GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 10348/1
Permit Holder:	Laing O'Rourke Australia Construction Pty Ltd
Duration of Permit:	From 13 July 2024 to 13 July 2034

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of service installation (sewer) and associated road works.

2. Land on which clearing is to be done

Beechboro Road North Road Reserve (PIN 11821528), Bennett Springs
Unnamed Road Reserve (PIN 1165363), Bennett Springs

3. Clearing authorised

The permit holder must not clear more than 0.23 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 13 July 2029.

PART II – MANAGEMENT CONDITIONS

5. Avoid, minimise, and reduce impacts and extent of clearing

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

(a) avoid the clearing of *native vegetation*;
(b) minimise the amount of *native vegetation* to be cleared; and
(c) reduce the impact of clearing on any environmental value.

6. Weed and dieback management

When undertaking any *clearing* authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and

(c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

7. Demarcation of the clearing area

Prior to undertaking any *clearing* authorised under this permit, the permit holder must:

(a) demarcate the clearing area to avoid inadvertent removal of adjacent vegetation,

(b) within one (1) month of installing the above demarcation, the permit holder must notify the *CEO* in writing that the demarcation has been completed.

8. Clearing not authorised - retention of habitat tree

(a) Prior to undertaking any *clearing* authorised under this permit, the permit holder must demarcate the marri (*Corymbia calophylla*) tree identified in the area cross-hatched orange in Figure 2 of Schedule 1 and at the following location:

- Latitude -31.856561°S, Longitude 115.924578°E

(b) The permit holder must not clear the marri (*Corymbia calophylla*) tree identified in accordance with condition 8(a).

(c) Within two months of completing the *clearing* authorised under this permit, the permit holder must provide to the *CEO* a photograph of the marri (*Corymbia calophylla*) tree retained in accordance with condition 8(b), taken after completing the *clearing* authorised under this permit.

9. Revegetation and rehabilitation – *temporary works*

The permit holder must:

(a) at an *optimal time* and no later than six (6) months following clearing authorised under this permit, *revegetate* and *rehabilitate* the area(s) that are no longer required for the purpose for which they were cleared under this permit (*temporary works*) by:

(i) re-shaping the surface of the land so that it is consistent with the surrounding five (5) metres of uncleared land; and

(ii) ripping the ground on the contour to remove soil compaction.

(b) within 24 months of undertaking *revegetation* and *rehabilitation* in accordance with condition 9(a) of this permit:

(i) engage an *environmental specialist* to determine the species composition, structure and density of the area *revegetated* and *rehabilitated*; and

(ii) engage an *environmental specialist* to make a determination as to whether the composition, structure and density determined under condition 9(b)(i) of this permit will, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area.

(c) If the determination made by the *environmental specialist* under condition 9(b)(ii) is that the species composition, structure, and density determined under condition 9(c)(i) will not, without further *revegetation*, result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, the permit holder must *revegetate* the area by deliberately *planting local provenance* propagating material and/or *direct seeding* of *local provenance* seeds that will result in a similar species composition, structure, and density of *native vegetation* to pre-clearing vegetation types in that area.

(d) Where additional *planting* or *direct seeding* of *native vegetation* is undertaken in accordance with condition 9(c), the permit holder must repeat the activities required by condition 9(b) and 9(c) within 24 months of undertaking the additional *planting* or *direct seeding* of *local provenance native vegetation*.

(e) Where a determination is made by an *environmental specialist* under condition 9(b)(ii) that the composition, structure and density within areas *revegetated* and *rehabilitated* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area, that determination shall be submitted to the *CEO* within three months of the determination being made by the *environmental specialist*.

(f) Where a notice is received from the *CEO*:

(i) stating that the *CEO* disagrees with the determination submitted under condition 9(e); and

(ii) specifying the required further *planting* of *local provenance* propagating material and/or *direct seeding* of *local provenance* seeds that in the *CEO*'s reasonable opinion are necessary to ensure that the *native vegetation* will result in a similar species composition, structure and density to that of pre-clearing vegetation types in that area;

(iii) the permit holder must carry out the further *planting* and/or *direct seeding* specified in the notice, during the next *optimal time* occurring after receiving the notice from the *CEO*.

10. Offset – Revegetation and rehabilitation

(a) Within 12 months of the commencement of *clearing* authorised under this permit, and no later than 13 July 2029, the permit holder must *revegetate* and *rehabilitate* 0.32 hectares of *native vegetation* in the area cross-hatched red in Figure 2 of Schedule 1 (Lot 12626 on Plan 21318), with plant species which provide suitable foraging habitat for *black cockatoo species*.

(b) In undertaking the *revegetation* and *rehabilitation* required under condition 10(a) of this permit, the permit holder must:

(i) ensure only *local provenance* seeds and propagating material is used to *revegetate* and *rehabilitate*;

(ii) undertake *revegetation* and *rehabilitation* activities at an *optimal time* with *native vegetation*;

(iii) undertake *weed* control activities and watering to achieve the minimum completion criteria specified in Table 3 of Schedule 2;

(iv) establish at least four 10 x 10 metre quadrats within the *revegetation* and *rehabilitation* areas, in the area cross-hatched red in Figure 2 of Schedule 1;

(v) engage an *environmental specialist* to monitor quadrats specified in condition 10(b)(iv) annually until the completion criteria, outlined in Table 3 of Schedule 2, have been met and maintained for a minimum of two years.

(vi) If the monitoring required under condition 10(b)(v) indicates that the completion criteria outlined in Table 3 of Schedule 2 have not been met, undertake remedial actions for *revegetation* and *rehabilitation* including:

(i) deliberately *planting native vegetation* within the areas cross-hatched red in Figure 2 of Schedule 1, that will result in the completion criteria specified in Table 3 of Schedule 2 being met, ensuring only *local provenance* seeds and propagating material are used;

(ii) undertake additional *weed* control activities;

(iii) continue the annual monitoring of *revegetation* and *rehabilitation* areas, in the areas cross-hatched red in Figure 2 of Schedule 1, by an *environmental specialist* until the completion criteria outlined in Table 3 of Schedule 2, are met.

(c) Where remedial actions have been undertaken in accordance with condition 10(b)(vi) of this permit, the permit holder must repeat the activities required by condition 10(a) and 10(b) of this permit.

(d) Where an *environmental specialist* has determined that the completion criteria outlined in Table 3 of Schedule 2 have been met, that report is to be provided to the *CEO*.

(e) If the *CEO* does not agree with the determinations made by an *environmental specialist* under condition 10(b) of this permit, the *CEO* may require the permit holder to repeat the required actions under conditions 10(a) and 10(b) of this permit.

PART III - RECORD KEEPING AND REPORTING

11. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	(a) the species composition, structure, and density of the cleared area; (b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (c) the date that the area was cleared; (d) the size of the area cleared (in hectares); (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 6; and (g) actions taken in accordance with condition 7 and 8.
2.	In relation to	(a) actions taken in accordance with condition 9

No.	Relevant matter	Specifications
	revegetation and *rehabilitation* (*temporary works*) pursuant to condition 9	to *revegetate* and *rehabilitate* areas cleared for *temporary works*; (b) the size of the area(s) *revegetated* and *rehabilitated*; (c) the date(s) on which the *revegetation* and *rehabilitation* was undertaken; (d) the boundaries of the area(s) *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings; (e) a description of any remediation works undertaken pursuant to condition 9(c); and (f) a copy of the *environmental specialist*'s monitoring report and determination, pursuant to condition 9(e).
3.	In relation to *revegetation* and *rehabilitation* pursuant to condition 10	(a) the date that *revegetation* and *rehabilitation* works began; (b) the boundaries of the area *revegetated* and *rehabilitated* (recorded digitally as a shapefile); (c) a description of the *revegetation* and *rehabilitation* activities undertaken, including actions taken to implement watering and *weed* control; (d) a list of the *native vegetation* species *planted*; (e) a description of any remediation works undertaken pursuant to condition 10(b)(vi); (f) the date that completion criteria were considered to be met; and (g) a copy of the *environmental specialist*'s monitoring report and determination, pursuant to condition 10(d).

12. Reporting

The permit holder must provide to the *CEO* the records required under condition 11 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions

Term	Definition
black cockatoo species	means one or more of the following species: (a) *Zanda listeriosis* (Carnaby's cockatoo); (b) *Zanda baudinii* (Baudin's cockatoo); and/or (c) *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo).
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of *Phytophthora* species on native vegetation.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
direct seeding	means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this permit, or who is approved by the *CEO* as a suitable environmental specialist.
EP Act	*Environmental Protection Act 1986* (WA)
fill	means material used to increase the ground level, or to fill a depression.
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
optimal time	means the period from May to June for undertaking planting and seeding.
plant/ing	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
rehabilitate/ed/ion	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate/ed/ion	means the re-establishment of a cover of local provenance native vegetation in an area using methods such as natural regeneration, direct seeding and/or planting, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.
temporary works	means access tracks, spoil areas, side tracks, site offices, storage areas, laydown areas, extraction sites, camps, project surveys, pre-construction activities, and similar works associated with a project activity that are temporary in nature.

