surveys of the site to determine habitat value and utilisation will be conducted in the coming season, if appropriate. As a result, the habitat scores in the attached worksheets may change and should be considered as preliminary only.

The following information summarises inspection reports/notes from all four sources noted above. Opportunities

- Good diversity of fauna habitat, topography, soil type and soil depth.
- All three species of BC are known from the general area of the survey and are known to breed in Blackwood River National Park and Jalbarragup area, approximately 20 km to the west (Kirkby, 2015)
- Six vegetation types on four broad landforms.
- Native remnant vegetation was consolidated over 145.6 ha(71%), with 59.1 ha (29%) of Blue Gum plantation.
- Remnant vegetation was predominantly rated as Ex*cellent* (130.8 ha) with a smaller portion rated as *Very Good* (9.8 ha); disturbance within these areas was restricted to historical logging and a few nonaggressive weed species (Onshore, 2018).
- Good fauna water sources (plantation dams, watercourses).

- The site contains some old stag trees, large jarrah and marri with a thick understory; it has not been logged for quite a long time.
- A limited survey by (Kirkby (2015) identified 133 potential habitat trees (DBH>500 mm) and three well-chewed hollows in Marri were located. DBCA (2018), also in a limited survey, did not identify any suitable hollows.
- Feeding residues from Jarrah, Marri, *B. grandis* and *pinus* spp were recorded 44 locations. Of these 28 were from Forest Red-tailed Black Cockatoo, 14 from Baudin's Cockatoo, one from Carnaby's Cockatoo and one from white-tailed spp. probably Baudin's Cockatoo (Kirkby, 2015).
- Flock of >12 Baudin's BC seen feeding on marri nuts (at height and lower down) in riverine vegetation; call of Red-tailed BC (DBCA, 2018).
- No roosts were identified within the site (Kirkby, 2015).
- Riverine habitat (potential for quokka, western ringtail possum). Owners report that quokka have been sighted (DBCA, 2018).
- Healthy mature grass tree and Banksia spp. indicate inspected native vegetation remnants are Phytophthora dieback free.
- Sits in right angle corner of existing Beaton forest block. Condition of adjoining State forest similar to those of the proposed offset site (Onshore, 2018).
- Nectar eating avifauna (e.g. honeyeater sp.) sighted indicating good nectar sources (DBCA, 2018).

Figure 1: Diverse age structure of remnant vegetation at Site 'L'

Constraints

- Fencing for Lot 11215 is in poor condition or non-existent.

- Forest carries a high fuel load requiring a prescribed burn.
- Titles include 59.1 ha of commercial Blue Gum plantation and 4.3 ha of fragmented remnants, with a vegetation condition rating of *Good*.
- Large numbers of tall, thin regrowth eucalypts (Marri, Jarrah and karri) – would improve in form if thinned.

Habitat quality assessment

A baseline habitat quality score for the 145.6 ha of remnant native vegetation of **9 out of 10** is considered appropriate for Black Cockatoo and **8 out of 10** for the Phascogale, Chuditch and WRP.

Although the site contains plentiful nesting and forage resources for all the MNES fauna species and has access to water, it also contains areas where vegetation is fragmented and of lower quality.

Importantly. the site does not constitute a remnant critical to the population (i.e. habitat quality score of 10 out of 10), as similar habitat is widely available in the area.

Risk factors

Risk factors that may cause or contribute to a reduction in habitat quality and extent are set out in Table 1.

TABLE 1: FACTORS WITH POTENTIAL TO REDUCE HABITAT QUALITY AND/OR EXTENT

Risk Factor	**Description**	**Likelihood**
Subdivision and development of 'rural lifestyle' blocks	The two lots are old land titles and are much larger than surrounding lots that have been largely cleared or parkland cleared to support residential and mixed rural land uses.	High
Removal of hollow- bearing stag trees	Under WA clearing regulations, dead trees may be legally felled for firewood and fencing materials, within prescribed limits. This includes hollow-bearing stag trees. This risk mainly applies to Black Cockatoo.	Possible
Legal clearing for other purposes	A significant portion of Loc. 11215 and a smaller portion of Loc. 11189 have been previously approved for clearing, although these approvals have since expired. The landowner, who already has legal rights to clear limited areas for housing envelopes, access tracks and firebreaks (up to 5 ha on each title each financial year), may also apply to clear larger areas (subject to assessment).	High

