

ENVIRONMENTAL OFFSET PROPOSAL



**LOT 81 AND LOT 2
BANKSIA ROAD,
CROOKED BROOK**

MAY 2018

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1 INTRODUCTION

1.1 Document Purpose

The purpose of this document is to provide details on the offsets proposed for the required vegetation clearing in accordance with the requirements of the *Environment Protection and Biodiversity Conservation Act* (EPBC Act) 1999.

1.2 Background

J and P Corporation (the proponent) are proposing to clear 20 hectares (ha) on Lot 81 on Plan 403943 Banksia Road, Crooked Brook (herein referred to as Lot 81) and 7.4 ha on Lot 2 on Diagram 65861 Banksia Road, Crooked Brook (herein referred to as Lot 2).

Within Lot 81, the proposed clearing is required to enable development for a sand and gravel extraction operation. Upon completion of the extraction operation, the pit will subsequently be used as landfill cells (as per the current zoning).

Within Lot 2, the clearing is required to:

- Enable the expansion of the current Class III putrescible landfill operation;
- Achieve optimum utilisation of airspace and remain a best practice operated landfill for a longer term to service the community; and
- Utilise in-situ soil for use as landfill daily cover.

Lot 81 and Lot 2 are zoned “Rural” under the Greater Bunbury Region Scheme and “General Farming” pursuant to the Town Planning Scheme (TPS) No. 3. In accordance with the Shire of Dardanup’s Local Planning Strategy, Lot 81 and Lot 2 are zoned ‘Waste Disposal/Processing’. Currently, Lot 2 is operated as a waste facility to meet the waste needs of the Southwest region.

A black cockatoo (Baudin’s black-cockatoo (*Calyptorhynchus baudinii*), Carnaby’s black cockatoo (*Calyptorhynchus latirostris*) and the forest red-tailed black-cockatoo (*Calyptorhynchus banksii naso*)) assessment (Harewood 2015 and Astron 2014) was undertaken whereby it was identified that the vegetation present within Lot 81 and Lot 2 contains potential black cockatoo breeding habitat in addition to identified foraging and roosting habitat. Accordingly, environmental offsets are required to compensate for the residual adverse impacts of the proposed action on black cockatoo habitat.

1.3 Document Purpose

This Offset Proposal applies only to the proposed clearing at Lot 81 and Lot 2 Banksia Road, Crooked Brook. It addresses the requirements of the *Environment Protection and Biodiversity Conservation Act 1999* and the *Environmental Offsets Policy* (October 2012). This Proposal applies to the offset requirements of the Department of the Environment and Energy (DotEE) EPBC Act offsets policy and calculator.

The environmental offset is directed at the residual impacts on the three threatened species of black cockatoo from the proposed action.

The objectives of this Plan are to:

- Mitigate significant and unavoidable adverse environmental impacts by a positive environmental gain, with an aspirational goal of achieving a ‘net environmental benefit’;

- Apply actions for implementation as other options to avoid and mitigate environmental impacts have been considered and exhausted;
- Target the stated matters with significant residual impacts resulting from the implementation of the proposed action;
- Deliver the offset in a timely manner and be long lasting; and
- Monitor and audit the implementation of the proposed offsets.

2 AVOIDANCE AND MITIGATION MEASURES

2.1 Avoidance Measures

The proponent has considered alternative locations for the proposed action within Lot 81 and Lot 2. However, regarding Lot 81, the gravel resource is restricted to the nominated clearing footprint. Previously cleared areas within Lot 81 either do not contain sufficient resource to warrant the proposed extractive industry or are considered unfeasible due to depth to groundwater.