Term	Definition
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

19 June 2024

Schedule 1

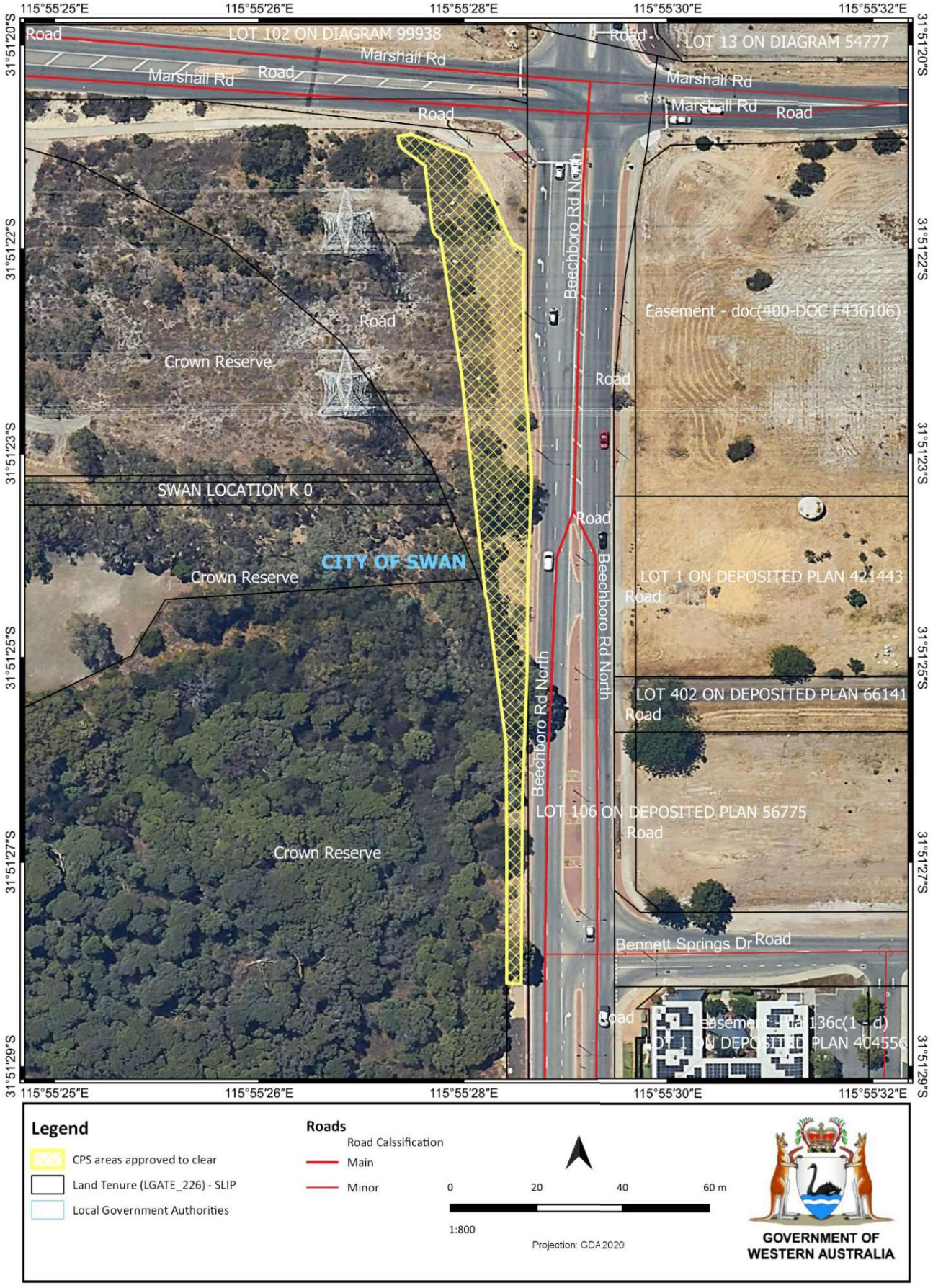

Figure 1: Map of the boundary of the area within which clearing may occur (cross-hatched yellow)

Figure 2: Map of the boundary of the area subject to condition 8 (cross-hatched orange) and the areas subject to condition 10 (cross-hatched red)

Schedule 2

Table 3: Completion criteria for the *revegetation* and *rehabilitation* within the areas cross-hatched red in Figure 2 of Schedule 1 as referred to under condition 10 of this permit.

Characteristic	Completion criteria	Monitoring
Species richness	Species richness of eight or more species of *native vegetation* per 100m^2, which must include a minimum of two tree species which provide suitable foraging habitat for *black cockatoo species*, for the 0.32-hectare area required to be rehabilitated under condition 10(a).	Annual monitoring by an *environmental specialist*, of species richness within the four monitoring quadrats required by condition 10(b)(v-vi). Completion criteria must be met and maintained for two years.
Species density	Density of one stem per two square metres in the areas required for *revegetation* and *rehabilitation* under condition 10(a).	Annual monitoring by an *environmental specialist*, of species density within the four monitoring quadrats required by condition 10(b)(v-vi). Completion criteria must be met and maintained for two years.
Vegetation cover	<20% bare ground assessed as vegetation cover in the areas required for *revegetation* and *rehabilitation* under condition 10(a).	Annual monitoring by an *environmental specialist*, of vegetation cover within the four monitoring quadrats required by condition 10(b)(v-vi). Completion criteria must be met and maintained for two years.
Vegetation condition	Targeted vegetation condition in Good (Keighery, 1994), or better condition in the areas required for *revegetation* and *rehabilitation* under condition 10(a).	Annual monitoring by an *environmental specialist*, of vegetation condition within the four monitoring quadrats required by condition 10(b)(v-vi). Completion criteria must be met and maintained for two years.
Weed cover	No declared weeds within the areas required for *revegetation* and *rehabilitation* under condition 10(a). Weed cover of less than 10% of total species abundance on site in the areas required for revegetation and rehabilitation under condition 10(a).	Annual monitoring, during Autumn and Spring, by an *environmental specialist*, of weed cover within the four monitoring quadrats required by condition 10(b)(v-vi). Completion criteria must be met and maintained for two years.

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 10348/1
Permit type:	Purpose permit
Applicant name:	Laing O'Rourke Australia Construction Pty Ltd
Application received:	20 September 2023
Application area:	0.23 hectares of native vegetation
Purpose of clearing:	service installation (sewer) and associated road works
Method of clearing:	Mechanical
Property:	Beechboro Road North Road Reserve (PIN 11821528) Unnamed Road Reserve (PIN 1165363)
Location (LGA area/s):	City of Swan
Localities (suburb/s):	Bennett Springs

1.2. Description of clearing activities

The vegetation proposed to be cleared is an approximately 230-metre strip of remnant vegetation along the western side of Beechboro Road North (see Figure 1, Section 1.5). The proposed clearing is to install sewer infrastructure and for associated road works. A portion of the western-most edge of the application area is proposed to be temporarily cleared for batters as part of the works.

1.3. Decision on application

Decision:	Granted
Decision date:	19 June 2024
Decision area:	0.23 hectares of native vegetation, 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. The application was readvertised for a further 7 days due to a change in the purpose of the proposed clearing and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix H.1), the findings of a biological survey (see Appendix E), the findings of a site inspection (see Appendix F), 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 clearing is for public road upgrades and service installation.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable habitat for *Zanda latirostris* (Carnaby's cockatoo), *Zanda baudinii* (Baudin's cockatoo) and *Calyptorhynchus banksia naso* (forest red-tailed black cockatoo) (collectively referred to as black cockatoos),
- the loss of significant remnant native vegetation in an area that has been extensively cleared,
- the loss of native vegetation that may contain suitable habitat for priority flora, and
- the potential introduction and spread of weeds and dieback 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 avoidance and mitigation measures (see section 3.1), the Delegated Officer determined the proposed clearing will result in the following significant residual impacts:

- 0.15 hectares of native vegetation that provides suitable foraging habitat for all three species of black cockatoos, and
- 0.23 hectares of native vegetation considered a significant remnant within an extensively cleared landscape.

In accordance with the Government of Western Australia's Offsets Policy (2011) and Offset Guidelines (2014), an offset is required to counterbalance the significant residual impacts of the proposed clearing (see section 4). The Delegated Officer considered the quantification of the offset required in accordance with the Western Australian Environmental Offset Calculator and Guideline (see Appendix D). The applicant proposed an offset to undertake revegetation within a 0.32-hectare area with suitable foraging species for black cockatoos. The Delegated Officer considered that the offset adequately counterbalances the significant residual impacts. The suitability of the offset is summarised in section 4.

The Delegated Officer determined that the management measures conditioned on the permit will manage any potential impacts on the environment. The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback,
- demarcate the clearing area to avoid inadvertent clearing of adjacent native vegetation,
- demarcate and retain the large marri (*Corymbia calophylla*) tree in the application area to minimise impacts to black cockatoo foraging habitat,
- undertake revegetation and rehabilitation of areas cleared for temporary works,
- undertake revegetation of 0.32 hectares of native vegetation from completely degraded to good condition, with suitable foraging species for black cockatoos.