Severe bushfire	The blocks are in a high-risk bushfire zone and DBCA has observed that both blocks carry a very high fire load.	Possible
Dieback and weed spread	Dieback and invasive weed impacts across the site appear to be low; however, future disturbances and increased access may see the risk of those impacts elevated to a higher level.	Possible

Assessment indicates that the priority risks to the extent and quality of habitat across the two blocks are both associated with current or future owners undertaking lawful clearing activities. The likelihood of this occurring over the next twenty years is considered to be high and may affect between 10 and 50 ha over that timeframe.

Risk of total loss

If the site remains unsecured as an offset, current or future owners may apply to clear the remaining native vegetation on both titles; however given its high environmental values, it is likely any such application would be referred for assessment under WA and Federal environmental legislation.

Accordingly, as the outcome of those future processes cannot be estimated with any certainty but should still be recognised, a risk of future loss value of 5% is assigned for existing and offset scenarios.

Future quality with offset

By securing the remaining native vegetation on the two blocks for conservation, the risks to habitat quality and extent posed by lawful clearing and felling, and associated additional access would be effectively nullified. A controlled or prescribed burn as part of a management plan would also reduce fire risk.

There are no known mineral resources associated with the blocks and no mining tenements have been granted or applied for.

The controls described have been demonstrated as being very reliable in addressing the risk factors described. Accordingly, a confidence rating of 90% is considered appropriate.

Quantitative assessment

The completed EPBC Offsets assessment guides for the 145.6 Ha of native vegetation on the two blocks is attached.

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[i] DBCA did not have access to the other site reports at the time.

Offset Guides

Site L

Talison Lithium
October 2018

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	Baudin's Cockatoo
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for Baudin's Cockatoo.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'L Carlotta	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	145.6	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	14.56	100%	14.56	11.47	54.97	17.45%	No	
									Future area without offset (adjusted hectares)	123.8	**Future area with offset (adjusted hectares)**	138.3								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**9**	**Future quality without offset (scale of 0-10)**	**6**	**Future quality with offset (scale of 0-10)**	**10**	4.00	90%	3.60	3.52				
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																			
Threatened species																				
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																			

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	Carnaby's Cockatoo
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for Baudin's Cockatoo.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'L Carlotta	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	145.6	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	14.56	100%	14.56	11.47	54.97	17.45%	No	
									Future area without offset (adjusted hectares)	123.8	**Future area with offset (adjusted hectares)**	138.3								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	9	**Future quality without offset (scale of 0-10)**	6	**Future quality with offset (scale of 0-10)**	10	4.00	90%	3.60	3.52				

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															
Threatened species																
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															

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	FRTB Cockatoo
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for Baudin's Cockatoo.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'L' Carlotta	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	145.6	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	14.56	100%	14.56	13.99	58.37	18.53%	No	
									Future area without offset (adjusted hectares)	123.8	**Future area with offset (adjusted hectares)**	138.3								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**9**	**Future quality without offset (scale of 0-10)**	**6**	**Future quality with offset (scale of 0-10)**	**10**	4.00	90%	3.60	3.59				
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																			
Threatened species																				
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	315	58.37	18.53%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

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	Chuditch
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of suitable Chuditch Habitat in which at least one Chuditch is known to occur and, which has been impacted and fragmented by anthropogenic disturbances.	**Area**	350	Hectares	Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey (Biologic 2018)
			Quality	**6**	Scale 0-10	
			Total quantum of impact	210.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	210.00	Adjusted hectares	Site 'L' Loc Carlotta	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	145.6	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	14.56	100%	14.56	13.99	33.38	15.90%	No	
									Future area without offset (adjusted hectares)	123.8	**Future area with offset (adjusted hectares)**	138.3								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**8**	**Future quality without offset (scale of 0-10)**	**6**	**Future quality with offset (scale of 0-10)**	**8**	2.00	90%	1.80	1.79				
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																			
Threatened species																				
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	210	33.38	15.90%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

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.

