Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10883/1
Permit type:	Purpose permit
Applicant name:	City of Busselton
Application received:	9 December 2024
Application area:	85 native trees
Purpose of clearing:	Road upgrades
Method of clearing:	Mechanical
Property:	Hairpin Road Reserve (PIN 11471113) Kaloorup Road Reserve (PIN 11471096)
Location (LGA area/s):	City of Busselton
Localities (suburb/s):	Jindong

1.2. Description of clearing activities

The applicant is proposing to selectively clear native trees along a road reserve (see Figures 1 to 4, Section 1.5). The application area was reduced during assessment from 87 native trees to 85 native trees due to an administrative error and one tree falling across the road in a storm, which was subsequently cleared under an exemption.

The purpose of the proposed clearing is for public road upgrades to improve road safety. The road has a crash history from vehicles leaving the carriage way given the narrow, sealed road surface (City of Busselton, 2024). The City is proposing to widen the road to 6.2 metres to increase the sealed road surface. The project is partially funded under the WA State Black Spot Program.

1.3. Decision on application

Decision:	Granted
Decision date:	23 July 2026
Decision area:	85 native trees, as depicted in Section 1.5, below.

1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for:

- the site characteristics (see 0),
- relevant datasets (see Appendix F.1),
- the findings of a flora and vegetation survey (Daniel Marsh Botanical Consulting, 2021),

- the findings of a fauna survey (Harewood, 2022),
- the clearing principles set out in Schedule 5 of the EP Act (see Appendix B),
- relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The Delegated Officer also took into consideration the purpose of the project is for public road upgrades to improve road safety and the project is part of the Main Roads WA State Black Spot Program.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable habitat for western ringtail possums and black cockatoos,
- potential direct impacts to fauna individuals present in the application area at the time of clearing,
- the loss of native vegetation that is a significant remnant within an extensively cleared landscape and is broadly representative of an extensively cleared vegetation community (Abba complex), and
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the potential direct impacts to fauna individuals and indirect impacts to adjacent vegetation can be appropriately managed through conditions on the clearing permit.

Given the above, the Delegated officer determined the proposed clearing will result in the following significant residual impacts:

- the loss of 78 native trees that provide suitable foraging and dispersal habitat for western ringtail possums,
- the loss of 78 native trees that provide suitable foraging habitat for black cockatoos, and
- the loss of 84 native trees that are broadly representative of an extensively cleared vegetation complex (Abba complex) and are a significant remnant within an extensively cleared landscape.

In accordance with the *WA Environmental Offsets Policy* (2011) and the *WA Environmental Offsets Guidelines* (2014) an offset is required to counterbalance the significant residual impacts of the proposed clearing (see section 4). The applicant proposed an environmental offset consisting of rehabilitation of 2.6 hectares of native vegetation and placement under secure conservation tenure. The Delegated Officer considered the offset adequately counterbalances the above significant residual impact. The suitability of the offset is summarised in section 4.

The Delegated Officer considered the extent of environmental impact, the necessity of clearing, and the applicant's adherence to the mitigation hierarchy, and determined it was appropriate to grant a clearing permit subject to conditions requiring the applicant to:

- undertake avoid and minimise measures to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback to adjacent vegetation,
- demarcate trees to be cleared to avoid inadvertent clearing of adjacent native vegetation,
- avoid the habitat tree located near the application area, to avoid impacts to potential black cockatoo breeding habitat,
- undertake pre-clearance inspections of trees for the presence of western ringtail possums and relocation of individuals to suitable habitat, where identified,
- infill planting of 132 marri (*Corymbia calophylla)* and six peppermint (*Agonis flexuosa*) trees within Hairpin Road Reserve (PIN 11471113),
- rehabilitation of 2.6 hectares of native vegetation within Vasse - Yallingup Siding Road (PIN 11471116) and creation of a new reserve vested for the purpose of 'Conservation'.

1.5. Site maps



Figure 1 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.



Figure 2 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.



Figure 3 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.



Figure 4 Map of the application area

The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit.

2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the polluter pays principle
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- *Environmental Offsets Guidelines* (August 2014)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA, 2020).*

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant submitted supporting information (City of Busselton, 2024) demonstrating actions taken to avoid and minimise the impacts of the proposed clearing, including:

- works are being undertaken in areas of degraded vegetation,
- larger trees were avoided where possible during the planning and design phase of the proposed works,
- all trees with hollows within the road reserve have been avoided (see Figure 5, below).



Figure 5. Tree with hollow to be avoided (cross-hatched green).

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

On-site rehabilitation

The assessment identified the proposed clearing will result in the loss native vegetation that provides suitable foraging and dispersal habitat for western ringtail possums and black cockatoos and is a significant remnant of native vegetation in an extensively cleared landscape (see Section 3.2). The applicant committed to mitigate a portion of this impact through on-site revegetation (City of Busselton, 2026).

The City will infill plant at least 132 marri (*Corymbia calophylla)* and six peppermint (*Agonis flexuosa*) trees within Hairpin Road Reserve (PIN 11471113; see Figures 6 to 9, below) to improve fauna habitat linkage within the road reserve (City of Busselton, 2026). Based on aerial imagery and the findings of the flora and vegetation survey (Daniel Marsh Botanical Consulting, 2021), the rehabilitation area ranges from patches of bare ground to areas of intact dense canopy.