1.5. Site map

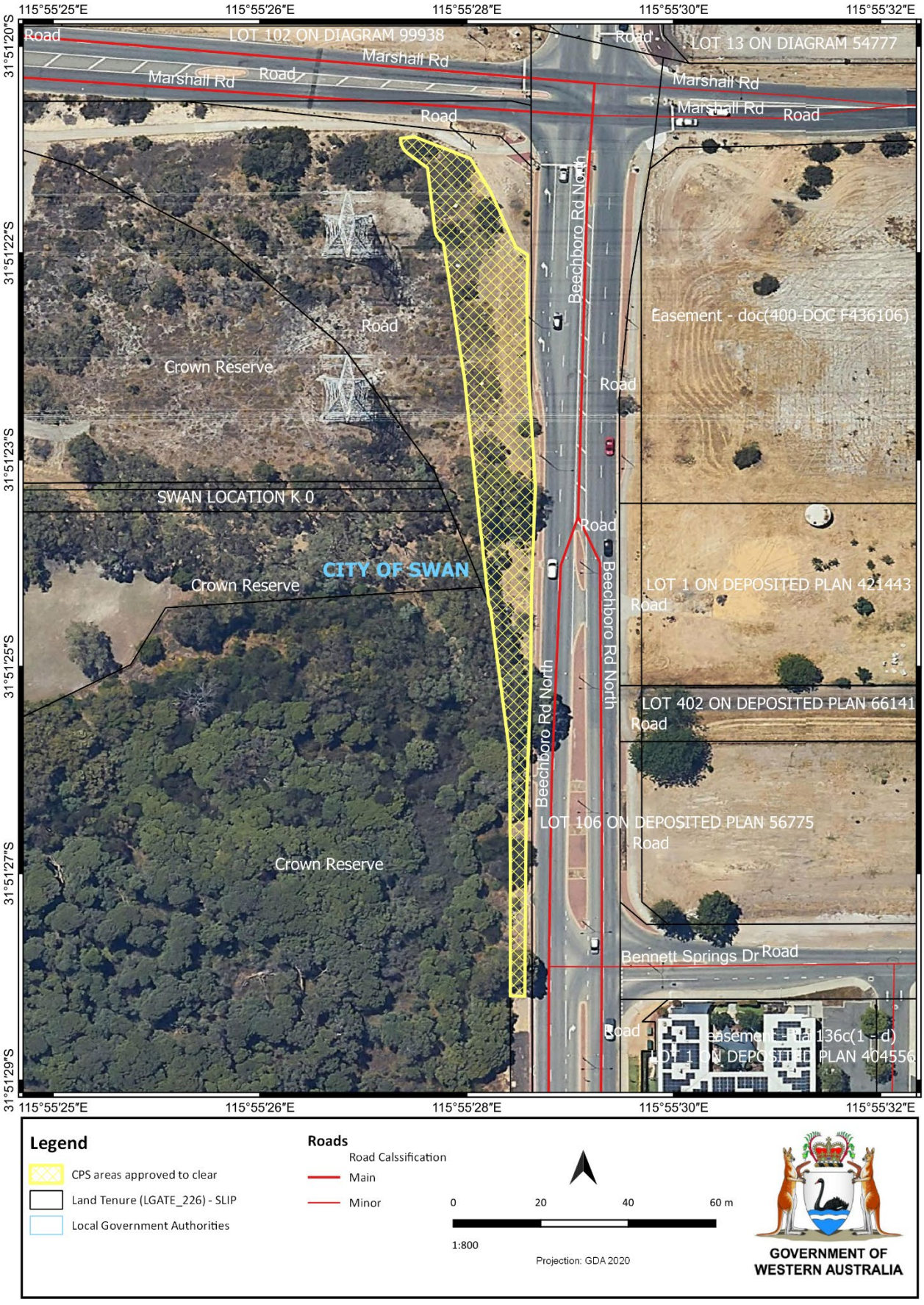

Figure 1 Map of the application area

The area crosshatched yellow indicates the area 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 Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating that:

- the application area was chosen in an area of degraded vegetation that has been subject to historical disturbance,
- the proposed sewer will be installed above ground level to meet requirements of the new road layout and to reduce the need for digging and dewatering,
- the proposed works will be covered by a sealed road. Areas cleared for temporary purposes (e.g. batters) will be revegetated to reduce erosion,
- the largest marri tree in the application area will be retained and no digging will occur near the tree to avoid impacts to the tree's root system,
- the proposed works have been moved as close to the road as practical to avoid and minimise the need for clearing. The applicant noted the works could not be moved closer to the road due to safety requirements for future maintenance.
- The design for the sewer works accounted for current and future road design, including requirements for the new roundabout being installed by the City of Swan at the intersection of Beechboro Road North and Orchid Avenue (related to a separate clearing permit application CPS 10373/1) (Laing O'Rourke, 2024b).

The applicant confirmed that alternate designs to the proposed works were considered to reduce the need for clearing, including moving the works to the cleared areas on the eastern side of Beechboro Road North. Evidence was provided by the applicant that this design was not practical with the current sewer alignment at Orchid Avenue. The sewer would need to cross Beechboro Road North and back, which would create excessive inefficiencies due to the distance and fall required. The sewer would need to be installed deeper to account for this and dewatering would be required. The current design does not require dewatering (Laing O'Rourke, 2024b).

After consideration of avoidance and mitigation measures, it was determined that an offset was necessary to counterbalance the significant residual impacts to suitable black cockatoo habitat and a significant remnant of native vegetation in an extensively cleared landscape. 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 are 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 Appendix A) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, 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, flora and vegetation), significant remnant vegetation and conservation areas, and land and water resources. 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 site inspection conducted by the department (DWER, 2024) indicates the application area consists of three vegetation types in Completely Degraded to Good (Keighery, 1994) condition:

- *Adenanthos cygnorum* (common woollybush) and *Xanthorrhoea preissii* (grass tree) low shrubland,
- *Corymbia calophylla* (marri), *Eucalyptus camaldulensis* and *E. rudis* woodland over shrubland,
- *Melaleuca preissiana* and *E. rudis* low woodland (see Appendix F).

According to available databases, 44 conservation significant fauna species have been recorded in the local area (10-kilometre radius from the application area). In forming a view on the likelihood of each species occurring within the application area, the following was considered:

- the preferred habitat and vegetation types of the species,
- their recorded proximity to the application, and
- date of record (see Appendix A.4).

The likelihood analysis identified eight conservation significant fauna species which may occur in the application area (see Appendix A.4.). Of these, three species were considered likely to occur: *Zanda latirostris* (Carnaby's cockatoo; EN), *Zanda baudinii* (Baudin's cockatoo; EN), and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo; VU).

Black cockatoos

The application area is within the known distribution of Carnaby's cockatoo, Baudin's cockatoo, and forest red-tailed black cockatoo (herein referred to as black cockatoos). According to available databases, there are no confirmed black cockatoo breeding sites in the local area. The closest recorded potential breeding site is located approximately 11 kilometres from the application area. There are 36 known roost sites in the local area, the closest is approximately two kilometres northwest of the application area. The fauna survey observed an individual black cockatoo in a large marri tree in the application area (Natural Area, 2023).

The referral guideline for threatened black cockatoo species, published by the Department of Agriculture, Water and the Environment (DAWE, 2022), specifies that habitat critical for the recovery of black cockatoos includes foraging habitat (including remnant patches of vegetation), night roosting habitat and nesting trees for breeding. Suitable breeding habitat for black cockatoos 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 the findings of the department's site inspection (DWER, 2024) and a fauna survey (Natural Area, 2023) the application area provides suitable foraging habitat for black cockatoos. There are thirteen trees in the application area, comprising six *Corymbia calophylla* (marri), five *Eucalyptus camaldulensis* (river red gum) and two *Eucalyptus rudis* (flooded gum). Additionally, the application area provides suitable understorey foraging species including *Xanthorrhoea preissii* (grass tree). A species list is available in Appendix E. No hollows or evidence of foraging by black cockatoos were observed in the application area during the site inspection (DWER, 2024). Chewed marri nuts were observed in the adjacent reserve, approximately 150 metres west of the application area (DWER, 2024). Chew marks were considered consistent with foraging by black cockatoos (see Appendix F).

The application area is adjacent to a mapped wetland which may provide a seasonal water source for black cockatoos. Consequently, the trees proposed to be cleared may provide roosting habitat for black cockatoos.

Advice was sought from the Department of Biodiversity, Conservation and Attractions (DBCA) regarding environmental values within and adjacent to the application area. DBCA advised the department that avoidance and mitigation measures should be applied to the marri tree that a black cockatoo was observed in, including demarcating and avoiding clearing the tree and ensuring nearby groundworks do not disturb the tree's root system. The applicant

confirmed the tree will be retained and the proposed works will not require digging near the roots of the tree. Further avoidance and mitigation measures are outlined in section 3.1.

Given the above, the application area is considered to provide suitable foraging and potential roosting habitat for black cockatoos. As the application area is within an extensively cleared landscape, the proposed clearing is considered to have a cumulative impact on black cockatoo foraging habitat in the local area (see section 3.2.3).

Other fauna

Other fauna which may be transient visitors to the application area are listed in Appendix A.4. Other than a black cockatoo, no conservation significant fauna species were observed in the application area during the fauna survey (Natural Area, 2023). Given the lack of dense understorey, size and condition of the vegetation, and distance to known records, the application area is not considered to provide significant habitat for these species. If present, the proposed clearing is considered unlikely to impact the conservation status of these species, given the size, extent, and linear nature of the clearing proposed.

Ecological linkage

The application area does not intersect a formal ecological linkage. The closest mapped ecological linkages are the Perth Regional Ecological Linkage and Gnangara Conceptual Ecological Linkage, mapped approximately 150 metres from the application area. Given the extent and condition of the vegetation, the linear nature of the proposed clearing, that it is along a cleared road, the proposed clearing is unlikely to alter the function of formally mapped ecological linkages. However, the application area is considered to provide linkage value for fauna species given it is part of an extensively fragmented landscape (see section 3.2.3).

