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Erindale Road Residential Development: Offset Strategy

Background

Digital 4 Pty Ltd (Digital 4; the Proponent) is proposing to rezone 179 (Lot 802) Erindale Road, Hamersley (the site) under the City of Stirling (CoS) Local Planning Scheme No. 3 (LPS No.3) from 'Local Reserve: Public Use Reserve (Commonwealth)' to 'Development Zone', enabling Urban development.

To facilitate Urban development, clearing of vegetation will be required within Lot 802 and part of the western edge of Lot 803. While future development will be contained within Lot 802, the proposed clearing footprint extends beyond Lot 802 into the adjacent lot (Lot 803) (owned by BAI Communications) to include clearing for bushfire management (asset protection zone [APZ]).

This memorandum outlines the offset strategy which has been developed in accordance with the following key policies and guidelines:

- *WA Environmental Offsets Policy* (GoWA 2011)
- *WA Environmental Offsets guidelines* (GoWA 2014)

It is noted that an offset strategy is currently being developed as part of the Preliminary Documentation required under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). In accordance with the *WA Environmental Offsets Policy* which aims to avoid duplication of offsets, the intention is to align the offset requirements of the State and Commonwealth where possible.

Based on the outcomes of the environmental impact assessment undertaken to support the *Environmental Protection Act 1986* Section 38 referral, including application of the mitigation hierarchy, it is anticipated that significant residual impacts to 11.441 ha of Carnaby's Black Cockatoo (CBC) foraging habitat will be required to be offset. Additionally, it is anticipated that impacts to 11.441 ha of EPBC Act listed ''Banksia woodlands of the Swan Coastal Plain Threatened Ecological Community'' (TEC) will be required to be offset through the Commonwealth process. As such, this offset strategy also includes provision for this TEC.

Proposed offset strategy

The proposed strategy to offset significant residual impacts to 11.441 ha of CBC foraging habitat and EPBC Act listed ''Banksia woodlands of the Swan Coastal Plain TEC'' includes:

1. Protection of approximately 2.3 ha within Lot 803, via a legal conservation mechanism.
2. Transfer of funding to the State government (i.e. Department of Biodiversity, Conservation and Attractions) for direct acquisition of an appropriate offset site for the purpose of conservation.
3. Contribution of funding to local conservation initiates of the City of Stirling.

The anticipated State and Commonwealth offset requirements have been determined using the Department of the Environment and Energy (DotEE, now DAWE) *Offset Assessment Guide,* and associated offset calculator. The DAWE offset calculator is also considered an appropriate tool for quantifying impacts and required offsets as part of state assessment processes (GoWA 2014).

It is noted that 90 % of the significant residual impacts are anticipated to be directly offset by measures 1 and 2, above. The balance of the offset will be provided as a contribution of funding toward local conservation initiatives.

Given that the proposal is still within the referral (State) and assessment (Commonwealth) phase, a specific offset site (in addition to the offset within Lot 803) has not yet been selected. Once the Proponent has received confirmation from the EPA and DAWE of the EP Act Environmental Factors, and EPBC Act Matters of National Environmental Significance that require offsetting, an offset site containing the appropriate values will be identified, in consultation with the EPA, DAWE and DBCA.

A provision of funding toward local conservation initiatives provides an additional offset, above the 90% value. Opportunities to contribute toward local conservation initiates will be determined in consultation with the EPA and City of Stirling.

1. *Lot 803 conservation area*

Digital 4 proposes to enter into an agreement with the landowner of Lot 803, to ensure the preservation and protection of approximately 1.5 ha of vegetation for conservation purposes within a 2.3 ha area of Lot 803. The Proponent will discuss the most appropriate conservation mechanism to ensure the preservation and protection of vegetation within Lot 803, with the EPA.

A level 2 flora and vegetation survey was previously conducted across Lot 803 (Cardno 2008) in accordance with the EPA's *Guidance Statement No. 51 Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004a) for the subject site (Cardno 2008). This included a site visit by two experienced botanists on two separate occasions in May and October 2008 to identify the presence of any DRF, Priority species and TEC. This survey also describes the species present within the subject site and the condition of the vegetation.

