GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 10068/1

File Number: DWERVT11948

Duration of Permit: From 14 December 2023 to 14 December 2032

ADVICE NOTE

Monetary contribution to the Offsets Fund

The monetary contribution to the Offsets Fund referred to in condition 5 of this permit is intended to contribute towards the purchase, and conservation in perpetuity of at least 21.30 hectares of native vegetation that comprises the Banksia Woodlands of the Swan Coastal Plain (Banksia Woodlands) Threatened Ecological Community (TEC) in Very Good or better condition and at least 12.72 hectares of native vegetation that is growing in or in association with a wetland containing values that reflect a conservation category wetland in Good to Very Good (Keighery, 1994) condition on the Swan Coastal Plain.

Revegetation and rehabilitation offset

The Project Revegetation Plan referred to in condition 6 of this permit is intended to facilitate the *revegetation* and *rehabilitation* of a total of 7.24 hectares of native vegetation within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake, that comprises 7.24 hectares of significant foraging habitat for Carnaby's cockatoo (*Zanda latirostris* (previously *Calyptorhynchus latirostris*)), and 6.64 hectares of significant foraging habitat for forest red-tailed black cockatoo *(Calyptorhynchus banksii naso*), on the Swan Coastal Plain.

PERMIT HOLDER

PSP Properties Pty Ltd as trustee for the Perth Surf Park Property Trust

LAND ON WHICH CLEARING IS TO BE DONE

Lot 800 on Deposited Plan 50212, Jandakot

Lot 9001 on Deposited Plan 65564, Jandakot

AUTHORISED ACTIVITY

The permit holder must not clear more than 5.75 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 14 December 2025.

2. 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.

3. 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.

4. Fauna management

(a) For a minimum of four (4) nights prior to the commencement of clearing activities authorised under this permit, within the area cross-hatched yellow on Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to undertake a pre-clearance trapping and relocation survey of the permit area to identify quenda (*Isoodon fusciventer*).

(b) The permit holder must engage the *fauna specialist* to trap and relocate quenda and any incidentally trapped native fauna, in accordance with a fauna license pursuant to the *Biodiversity Conservation Regulations 2018*.

(c) The permit holder must also engage a fauna spotter to traverse the area, cross-hatched yellow on Figure 1 of Schedule 1, ahead of clearing machinery immediately prior to, and for the duration of, clearing activities.

(d) Clearing activities must cease in any area where quenda are identified under condition 4(c) until the quenda(s) individual has been trapped and relocated in accordance with condition 4(b).

(e) Within two months of undertaking any clearing authorised under this permit within the area cross-hatched yellow on Figure 1 of Schedule 1, the permit holder must provide the results of the pre-clearance trapping and relocation survey in a report to the *CEO*.

(f) The report prepared in accordance with condition 4(e) must include, but not be limited to:

(i) the methodology used to trap and relocate quenda under conditions 4(b) and 4(d);

(ii) the relevant qualifications of the *fauna specialist* and fauna spotter undertaking identification, trapping, and relocation under conditions 4(a), 4(b) and 4(d);

(iii) the number of quenda individuals identified under conditions 4(a), 4(b) and 4(d);

(iv) the date each quenda individual was identified under conditions 4(a), 4(b) and 4(d);

(v) the name and number of any native fauna individual(s) incidentally identified under conditions 4(b) and 4(d);

(vi) the date each native fauna individual(s) was incidentally identified under conditions 4(b) and 4(d);

(vii) the location where each individual referred to in conditions 4(a)-(d) was identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(viii) the number of quenda individuals relocated under conditions 4(b) and 4(d);

(ix) the time and date each quenda individual referred to under condition 4(b) and4(d) was relocated;

(x) the name and number of any other native fauna individual(s) relocated;

(xi) the location where each quenda individual or other native fauna individual was relocated to, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees; and

(xii) details pertaining to the circumstances of any death of, or injury sustained by a quenda individual or other native fauna individual.

5. Offset – monetary contributions to the Offsets Fund

Prior to undertaking any clearing authorised under this permit and no later than 14 December 2025, the permit holder must provide documentary evidence to the *CEO* that funding of $101,149.49 has been transferred to the Department of Water and Environmental Regulation for the purpose of establishing or maintaining *native vegetation* as an environmental offset for the clearing activities authorised under this permit.