In relation to Lot 2, the topographic relief in certain areas, and proximity to groundwater in the western portions of the Lot render the proposed clearing footprint as the only feasible location for the extension of the existing landfill. Locating the landfill cells towards the east of the Lots is considered best practice due to sustainable use of in-situ soil and lower risk of environmental impacts due to the depth to groundwater table being approximately 20m below base of expanded landfill. The material balance needed to excavate and cover the landfill would not be available if the landfill was expanded to the west instead of to the east as proposed. The Shire's long-term land use expectations for the both Lots is waste disposal which is reflected by the zoning. No other properties within the local government area are zoned for waste disposal.

To avoid any potential impacts to the adjacent Dardanup Conservation Park from the proposed action, a 50m buffer of vegetation will be established from the internal firebreak within each Lot. This will involve the application of a conservation covenant over the vegetation to enable protection in perpetuity. This will also ensure that the identified black cockatoo roosting tree (Harewood 2015) on the northern boundary of Lot 81 will be retained.

Given that the clearing area has historically been subject to livestock grazing (resulting in a reduced mid and understorey), the key environmental attributes are the mature habitat trees. These are interspersed throughout the clearing footprint and therefore areas of increased environmental value could not be reasonably isolated.

It is considered that no other feasible avoidance measures can be implemented within the clearing footprint.

2.2 Mitigation Measures

In order to reduce the impacts from the proposed action, a series of management plans will be implemented as described below.

Flora and Vegetation Management

The management objectives for vegetation and flora are:

- Restrict vegetation clearing to a practical minimum;
- Prevent unauthorised clearing of native vegetation outside of the clearing footprint; and
- Minimise disturbance to remaining vegetation to retain health and integrity.

Management actions to minimise disturbance to vegetation include:

- Peg/flag areas to be cleared to avoid any unnecessary disturbance to adjacent vegetation;
- Create strategic firebreaks where necessary; and
- Restrict vehicle movement to designated access tracks, to prevent vegetation damage and erosion.

Fauna Management

The proposed management actions to mitigate potential impacts to fauna include:

- Plan clearing such that it does not result in the creation of isolated remnants of native vegetation that have no ecological corridors to allow fauna movement to adjacent areas;
- Restrict all vehicle use to designated roads and access tracks;
- Enforce compliance with onsite speed limits at all times;
- General housekeeping procedures such as litter removal at the perimeter of the Lots will be maintained to discourage fauna from entering the site from the adjacent Dardanup Conservation Park;
- Investigate methods for removing European honey bee hives from the clearing footprint;
- During clearing, a qualified fauna expert will be present to direct clearing operators, particularly when clearing trees that are occupied by fauna, to ensure that these are cleared in a way that allows the animals to safely mobilise to adjacent areas. In addition, they will supervise any animal handling and the rescue of injured animals should this be required;
- No stockpiling of topsoil or other material is to occur outside of the clearing boundary;
- If clearing during black cockatoo breeding season (i.e. August to May), check potential habitat trees (i.e. DBH in excess of 50 cm) for nesting hollows; and
- If active black cockatoo nests are located in the clearing footprint, do not clear until fledglings have left the nest.

Weed and Pathogen Management

The proposed management actions to mitigate potential impacts associated with weeds and pathogens include:

- All earthmoving and ground engaging equipment will be inspected and cleaned of vegetation, mud and soil prior to entry and exit of the impact area.

In addition to the proposed management measures, within Lot 81 the 20 ha will be cleared progressively over approximately five years. Subsequently, it is not proposed that the entire 20 ha will be cleared as a single exercise but rather at an approximate rate of four hectares per annum. For both Lots, clearing will commence in a west to east direction, which will enable fauna to naturally disperse into the adjoining Dardanup Conservation Park.

Based on the above, the proposed clearing is unlikely to impact on the persistence of the species', however the action will result in a residual impact of clearing 27.4 ha of black cockatoo habitat.

3 OFFSET PROPOSAL

3.1 Offset Proposal

This Offset Proposal addresses the significant residual impacts to black cockatoos from the impact of clearing 27.4 ha of known foraging habitat and potential breeding habitat.