Two vegetation types were mapped across the survey area, both of which were primarily composed of *Banksia* species. These were:

- PC4 – Woodland of *Eucalyptus marginata* over *Banksia attenuata* and *Banksia menziesii* over *Xanthorrhoea preissii*, *Hibbertia hypericoides*, *Stirlingia latifolia*, *Mesomelaena pseudostygia* and *Alexgeorgea nitens*; and
- PC5 – Degraded low shrubland of *Xanthorrhoea preissii*, *Grevillea vestita* subsp. *vestita* and *Jacksonia sericea* over *Ehrharta calycina* and *Pelargonium capitatum*.

Vegetation condition ranged from Excellent to Completely Degraded, with approximately 40% of the survey area in Excellent – Very Good condition.

No DRF were identified during the survey.

Additionally, a fauna survey was conducted by an experienced zoologist (Harewood 2008), in accordance with the EPA's *Guidance Statement No. 56 Guidance for Environmental Factors – Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004b).

Of the 85 native fauna species that were considered to potentially occur within the survey area, only 23 were observed during the survey. Of these species, six were considered to be conservation significant. These species are:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*)

- Rainbow Bee-eater (*Merops ornatus*)
- Peregrine Falcon (*Falco peregrinus*)
- Southern Brown Bandicoot (*Isoodon fusciventer*)
- Fork-tailed Swift (*Apus pacificus*)
- Graceful Sun moth (*Synemon gratiosa*)

Since the time of this survey, the status of some species identified within the survey area has changed. Specifically, the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) is now listed as Vulnerable under both the Western Australian *Biodiversity Conservation Act 2016* (BC Act) and Commonwealth EPBC Act, and the Rainbow Bee-eater has been delisted from the BC Act and is listed only as Migratory under the EPBC Act.

It should be noted that the above surveys did not cover the entirety of Lot 803, however the values recorded give an overview of the ecological values within the lot. An additional flora, vegetation and black cockatoo habitat assessment will be undertaken across the proposed offset site within Lot 803, to ensure that the current values are ''like for like'' with those being significantly impacted within Lot 802.

The proposed 2.3 ha offset area (containing approximately 1.5 ha of vegetation) within Lot 803 will be contiguous with the 1.052 ha conservation area (comprising 0.854 ha of vegetation) within Lot 802 and 803, providing more than 2 ha of vegetation protection and maximising the viability of these two areas. Comparatively, the total contiguous conservation area within Lot 802 and 803 (3.364 ha) represents over 29% of the area to be cleared (11.441 ha).

The offset conservation area proposed within Lot 803 has been located within predominantly ''very good'' condition vegetation (with the exception of cleared tracks/ firebreaks), comprising; ''woodland of *Eucalyptus marginata* over *Banksia attenuata* and *Banksia menziesii* over *Xanthorrhoea preissii, Hibbertia hypericoides, Stirlingia latifolia, Mesomelaena pseudostygia* and *Alexgeorgea nitens*.''. Of the 2.346 ha of vegetation within the contiguous conservation area, approximately 1.979 ha (84%) is considered to be in Very Good condition, and 0.267 ha (11%) is considered to be in a Degraded condition. Comparatively, the total area of Very Good vegetation proposed for protection (1.979 ha) represents 17% of the maximum area proposed to be cleared (11.441 ha).

The vegetation type recorded within the proposed Lot 803 conservation area is consistent with Banksia and Jarrah vegetation recorded within Lot 802, thus providing a suitable, local, like-for-like offset.

Harewood (2008) recorded only two black cockatoo habitat trees within Lot 803, which are not located within the proposed offset area.

The proposed conservation area is shown indicatively in Attachment 1, overlaid with vegetation condition mapping. It is noted that the ultimate shape and size to be determined in consultation with the EPA.

An offset calculation has been prepared for the proposed Lot 803 conservation area using the *Offset Assessment Guide*, which demonstrates that this component of the strategy provides 6.77% of the overall offset. The proposed conservation area within Lot 803, coupled with the contribution toward funding of local conservation initiates (point 3 listed above), provides a plausible, local conservation outcome, in a highly constrained area.

A summary of the offset site calculator inputs relating to CBC foraging habitat has been provided in Table 1. The offset calculation is provided in Attachment 2.