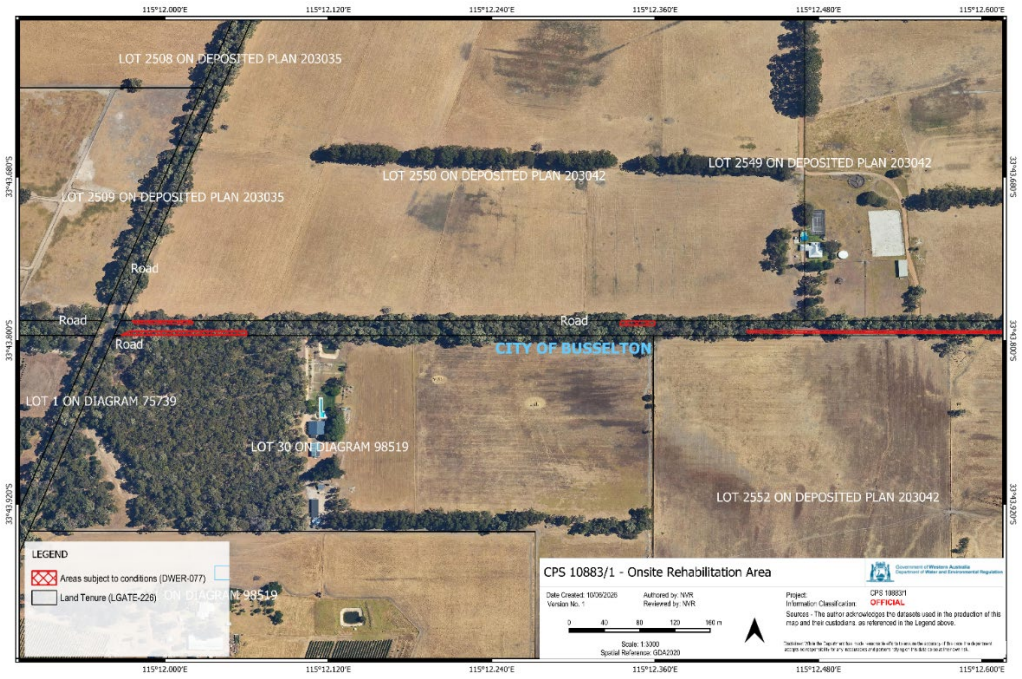


Figure 6. Map of the areas subject to on-site rehabilitation (cross-hatched red).

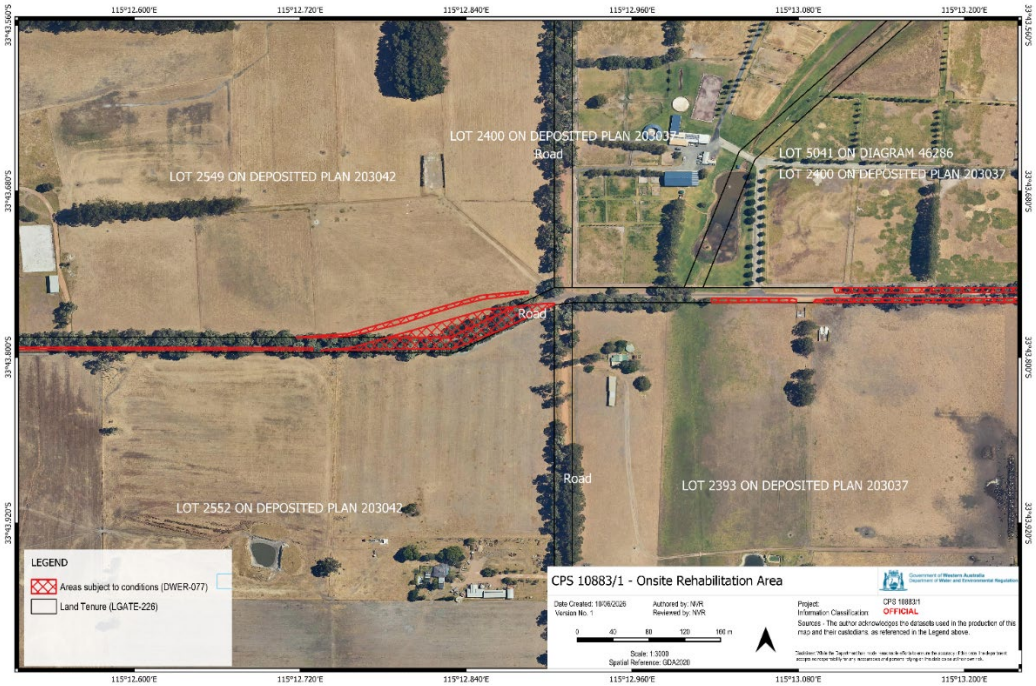


Figure 7. Map of the areas subject to on-site rehabilitation (cross-hatched red).