Conclusion

Based on the above assessment, the impact of the proposed clearing on black cockatoo foraging habitat constitutes a significant residual impact. Environmental offsets are required to counterbalance this significant residual impact (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,
- demarcation and retention of the large marri (*Corymbia calophylla*) tree in the application area to minimise impacts to black cockatoo foraging habitat,
- revegetation and rehabilitation of areas cleared for temporary works,
- environmental offsets (as detailed in section 4 below).

3.2.2. Biological values (flora and threatened ecological community) - Clearing Principles (a), (c) and (d)

Assessment

A site inspection conducted by the department (DWER, 2024) indicates the application area consists of three vegetation types in Completely Degraded to Good (Keighery, 1994) condition:

- *Adenanthos cygnorum* (common woollybush) and *Xanthorrhoea preissii* (grass tree) low shrubland,
- *Corymbia calophylla* (marri), *Eucalyptus camaldulensis* and *E. rudis* woodland over shrubland,
- *Melaleuca preissiana* and *E. rudis* low woodland (see Appendix F).

According to available databases, the closest conservation significant flora record is the Priority 3 *Cyathochaeta teretifolia*, recorded approximately 50 metres from the application area. Six threatened flora species have been recorded in the local area. No priority or threatened flora were identified in the application area during the flora and vegetation survey (Natural Area, 2023).

A likelihood assessment was conducted based on habitat and soil preferences, vegetation within the application area, and known species distribution. The assessment identified 12 conservation significant flora species which may occur in the application area (see Appendix A.3). Of these, four species would not have been identifiable during the out-of-season flora survey based on advice received from DBCA (2023): *Poranthera moorokatta* (P2), *Millotia tenuifolia* var. *laevis* (P2), *Stylidium longitubum* (P4) and *Drosera occidentalis* (P4).

DBCA advised the department that, given the small size and degraded condition of the application area, *Poranthera moorokatta*, *Millotia tenuifolia* var. *laevis* and *Stylidium longitubum* are unlikely to be present in high numbers in the application area (DBCA, 2023). If present, the proposed clearing may be a locally significant impact, however, is unlikely to impact the conservation status of these species (DBCA, 2023).

***Drosera occidentalis* (P4)**

Drosera occidentalis grows in seasonally wet areas and has been recorded in open *Banksia attenuata* and *Eucalyptus todtiana* woodland (WA Herb 1998-). This vegetation type was identified adjacent to the northern portion of the application area during the site inspection (DWER, 2024). According to available databases, *D. occidentalis* has been recorded approximately 80 metres from the application area. DBCA advised the department that this species is likely to occur in or near the application area as there is a recorded *D. occidentalis* population nearby (DBCA, 2023). Given the species is a small rosetted perennial herb it would have been difficult to detect at the time of the flora survey (DBCA, 2023).

DBCA advised that, given the small size and degraded condition of the application area, this species is unlikely to be present in large numbers (DBCA, 2023). Given this, DBCA advised that direct impacts to *D. occidentalis* are unlikely to be significant at the species or regional level. DBCA recommended that the application area is clearly demarcated prior to clearing to limit indirect impacts to *D. occidentalis* if present nearby. DBCA recommended the applicant avoid disturbance outside the proposed clearing area.

Additionally, DBCA recommend the proposed works be moved to the eastern side of Beechboro Road North to avoid possible impacts to *D. occidentalis*. This option was explored by the applicant and was not found viable (see section 3.1).

Closest recorded flora

According to available databases, *Cyathochaeta teretifolia* (P3) has been recorded approximately 50 metres from the application area. Given *C. teretifolia* is a perennial herb that grows to 2 metres high, it is considered likely to have been identifiable in the flora survey (Natural Area, 2023) if present. As it was not identified in the flora survey, *C. teretifolia* is considered unlikely to be present in the application area.

Threatened ecological community (TEC)

A mapped occurrence of the federally listed Banksia Woodlands on the Swan Coastal Plain Threatened Ecological Community (Banksia Woodland TEC) partially intersects the application area. The key diagnostic criteria for the Banksia Woodlands TEC includes the presence of at least one of the four diagnostic *Banksia* species: *Banksia attenuata*, *B. menziesii*, *B. prionotes* and *B. ilicifolia* (Department of the Environment and Energy, 2016).

Three dead *Banksia littoralis* individuals were identified in the southern portion of the application area during the site inspection (DWER, 2024) and flora survey (Natural Area, 2023). No extant banksias were observed within the application area (DWER, 2024). Given this, the application area is not considered to contain species representative of the Banksia Woodland TEC. However, DBCA advised the department that, while the application area is unlikely to currently meet the key diagnostic characteristics and condition threshold for Banksia Woodland TEC, with effective rehabilitation the application area may meet these criteria in the future (DBCA, 2023).

The vegetation adjacent to the northern portion of the application area may represent a patch of the Banksia Woodland TEC, based on the findings of the site inspection (DWER, 2024). *Banksia attenuata*, *B. menziesii* and *B. ilicifolia* individuals were observed in this patch of vegetation west of the application area, mapped as Banksia Woodland TEC (see Appendix F).

DBCA advised the department that the mapped small and fragmented patch of potential Banksia Woodland TEC is likely already impacted by a large edge to area ratio, increased public access, weeds and rubbish (DBCA, 2023). DBCA advised that, if the Banksia Woodland TEC is present adjacent to the application area, the proposed clearing will reduce the surrounding vegetation buffer, likely exacerbating these threatening processes (DBCA, 2023). To reduce this impact, DBCA recommended that clearing of vegetation is minimised and the proposed works are confined to already cleared sections of the road verge where possible (DBCA, 2023). See section 3.1 for information regarding the applicant's avoidance and mitigation measures.

While the proposed clearing is likely to exacerbate existing impacts to the TEC patch by reducing the vegetation buffer, given the extent and condition of the application area, the narrow linear nature of the proposed clearing, and that temporarily cleared areas will be revegetated, the proposed clearing is considered unlikely to significantly alter the functioning of the adjacent Banksia Woodland TEC patch.

Another mapped occurrence of Banksia Woodlands TEC is present west of the southern portion of the application area. The site inspection observed this vegetation to comprise *Melaleuca rhaphiophylla* and *Eucalyptus rudis* woodland (DWER, 2024; see Appendix F). This vegetation is considered unlikely to represent the Banksia Woodland TEC.

Conclusion

Given the above, it is considered unlikely that conservation significant flora individuals are present in the application area. Based on expert advice from DBCA, given the extent of clearing proposed, the condition of the vegetation in the application area, and the location along a cleared road, the proposed clearing is unlikely to have a significant

residual impact on conservation significant flora species if present in the application area. The proposed clearing is considered unlikely to significantly impact the adjacent potential occurrence of Banksia Woodland TEC.

For the reasons set out above, it is considered that the impacts of the proposed clearing on flora and TECs can be managed, subject to the below conditions.

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 and dieback to adjacent vegetation,
- demarcation of clearing area to avoid inadvertent clearing of adjacent native vegetation,
- revegetation and rehabilitation of areas cleared for temporary works.

3.2.3. Significant remnant vegetation and conservation areas - Clearing Principles (e) and (h)

Assessment

Conservation areas

The application area borders Reserve R44853 (Orchid Park) vested with the Conservation Commission of WA for the purpose of conservation of flora and fauna. Orchid Park is an approximately 2.4-hectare area of native vegetation mapped as a conservation category sumpland. Impacts to water resources, including Orchid Park, are discussed in section 3.2.4. As the application area is located between Orchid Park and Beechboro Road North, the vegetation under application likely provides some buffer value from the road to the vegetation in Orchid Park.

The department received advice from DBCA that, while the vegetation in the application area is degraded, it still functions as a buffer to the vegetation in the adjacent conservation reserve. DBCA advised, the reserve is already impacted through a large edge to area ratio, increased public access, weeds and rubbish (DBCA, 2023). Removing or reducing the size of the buffer is likely to exacerbate these threatening processes (DBCA, 2023).

After receiving DBCA advice, the department conducted a site inspection to determine the distance between the application area and the vegetation in the adjacent reserve. The department's site inspection observed a buffer of degraded vegetation between the application area and the better-quality vegetation in the adjacent reserve, ranging two to 15 metres wide (DWER, 2024). The width of the buffer decreased towards the southern end of the application area.

The department considers that, while the proposed clearing may exacerbate existing threatening processes in Orchid Park to some extent, given the distance between the application area and better-quality vegetation in the adjacent reserve, the narrow linear nature of the proposed clearing, the extent and condition of vegetation in the application area, and that temporarily cleared areas will be revegetated, the proposed clearing is considered unlikely to significantly alter the functioning of the adjacent vegetation in Orchid Park.

While an offset is not required in this instance, the revegetation offset proposed to counterbalance the significant residual impacts of the proposed clearing (see section 4) will benefit the vegetation in Orchid Park by improving and increasing the vegetation buffer on the northwestern and southern side of the reserve.

Remnant vegetation

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 located within the Swan Coastal Plain IBRA Bioregion which retains approximately 38.62 per cent of its pre-European vegetation extent (Government of Western Australia, 2019). The application area is mapped within the Southern River Complex (System 42) vegetation community, which retains approximately 18.43 per cent of its pre-European vegetation extent (see Appendix A.2). The vegetation within the application area is considered representative of this community. The vegetation extent within the local area falls below national targets, with approximately 12.04 per cent of pre-European vegetation remaining.