The proponent proposes the following offsets to counterbalance the residual environmental impacts associated with the proposed clearing:

- Direct Offset 1: Conservation in perpetuity of 12.5 ha of non-secure remnant native vegetation within Lot 10 Temple Road, East Picton (Lot on Survey P070159 10) (refer to **Figure 1**);
- Direct Offset 2: Conservation in perpetuity of 38 ha of non-secure remnant native vegetation in Lot 2148 Ferguson Road, Ferguson (refer to **Figure 2**); and
- Direct Offset 3: Retention of 8.3 ha of black cockatoo foraging and breeding habitat within the vegetation buffer (refer to **Figure 3** and **4**).

3.1.1 Direct Offset 1

Lot 10 is located approximately 12 km north-west of the clearing footprint. The vegetation has been mapped as Beard Vegetation Association 1000. This vegetation is described as medium forest consisting of jarrah and marri low woodland and banksia low forest with teatree (*Melaleuca* spp.) (Shepherd *et al.*, 2001). It is also mapped as Southern River complex which is described as predominately open woodland of marri, jarrah and banksia sp., with fringing woodland of *Eucalyptus rudis* and *Melaleuca raphiophylla* (swamp paperbark) along creek beds (Hedde et al., 1980). Based on a site visit (Accendo, 10/12/2015), the vegetation is likely to be in a 'Good' to 'Excellent' condition.

A perennial water body is located approximately 400m east of the remnant vegetation which can provide a water resource for black cockatoos.

The vegetation is likely to constitute the Threatened Ecological Community '*Banksia Woodlands of the Swan Coastal Plain*' given its location on the Swan Coastal Plain and that it is comprised of a generally Banksia dominant component.

Lot 10 is comprised of mature vegetation that has been identified as providing suitable foraging habitat for black cockatoos given species composition (i.e. jarrah, marri and banksia woodland, refer to **Plates 1** and **2**). Furthermore, Lot 10 is mapped within the predicted and known breeding range for black cockatoos (DSEWPC 2012).

Lot 10 is currently owned by the proponent. It is zoned "Rural" under the Greater Bunbury Region Scheme and "General Farming" pursuant to the Town Planning Scheme (TPS) No. 3.

To protect the 12.5 ha of vegetation, the proponent will enter into a conservation covenant (voluntary written agreement) with the Commissioner of Soil and Land Conservation under section 3 of the *Soil and Land Conservation Act 1945*. The purpose of the conservation covenant is to protect and manage the native vegetation in such a way as to retain and promote its growth. The term of the conservation covenant will be in perpetuity and will bind the landowner and all successive landowners through registration as a memorial on the property's certificate of title.



Plate 1. Remnant vegetation within Lot 10, Direct Offset 1.



Plate 2. Remnant vegetation within Lot 10, Direct Offset 1.

3.1.2 Direct Offset 2

For Direct Offset 2 it is proposed to conserve in perpetuity 38 ha of remnant vegetation within Lot 2148 Ferguson Road, Ferguson. Lot 2148 is located approximately 14 km east of the clearing footprint and is situated on private property that is surrounded by 28,000 ha of State Forest, forest conservation zones, conservation parks, proposed conservation parks, and Crown reserves.

Within Lot 2148, the vegetation has been mapped as Beard Vegetation Association 3. This vegetation is described as medium forest consisting of jarrah and marri (Shepherd *et al.*, 2001). It is also mapped as Yarragil complex which is described as open forest of *Eucalyptus marginata* subsp. *Marginata-Corymbia calophylla* on slopes with mixtures of *Eucalyptus patens* and *Eucalyptus megacarpa* (Hedde *et al.*, 1980). Based on a site visit (Accendo, 10/12/2015), the vegetation is likely to be in a 'Very Good' to 'Excellent' condition (refer to **Plate 3** and **4**).