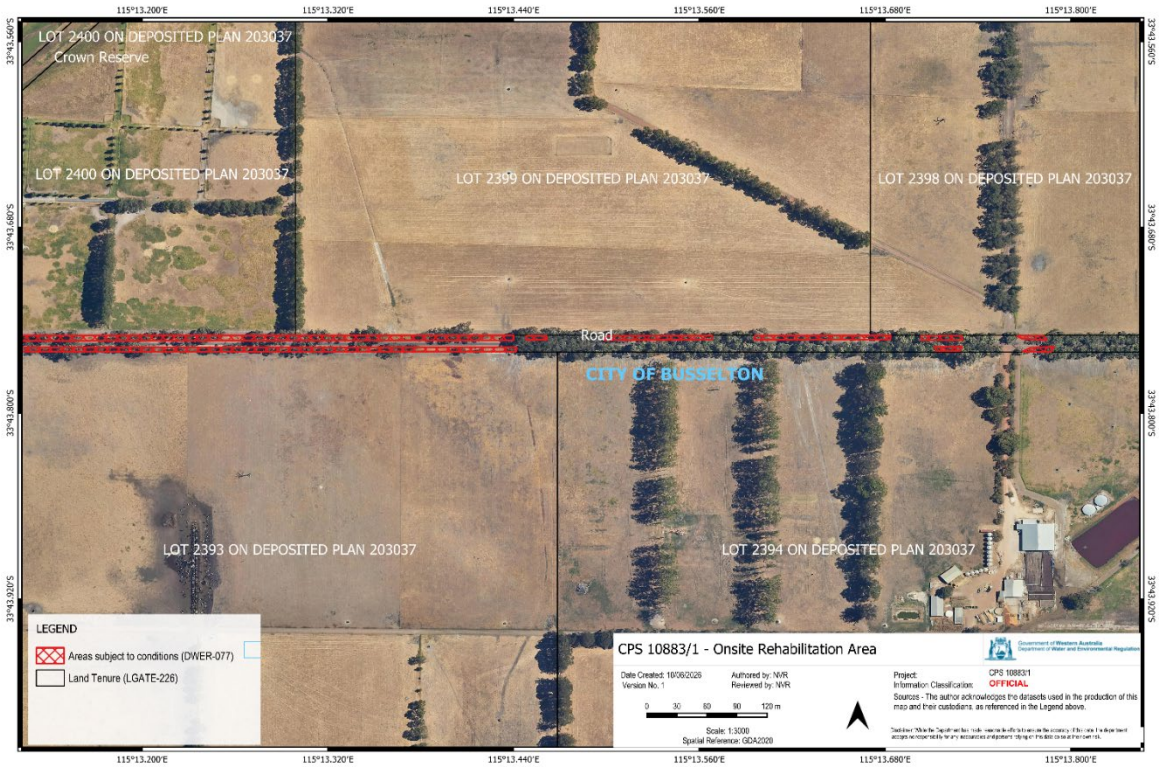


Figure 8. Map of the areas subject to on-site rehabilitation (cross-hatched red)



Figure 9. Map of the areas subject to on-site rehabilitation (cross-hatched red).

After consideration of avoidance and mitigation measures, and the applicant's proposed on-site rehabilitation, the Delegated Officer determined that an offset was necessary to counterbalance the remaining significant residual impacts to western ringtail possum habitat, black cockatoo habitat and significant remnant vegetation. In accordance with the Government of Western Australia's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided is summarised in Section 4.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see 0) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix B) identified that the impacts of the proposed clearing present a risk to biological values (fauna) and significant remnant vegetation. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1. Biological values (fauna) - Clearing Principles (a) and (b)

Assessment

A fauna likelihood assessment was conducted based on:

- the preferred habitat and vegetation types of conservation significant fauna species recorded in the local area (10-kilometre radius from the application area),
- the site characteristics (see Appendix A.1), and
- known species distribution.

The likelihood analysis identified ten fauna species which may occur in the application area (see Appendix A.2.). Of these, four species were considered likely to occur: *Pseudocheirus occidentalis* (western ringtail possum; CR), *Zanda baudinii* (Baudin's cockatoo; EN), *Zanda latirostris* (Carnaby's cockatoo; EN) and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo; VU).

Western ringtail possum (CR)

The western ringtail possum (WRP) is an arboreal marsupial associated with a diverse range of habitats. Habitat critical for survival in the Swan Coastal Plain management zone includes habitat connecting patches of remnant vegetation (DPAW, 2017).

Habitat loss and fragmentation is a key threatening process for WRP in the Swan Coastal Plain zone (DPAW, 2017). Disruption to canopy connectivity restricts dispersal ability of WRP and can cause overpopulation within patches of habitat. Where WRP must come to the ground to disperse between habitat, the risk of road kills and predation increases (DPAW, 2017). Maintaining habitat connectivity is essential for long-term conservation of WRP.

The application area includes suitable foraging species for the WRP, including marri, jarrah, and peppermint trees. The fauna survey (Harewood, 2022), identified a WRP individual and two dreys in peppermint woodland vegetation adjacent to the application area. The vegetation within Hairpin Road and Kaloorup Road links nearby areas of remnant vegetation present north and west of the application area.

An assessment of the trees proposed to be cleared identified seven trees in the application area that are too small to provide suitable habitat for WRP (see Appendix D). Given this, 78 native trees within the application area are considered to provide significant foraging and linkage habitat for WRP within an extensively cleared landscape.

Black cockatoos

Habitat critical for the recovery of Carnaby's cockatoo, Baudin's cockatoo, and forest red-tailed black cockatoo (herein referred to as black cockatoos) includes foraging habitat (including remnant patches of vegetation), night roosting habitat and nesting trees for breeding (DAWE, 2022). Suitable breeding habitat includes trees with a suitable nest hollow or of a suitable diameter at breast height (DBH) to develop a nest hollow (DAWE, 2022). Night roosting sites are often located near food and water resources.

According to available databases, the closest recorded confirmed breeding site is approximately 13 kilometres from the application area. There are 5 known roost sites in the local area, the closest is approximately one kilometre from the application area.

The fauna survey (Harewood, 2022) identified chewed marri nuts within the application area, consistent with foraging by Baudin's cockatoo. The marri and jarrah trees within the application area provide suitable foraging habitat for black cockatoos. An assessment of the trees proposed to be cleared identified seven trees in the application area that are juvenile and unlikely to provide suitable foraging habitat for black cockatoos (see Appendix D). Given this, 78 native trees in the application area are considered to provide significant foraging habitat for black cockatoos within an extensively cleared landscape.

The fauna survey (Harewood, 2022) identified a tree with a potential hollow located close to the application area. This tree will not be cleared (see Section 3.1).

Other fauna

Other fauna which may be transient visitors to the application area are listed in Appendix A.2. The vegetation in the application area connects remnant native vegetation present to the north and west. Given this, the application area is considered significant as an ecological linkage for fauna moving through the landscape. Onsite rehabilitation within degraded areas of the Hairpin Road reserve will mitigate the potential impacts of clearing significant linkage habitat for fauna (see Section 3.1).