The Environmental Protection Authority (EPA) recognises the Perth Metropolitan Region to be a constrained area, within which a minimum 10 per cent representation threshold for ecological communities is recommended (EPA, 2008). The current vegetation extent for the Swan Coastal Plain IBRA Bioregion, the Southern River Complex, and the local area are all above the 10 per cent threshold for constrained areas (see Appendix A.2).

However, this threshold does not consider the effect of habitat fragmentation and in heavily fragmented landscapes representation levels may need to be increased above the standard threshold (DER, 2013). Given the application area is within a heavily fragmented landscape, the vegetation extent in the local area is close to the 10 per cent threshold and the vegetation is considered to provide significant habitat for threatened fauna (see section 3.2.1), the application area is considered significant as a remnant of native vegetation in a fragmented and extensively cleared landscape.

Conclusion

Based on the above, the application area is a significant remnant of native vegetation in an extensively cleared and fragmented landscape. Given this, the impact of the proposed clearing on significant remnant vegetation constitutes a significant residual impact and environmental offsets are required (see section 4).

It is considered that the impacts of proposed clearing on the adjacent conservation area can be managed subject to the below conditions.

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 and dieback to adjacent vegetation,
- demarcation of clearing area to avoid inadvertent clearing of adjacent native vegetation,
- demarcation and retention of the large marri (*Corymbia calophylla*) tree in the application area,
- revegetation and rehabilitation of areas cleared for temporary works,
- environmental offsets (as detailed in section 4 below).

3.2.4. Land and water resources - Clearing Principles (f), (g) and (i)

Assessment

The southern portion of the application area contains riparian vegetation, identified as *Melaleuca preissiana* and *Eucalyptus rudis* low woodland during the site inspection (DWER, 2024; see Appendix F). The application area partially intersects the mapped Victoria Road Swamp multiple use sumpland (seasonally waterlogged basin) and is adjacent to Orchid Park conservation category sumpland. Impacts to the Orchid Park reserve are discussed under section 3.2.3.

The flora and vegetation survey (Natural Area, 2023), undertaken during winter, did not find standing water in the application area. If water is present at the time of clearing, the proposed clearing may generate localised sedimentation. Given the small size of clearing, it is unlikely minor sedimentation would cause deterioration of the surface water quality in the application area or adjacent wetland. Given this, any impacts to surface water quality are considered minimal and short term.

The applicant confirmed taking of groundwater is not required as part of the works (see section 3.1). Given this, and the extent and condition of the vegetation in the application area, the proposed clearing is not expected to result in changes to groundwater levels or quality.

The soils mapped across the application area have a high risk of waterlogging, subsurface acidification, phosphorus export, water repellence and wind erosion. Given the extent of clearing proposed, that minimal soil disturbance is required as sewer pipes will be installed at or above ground level (see section 3.1) and that temporarily cleared areas will be revegetated, the proposed clearing is unlikely to cause appreciable land degradation.

Conclusion

Given the above, the proposed clearing is considered unlikely to exacerbate impacts to land and water resources in or near the application area. It is considered that minor impacts can be managed subject to the below conditions.

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 and dieback to adjacent vegetation,
- demarcation of clearing area to avoid inadvertent clearing of adjacent native vegetation,
- demarcation and retention of the large marri (*Corymbia calophylla*) tree in the application area,
- revegetation and rehabilitation of areas cleared for temporary works.

3.3. Relevant planning instruments and other matters

The City of Swan advised DWER that the City do not have any objections to the proposed clearing and recommended planting is undertaken nearby to mitigate the clearing of native trees (City of Swan, 2023).

The department's Swan Avon Region advised that a 5C license under the *Rights in Water and Irrigation Act 1914* (RIWI Act) is required if groundwater is to be taken for dewatering purposes for the proposed road works (DWER, 2023). The applicant confirmed groundwater is not required to be taken as part of the works (Laing O'Rourke, 2024b).

A related clearing permit application has been received by the department from the City of Swan (CPS 10373/1) adjacent to the application area for CPS 10348/1. The cumulative impact of the clearing proposed under this application has been accounted for during the assessment of CPS 10348/1 and was considered in requiring offsets for this application.

The application area is within a mapped Aboriginal site of significance. 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

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:

- 0.15 hectares of native vegetation that provides suitable habitat for black cockatoos within an extensively cleared landscape, and
- 0.23 hectares of native vegetation that is a significant remnant within an extensively cleared landscape.

The applicant proposed an environmental offset to counterbalance the above impacts, comprising:

- revegetation of a 0.32 hectares area from completely degraded to good condition with suitable foraging species for black cockatoos.

The proposed offset area is located in the property adjacent to the application area, Crown Reserve R 44852 (Lot 12626 on Plan 21318), vested with the City of Swan for the purpose of recreation (Figure 2). The 0.32-hectare offset area is comprised of two separate areas, a 0.22-hectare area to the north and a 0.11-hectare area to the south.

The department's site inspection (DWER, 2023), aerial imagery, and photographs provided by the applicant (Laing O'Rourke, 2024a) indicate that the offset area is comprised of bare ground and remnant native vegetation in Completely Degraded (Keighery, 1994) condition. Representative photographs are available in Appendix G. Given the proximity to the application area, the proposed offset area is considered to have a similar site context to the area proposed to be cleared.

The Delegated Officer considers the proposed offset adequately counterbalances the significant residual impacts listed above. The Delegated Officer had consideration for the Government of Western Australia's Offsets Policy (2011) and Offset Guidelines (2014), and WA Environmental Offsets Metric in making this determination.

The justification for the values used in the offset calculation is provided in Appendix D. The clearing permit will contain conditions that require specific completion criteria and contingency measures for the proposed revegetation.

Figure 2. Map of the proposed offset site (crosshatched red) in context of the application area (crosshatched yellow).

End

Appendix A. 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.

A.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of a 5-hectare isolated patch of native vegetation in the intensive land use zone of Western Australia. It is surrounded by areas cleared for residential use. The proposed clearing area is located along a major road. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 12 per cent of the original native vegetation cover.
Ecological linkage	The application area does not intersect a formal ecological linkage. The closest mapped ecological linkages are the Perth Regional Ecological Linkage and Gnangara Conceptual Ecological Linkage, approximately 150 metres from the application area.
Conservation areas	The application area borders a reserve for the purpose of Conservation of Flora and Fauna (Orchid Park; R44853) vested with Conservation Commission of Western Australia.
Vegetation description	A site inspection conducted by the department (DWER, 2024) and flora and vegetation survey provided by the applicant (Natural Area, 2023) indicate the application area consists of three vegetation types: • *Adenanthos cygnorum* (common woollybush) and *Xanthorrhoea preissii* (grass tree) low shrubland, • *Corymbia calophylla* (marri), *Eucalyptus camaldulensis* and *E. rudis* woodland over shrubland, • *Melaleuca preissiana* and *E. rudis* low woodland. The full survey descriptions and maps are available in Appendix E. This is consistent with the mapped vegetation type: • Southern River Complex (system 42) described as open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus marginata* (Jarrah) - *Banksia* species with fringing woodland of *Eucalyptus rudis* (Flooded Gum) - *Melaleuca rhaphiophylla* (Swamp Paperbark) along creek beds. The mapped vegetation type retains approximately 18 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	A site inspection conducted by the department (DWER, 2024) and the findings of the flora and vegetation survey (Natural Area, 2023) indicate the vegetation within the proposed clearing area is in Completely Degraded to Good (Keighery, 1994) condition. The full Keighery (1994) condition rating scale is provided in Appendix C. The full survey descriptions and mapping are available in Appendix E.
Climate and landform	The average annual rainfall received over the application area from 1991 to 2020 is 600 to 1000 millimetres (Commonwealth of Australia, 2021). The application area is at an altitude of 30 to 35 meters above sea level.
Soil description	The soil is mapped as: • Bassendean, Jandakot Phase (212Bs__Ja), described as Jandakot low dunes. Slopes <10% and generally more than 5m relief. Grey sand over pale yellow sands generally underlain by humic and iron podsols; *Banksia* spp. low open woodland with a dense shrub layer. • Bassendean Yanga Phase (Bassendean) (212Bs__Ya), described as flat, poorly drained complex landscape; soils include shallow sand over limestone or ferruginous pan, deep leached sand, and saline soils; dense *Melaleuca* spp. along drainage lines.

Characteristic	Details
Land degradation risk	Land degradation risks are summarised in Table A.5. The application area is mapped as high to moderate and moderate to low acid sulfate soils disturbance risk (<3m from surface).
Waterbodies	The desktop assessment and aerial imagery indicate a multiple use sumpland (seasonally inundated basin; Victoria Road Swamp) transects the application area. The application area is adjacent to a conservation category sumpland (Orchid Park).
Hydrogeography	The application area falls within the Swan River System Surface Water Area and Mirrabooka 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 48 conservation significant flora taxa within the local area which comprises of six threatened flora and 42 priority flora taxa. The nearest record is a Priority 3 species, *Cyathochaeta teretifolia*, approximately 50 metres from the application area.
Ecological communities	A mapped occurrence of the Banksia Woodlands of the Swan Coastal Plain TEC partially transects the application area.
Fauna	The desktop assessment identified 44 conservation significant fauna species in the local area. The closest record is a *Zanda latirostris* (Carnaby's cockatoo) recorded 100 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. There are 36 known black cockatoo roost sites within the local area, the closest recorded roost site is 2 kilometres northwest of the application area.