Lot 2148 is zoned "Rural" under the Greater Bunbury Region Scheme and "General Farming" pursuant to the Town Planning Scheme (TPS) No. 3.

To protect the 38 ha of vegetation, the proponent will purchase the property (which is currently for sale) and subsequently enter into a conservation covenant (voluntary written agreement) with the Commissioner of Soil and Land Conservation under section 3 of the *Soil and Land Conservation Act 1945*. The purpose of the conservation covenant is to protect and manage the native vegetation within the offset in such a way as to retain and promote its growth. The term of the conservation covenant will be in perpetuity and will bind the landowner and all successive landowners through registration as a memorial on the property's certificate of title.



Plate 3. Remnant vegetation within Lot 2148, Direct Offset 2.



Plate 4. Remnant vegetation within Lot 2148, Direct Offset 2.

3.1.3 Direct Offset 3

Direct Offset 3 involves the conservation in perpetuity of 8.3 ha of remnant vegetation within Lot 81 and Lot 2 Banksia Road, Crooked Brook. This vegetation will provide a 50m buffer to the adjacent Dardanup Conservation Park and will retain an identified roosting tree (forest red-tailed black-cockatoo) (Harewood 2015), 135 black cockatoo habitat trees of which 39 have hollows and 11 of these are likely to be suitable for black cockatoos (refer to **Figure 3**).

The vegetation buffer is zoned “Rural” under the Greater Bunbury Region Scheme and “General Farming” pursuant to the Town Planning Scheme (TPS) No. 3. In accordance with the Shire of Dardanup’s Local Planning Strategy, it is zoned ‘Waste Disposal/Processing’. Accordingly, without protection this vegetation would likely be subject to clearing to accommodate the expansion of the current waste facility.

To protect the vegetation buffer, the proponent will enter into a conservation covenant (voluntary written agreement) with the Commissioner of Soil and Land Conservation under section 3 of the *Soil and Land Conservation Act 1945*. The purpose of the conservation covenant is to protect and manage the native vegetation within the offset in such a way as to retain and promote its growth. The term of the conservation covenant will be in perpetuity and will bind the landowner and all successive landowners through registration as a memorial on the property’s certificate of title.

3.2 EPBC Act Offset Policy

3.2.1 Background

The *EPBC Act Environmental Offsets Policy* (October 2012) (referred to as the EPBC Act Offset Policy) requires the delivery of an “overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environmental law and affected by the proposed action”. The Commonwealth environmental offset is a measure that compensates for the residual adverse impacts of an impact on the environment, whereby offsets are only necessary where the residual impacts are significant. The *EPBC Act Offsets Policy* provides for the application of direct offsets and other compensatory measures as follows:

- Direct offsets are defined as those actions that provide a measurable conservation gain for an impacted protected matter. A minimum of 90% of an offset must be a direct offset; and
- Other compensatory measures are defined as those actions that do not directly offset impacts but are anticipated to lead to benefits for the impacted protected matter.

3.2.2 Calculations

In order to determine the acceptability of the proposed offsets in regard to the *EPBC Act Offsets Policy*, the associated calculator has been used for the Carnaby’s Black Cockatoo (given that it has the highest conservation rating of the three species of black cockatoo (i.e. Endangered)). This appraisal is based on habitat using the average for each rating of impact, habitat quality, offset start quality and future quality, to ascertain an initial comparison. A summary of the results is provided within **Table 1** which demonstrates that the proposed offsets are adequate (refer to **Appendix A** for specific calculations).

Table 1. Summary of offset calculations.

Species	Protected Matter Attribute	Quantum of Impact	% of Impact Offset	Direct Offset Adequate
Carnaby's Black Cockatoo	Area of habitat	16.44 ha	109.16	Yes

3.2.3 Policy Compliance

In order to determine the consistency of the proposed offset approach with the eight principles of the *EPBC Act Offsets Policy*, an assessment has been conducted as provided within **Table 2**.