Conclusion

Based on the above assessment, the application area provides significant foraging and dispersal habitat for western ringtail possums and black cockatoos in an extensively cleared landscape. Infill planting of 132 marri and 6 peppermint trees within Hairpin Road will mitigate a portion of the significant residual impacts of clearing in accordance with the mitigation hierarchy (see Section 3.1). Environmental offsets are required to counterbalance the remaining significant residual impacts (see Section 4).

The management measures specified below will reduce impacts to fauna present in or near the application area during clearing activities.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- avoidance and minimisation to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds to adjacent vegetation,
- demarcation of trees to be cleared to avoid inadvertent clearing of adjacent native vegetation,
- avoidance of the habitat tree located near the application area, to avoid impacts to potential black cockatoo breeding habitat,
- undertake pre-clearing inspections for western ringtail possums and relocation of individuals to suitable habitat, where identified,
- infill planting of 132 marri (*Corymbia calophylla)* and six peppermint (*Agonis flexuosa*) trees within Hairpin Road Reserve (PIN 11471113) as detailed in Section 3.1,
- environmental offsets (as detailed in Section 4 below).

3.2.2. Significant remnant vegetation - Clearing Principle (e)

Assessment

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e., pre-European settlement), below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The application area is in the Swan Coastal Plain IBRA Bioregion which retains about 39 per cent of the pre-European vegetation extent (Government of Western Australia, 2019b). According to available databases, the local area retains about 18 per cent of pre-European vegetation extent (see Appendix A.2). The application area is broadly representative of the mapped Abba complex, which retains about six per cent of the pre-European vegetation extent.

The extent of vegetation remaining for the Abba complex and in the local area falls below national targets. Given this, the application area is considered significant as a remnant of native vegetation in an extensively cleared landscape.

Conclusion

Based on the above assessment, the application area is representative of an extensively cleared vegetation complex in an extensively cleared landscape. The impact of the proposed clearing on significant remnant vegetation constitutes a significant residual impact and environmental offsets are required (see Section 4).

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- avoidance and minimisation to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds to adjacent vegetation,
- demarcation of trees to be cleared to avoid inadvertent clearing of adjacent native vegetation,

- infill planting of 132 marri (*Corymbia calophylla)* and six peppermint (*Agonis flexuosa*) trees within Hairpin Road Reserve (PIN 11471113) as detailed in Section 3.1,
- environmental offsets (as detailed in Section 4 below).

3.3. Relevant planning instruments and other matters

No Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

4 Suitability of offsets

Significant residual impacts

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- the loss of 78 native trees that provide suitable foraging and dispersal habitat for western ringtail possums,
- the loss of 78 native trees that provide suitable foraging habitat for black cockatoos, and
- the loss of 84 native trees that are broadly representative of an extensively cleared vegetation complex (Abba complex) and are a significant remnant within an extensively cleared landscape.

The applicant has proposed to infill plant 132 marri (*Corymbia calophylla)* and six peppermint (*Agonis flexuosa*) trees within Hairpin Road Reserve to mitigate a portion of the significant residual impacts listed above (see Section 3.1).

The applicant has proposed an environmental offset to address the above impact, as detailed below. The Delegated Officer determined on balance it is appropriate to consider an offset to counterbalance the significant residual impacts in this instance, noting the extent of the impact, the necessity of the proposed clearing, and the applicant's demonstrated efforts to avoid, minimise and mitigate the environmental impacts of the proposed clearing, in accordance with the *WA Environmental Offsets Guidelines* (2014).

Proposed offset

The applicant proposed an environmental offset consisting of revegetation of 2.6-hectares of native vegetation within Vasse - Yallingup Siding Road Reserve (PIN 11471116; see Figure 10, below). The applicant has proposed to conserve the revegetation area in perpetuity through the creation of a new reserve vested for the purpose of 'Conservation', to be managed by the City.