A.2. 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	17.98
Vegetation complex**					
Southern River Complex (system 42)	58,781.48	10,832.18	18.43	940.36	1.60
Local area					
10km radius	31,642.18	3,809.03	12.04	-	-

*Government of Western Australia (2019b)

**Government of Western Australia (2019a)

A.3. Flora analysis table

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

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Flora survey adequate to identify? [Y/N]
Cyathochaeta teretifolia	P3	Y	Y	Y	0.05	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Flora survey adequate to identify? [Y/N]
Drosera occidentalis	P4	Y	Y	Y	0.08	N
Drosera patens	P1	Y	Y	Y	1.72	Y
Stylidium longitubum	P4	Y	Y	Y	2.18	N
Acacia benthamii	P2	Y	Y	Y	3.13	Y
Verticordia lindleyi subsp. *lindleyi*	P4	Y	Y	Y	3.28	Y
Amanita fibrillopes	P3	Y	Y	Y	3.37	Y
Stachystemon exilis	P1	Y	Y	Y	3.68	Y
Poranthera moorokatta	P2	Y	Y	Y	3.88	N
Millotia tenuifolia var. *laevis*	P2	Y	Y	Y	6.16	N
Dampiera triloba	P3	Y	Y	Y	6.45	Y
Stylidium paludicola	P3	Y	Y	Y	6.45	Y

P: priority

A.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)
Zanda latirostris (Carnaby's cockatoo)	EN	Y	Y	0.11
Isoodon fusciventer (quenda)	P4	Y	Y	0.65
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	Y	Y	1.14
Neelaps calonotos (black-striped snake)	P3	Y	Y	1.27
Zanda baudinii (Baudin's cockatoo)	EN	Y	Y	2.91
Falco peregrinus (peregrine falcon)	OS	Y	Y	2.91
Cacatua pastinator pastinator (Muir's corella)	CD	Y	Y	6.14
Hylaeus globuliferus (woolybush bee)	P3	Y	Y	8.47

EN: endangered, VU: vulnerable, P: priority; CD: conservation dependent; OS: other specially protected.

A.5. Land degradation risk table

Risk categories	Land Unit 1
Water logging	H2: >70% of map unit has a moderate to very high waterlogging risk L1: <3% of map unit has a moderate to very high waterlogging risk
Subsurface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid
Phosphorus export risk	H2: >70% of map unit has a high to extreme phosphorus export risk M1: 10-30% of map unit has a high to extreme phosphorus export risk
Water repellence	H2: >70% of map unit has a high water repellence risk M1: 10-30% of map unit has a high water repellence risk
Wind erosion	H1: 50-70% of map unit has a high to extreme wind erosion risk M1: 10-30% of map unit has a high to extreme wind erosion risk
Salinity	M1: 10-30% 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
Water erosion	L1: <3% of map unit has a high to extreme water erosion 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: Given the size and condition of the application area, that it is along a cleared road and is within a built-up area, it is unlikely to comprise a high level of biodiversity. Any potential impacts can be managed via permit conditions.	May be at variance	Yes *Refer to Section 3.2.1 and 3.2.2, above.*
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."* Assessment: The application area contains significant foraging habitat and suitable roosting habitat for black cockatoos.	At variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The application area is unlikely to contain habitat for threatened flora species. No threatened flora species were identified in the application area during the flora and vegetation survey (Natural Area, 2023).	Not likely to be at variance	Yes *Refer to Section 3.2.2, above.*
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: The area proposed to be cleared intersects a mapped occurrence of the Banksia Woodland TEC. A site inspection conducted by the department indicates the vegetation in the application area is not representative of the Banksia Woodland TEC, however adjacent vegetation may be representative. While the application area may provide buffer value to the adjacent vegetation, it is not considered necessary for the maintenance of the potential TEC patch. Any potential impacts can be managed via permit conditions.	May be at variance	Yes *Refer to Section 3.2.2, above.*
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 native vegetation within the local area falls below national targets for biodiversity conservation in Australia. However, the vegetation extent for the Swan Coastal Plain IBRA bioregion, the Southern River Complex and the local area are above the minimum threshold for constrained areas (EPA, 2008). Given the application area is within a heavily fragmented landscape, that the vegetation extent in the local area is 12 per cent and the vegetation proposed to be cleared provides significant habitat for threatened fauna, the application area is considered a significant remnant within an extensively cleared landscape.	At variance	Yes *Refer to Section 3.2.3, above.*

Assessment against the clearing principles	Variance level	Is further consideration required?
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: The application area provides value as a vegetation buffer to the adjacent conservation reserve (Orchid Park) and the proposed clearing will reduce the width of this buffer. This may exacerbate threatening processes in the reserve. However, given the narrow linear nature and small extent of the proposed clearing, the distance between the application area and better-quality vegetation in the adjacent reserve, and that temporarily cleared areas will be revegetated, the proposed clearing is considered unlikely to significantly impact the environmental values of the adjacent conservation area. Any potential impacts can be managed via permit conditions.	May be at variance	Yes *Refer to Section 3.2.3, above.*
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 The application area is within a mapped multiple use wetland (sumpland) and contains riparian vegetation. Any potential impacts can be managed via permit conditions.	At variance	Yes *Refer to Section 3.2.4, above.*
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 water logging, subsurface acidification, water repellence and wind erosion and have high phosphorus export risk. Given the extent and condition of the application area, that minimal soil disturbance is proposed and that temporarily cleared areas will be revegetated, the proposed clearing is unlikely to have an appreciable impact on land degradation. Any potential impacts can be managed via permit conditions.	Not likely to be at variance	Yes *Refer to Section 3.2.4, above.*
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: Given the extent of the application area, condition of the vegetation, and that it is along an existing road, the proposed clearing is considered unlikely to cause a deterioration in surface water quality. Any impacts to surface water quality are likely to be minimal and short term. As groundwater will not be taken for the works and minimal digging is required, the proposed clearing is considered unlikely to cause a deterioration in groundwater quality.	Not likely to be at variance	Yes *Refer to Section 3.2.4, above.*
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: According to available mapping, the application area is within a low flood risk area. Given this, and the small extent of proposed clearing, it is unlikely that the proposed clearing with cause or exacerbate flooding.	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. Offset calculator value justification

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 provides black cockatoo foraging habitat within an extensively cleared landscape.
Type of environmental value	Species (flora/fauna)	Suitable habitat for black cockatoos.
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)	0.15	Based on a site inspection conducted by the department, 0.15 hectares within the 0.23-hectare application area is considered

Calculation	Score (Area)	Rationale
		to provide suitable habitat for black cockatoos. The remaining area contains bare ground or native vegetation that is not considered suitable foraging habitat for black cockatoos.
Quality (scale)	6	The application area is within ten kilometres of approximately 36 roost sites and occurs within and adjacent to a mapped wetland which may provide seasonal watering sites for black cockatoos. The closest confirmed breeding site is approximately 16 kilometres away and closest recorded roost site is two kilometres away. The application area is within an extensively impacted part of the species range. Given the habitat attributes and site context of the application area, the vegetation under application is considered to provide moderate quality foraging habitat for black cockatoos.
Rehabilitation credit		
N/A	N/A	Onsite revegetation will not be taking place.
Offset		
Description	Rehabilitation	Rehabilitation from a low to a high habitat quality with species that provide foraging habitat for black cockatoos, over bare ground within an extensively cleared landscape.
Proposed offset (area in hectares)	0.32	The area required to counterbalance 100% of significant residual impact (SRI) of the proposed clearing.
Current quality of offset site	1	The area to be rehabilitated comprises bare ground (completely degraded quality) or sparse vegetation that provides very low-quality black cockatoo habitat.
Future quality WITHOUT offset	1	It is considered unlikely the habitat quality will increase without active revegetation.
Future quality WITH offset	6	The habitat quality of the offset site is considered to increase to high quality foraging habitat by planting trees that are suitable foraging species for black cockatoos.
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 offset result (%)	80	Moderate to 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)	0	The offset is proposed within land tenure currently managed by the City of Swan.
Risk of future loss WITHOUT offset (%)	15%	There is a moderate to low risk of loss given the offset area is within a reserve managed by the City of Swan for the purpose of recreation.
Risk of future loss WITH offset (%)	15%	The risk of loss is not considered to change with the proposed offset as the offset area is within a reserve managed by the City of Swan and no further security mechanisms are proposed (e.g. changing purpose of reserve to conservation). While a risk of loss with offset of lower than 15% would be preferable, it is considered acceptable in this instance only, given: • the proposed offset area is close to the impact site, • the proposed offset will fill a gap in an otherwise intact remnant of native vegetation and increase the vegetation

Calculation	Score (Area)	Rationale
		buffer to the adjacent conservation category wetland, which is a preferred environmental outcome, • in accordance with appeal determination 018-22, a degree of protection is afforded to the vegetation in the offset area given the vegetation will be planted for conservation purposes and any future clearing would be subject to the requirements of Part V of the EP Act.