Table 2. Comparison of the proposed offsets with the EPBC Act Offsets Policy.

No.	EPBC Offset Principle	Current Project
1	Must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action	The offset proposed will increase the representation of foraging and potential breeding habitat for black cockatoos within conservation. This protection will, at a minimum, assist in maintaining the viability of the protected matter.
2	Must be built around direct offsets but may include other compensatory measures	The proposal achieves in excess of 100% direct offsets.
3	Must be in proportion to the level of statutory protection that applies to the protected matter	The offsets proposed are considered appropriate and consistent with the DotEE policy given that they provide in excess of 100% of the impact offset as identified through the offset calculator.
4	Must be of a size and scale proportionate to the residual impacts on the protected matter	The proposed offsets will be proportionate to the residual impacts on habitat within the application area as reflected through the offset calculator.
5	Must effectively account for and manage the risks of the offset not succeeding	Given the land is vegetated and will be protected by a legal mechanism there is a very low risk of the offset not succeeding. This has been reflected in the inputs used in the EPBC Offset Guide to calculate the offset required.
6	Must be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action, see section 7.6)	The proposed offsets package for the 'Matters of National Environmental Significance' have been developed to satisfy the requirements of the Commonwealth EPBC Act only.
7	Must be efficient, effective, timely, transparent, scientifically robust and reasonable	The proposed offset is considered to be effective and efficient as the offset sites will be legally protected. The offset is considered to meet the timeliness requirement as the covenants will be implemented prior to the commencement of clearing, and the offset sites are already vegetated and provide foraging and potential breeding habitat for black cockatoos. Habitat for the species has been thoroughly defined by a number of studies and

		reports. The offset has been calculated using the EPBC Offset Guide and is therefore considered reasonable.
8	Must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	Offsets will be monitored and reported to DotEE annually through the Annual Environmental Report (AER).

3.3 WA Environmental Offsets Policy

Compliance with the offset principles detailed in the *WA Environmental Offsets Policy* is demonstrated in the following Table.

Table 3. Compliance with the WA Environmental Offsets Policy.

No.	WA Environmental Offset Principle	Current Project
1	Environmental offsets will only be considered after avoidance and mitigation options have been pursued.	Section 2 discusses avoidance and mitigation measures associated with this application.
2	Environmental offsets are not appropriate for all projects.	This application will not result in environmental impacts so significant that an appropriate offset cannot be applied.
3	Environmental offsets will be cost-effective, as well as relevant and proportionate to the significance of the environmental value being impacted.	The proposed offset is considered suitable as: <ul style="list-style-type: none"> • The offset area contains the same floristic communities as the application area; • The offset area's vegetation is in better condition than that of the application area; • The offset area contains black cockatoo habitat; and • The offset will result in a net environmental benefit.
4	Environmental offsets will be based on sound environmental information and knowledge.	Site inspections and review of desktop vegetation mapping has been undertaken to determine the adequacy of the offset sites for the provision of black cockatoo habitat.
5	Environmental offsets will be applied within a framework of adaptive management.	The proposed offset consists of the protection and management of an existing unsecure remnant of vegetation. As such, there is essentially no risk that the proposed ecological outcomes will not be achieved because they are pre-existing.
6	Environmental offsets will be focussed on longer term strategic outcomes.	The proposal involves protection in perpetuity of the offset site and the enhancement of previously degraded area which will provide significant environmental values in the medium to long term.