Table 1: Offset Calculator inputs for CBC habitat within Lot 803

Criteria	Response
Impact site	
Area	11.441 ha.
Quality	A quality score of 7 has been nominated based on: • 0.632 ha (5%) Good quality CBC habitat • 7.537 ha (67%) moderate quality CBC habitat • 3.272 ha (28%) Very Poor quality CBC habitat. It is noted that the site is outside of the known breeding range for CBC.
Offset site	
Time over which loss is averted.	A value of 20 years has been nominated, as this is the timeframe associated with a conservation covenant.
Start area (ha)	2.312 ha
Risk of loss without offset.	A value of 0% has been nominated based on The University of Queensland (2017) *Guidance for deriving 'Risk of Loss' estimates when evaluating biodiversity offset proposals under the EPBC Act*, for the following reasons: • The proposed offset area is zoned Urban under the MRS • Lot 803 has been identified as District Centre in the City's Better Suburbs Strategy • Lot 803 has not been identified for conservation within the State's Sub-regional frameworks (with the exception of ecological linkages) • Lot 803 is located adjacent within the Perth Metropolitan area close to major transport corridors (Reid Highway, Wanneroo Road and Erindale Road), thus is favourable land for development. • There is no formal conservation protection currently in place within Lot 803, however any significant clearing of the offset site would likely trigger EPBC Act referral and potentially, offsets. • Vegetation within Lot 803 could be cleared in future for broadcasting purposes (under current LPS zoning) if not protected (subject to Part V EP Act native vegetation clearing permit, or valid exemption).
Risk of loss with offset.	Risk of loss with offset. A value of 0% has been nominated as the offset site is to be secured by a legal mechanism for conservation purposes.
Confidence in result (top row)	90%
Time until ecological benefit.	2 years to allow for application of conservation covenant.
Start quality	7 based on ''very good'' condition vegetation comprising CBC foraging species.
Future quality without offset.	A value of 3 has been nominated for the future quality without the offset, for the following reasons: The proposed offset area is zoned Urban under the MRS Lot 803 has been identified as District Centre in the City's Better Suburbs Strategy Lot 803 has not been identified for conservation within the State's Sub-regional frameworks (with the exception of ecological linkages) Lot 803 is located adjacent within the Perth Metropolitan area close to major transport corridors (Reid Highway, Wanneroo Road and Erindale Road), thus is favourable land for development.

Criteria	Response
Impact site	
	There is no formal conservation protection currently in place within Lot 803 and the land is an operational site subject to disturbance associated with infrastructure maintenance. Incremental clearing could avoid referral under the EPBC Act, if each clearing 'action' is not considered significant. Bushfire fuel load reduction works can be undertaken across the site for risk mitigation and infrastructure protection. Vegetation within Lot 803 could be cleared in future for broadcasting purposes (under current LPS zoning) if not protected (subject to Part V EP Act native vegetation clearing permit, or valid exemption).
Future quality with offset	A ''future quality with offset'' value of 7 is nominated as the site is assumed to remain as per the current condition, based on implementation of a conservation covenant.
Confidence in result (bottom row)	A value of 80% has been nominated based on: Confidence that a conservation mechanism will be in place within 2 years based on landowner support/ permission Site specific, scientific survey confirming habitat quality Confidence in the number of planning/ clearing threats to Lot 803 (listed above).
% of impact offset	6.77%

2. *Direct acquisition of offset site*

Digital 4 proposes to identify an appropriate offset site within the Swan Coastal Plain IBRA Region, to account for the remaining 81% offset required (of 90% direct offset required) for impacts to CBC foraging habitat and ''Banksia woodlands of the Swan Coastal Plain TEC''. Digital 4 will provide funding to DBCA to acquire the offset site for inclusion within their conservation estate.

A summary of the offset site calculator inputs relating to CBC foraging habitat has been provided in Table 2.