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

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Extensively cleared local area	The application is to clear significant native vegetation within an extensively cleared local area.
Type of environmental value	Vegetation/habitat	Extensively cleared local area (10 kilometres).
Conservation significance of environmental value	Terrestrial native vegetation complex - <10% extent remaining in a constrained area	The local area retains approximately 12 per cent of the original extent of native vegetation. The application area is considered significant as a remnant, given it: • provides a vegetation buffer to the adjacent conservation category wetland and nearby occurrence of Banksia Woodland TEC based on advice from DBCA, • forms part of a 4.5-hectare area of remnant vegetation which has been historically impacted by development, • has been found to provide significant habitat value to black cockatoos, • is ~150 metres from mapped Perth Regional Ecological Linkages. While the vegetation in the local area is marginally above the 10 per cent threshold for constrained areas, the vegetation is part of a heavily fragmented landscape. Given this, the proposed clearing is considered to have a significant residual impact on significant remnant vegetation.
Landscape level value impacted	Yes/No	Yes - extensively cleared landscape.
Significant impact		
Description	Clearing of remnant vegetation	Proposed clearing of significant remnant native vegetation within an extensively cleared landscape.
Significant impact (hectares)	0.23	Applicant is proposing to clear 0.23 hectares of native vegetation.
Quality (scale)	3	The application area is in Degraded to Completely Degraded (Keighery, 1994) condition.
Rehabilitation credit		
N/A	N/A	Onsite revegetation will not be taking place.
Offset		
Description	Rehabilitation	Rehabilitation of native vegetation from a completely degraded to good condition within an extensively cleared landscape.
proposed offset (area in hectares)	0.26	The area required to counterbalance 100% of significant residual impact (SRI) of the proposed clearing.
Current quality of offset site	1	The area to be rehabilitated contains vegetation in completely degraded to degraded condition, comprising mostly bare ground.
Future quality WITHOUT offset	1	It is considered unlikely the quality will increase without active revegetation.

Calculation	Score (Area)	Rationale
Future quality WITH offset	5	The proposed revegetation over bare ground with both overstorey and understorey species will increase the condition of the offset site to a good quality.
Time until ecological benefit (years)	12	Average time until planted vegetation has matured. 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	Moderate to 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)	0	The offset is proposed within land tenure currently managed by the City of Swan.
Risk of future loss WITHOUT offset (%)	15%	There is a moderate risk of loss given the offset area is within a reserve managed by the City of Swan for the purpose of recreation.
Risk of future loss WITH offset (%)	15%	The risk of loss is not considered to change with the proposed offset as the offset area is within a reserve managed by the City of Swan and no further security mechanisms are proposed (e.g. changing purpose of reserve to conservation). While a risk of loss with offset of lower than 15% would be preferable, it is considered acceptable in this instance only, given: • the proposed offset area is close to the impact site, • the proposed offset will fill a gap in an otherwise intact remnant of native vegetation and increase the vegetation buffer to the adjacent conservation category wetland, which is a preferred environmental outcome, • in accordance with appeal determination 018-22, a degree of protection is afforded to the vegetation in the offset area given the vegetation will be planted for conservation purposes and any future clearing would be subject to the requirements of Part V of the EP Act.

Appendix E. Biological survey information excerpts (Natural Area, 2023)

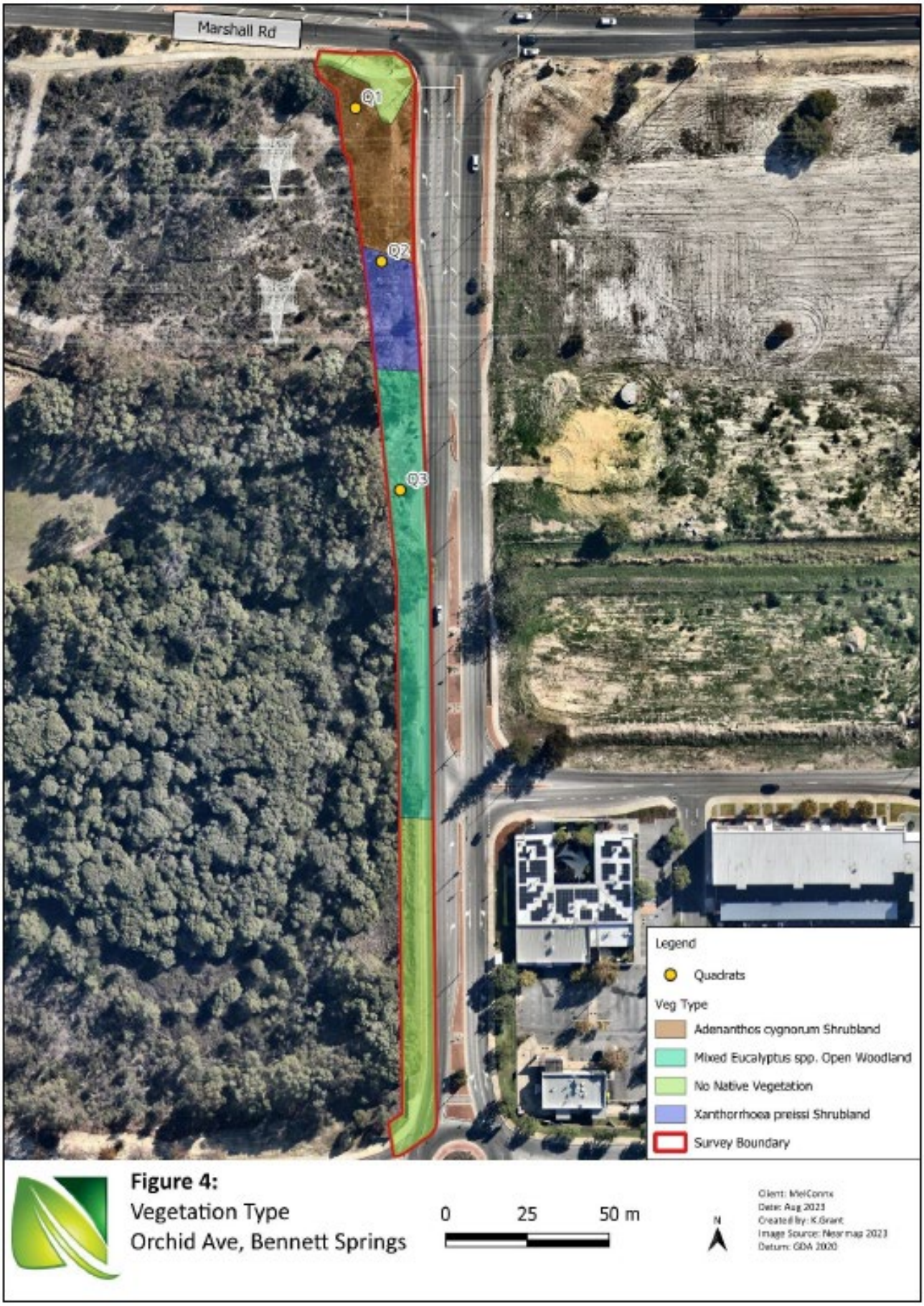

Figure 3a. Vegetation types mapped in the application area (Natural Area, 2023).

Figure 3b. Vegetation condition mapped in the application area (Natural Area, 2023).

Vegetation Type	Description	Photograph
Adenanthos cygnorum Shrubland	A shrubland of *Adenanthos cygnorum* over Perennial Veldt Grass (**Ehrharta calycina*) and *Desmocladus flexuosus*.	
Xanthorrhoea preissi Shrubland	A shrubland of *Xanthorrhoea preissi* over *Calytrix fraseri, Desmocladus flexuosus,* and Perennial Veldt Grass (**Ehrharta calycina*).	
Mixed *Eucalyptus* spp. Open Woodland	An open woodland of mixed *Eucalyptus* spp. over mixed weeds and *Eremophobia glabra.*	

Figure 3c. Vegetation descriptions in the application area (Natural Area, 2023).

Family	Species Name	Common Name
Brassicaceae	**Brassica tournefortii*	Mediterranean Turnip
Poaceae	**Ehrharta calycina*	Perennial Veldt Grass
Poaceae	**Ehrharta longiflora*	Annual Veldt Grass
Poaceae	**Eragrostis curvula*	African Lovegrass
Asteraceae	**Erigeron bonariensis*	
Geraniaceae	**Erodium botrys*	Long Storksbill
Euphorbiaceae	**Euphorbia terracina*	Geraldton Carnation Weed
Papaveraceae	**Fumaria capreolata*	Whiteflower Fumitory
Iridaceae	**Gladiolus caryophyllaceus*	Wild Gladiolus
Iridaceae	**Gladiolus undulatus*	Wild Gladiolus
Oxalidaceae	**Oxalis pes-caprae*	Soursob
Geraniaceae	**Pelargonium capitatum*	Rose Pelargonium
Poaceae	**Poa annua*	Winter Grass
Asteraceae	**Sonchus oleraceus*	Common Sowthistle
Asteraceae	**Ursinia anthemoides*	Ursinia
Fabaceae	**Vicia sativa*	Common Vetch
Fabaceae	*Acacia applanata*	
Fabaceae	*Acacia pulchella*	Prickly Moses
Fabaceae	*Acacia saligna*	Orange Wattle
Fabaceae	*Acacia stenoptera*	Narrow Winged Wattle
Proteaceae	*Adenanthos cygnorum*	Common Woollybush
Myrtaceae	*Agonis flexuosa*	Peppermint
Restionaceae	*Alexgeorgea nitens*	
Casuarinaceae	*Allocasuarina humilis*	Dwarf Sheoak
Proteaceae	*Banksia littoralis*	Swamp Banksia
Fabaceae	*Bossiaea eriocarpa*	Common Brown Pea
Myrtaceae	*Calytrix fraseri*	Pink Summer Calytrix
Myrtaceae	*Corymbia calophylla*	Marri
Fabaceae	*Daviesia triflora*	

Family	Species Name	Common Name
Restionaceae	*Desmocladus flexuosus*	
Myrtaceae	*Eremaea pauciflora*	
Scrophulariaceae	*Eremophila glabra*	Tar Bush
Myrtaceae	*Eucalyptus rudis*	Flooded Gum
Myrtaceae	*Eucalyptus* sp. 1	
Myrtaceae	*Eucalyptus* sp. 2	
Fabaceae	*Gompholobium tomentosum*	Hairy Yellow Pea
Dilleniaceae	*Hibbertia hypericoides*	Yellow Buttercups
Restionaceae	*Hypolaena exsulca*	
Fabaceae	*Jacksonia floribunda*	Holly Pea
Asparagaceae	*Laxmannia squarrosa*	Paper Lily
Goodeniaceae	*Lechenaultia floribunda*	Free-flowering Leschenaultia
Anarthriaceae	*Lyginia imberbis*	
Myrtaceae	*Melaleuca rhaphiophylla*	Swamp Paperbark
Iridaceae	*Patersonia occidentalis*	Purple Flag
Haemodoraceae	*Phlebocarya ciliata*	
Myrtaceae	*Regelia ciliata*	
Proteaceae	*Stirlingia latifolia*	Blueboy
Ericaceae	*Styphelia pallida*	Kick Bush
Xanthorrhoeaceae	*Xanthorrhoea preissii*	Grass tree

Figure 3d. List of species identified in the application area (Natural Area, 2023).