FIGURES




PROJECT Lot 81 and Lot 2 Banksia Rd, Crooked Brook

DRAWING TITLE FIGURE 1. Direct Offset 1 - Lot 12 Temple Rd, Picton

CLIENT J & P Group

Legend

 Direct Offset 1

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1516
Designed KMT
Drawn PN
Local Authority Shire of Dardanup

Drawing Number
FIG 1
Checked KMT
Approved KMT
Revision
A
Date 28.05.2018
Sheet 1 of 1



PROJECT **Lot 81 and Lot 2 Banksia Rd, Crooked Brook**
 DRAWING TITLE **FIGURE 2. Direct Offset 2 - Lot 2148 Ferguson Road**
 CLIENT **J & P Group**

Legend

 Direct Offset 2

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1516

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 Drawn PN

Local Authority

Drawing Number
FIG 2

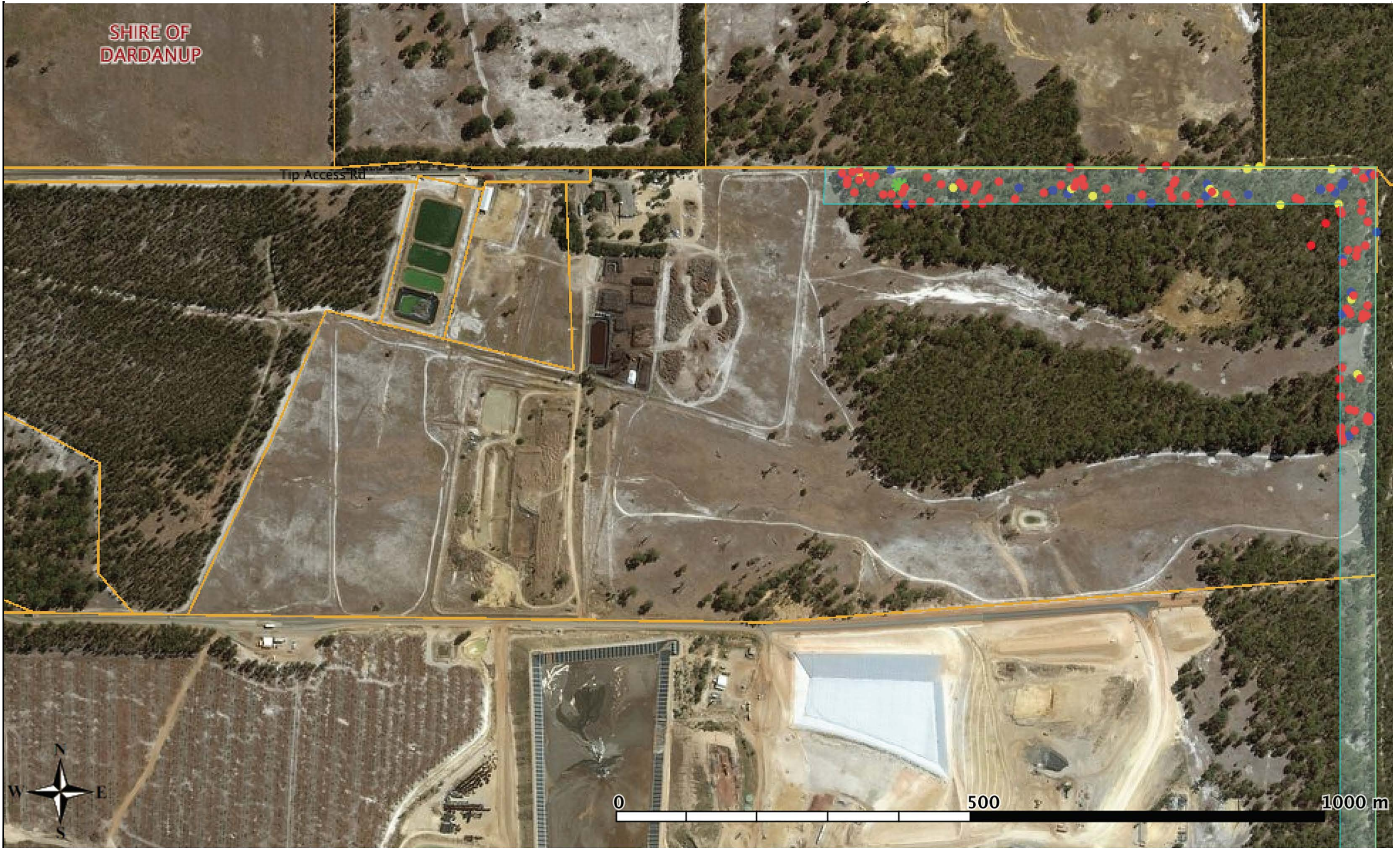
Checked KMT
 Approved KMT

Shire of Dardanup

Revision
 A
 Date 28.03.2018
 Sheet 1 of 1

SHIRE OF
DARDANUP

Tip Access Rd



PROJECT **Lot 81 and Lot 2 Banksia Rd, Crooked Brook**
 DRAWING TITLE **FIGURE 3. Direct Offset 3 - Lot 81 Banksia Rd**
 CLIENT **J+P Group**

- Legend**
- Habitat Trees with no hollows
 - Habitat Trees with 1 hollows
 - Habitat Trees with 2 or more hollows
 - ★ Roosting Tree

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Project Number 1738	Drawing Number FIG 3	Revision A
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Local Authority	Shire of Dardanup	

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PROJECT **Lot 81 and Lot 2 Banksia Road, Crooked Brook**
 DRAWING TITLE **FIGURE 4. Direct Offset 3 - Lot 2 Banksia Road**
 CLIENT **J+P Group**

- Legend**
- Habitat Trees with no hollows
 - Habitat Trees with 1 hollows
 - Habitat Trees with 2 or more hollows
 - ★ Potential Habitat Tree

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Project Number	Drawing Number	Revision
1738	FIG 4	A
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Local Authority	Shire of Dardanup	

APPENDIX A – EPBC Act Offset Calculations

Carnaby's Black Cockatoo

EPBC Act Status: Endangered Annual Probability of Extinction: 1.2%

Impact Calculator					
Protected Matter Attributes	Attribute Relevant to Case	Description	Quantum of Impact		Information Source