Table 2: Offset Calculator inputs for CBC habitat

Criteria	Response
Impact site	
Area	11.441 ha .
Quality	A quality score of 7 has been nominated based on: • 0.632 ha (5%) Good quality CBC habitat • 7.537 ha (67%) moderate quality CBC habitat • 3.272 ha (28%) Very Poor quality CBC habitat. It is noted that the site is outside of the known breeding range for CBC.
Offset site	
Time over which loss is averted.	A value of 20 years has been nominated, as this is the timeframe associated with a conservation covenant, noting that the site will be transferred into DBCA's conservation estate.
Start area (ha)	55 ha
Risk of loss without offset.	A value of 0% has been nominated based on The University of Queensland (2017) *Guidance for deriving 'Risk of Loss' estimates when evaluating biodiversity offset proposals under the EPBC Act.* It is noted that the offset site will likely be located in an area zoned for agricultural uses within the Shire of Gingin. A number of Part V EP Act clearing permit exemptions apply for agricultural/ private uses (up to 5 ha per year), including: • Clearing to construct a building (Regulation 5, Item 1) • Clearing to collect firewood (Regulation 5, Item 5) • Clearing to obtain fencing or farming materials (Regulation 5, Item 6) • Clearing for woodwork (Regulation 5, Item 7) • Clearing for fence lines (Regulation 5, Item 10) • Clearing for vehicular tracks (Regulation 5, Item 12) • Clearing for walking tracks (Regulation 5, Item 13) • Clearing isolated trees (Regulation 5, Item 19) The offset site could be subject to clearing of up to 5 ha per year, without the need for formal clearing approval. The site will likely, currently be under private ownership which does not preclude the proposed offset site from being subject to future scheme amendments and subdivision, and without a formal protection mechanism, the risk of loss of the offset site is considered to be increased. Notwithstanding this, a value of zero has been nominated based on the above guideline as clearing of the proposed offset site would likely trigger an offset requirement under State and/ or Commonwealth legislation.
Risk of loss with offset.	Risk of loss with offset. A value of 0% has been nominated as the offset site is to be secured via placement into DBCA's conservation estate.

Criteria	Response
Impact site	
Confidence in result (top row)	80% has been nominated as: • The site will be added to DBCA conservation estate • A minimum of XX ha will be provided as an offset (unless other value is determined throughout the assessment process) • the risk of loss has been determined in accordance with The University of Queensland (2017) Guidance for deriving 'Risk of Loss' estimates when evaluating biodiversity offset proposals under the EPBC Act,
Time until ecological benefit.	2 years to allow for transfer of funding and land ownership to DBCA.
Start quality	A quality of 7 has been nominated, as the offset site will, at a minimum contain habitat of the same quality as the impact site (or alternatively greater quality). It is noted that quality values will be refined in future offset calculations once an offset site has been selected.
Future quality without offset.	A value of 6 has been nominated for the future quality without the offset, as the habitat could be degraded through undesirable vehicle/ pedestrian access, as well as bushfire, without appropriate management. Additionally, A number of Part V EP Act clearing permit exemptions apply for agricultural/ private uses (up to 5 ha per year), including: • Clearing to construct a building (Regulation 5, Item 1) • Clearing to collect firewood (Regulation 5, Item 5) • Clearing to obtain fencing or farming materials (Regulation 5, Item 6) • Clearing for woodwork (Regulation 5, Item 7) • Clearing for fence lines (Regulation 5, Item 10) • Clearing for vehicular tracks (Regulation 5, Item 12) • Clearing for walking tracks (Regulation 5, Item 13) • Clearing isolated trees (Regulation 5, Item 19) The offset site could be subject to clearing of up to 5 ha per year, without the need for formal clearing approval. The site will likely, currently be under private ownership which does not preclude the proposed offset site from being subject to future scheme amendments and subdivision, and without a formal protection mechanism.
Future quality with offset	A ''future quality with offset'' value of 8 is nominated as management by DBCA will prevent habitat/ vegetation degradation through measures such as, controlling of access and firebreak maintenance, potential installation of conservation fencing etc.
Confidence in result (bottom row)	A value of 70% has been nominated based on: • Confidence that a conservation mechanism will be in place within 2 years based on landowner support/ permission • Site specific, scientific survey will be undertaken to confirm habitat quality matches calculator inputs (to be refined once a specific offset site has been selected) • Confidence that management of the offset site will prevent habitat degradation and encourage regeneration.
% of impact offset	93.88 %

Contribution of funding to local conservation initiates of the City of Stirling

The proponent will also seek opportunities to provide a portion of the required offset within the City of Stirling local government area to ensure that 100% of significant residual impacts are offset.