6. Offset – revegetation and rehabilitation requirements

(a) Within 6 months of the commencement of clearing activities authorised under this permit and not later than 14 June 2026, the permit holder must submit a Project Revegetation Plan to the *CEO* for approval for the *revegetation and rehabilitation* of a total of 7.24 hectares, comprising 5.31 hectares within the combined areas cross-hatched red and 1.93 hectares within the combined areas cross-hatched green on Figure 2 of Schedule 1, within Crown Reserve 46787, Bibra Lake. The Project Revegetation Plan must be developed in accordance with *A Guide to Preparing Revegetation Plans for Clearing Permits* (Department of Water and Environmental Regulation, 2018).

(b) The Project Revegetation Plan must be prepared by an *environmental specialist*.

(c) The Project Revegetation Plan must include the following:

(i) the location/s of the *revegetation* and *rehabilitation* area/s required under condition 6(a) of this permit, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(ii) *site preparation*;

(iii) *weed* control;

(iv) *regeneration, direct seeding* or *planting*, at an *optimal time*;

(v) a *vegetation establishment period*;

(vi) *revegetation* success completion criteria to achieve high quality foraging habitat for Carnaby's cockatoo (*Zanda latirostris* (previously *Calyptorhynchus latirostris*)) and forest red-tailed black cockatoo *(Calyptorhynchus banksii naso*) based on selected *reference sites*, including but not limited to target weed cover, target species diversity, target vegetation condition, target density, and target structure;

(vii) *remedial actions* to be undertaken if completion criteria are not met;

(viii) details of ongoing maintenance and monitoring of the area to be *revegetated* and *rehabilitated* for a minimum of five (5) years;

(ix) timeframes for completion of the activities; and

(x) management commitments that will be achieved.

(d) If the *CEO*, having had regard to conditions 6(b) and 6(c) of this permit, does not approve the Project Revegetation Plan, the permit holder must revise and resubmit the Project Revegetation Plan within one (1) month of the date of the *CEO*'s decision.

(e) If the *CEO*, having had regard to conditions 6(b) and 6(c) of this permit, does not approve a revised Project Revegetation Plan submitted in accordance with condition 6(d) of this permit, the permit holder must again revise and resubmit the Project Revegetation Plan in accordance with condition 6(d) of this permit.

(f) The permit holder must obtain the approval of the *CEO*, prior to implementing the Project Revegetation Plan.

(g) The permit holder must implement the approved Project Revegetation Plan within 12 months of the date of approval by the *CEO*.

7. 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 Geocentric Datum Australia 1994 (GDA94), 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 2; (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3; and (g) actions taken for fauna management in accordance with condition 4.
2.	In relation to the *revegetation and rehabilitation* of areas pursuant to condition 6	(a) A description of the *revegetation* and *rehabilitation* activities undertaken; (b) The size of the area *revegetated* and *rehabilitated*; (c) The date/s on which the *revegetation* and *rehabilitation* was undertaken; (d) The boundaries of the area *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings; and (e) any other actions taken in accordance with condition 6.

8. Reporting

(a) The permit holder must provide to the CEO, on or before 30 June of each calendar year, a written report conditioning:

(i) the records required to be kept under condition 7; and

(ii) records of activities done by the permit holder under this permit between 1 January and 31 December of the preceding calendar year.

(b) If no clearing authorised under this permit has been undertaken, a written report confirming that no clearing under this permit has been undertaken must be provided to the *CEO* on or before 30 June of each calendar year.

(c) The permit holder must provide to the *CEO*, no later than 90 days prior to the expiry date of the permit, a written report of records required under condition 7, where these records have not already been provided under condition 8(a).

DEFINITIONS

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

Table 2: Definitions

Term	Definition
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.
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.
dieback	means the effect of *Phytophthora* species on native vegetation.
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 a minimum of two (2) years work 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)
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of two (2) years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the *CEO* as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.

Term	Definition
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 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 April to July for undertaking *planting* and *direct seeding*.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
reference sites	Means nearby sites used to provide baseline data for planning a revegetation project. Measurements from fixed reference points or plots where biodiversity components are measured are used to set measurable *completion criteria* for *revegetation projects*. The *reference sites* must contain the following values: • suitable foraging habitat for *Zanda latirostris* (previously *Calyptorhynchus latirostris)* (Carnaby's cockatoo) and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo); and • vegetation in a Very Good (Keighery, 1994) or better condition.
regenerate / regenerated / regeneration	means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing mulch.
rehabilitate / rehabilitated / rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
remedial action/s	means any activity that is required to ensure successful reestablishment of vegetation to its pre-clearing composition, structure and density, and may include a combination of soil treatments and *revegetation*.
revegetate / vegetated / revegetation	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.
site preparation	means management of existing site topsoil and preparation of the finished soil surface, for example by ripping or tilling the soil surface and respreading site topsoil and chipped native vegetation.
vegetation establishment period	means a period of at least two summers after the *revegetation* during which time replacement and infill *revegetation* works may be required for areas in which *revegetation* has been unsuccessful and involves regular inspections of *revegetation* sites to monitor

Term	Definition
	the success of *revegetation*.
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

JBurton

Jessica Burton
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

22 November 2023

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).