Threatened Species Habitat					
Area of habitat	Yes	27.4 ha of remnant vegetation will be cleared.	Area	27.4 ha	<p>Quality is based on the following:</p> <p><u>Site condition:</u> Vegetation condition within Lot 2 ranged from 'degraded' to 'very good to excellent' for the majority of the vegetated area (Astron 2014). For Lot 81, the habitat quality was identified as being 'good' to 'very good' (Harewood 2015). A rating of 7 is provided.</p> <p><u>Site context:</u> The clearing footprint does provide suitable foraging habitat for Carnaby's Cockatoo which is supported by evidence of foraging obtained during recent surveys (Astron 2014 and Harewood 2015). While no breeding was recorded within the clearing footprint, it is located within the breeding range for the species and potential habitat trees suitable for black cockatoos have been identified (Harewood 2015 and Astron 2014). However, extensive areas of preferential foraging, nesting and roosting habitat are available adjacent to the clearing footprint, indicating that the subject site is likely to be of limited significance for the species. The current ongoing threat associated with the degradation of the subject site is the current land use (waste facility). A rating of 5 is provided.</p> <p><u>Species Stocking Rate:</u> Evidence of the species foraging within the clearing footprint has been recorded (Astron 2014 and Harewood 2015) however, no breeding was recorded within the clearing footprint. The species stocking rate is unlikely to be high (given that availability of more suitable habitat nearby), however the species has the potential to occur in the area in low numbers. A rating of 5 is provided.</p> <p><u>References:</u> Harewood 2015. <i>Fauna Assessment – Lot Banksia Road, Dardanup</i>. Unpublished. Astron 2014, <i>Banksia Road Dardanup Level 2 Vegetation and Flora Survey and Level 1 Fauna Assessment</i> Unpublished.</p>
			Quality	6.0	
			Total Quantum of Impact	16.44 ha	

Note: Three separate calculations are required for the proposed offsets in consideration of the 12.5 ha offsite offset, 38 ha offsite offset and 8.3 ha of vegetation retention within the 50m buffer.