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

Matter of National Environmental Significance	
Name	WBT Phascogale
EPBC Act status	Other
Annual probability of extinction Based on IUCN category definitions	**0.0%**

Other annual probability of extinction	Information source
0.0%	**IUCN**

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of suitable Phascogale Habitat which has been impacted and fragmented by anthropogenic disturbances including mining, forestry and fire	**Area**	350	Hectares	Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey (Biologic 2018)
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'L' Loc Carlotta	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	145.6	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	14.56	100%	14.56	14.56	33.92	10.77%	No	
									Future area without offset (adjusted hectares)	123.8	**Future area with offset (adjusted hectares)**	138.3								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**8**	**Future quality without offset (scale of 0-10)**	**6**	**Future quality with offset (scale of 0-10)**	**8**	2.00	90%	1.80	1.80				
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																			
Threatened species																				
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	315	33.92	10.77%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

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	WRP
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	18 ha of poor to marginal Western Ringtail Possum Habitat which has been impacted by anthropogenic disturbances.	**Area**	18	Hectares	Western Ringtail Possum Survey Greenbushes Mine (Onshore Environmental Consultants 2018)
			Quality	**5**	Scale 0-10	
			Total quantum of impact	9.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	9.00	Adjusted hectares	Site 'L' Loc Carlotta	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	145.6	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	14.56	100%	14.56	3.91	22.66	251.72%	Yes	
									Future area without offset (adjusted hectares)	123.8	**Future area with offset (adjusted hectares)**	138.3								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**8**	**Future quality without offset (scale of 0-10)**	**6**	**Future quality with offset (scale of 0-10)**	**8**	2.00	90%	1.80	1.58				
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																			
Threatened species																				
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	22.66	251.72%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**

Preliminary Offset Site Assessment

Offset Site	**'Site S'**	
Locality	**Wilga West, Shire of Donnybrook-Balingup**	
Size (total)	**409 ha**	
Land use	Native vegetation (mixed jarrah/marri/Flooded Gum)	**297.4 Ha**
	Cleared grazing land	**111.6 ha**
Date	**3 Oct 2018**	

The vegetation on Site 'S' is currently approved for thinning for commercial timber production, i.e. the removal of competing and unsaleable trees to a minimum basal retention rate of 15m^2/ha. 'Site S' has been assessed by Onshore Environmental (2018), DBCA[i] (2018) and DEC (2009). The following information summarises inspection reports/notes from those sources and applies only to the 297.4 ha of native vegetation.

Opportunities

- Majority of forested portion of the property appears to be managed for a forestry purpose and has high value mature jarrah. Large patch in NE quarter of the block has higher level of fauna habitat value, including continuous canopy. Evidence of high level of red-tailed BC feeding on jarrah nuts.
- Some tall, large, evenly spaced, potential nesting trees remain across the site.
- Heavy logging has occurred, and continues to occur, in surrounding state forest, and vegetation condition is similar across the regional area.
- Some diversity of fauna habitat, albeit it in dispersed localities- related to watercourses/wetlands or where forest has not been managed for timber.
- Good fauna water sources (farm/firefighting dams, watercourses).
- Call of red-tailed BC regularly heard across property and owner had advised that this species is regularly present on the property.
- Marri nut eating evidence (from base of nut) indicates presence of Carnaby's and/or Red- tailed BCs near mid-south of property near watercourse. These gouged nuts were both recent (potentially also ring-necked parrots as nuts were green(unripe) and fleshy) and of some age. Larger marri and jarrah in SE corner of property, along water courses and as single mature marri trees present higher value habitat for BCs.
- Small flock of red-tailed BC sighted in SE quarter of property.
- Overall property appears suitable as roosting and feeding habitat for all three BC species.
- Riverine and wetland habitat (potential for quokka, phascogale sp, western ringtail possum), although no peppermint sighted.
- Healthy, mature grass tree and Banksia spp. indicates non-pasture parts of site are Phytophthora dieback free.
- Is an enclave totally surrounded State Forest.

Constraints

- The site is managed for commercial timber production and much of the site has had its brush and understorey removed.
- Boundary fencing is in poor condition or non-existent.
- Lack of second strata of trees for large part of property due to forestry/thinning management approach.
- Presence of feral pigs and heavy grazing of understory by kangaroos and by cattle has been noted.