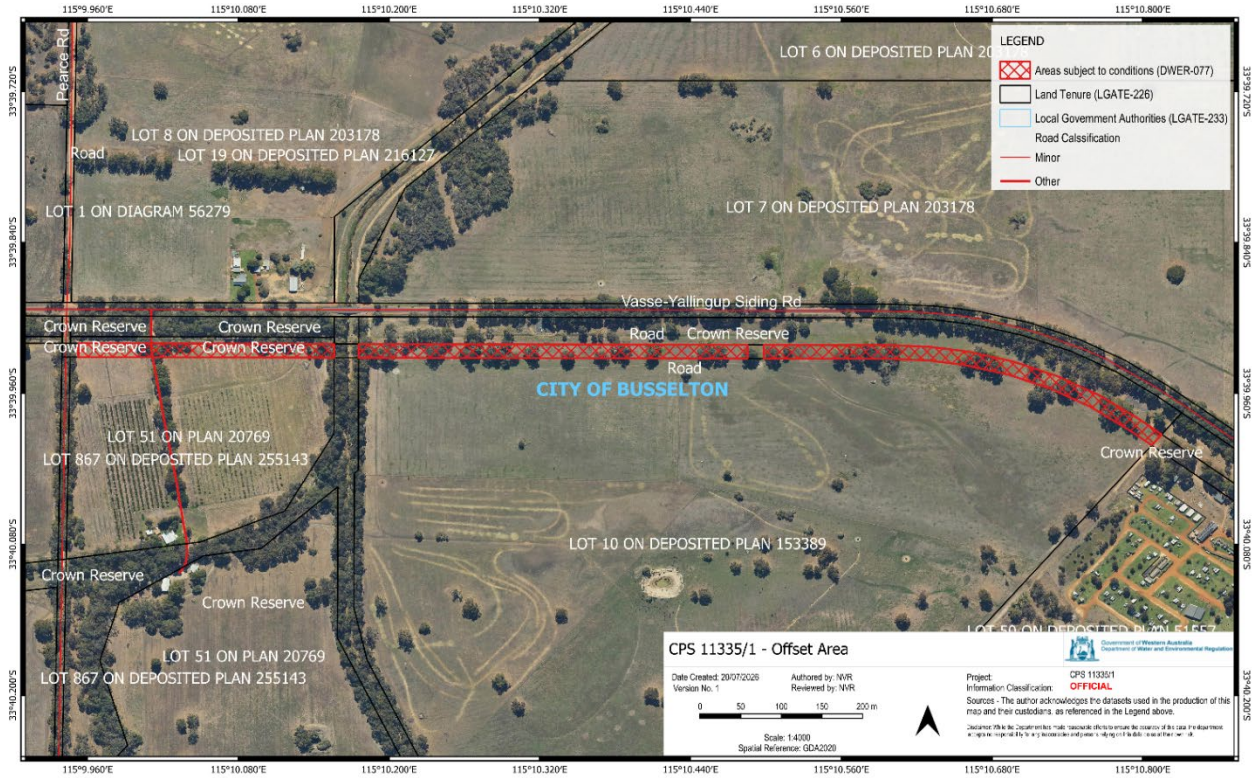


Figure 10. Proposed 2.6-hectare offset area, to be rehabilitated and placed under secure conservation tenure.

The proposed offset area has been historically cleared and currently comprises marri, peppermint and jarrah trees over bare ground and weeds (City of Busselton, 2026). The site is located approximately six kilometres from the application area. The City proposes to undertake rehabilitation planting, fencing and weed control within the offset area (City of Busselton, 2026). The proposed rehabilitaiton will improve habitat connectivity within the property, connecting intact native vegetation within the adjacent road reserves.

Offset adequacy

The Delegated Officer considers that this adequately counterbalances the significant residual impacts listed above. The justification for the values used in the offset calculation is provided in Appendix E.

End

Site characteristics

A.1. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix B.

Characteristic	Details
Local context	The area proposed to be cleared is part of a linear strip of native vegetation located along an east-west road. The application area is in the intensive land use zone of Western Australia and is surrounded by areas cleared for rural use. The trees proposed to be cleared contribute to an important linkage in a highly cleared landscape. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 18 per cent of the original native vegetation cover.
Ecological linkage	The application area is not part of a formally mapped ecological linkage. The application area is connected to vegetation that is within the South West Regional Ecological Linkages.
Conservation areas	The application area does not intersect a mapped conservation area. The closest mapped conservation area is an Agreement to Reserve under the *Soil and Land Conservation Act 1945*, located 600 metres north of the application area.
Vegetation description	Supporting information provided by the applicant (City of Busselton, 2024) indicates the 85 trees proposed to be cleared comprise of: • 82 *Corymbia calophylla* (marri), • one (1) *Agonis flexuosa* (peppermint), • one (1) *Eucalyptus marginata* (jarrah), and • one (1) *Xanthorrhoea preissii* (grass tree). A vegetation survey (Daniel Marsh Botanical Consulting, 2021) indicates the trees occur within two vegetation types: • *Corymbia calophylla* mid open forest over isolated *Banksia grandis*, *Kingia australis* and / or *Xanthorrhoea preissii* over isolated *Acacia extensa* over weeds, and • *Agonis flexuosa* and *Corymbia calophylla* mid closed forest over weeds. This is broadly consistent with the mapped vegetation type: • Abba complex (system 30), described as a mixture of open forest of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - *Banksia* species and woodland of *Corymbia calophylla* (Marri) with minor occurrences of *Corymbia haematoxylon* (Mountain Marri). Woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca* species along creeks and on flood plains (Heddle, et. al, 1980). *The mapped vegetation type retains approximately 6.5 per cent of the original extent (Government of Western Australia, 2019).*
Vegetation condition	A vegetation survey (Daniel Marsh Botanical Consulting, 2021) provided by the applicant indicates the vegetation within the proposed clearing area is in Degraded to Completely Degraded (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix C.
Climate and landform	Available databases indicated the average annual rainfall received over the application area is 750 - 800 millimetres. The application area is at an altitude of 25 to 30 meters above sea level.
Soil description	The soil is mapped as: • Abba Flats Phase (213AbAB1), described as flats and low rises with sandy grey brown duplex (Abba) and gradational (Busselton) soils, and • Abba wet flats Phase (213AbABw), described as winter wet flats and slight depressions with sandy grey brown duplex (Abba) and gradational (Busselton) soils (DPIRD, 2019).

Characteristic	Details
Land degradation risk	Land degradation risks are summarised in Table A.4. The application area is mapped as moderate to low acid sulfate soils disturbance risk (<3m from surface).
Waterbodies	The desktop assessment and aerial imagery indicate the application area intersects a multiple use palusplain (seasonally waterlogged flat) and a non-perennial minor river (subsidiary of Buayanyup River).
Hydrogeography	The application area falls within the Busselton-Capel Groundwater Area as proclaimed under the *Rights in Water and Irrigation Act 1914* (RiWI Act). The groundwater salinity level (total dissolved solids) is mapped as 500-1000 milligrams per litre.
Flora	The desktop assessment identified 63 conservation significant flora species within the local area, comprised of 15 threatened flora and 48 priority flora species. There are no flora records within the application area. The nearest record is a Priority 3 species, *Lasiopetalum laxiflorum*, recorded approximately 400 metres from the application area.
Ecological communities	The application area does not intersect a mapped occurrence of a conservation significant ecological community. The application area is 750 metres from a mapped occurrence of the Banksia Woodlands of the Swan Coastal Plain threatened ecological community.
Fauna	The desktop assessment identified 40 conservation significant fauna in the local area. The closest record is a *Tyto novaehollandiae novaehollandiae* (masked owl (southwest)) recorded 800 metres from the application area. The application area is within Baudin's cockatoo, Carnaby's cockatoo and forest red-tailed black cockatoo known distribution zones and is mapped as black cockatoo feeding habitat. There are five recorded black cockatoo roost sites within the local area, the closest is one kilometre from the application area. The closest recorded breeding site is 13 kilometres from the application area.