Offset Calculator – 12.5 ha Offset Site																		
Protected Matter Attributes	Total Quantum of Impact	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 Direct Offset Met?	Information Source					
Threatened Species Habitat																		
Area of habitat	16.44 adjusted hectares	Lot 10 is located approximately 12 km north-west of the clearing footprint. Vegetation is described as jarrah and marri low woodland and banksia low forest with teatree. The vegetation is likely to be in a 'Good' to 'Excellent' condition. It is zoned "Rural" under the Greater Bunbury Region Scheme and "General Farming" pursuant to the Town Planning Scheme (TPS) No. 3. To protect the 12.5 ha of vegetation, the proponent will enter into a conservation covenant.	Time over which loss is averted	20	Start Area (ha)	12.5	Risk of loss (%) without offset	50%	Risk of loss (%) with offset	5%	5.63	85%	4.78	3.77	2.43	22.05%	No	Accendo site visit 2015
					Future area without offset (adjusted hectare)	6.3	Future area with offset (adjusted hectares)	11.9										
			Time until ecological benefit	1	Start Quality	7	Future quality without offset	5	Future quality with offset	7	2.00	80%	1.60	1.58				

Offset Calculator – 38 ha Offset Site																			
Protected Matter Attributes	Total Quantum of Impact	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 Direct Offset Met?	Information Source						
<i>Threatened Species Habitat</i>																			
Area of habitat	16.44 adjusted hectares	Lot 2148 is located approximately 14 km east of the clearing footprint. Vegetation is described as jarrah and marri forest. The vegetation is likely to be in a 'Very Good' to 'Excellent' condition. It is zoned "Rural" under the Greater Bunbury Region Scheme and "General Farming" pursuant to the Town Planning Scheme (TPS) No. 3. To protect the vegetation, the proponent will enter into a conservation covenant.	Time over which loss is averted	20	Start Area (ha)	38	Risk of loss (%) without offset	50%	Risk of loss (%) with offset	5%	17.10	85%	14.54	11.45					
			Future area without offset (adjusted hectare)	19.0	Future area with offset (adjusted hectares)	36.1							12.16	73.99%	No	Accendo site visit 2017			
			Future quality without offset	6	Future quality with offset	8	2.00	80%	1.60	1.58									
			Time until ecological benefit	1	Start Quality	8													

Offset Calculator – 8.3 ha Onsite Vegetation Retention															
Protected Matter Attributes	Total Quantum of Impact	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 Direct Offset Met?	Information Source		
Area of habitat	16.44 adjusted hectares	This vegetation will provide a 50m buffer to the adjacent Dardanup Conservation Park and will retain an identified roosting tree, 135 black cockatoo habitat trees of which 39 have hollows and 11 of these are likely to be suitable for black cockatoos. The vegetation buffer is zoned "Rural" under the Greater Bunbury Region Scheme and "General Farming" pursuant to the Town Planning Scheme (TPS) No. 3. In accordance with the Shire of Dardanup's Local Planning Strategy, it is zoned 'Waste Disposal/Processing'. Accordingly, without protection this vegetation would likely be subject to clearing to accommodate the expansion of the current waste facility.	Time over which loss is averted	20	Start Area (ha)	8.3	Risk of loss (%) without offset	50	Risk of loss (%) with offset	5	3.74	85%	3.17	2.50	
			Future area without offset (adjusted hectare)	4.2	Future area with offset (adjusted hectares)	7.9									
			Future quality without offset	4	Future quality with offset	6	2.00	80%	1.60	1.58			2.16	13.12%	No
			Time until ecological benefit	1	Start Quality	6									

Summary			
Protected Matter Attributes	Quantum of Impact	% of Impact Offset	Direct Offset Adequate
Area of habitat	16.44	109.16	Yes