Figure 1: Area of the site managed for timber production

Habitat quality assessment

The following assessment is preliminary only and will be refined over the coming season by qualified and experienced fauna habitat specialists.

For Black Cockatoos, the site contains potential nesting and forage resources, and FRBC/Carnaby's have been recorded using these resources. Unfortunately ongoing management of the site for timber production and poor condition and diversity of understorey vegetation in large areas has

reduced the site's condition score when compared to other less affected sites in the region.

Utilisation of the site by Black Cockatoo, WRP and Chuditch has not been assessed but there is no evidence or indications that the site is used more or less than the surrounding bushland. Mature trees remain on the site, the canopy is fairly continuous and the presence of local water sources and proximity to riparian corridors, as well as some remnant undergrowth provides habitat values for WRP and Chuditch.

Based on the above, a preliminary Black Cockatoo habitat quality score for the 297.4 ha of remnant native vegetation of **6 out of 10** is considered appropriate and 5 out of 10 has been applied for Chuditch and Phascogale and a lower due to the scarcity of undergrowth and mid-storey of **4 out of 10** has been applied for the WRP.

Risk factors

Risk factors that may cause or contribute to a reduction in habitat quality and extent are set out in Table 1.

Table 1: Factors with potential to reduce habitat quality and/or extent

Risk Factor	**Description**	**Likelihood**
Continued timber production	The current owner has invested considerable resources in managing the remnant areas for timber production and timber harvesting is a key economic driver in the region.	Certain
Removal of hollow-bearing stag trees	Under WA clearing regulations, dead trees may be legally felled for firewood and fencing materials, within prescribed limits. This includes hollow-bearing stag trees.	Certain
Severe bushfire	The site is in a high risk bushfire zone but bushfire load did not appear excessive.	Possible
Grazing pressure	There is evidence of heavy grazing of the lower layers of the vegetation by kangaroos and cattle (which typically also prevents regrowth of mid and upper storey plants as well).	High
Dieback and weed spread	Dieback and invasive weed impacts across the site appear to be low, but the presence of feral pigs (and illegal hunters) are a key vector for disease and weeds..	Possible

Assessment indicates that the priority risk to the extent and quality of MNES fauna habitat across the site is associated with timber harvesting and impacts from grazing and feral pigs. The likelihood of these risks impacting over the next twenty years is considered to be high and may reduce habitat condition and availability by 30 – 50% (i.e. ~2% per year over 20 years) for all species involved.

Risk of total loss

On the basis that the native vegetation continues to be thinned to promote timber production, it is reasonable to expect that the site will at some stage in the future be totally cleared, or almost so, to the point that habitat values are extinguished.

If the vegetation on the site is secured under a perpetual Conservation Covenant, and managed and resourced appropriately, total loss of habitat would almost certainly be averted.

Future quality with offset

By securing the remaining native vegetation on the site within a perpetual Conservation Covenant, and providing the direction and resources for managing the site to achieve an improvement in environmental condition, such as allowing and encouraging the re-establishment of undergrowth and mid-storey, as well as preserving mature, hollow-bearing trees, there is a very high likelihood that habitat quality will cease to decline and will be expected to improve by at least 10% over the next twenty years.

There are no known mineral resources associated with the blocks and no mining tenements have been granted or applied for.

Quantitative assessment

The completed EPBC Offsets assessment guide for the 297.4 a of native vegetation on the site is attached.

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[i] DBCA did not have access to the Onshore report at the time.

Offset Guides

Site S

Talison Lithium
October 2018

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	Baudin's Cockatoo
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for Baudin's Cockatoo.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'S' Wliga	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	297.4	**Risk of loss (%) without offset**	80%	**Risk of loss (%) with offset**	5%	223.05	100%	223.05	175.71	143.90	45.68%	No	
									Future area without offset (adjusted hectares)	59.5	**Future area with offset (adjusted hectares)**	282.5								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	6	**Future quality without offset (scale of 0-10)**	3	**Future quality with offset (scale of 0-10)**	7	4.00	90%	3.60	3.52				
	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																		
Threatened species																				
	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																		