A.2. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix E.1), and biological survey information, impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)
Tyto novaehollandiae novaehollandiae (masked owl (southwest))	P3	Y	Y	0.81
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	Y	Y	1.37
Pseudocheirus occidentalis (western ringtail possum)	CR	Y	Y	2.03
Isoodon fusciventer (quenda)	P4	Y	Y	2.66
Phascogale tapoatafa wambenger (south-western brush-tailed phascogale)	CD	Y	Y	3.37
Zanda baudinii (Baudin's cockatoo)	EN	Y	Y	3.59
Zanda latirostris (Carnaby's cockatoo)	EN	Y	Y	3.71
Falco peregrinus (peregrine falcon)	OS	Y	Y	4.96
Notamacropus irma (western brush wallaby)	P4	Y	Y	7.81
Dasyurus geoffroii (chuditch)	VU	Y	Y	8.25

A.3. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
Vegetation complex**					
Abba complex (system 30)	50,892.78	3,326.20	6.54	183.20	0.36
Local area					
10km radius	37,485.85	6,803.98	18.15	-	-

*Government of Western Australia (2019b)

**Government of Western Australia (2019a)

A.4. Land degradation risk table

Risk categories	*Land Unit Risk*
Subsurface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid
Water logging	H2: >70% of map unit has a moderate to very high waterlogging risk H1: 50-70% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	M1: 10-30% of map unit has a high to extreme phosphorus export risk
Wind erosion	M1: 10-30% of map unit has a high to extreme wind erosion risk
Water repellence	M1: 10-30% of map unit has a high water repellence risk
Water erosion	L1: <3% of map unit has a high to extreme water erosion risk
Salinity	L2: 3-10% of map unit has a moderate to high salinity risk or is presently saline L1: <3% of map unit has a moderate to high salinity risk or is presently saline
Flood risk	L1: <3% of the map unit has a moderate to high flood risk

Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: Noting the condition of the vegetation, and the lack of native understorey, the application area is not likely to comprise a high level of biodiversity. A flora likelihood assessment was conducted based on habitat and soil preferences, vegetation in the application area, and known species distribution. No priority flora were identified in the application area during an appropriately timed flora survey (Daniel Marsh Botanical Consulting, 2021).	Not likely to be at variance	No
Principle (b): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."*	At variance	Yes *Refer to Section 3.2.1, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
Assessment: The area proposed to be cleared contains suitable habitat for the western ringtail possum and black cockatoos.		
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: A flora likelihood assessment was conducted based on habitat and soil preferences, vegetation in the application area, and known species distribution. No threatened flora were identified in the application area during an appropriately timed flora survey (Daniel Marsh Botanical Consulting, 2021).	Not likely to be at variance	No
Principle (d): *"Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community."* Assessment: Given the condition of the vegetation, and the lack of native understorey, the application area is unlikely to represent a threatened ecological community.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: The extent of the mapped vegetation type and native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia.	At variance	Yes *Refer to Section 3.2.2, above.*
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: One tree within the application area intersects a mapped multiple use palusplain and a non-perennial minor river. Given the extent of clearing proposed within the mapped palusplain and condition of the vegetation, the proposed clearing is unlikely to impact environmental values of the mapped waterbodies.	At variance	No
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are highly susceptible to subsurface acidification and water logging. Noting the extent of the application area and the condition of the	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation.		
Principle (i): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water."* Assessment: One tree within the application area intersects a mapped multiple use palusplain. Given the extent of clearing proposed within the mapped palusplain and condition of the vegetation, the proposed clearing is unlikely to impact surface or ground water quality.	Not likely to be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* *Assessment:* Waterlogging was identified in the application area during the flora and vegetation survey (Daniel Marsh Botanical Consulting, 2021). Noting the purpose of clearing is to upgrade the existing road and given the extent of clearing proposed and condition of the vegetation, the proposed clearing is unlikely to significantly increase the intensity of existing waterlogging within the road reserve.	Not likely to be at variance	No

Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix D. Photographs of juvenile trees in the application area (City of Busselton, 2024),



Figure 11. Example juvenile tree in the application area



Figure 12. Example juvenile tree in the application area

Appendix E. Offset calculator value justification

Offset calculation and justification for significant residual impact to western ringtail possums.

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Western ringtail possum habitat	Vegetation that provides western ringtail possum habitat and linkage value in an extensively cleared landscape
Type of environmental value	Species (flora/fauna)	Western ringtail possum (WRP)
Conservation significance of environmental value	Rare/threatened species – critically endangered	WRP is listed as critically endangered under the BC Act (state) and EPBC Act (federal)
Landscape level value impacted	Yes/No	Yes - extensively cleared landscape
Significant impact		
Description	Clearing of foraging and linkage habitat for WRP	Proposed clearing of native vegetation considered suitable habitat for western ringtail possums in an extensively cleared landscape
Significant impact (hectares)	78 trees	Applicant is proposing to clear 78 native trees considered to provide suitable habitat for western ringtail possums. A calculation of one tree = 0.01ha has been used.