Appendix F. DWER Site inspection (DWER, 2024)

Figure 4a. Photographs of large marri tree being retained.

Fig 15. Large marri being retained – facing Orchid Park (Photograph 2130329).

Fig 48. View of group of trees with large marri from opposite side of Beechboro Rd (Photograph 2130436).

Figure 4b. Evidence of black cockatoo foraging outside application area.

Fig 45. Evidence of foraging by black cockatoos west of application area adjacent to Orchid Park (Photograph 2130423).

Fig 46. Evidence of foraging by black cockatoos west of application area adjacent to Orchid Park (Photograph 2130427).

Figure 4c. Representative photographs of vegetation in the application area.

Fig 11. View from northern application area facing south along Beechboro Rd (Photograph 2130312).

Fig 12. Patch of *Xanthorrhoea preissii* (Photograph 2130319).

Fig 13. *Eucalyptus rudis* and small shrubs over non-native grasses (Photograph 2130321).

Fig 14. Group of four trees: large marri being retained, two *Eucalyptus camaldulensis*, one *E. rudis* (Photograph 2130326).

Fig 23. *E. camaldulensis*, *E. rudis* and marri in application area – facing Orchid Park (Photograph 2130348).

Fig 24. *E. camaldulensis* and *E. rudis* in application area – facing Orchid Park (Photograph 2130350).

Fig 25. *Melaleuca presisssiana* in application area – facing Orchid Park (Photograph 2130353).

Fig 26. *Melaleuca* and flooded gum in application area – facing Orchid Park (Photograph 2130357).

Figure 4d. Photographs of Banksia species identified in the adjacent vegetation outside of the application area.

Fig 3. *Banksia menziesii* west of northern CPS 10348/1 application area (Photograph 2130294).

Fig 4. *Banksia menziesii* west of northern CPS 10348/1 application area (Photograph 2130287).

Fig 5. *Banksia attenuata* west of northern CPS 10348/1 application area (Photograph 2130291).

Fig 6. *Banksia ilicifolia* west of northern CPS 10348/1 application area (Photograph 2130283).

Fig 7. *Eucalyptus todtiana* adjacent to northern CPS 10348/1 application area. Woollybush is within application area (Photograph 2130296).

Fig 8. Northern CPS 10348/1 application area. Dry *Alexgeorgea* and Woollybush. *E. todtiana* is outside application area (Photograph 2130299).

Appendix G. Representative photographs of the offset area (Laing O'Rourke, 2024)

Figure 5a. Vegetation in north offset area, facing north-east.

Figure 5b. Vegetation in north offset area, facing north.

Figure 5c. Vegetation in north offset area, facing northeast.

Figure 5d. Vegetation in south offset area, facing east along Orchid Avenue.

Figure 5e. Vegetation in south offset area, facing east along Orchid Avenue.

Figure 5f. Vegetation in south offset area, facing west along Orchid Avenue.

Appendix H. Sources of information

H.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)
- 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)

H.2. References

City of Swan (2023) *Advice for clearing permit application CPS 10348/1*, received 7 December 2023 (DWER Ref: DWERDT879385).

Commonwealth of Australia (2021) *Average annual, seasonal and monthly rainfall maps*. Commonwealth of Australia, Australian Bureau of Meteorology. Available from www.bom.gov.au/climate/maps/averages/rainfall/ (accessed March 2023).

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*, Canberra.

Department of Biodiversity, Conservation and Attractions (DBCA) (2023) *Species and Communities Branch TEC and flora advice for clearing permit application CPS 10348/1*, received 14 December 2023. Department of Biodiversity, Conservation and Attractions, Western Australia (DWER Ref: DWERDT883094).

Department of the Environment and Energy (2016). *Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community*. Canberra: Department of the Environment and Energy. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/131-conservation-advice.pdf.

Department of Environment Regulation (DER) (2013). *A guide to the assessment of applications to clear native vegetation*. Perth. Available from: https://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/Guide2_assessment_native_veg.pdf.

Department of Primary Industries and Regional Development (DPIRD) (2019). *NRInfo Digital Mapping. Department of Primary Industries and Regional Development.* Government of Western Australia. URL: https://maps.agric.wa.gov.au/nrm-info/.

Department of Water and Environmental Regulation (DWER) (2019). *Procedure: Native vegetation clearing permits*. Joondalup. Available from: https://dwer.wa.gov.au/sites/default/files/Procedure_Native_vegetation_clearing_permits_v1.PDF.

Department of Water and Environmental Regulation (DWER) (2024) *Site Inspection Report for Clearing Permit Application CPS 10348/1,* 13 February 2024. Department of Water and Environmental Regulation, Western Australia (DWER Ref: DWERDT911992).

Department of Water and Environmental Regulation (DWER) (Swan Avon Region) (2023) *Rights in Water and Irrigation Act 1914 advice for clearing permit application CPS 10348/1*, received 23 November 2023 (DWER Ref: DWERDT872788).

Environmental Protection Authority (EPA) (2016). *Technical Guidance - Flora and Vegetation Surveys for Environmental Impact Assessment*. Available from: http://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf.

Environmental Protection Authority (EPA) (2016). *Technical Guidance – Terrestrial Fauna Surveys.* Available from: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/Tech%20guidance-%20Terrestrial%20Fauna%20Surveys-Dec-2016.pdf.

Environmental Protection Authority (EPA) (2008) *Environmental Guidance for Planning and Development Guidance Statement No 33*. Environmental Protection Authority, Western Australia.

Government of Western Australia (2019a) *2018 South West Vegetation Complex Statistics. Current as of March 2019*. WA Department of Biodiversity, Conservation and Attractions, Perth, https://catalogue.data.wa.gov.au/dataset/dbca

Government of Western Australia. (2019b) *2018 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of March 2019.* WA Department of Biodiversity, Conservation and Attractions. https://catalogue.data.wa.gov.au/dataset/dbca-statewide-vegetation-statistics

Heddle, E. M., Loneragan, O. W., and Havel, J. J. (1980) *Vegetation Complexes of the Darling System, Western Australia*. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.

Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Laing O'Rourke Australia Construction Pty Ltd (Laing O'Rourke) (2024a) *Offset proposal*, received 14 March 2024 (DWER Ref: DWERDT920905).

Laing O'Rourke Australia Construction Pty Ltd (Laing O'Rourke) (2024b) *Supporting information for clearing permit application CPS 10348/1*, received 18 January 2024 (DWER Ref: DWERDT893416).

Laing O'Rourke Australia Construction Pty Ltd (Laing O'Rourke) (2023) *Clearing permit application CPS 10348/1*, received 20 September 2023 (DWER Ref: DWERDT838255).

Mattiske, E.M. and Havel, J.J. (1998) *Vegetation Complexes of the South-west Forest Region of Western Australia*. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.

Natural Area Holdings Pty Ltd (Natural Area) (2023) *Orchid Ave Detailed Flora and Vegetation Survey and Basic Fauna Survey*, prepared for MELconnx, August 2023 (DWER Ref DWERDT853037).

Northcote, K. H. with Beckmann G G, Bettenay E., Churchward H. M., van Dijk D. C., Dimmock G. M., Hubble G. D., Isbell R. F., McArthur W. M., Murtha G. G., Nicolls K. D., Paton T. R., Thompson C. H., Webb A. A. and Wright M. J. (1960-68) *Atlas of Australian Soils*, Sheets 1 to 10, with explanatory data. CSIRO and Melbourne University Press: Melbourne.

Schoknecht, N., Tille, P. and Purdie, B. (2004) *Soil-landscape mapping in South-Western Australia – Overview of Methodology and output*s Resource Management Technical Report No. 280. Department of Agriculture.

Shah, B. (2006) *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia*. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Valentine, L.E. and Stock, W. (2008) *Food Resources of Carnaby's Black Cockatoo (Calyptorhynchus latirostris) in the Gnangara Sustainability Strategy Study Area*. Edith Cowan University and Department of Environment and Conservation. December 2008.

Western Australian Herbarium (1998-). *FloraBase - the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions, Western Australia. https://florabase.dpaw.wa.gov.au/.