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	Carnaby's Cockatoo
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for Carnaby's Cockatoo.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'S' Wliga	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	297.4	**Risk of loss (%) without offset**	80%	**Risk of loss (%) with offset**	5%	223.05	100%	223.05	175.71	143.90	45.68%	No	
									Future area without offset (adjusted hectares)	59.5	**Future area with offset (adjusted hectares)**	282.5								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	6	**Future quality without offset (scale of 0-10)**	3	**Future quality with offset (scale of 0-10)**	7	4.00	90%	3.60	3.52				
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																			
Threatened species																				
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																			

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	FRTB Cockatoo
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for FRTBC.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'S' Wilga	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	297.4	**Risk of loss (%) without offset**	80%	**Risk of loss (%) with offset**	5%	223.05	100%	223.05	214.31	171.35	54.40%	No	
									Future area without offset (adjusted hectares)	59.5	**Future area with offset (adjusted hectares)**	282.5								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	6	**Future quality without offset (scale of 0-10)**	3	**Future quality with offset (scale of 0-10)**	7	4.00	90%	3.60	3.59				
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																			
Threatened species																				
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																			

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	WBT Phascogale
EPBC Act status	Other
Annual probability of extinction Based on IUCN category definitions	**0.0%**

Other annual probability of extinction	Information source
0.0%	**IUCN**

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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of suitable Phascogale Habitat which has been impacted and fragmented by anthropogenic disturbances including mining, forestry and fire	**Area**	350	Hectares	Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey (Biologic 2018)
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'S' Wilga West	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	297.4	**Risk of loss (%) without offset**	80%	**Risk of loss (%) with offset**	5%								
									Future area without offset (adjusted hectares)	59.5	**Future area with offset (adjusted hectares)**	282.5	223.05	100%	223.05	222.60	149.62	47.50%	No	
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**5**	**Future quality without offset (scale of 0-10)**	**3**	**Future quality with offset (scale of 0-10)**	**6**	3.00	90%	2.70	2.70				
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																			
Threatened species																				
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	315	149.62	47.50%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
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This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Chuditch
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of suitable Chuditch Habitat in which at least one Chuditch is known to occur and, which has been impacted and fragmented by anthropogenic disturbances.	**Area**	350	Hectares	Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey (Biologic 2018)
			Quality	**6**	Scale 0-10	
			Total quantum of impact	210.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	210.00	Adjusted hectares	Site 'S' Wilga West	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	297.4	**Risk of loss (%) without offset**	80%	**Risk of loss (%) with offset**	5%	223.05	100%	223.05	214.31	144.58	68.85%	No	
									Future area without offset (adjusted hectares)	59.5	**Future area with offset (adjusted hectares)**	282.5								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**5**	**Future quality without offset (scale of 0-10)**	**3**	**Future quality with offset (scale of 0-10)**	**6**	3.00	90%	2.70	2.69				
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																			
Threatened species																				
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	210	144.58	68.85%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

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	WRP
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	18 ha of poor to marginal Western Ringtail Possum Habitat which has been impacted by anthropogenic disturbances.	**Area**	18	Hectares	Western Ringtail Possum Survey Greenbushes Mine (Onshore Environmental Consultants 2018)
			Quality	**5**	Scale 0-10	
			Total quantum of impact	9.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	9.00	Adjusted hectares	Site 'S' Wilga West	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	297.4	**Risk of loss (%) without offset**	80%	**Risk of loss (%) with offset**	5%	223.05	100%	223.05	59.84	50.76	564.05%	Yes	
									Future area without offset (adjusted hectares)	59.5	**Future area with offset (adjusted hectares)**	282.5								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**4**	**Future quality without offset (scale of 0-10)**	**3**	**Future quality with offset (scale of 0-10)**	**6**	3.00	95%	2.85	2.50				
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																			
Threatened species																				
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	50.76	564.05%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**

Offset Guides

Site R

Talison Lithium
October 2018

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	Baudin's Cockatoo
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for Baudin's Cockatoo.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'R' Tone Bridge	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	563	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	56.30	100%	56.30	44.35	119.59	37.96%	No	
									Future area without offset (adjusted hectares)	478.6	**Future area with offset (adjusted hectares)**	534.9								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	7	**Future quality without offset (scale of 0-10)**	6	**Future quality with offset (scale of 0-10)**	8	2.00	90%	1.80	1.76				
	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																			
Threatened species																				
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																			