Calculation	Score (Area)	Rationale
Quality (scale)	8	The trees are preferred habitat species for WRP, comprising marri, jarrah and peppermint. WRP were recorded in the property in the fauna survey. The trees contribute to canopy linkage along the road reserve, which is considered a significant ecological linkage in an extensively cleared landscape. Given the site context and habitat attributes, the vegetation is considered to provide high quality habitat for WRP.
Rehabilitation credit		
Description	Infill planting within the road reserve	Infill planting of marri and peppermint trees within Hairpin Road Reserve, adjacent to the application area.
Proposed rehabilitation (area in hectares)	138 trees	Infill planting of 132 marri and 6 peppermint trees. A calculation of one tree = 0.01ha has been used.
Current quality of rehabilitation site	2	The planting is proposed in degraded patches of native vegetation. There is a mix of high-quality intact vegetation and patches of bare ground. On average, the vegetation is considered to provide low habitat quality for WRP.
Future quality WITHOUT rehabilitation	2	It is considered unlikely the habitat quality will increase without active revegetation.
Future quality WITH rehabilitation	5	The habitat quality of the offset site is considered to increase to good quality foraging and linkage habitat by active revegetation and management measures to meet appropriate completion criteria.
Time until ecological benefit (years)	12	Average time until planted vegetation can be used as foraging habitat by WRP. An extra two years has been added to account for the delay in commencement of the revegetation (assumed to commence within two years of the permit start date).
Confidence in rehabilitation result (%)	80	High level of confidence that the quality within the rehabilitated areas will improve with best practice revegetation techniques and appropriate completion criteria.
Offset		
Description	Rehabilitation and conservation reserve vesting	Revegetation of native vegetation from a moderate to good habitat quality for WRP and change of reserve vesting to conservation.
Proposed offset (area in hectares)	2.6	The area required to counterbalance 100% of the significant residual impact (SRI) of the proposed clearing remaining after rehabilitation credit has been applied.
Current quality of offset site	1	The proposed offset site provides low habitat quality for WRP
Future quality WITHOUT offset	1	It is considered unlikely the habitat quality will increase without active revegetation
Future quality WITH offset	5	The habitat quality of the offset site is considered to increase by active revegetation and management measures to meet appropriate completion criteria. The revegetation will improve linkage value within the offset site
Time until ecological benefit (years)	12	Average time until planted vegetation can be used as foraging habitat by WRP. An extra two years has been added to account for the delay in commencement of the revegetation (assumed to commence within two years of the permit start date).
Confidence in offset result (%)	80	High level of confidence that the quality within the rehabilitated areas will improve with best practice revegetation techniques and appropriate completion criteria.

Calculation	Score (Area)	Rationale
Duration of offset implementation (maximum 20 years)	20	Maximum value applied noting the vegetation is not to be cleared in the future.
Time until offset site secured (years)	2	Two years for vesting of reserve to be changed to 'conservation'
Risk of future loss WITHOUT offset (%)	30%	The proposed offset site is currently within a road reserve with a moderately high risk of loss, given the risk of potential future clearing from road upgrade works.
Risk of future loss WITH offset (%)	10%	Risk of loss is considered to decrease with placement under secure conservation tenure. However, there is a small risk of future loss from road upgrade works or maintenance given the location of the offset area adjacent to an existing road. The City has advised there are no current plans to upgrade the road adjacent to the proposed offset site.

Offset calculation and justification for significant residual impact to black cockatoos.

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Black cockatoo foraging habitat	The application area includes vegetation that provides black cockatoo foraging habitat within an extensively cleared landscape
Type of environmental value	Species (flora/fauna)	Suitable habitat for black cockatoos (BC)
Conservation significance of environmental value	Rare/threatened species – endangered	Carnaby's black cockatoo and Baudin's black cockatoo are listed as endangered under the BC Act (state) and EPBC Act (federal); Forest red-tailed black cockatoo is listed as vulnerable under the BC Act (state) and EPBC Act (federal). The highest attribute was used for the calculation.
Landscape level value impacted	Yes/No	yes - extensively cleared landscape
Significant impact		
Description	Clearing of suitable foraging habitat for black cockatoos	Proposed clearing of native vegetation considered suitable foraging habitat for all three species of black cockatoos, within an extensively cleared landscape
Significant impact (hectares)	78 trees	The application is to clear 78 native trees considered to provide foraging habitat for black cockatoos. The canopy area of each tree has been averaged and an area calculation considered for the offset, noting the canopy provides the foraging values. A calculation of one tree = 0.01ha has been used.
Quality (scale)	8	The trees are marri and jarrah, which are preferred foraging habitat for black cockatoos. The trees provide significant habitat linkage value for black cockatoos in an extensively cleared and fragmented landscape. Given the site context and habitat attributes, the vegetation is considered to provide high quality habitat for black cockatoos.
Rehabilitation credit		
Description	Infill planting within the road reserve	Infill planting of marri trees within Hairpin Road Reserve, adjacent to the application area.
Proposed rehabilitation (area in hectares)	132 trees	Infill planting of 132 marri trees. A calculation of one tree = 0.01ha has been used.