Given that natural bushland within the City of Stirling is largely located within public landholdings and is not readily available for acquisition, an acquisition offset within the local area is implausible. A contribution of funding towards the rehabilitation of Local Natural Areas with black cockatoo habitat will be considered in consultation with the EPA and the City of Stirling, such as the current local projects listed below:

- Lake Gwelup restoration
- Jackadder Lake wetland margin restoration
- Basalt Silver Topaz Bushland enhancement project
- Star Swamp Reserve.

References

Cardno 2008, *Lot 101 and 102 Erindale Road, Hamersley Spring Flora and Vegetation Assessment,* unpublished Report prepared for Broadcast Australia, November 2008.

Environmental Protection Authority. 2004a. *Guidance statement No. 51. Guidance for the Assessment of Environmental Factors – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia*. Perth: EPA.

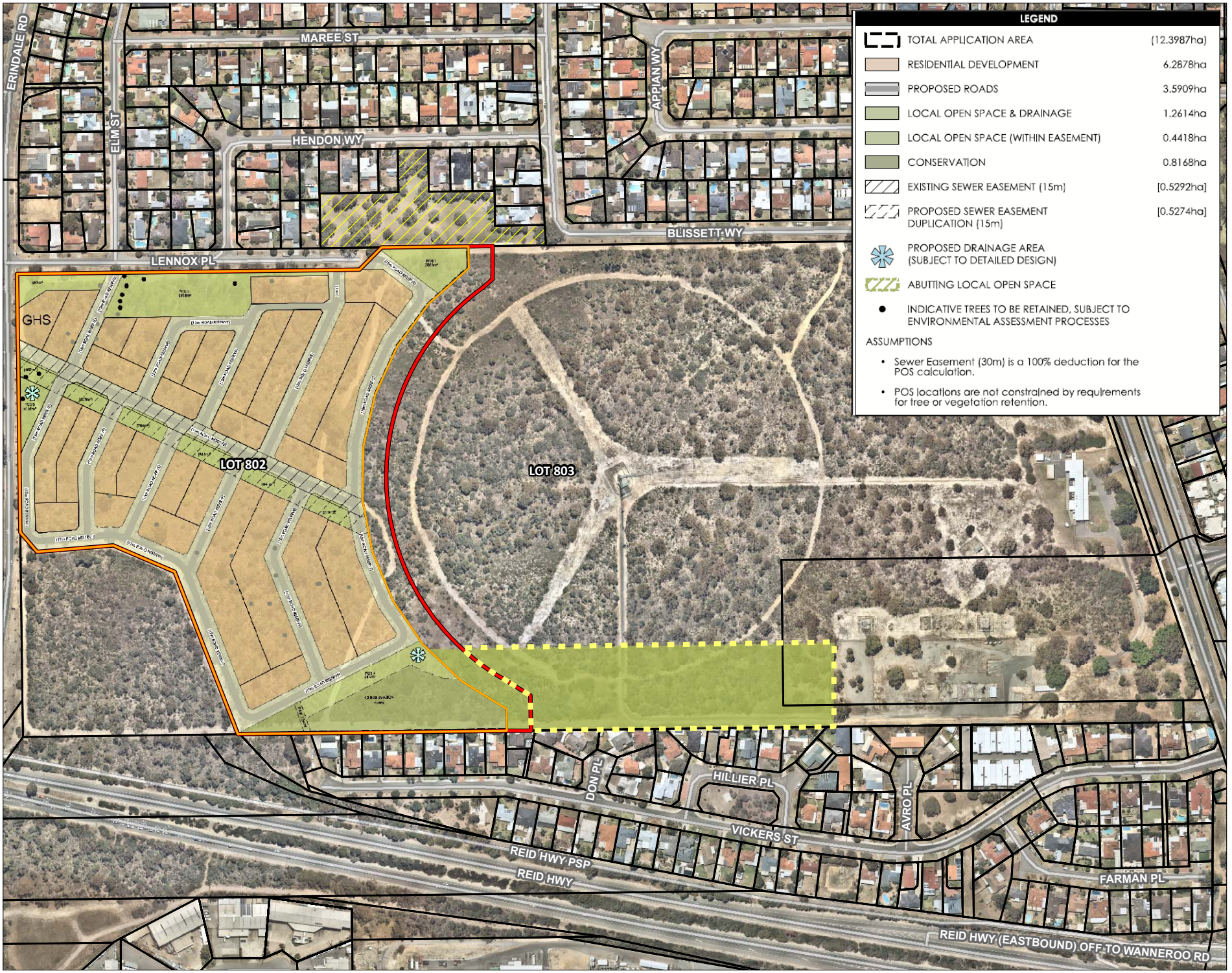
Environmental Protection Authority. 2004b. *Guidance statement No. 56. Guidance for the Assessment of Environmental Factors – Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia.* Perth: EPA.