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	Carnaby's Cockatoo
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for Carnaby's Cockatoo.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'R' Tone Bridge	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	563	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	56.30	100%	56.30	44.35	119.59	37.96%	No	
									Future area without offset (adjusted hectares)	478.6	**Future area with offset (adjusted hectares)**	534.9								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	7	**Future quality without offset (scale of 0-10)**	6	**Future quality with offset (scale of 0-10)**	8	2.00	90%	1.80	1.76				
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																			
Threatened species																				
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																			

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	FRTB Cockatoo
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of Jarrah/Marri Forest and Jarrah/Marri Forest over Banksia which is known foraging and potential breeding habitat for FRTBC.	**Area**	350	Hectares	
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'R' Tone Bridge	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	563	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	56.30	100%	56.30	54.09	129.07	40.97%	No	
									Future area without offset (adjusted hectares)	478.6	**Future area with offset (adjusted hectares)**	534.9								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**7**	**Future quality without offset (scale of 0-10)**	**6**	**Future quality with offset (scale of 0-10)**	**8**	2.00	90%	1.80	1.79				
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																			
Threatened species																				
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																			

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	Chuditch
EPBC Act status	Vulnerable
Annual probability of extinction Based on IUCN category definitions	**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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of suitable Chuditch Habitat in which at least one Chuditch is known to occur and, which has been impacted and fragmented by anthropogenic disturbances.	**Area**	350	Hectares	Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey (Biologic 2018)
			Quality	**6**	Scale 0-10	
			Total quantum of impact	210.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	210.00	Adjusted hectares	Site 'R' Tone Bridge	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	563	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	56.30	100%	56.30	54.09	123.66	58.89%	No	
									Future area without offset (adjusted hectares)	478.6	**Future area with offset (adjusted hectares)**	534.9								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	90%	1.80	1.79				
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																			
Threatened species																				
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	210	123.66	58.89%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

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

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Matter of National Environmental Significance	
Name	WBT Phascogale
EPBC Act status	Other
Annual probability of extinction Based on IUCN category definitions	**0.0%**

Other annual probability of extinction	Information source
0.0%	**IUCN**

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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	350 ha of suitable Phascogale Habitat which has been impacted and fragmented by anthropogenic disturbances including mining, forestry and fire	**Area**	350	Hectares	Greenbushes Targeted Vertebrate and SRE Invertebrate Fauna Survey (Biologic 2018)
			Quality	**9**	Scale 0-10	
			Total quantum of impact	315.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	315.00	Adjusted hectares	Site 'R' Tone Bridge	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	563	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	56.30	100%	56.30	125.55	39.86%	No		
									Future area without offset (adjusted hectares)	478.6	**Future area with offset (adjusted hectares)**	534.9								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	90%	1.80	1.80				
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																			
Threatened species																				
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	315	125.55	39.86%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Offsets Assessment Guide

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

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Matter of National Environmental Significance	
Name	WRP
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
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	Yes	18 ha of poor to marginal Western Ringtail Possum Habitat which has been impacted by anthropogenic disturbances.	**Area**	18	Hectares	Western Ringtail Possum Survey Greenbushes Mine (Onshore Environmental Consultants 2018)
			Quality	**5**	Scale 0-10	
			Total quantum of impact	9.00	Adjusted hectares	
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					
Threatened species						
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
Ecological Communities																				
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)**									
Threatened species habitat																				
Area of habitat	Yes	9.00	Adjusted hectares	Site 'R' Tone Bridge	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	563	**Risk of loss (%) without offset**	15%	**Risk of loss (%) with offset**	5%	56.30	100%	56.30	15.10	86.09	956.58%	Yes	
									Future area without offset (adjusted hectares)	478.6	**Future area with offset (adjusted hectares)**	534.9								
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**6**	**Future quality without offset (scale of 0-10)**	**5**	**Future quality with offset (scale of 0-10)**	**7**	2.00	90%	1.80	1.58				
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																			
Threatened species																				
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	86.09	956.58%	**Yes**	$0.00	N/A	$0.00
Area of community	0				$0.00		$0.00
					$0.00	**$0.00**	**$0.00**