Calculation	Score (Area)	Rationale
Current quality of rehabilitation site	2	The planting is proposed in degraded patches of native vegetation. There is a mix of high quality intact vegetation and patches of bare ground. On average, the vegetation is considered to provide low habitat quality for black cockatoos.
Future quality WITHOUT rehabilitation	2	It is considered unlikely the habitat quality will increase without active revegetation.
Future quality WITH rehabilitation	5	The habitat quality of the rehabilitation area is considered to increase to good quality foraging habitat by active revegetation and management measures to meet appropriate completion criteria.
Time until ecological benefit (years)	17	Average time until planted vegetation can be used as foraging habitat by black cockatoos. An extra two years has been added to account for the delay in commencement of the revegetation (assumed to commence within two years of the permit start date).
Confidence in rehabilitation result (%)	80	High level of confidence that the quality within the rehabilitated areas will improve with best practice revegetation techniques and appropriate completion criteria.
Offset		
Description	Rehabilitation and conservation reserve vesting	Revegetation of native vegetation from a moderate to good habitat quality and change of reserve vesting to conservation.
Proposed offset (area in hectares)	1.31	The area required to counterbalance 100% of significant residual impacts (SRI) of the proposed clearing remaining after rehabilitation credit is applied.
Current quality of offset site	1	The proposed offset site provides low quality habitat for BC
Future quality WITHOUT offset	1	It is considered unlikely the habitat quality will increase without active revegetation
Future quality WITH offset	5	The habitat quality of the offset site is considered to increase by active revegetation and management measures to meet appropriate completion criteria.
Time until ecological benefit (years)	17	Average time until planted vegetation can be used as foraging habitat by BC. An extra two years has been added to account for the delay in commencement of the revegetation (assumed to commence within two years of the permit start date).
Confidence in offset result (%)	80	High level of confidence that the quality within the rehabilitated areas will improve with best practice revegetation techniques and appropriate completion criteria.
Duration of offset implementation (maximum 20 years)	20	Maximum value applied noting the vegetation is not to be cleared in the future.
Time until offset site secured (years)	2	Two years for vesting of reserve to be changed to 'conservation'
Risk of future loss WITHOUT offset (%)	30%	The proposed offset site is currently within a road reserve with a moderately high risk of loss, given the risk of potential future clearing from road upgrade works.
Risk of future loss WITH offset (%)	10%	Risk of loss is considered to decrease with placement under secure conservation tenure. However, there is a small risk of future loss from road upgrade works or maintenance given the location of the offset area adjacent to an existing road. The City has advised there are no current plans to upgrade the road adjacent to the proposed offset site.

Offset calculation and justification for significant residual impact to extensively cleared remnant vegetation and Abba complex

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Extensively cleared vegetation complex	The application is to clear vegetation considered representative of the Abba complex in an extensively cleared local area.
Type of environmental value	Vegetation/habitat	Extensively cleared vegetation complex and local area (10 kilometres).
Conservation significance of environmental value	Terrestrial native vegetation complex - <30% extent remaining in bioregion	The Abba complex retains approximately 6.5% of pre-European extent. The application area is representative of the Abba complex in degraded condition. The local area (10km) retains approximately 18% remnant native vegetation. Given this, the application area is considered representative of an extensively cleared vegetation complex in an extensively cleared landscape.
Landscape level value impacted	Yes/No	Yes - extensively cleared landscape.
Significant impact		
Description	Extensively cleared vegetation	Proposed clearing of native vegetation considered broadly representative of the Abba complex in an extensively cleared landscape.
Significant impact (hectares)	84 trees	The applicant is proposing to selectively clear 85 native trees. One dead tree is proposed to be cleared that has been excluded from the offset calculation. A calculation of one tree = 0.01ha has been used.
Quality (scale)	3	Vegetation is in Degraded to Completely Degraded (Keighery, 1994) condition. The Abba complex retains 6% of pre-European extent. Given the extent of vegetation remaining for the Abba complex is significantly below the 30% threshold, remaining vegetation representative of this complex is considered significant.
Rehabilitation credit		
N/A	N/A	The proposed onsite rehabilitation is not considered suitable for mitigating impacts to the Abba complex, noting infill planting of trees only is proposed with no rehabilitation of the understorey vegetation.
Offset		
Description	Rehabilitation and conservation reserve vesting	Rehabilitation (weeding) and placement under conservation tenure within Crown Reserve R 24520 (Lot 592 on Deposited Plan 65482 and Lot 593 on Deposited Plan 65482), Bullaring.
Proposed offset (area in hectares)	0.79	The area required to counterbalance 100% of the significant residual impact of the proposed clearing
Current quality of offset site	1	The vegetation is in Good to Very Good condition, based on the department's site inspection.
Future quality WITHOUT offset	1	The quality of the vegetation is unlikely to increase without active rehabilitation.
Future quality WITH offset	5	Consistent weeding will increase the quality of the proposed offset site to Very Good condition.
Time until ecological benefit (years)	12	Quality increase assumed to be met after five years of weeding and monitoring of offset site. This accounts for time required to reduce weed load in the soil. An extra year has been added to account for the delay in commencement of the rehabilitation (assumed to commence within one year of the permit start date).

Calculation	Score (Area)	Rationale
Confidence in offset result (%)	80	High level of confidence that the quality within the rehabilitated areas will improve with best practice rehabilitation techniques and appropriate completion criteria.
Duration of offset implementation (maximum 20 years)	20	Maximum value applied noting the vegetation is not to be cleared in the future.
Time until offset site secured (years)	2	Two years for vesting of purpose to be changed to 'conservation'
Risk of future loss WITHOUT offset (%)	30%	The proposed offset site is currently within a road reserve with a moderately high risk of loss, given the risk of potential future clearing from road upgrade works.
Risk of future loss WITH offset (%)	10%	Risk of loss is considered to decrease with placement under secure conservation tenure. However, there is a small risk of future loss from road upgrade works or maintenance given the location of the offset area adjacent to an existing road. The City has advised there are no current plans to upgrade the road adjacent to the proposed offset site.

Appendix F. Sources of information

F.1. GIS databases

Publicly available GIS Databases used (sourced from www.data.wa.gov.au):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Mean Annual Rainfall Isohyets (30 years)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)

- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

F.2. References

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