Government of Western Australia. 2011. *WA Environmental Offsets Policy.* Government of Western Australia, Perth.

Government of Western Australia. 2014. *WA Environmental Offsets Guidelines.* Government of Western Australia, Perth.

Harewood G, 2008, *Fauna Assessment Level 1 Lot 101 Erindale Road Hamersley*, unpublished Report prepared for Cardno.

The University of Queensland (2017) *Guidance for deriving 'Risk of Loss' estimates when evaluating biodiversity offset proposals under the EPBC Act,* report prepared for Department of the Environment and Energy, The University of Queensland, Brisbane, Queensland 4072, Australia.



LEGEND

TOTAL APPLICATION AREA	(12.3987ha)
RESIDENTIAL DEVELOPMENT	6.2878ha
PROPOSED ROADS	3.5909ha
LOCAL OPEN SPACE & DRAINAGE	1.2614ha
LOCAL OPEN SPACE (WITHIN EASEMENT)	0.4418ha
CONSERVATION	0.8168ha
EXISTING SEWER EASEMENT (15m)	[0.5292ha]
PROPOSED SEWER EASEMENT DUPLICATION (15m)	[0.5274ha]
PROPOSED DRAINAGE AREA (SUBJECT TO DETAILED DESIGN)	
ABUTTING LOCAL OPEN SPACE	
INDICATIVE TREES TO BE RETAINED, SUBJECT TO ENVIRONMENTAL ASSESSMENT PROCESSES	

ASSUMPTIONS

- Sewer Easement (30m) is a 100% deduction for the POS calculation.
- POS locations are not constrained by requirements for tree or vegetation retention.

Legend:

- Proposal area (13.55 ha)
- Proposed offset area (2.31 ha)
- Abutting local open space
- Lot 802 (12.39 ha)
- Cadastral boundaries
- Roads (MRWA)

strategen JBS&G

Job No: 57077

Client: Broadcast Australia Pty Ltd

Version: A | Date: 13-May-2020

Drawn By: hsullivan | Checked By: WO

Scale 1:4,500

0 50 100
metres

Coord. Sys. GDA 1994 MGA Zone 50

Lot 801 Erindale Road Hamersley

INDICATIVE OFFSET AREA

ATTACHMENT A

File Name: \\008pmpmr004v001.jbsg.aust\JBS Perth\Projects\1)Open\Broadcast Australia Pty Ltd\57707 Erindale Rd Hamersley EPA S38 referral\GIS\Maps\M01_Rev_A\57707_A1_IndicativeOffset.mxd
Reference: www.nearmap.com© - Imagery Date: 26 October 2019.

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	Lot 802 Erindale Road Hamersley
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		**Area**	11.44	Hectares	
			Quality	**7**	Scale 0-10	
			Total quantum of impact	8.01	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	8.01	Adjusted hectares		**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	2.312	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%								
									Future area without offset (adjusted hectares)	2.3	**Future area with offset (adjusted hectares)**	2.3	0.00	90%	0.00	0.00	0.54	6.77%	No	
					Time until ecological benefit	2	**Start quality (scale of 0-10)**	**7**	**Future quality without offset (scale of 0-10)**	**4**	**Future quality with offset (scale of 0-10)**	**7**	3.00	80%	2.40	2.34				
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	8.0087	0.54	6.77%	**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	Lot 802 Erindale Road Hamersley
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		**Area**	11.44	Hectares	
			Quality	**7**	Scale 0-10	
			Total quantum of impact	8.01	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	8.01	Adjusted hectares		**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	55	**Risk of loss (%) without offset**	0%	**Risk of loss (%) with offset**	0%								
									Future area without offset (adjusted hectares)	55.0	**Future area with offset (adjusted hectares)**	55.0	0.00	80%	0.00	0.00	7.52	93.88%	Yes	
					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	70%	1.40	1.37				
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	8.0087	7.52	93.88%	**Yes**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**