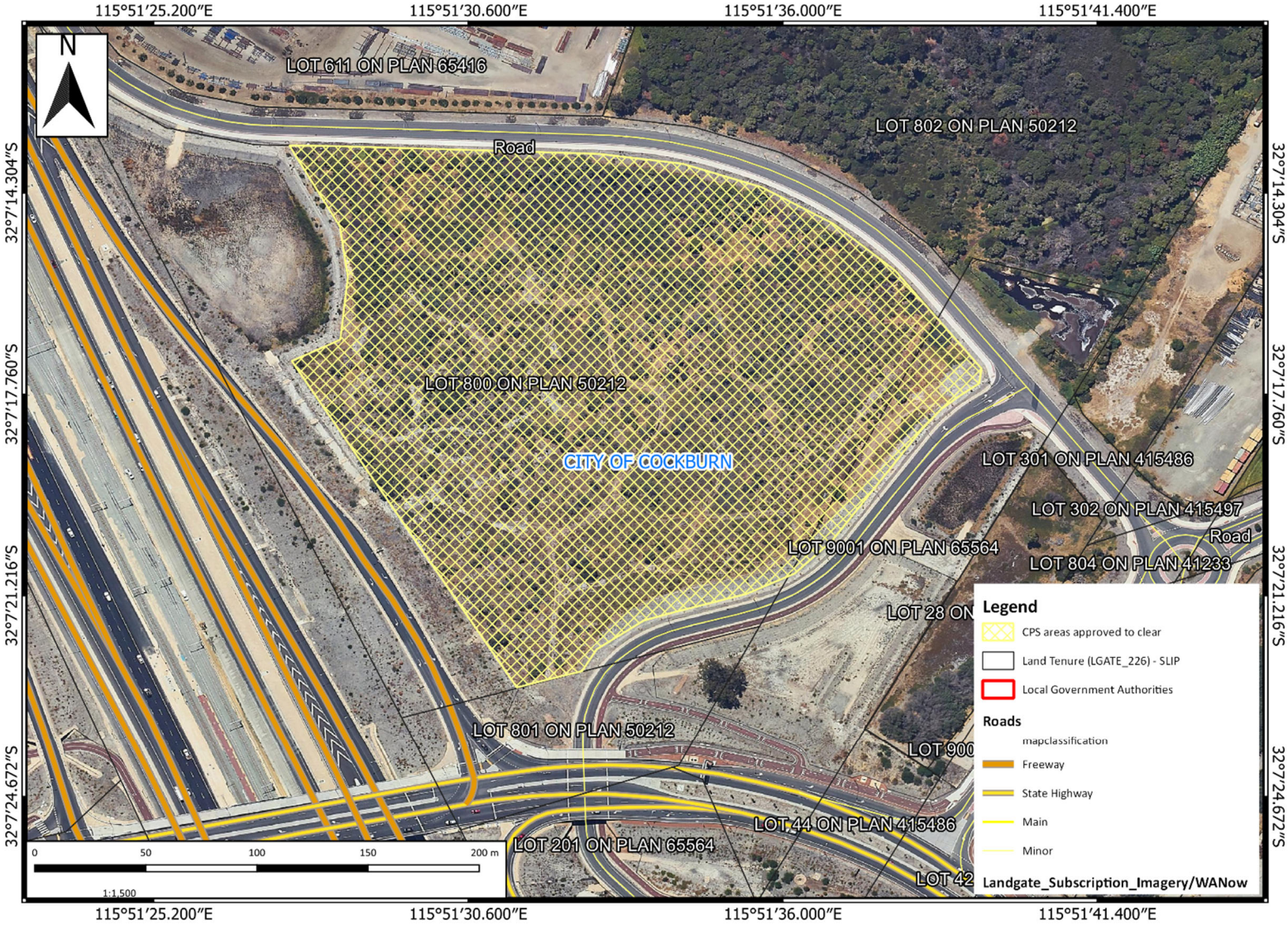

Figure 1: Map of the boundary of the area (cross-hatched yellow) within which clearing may occur

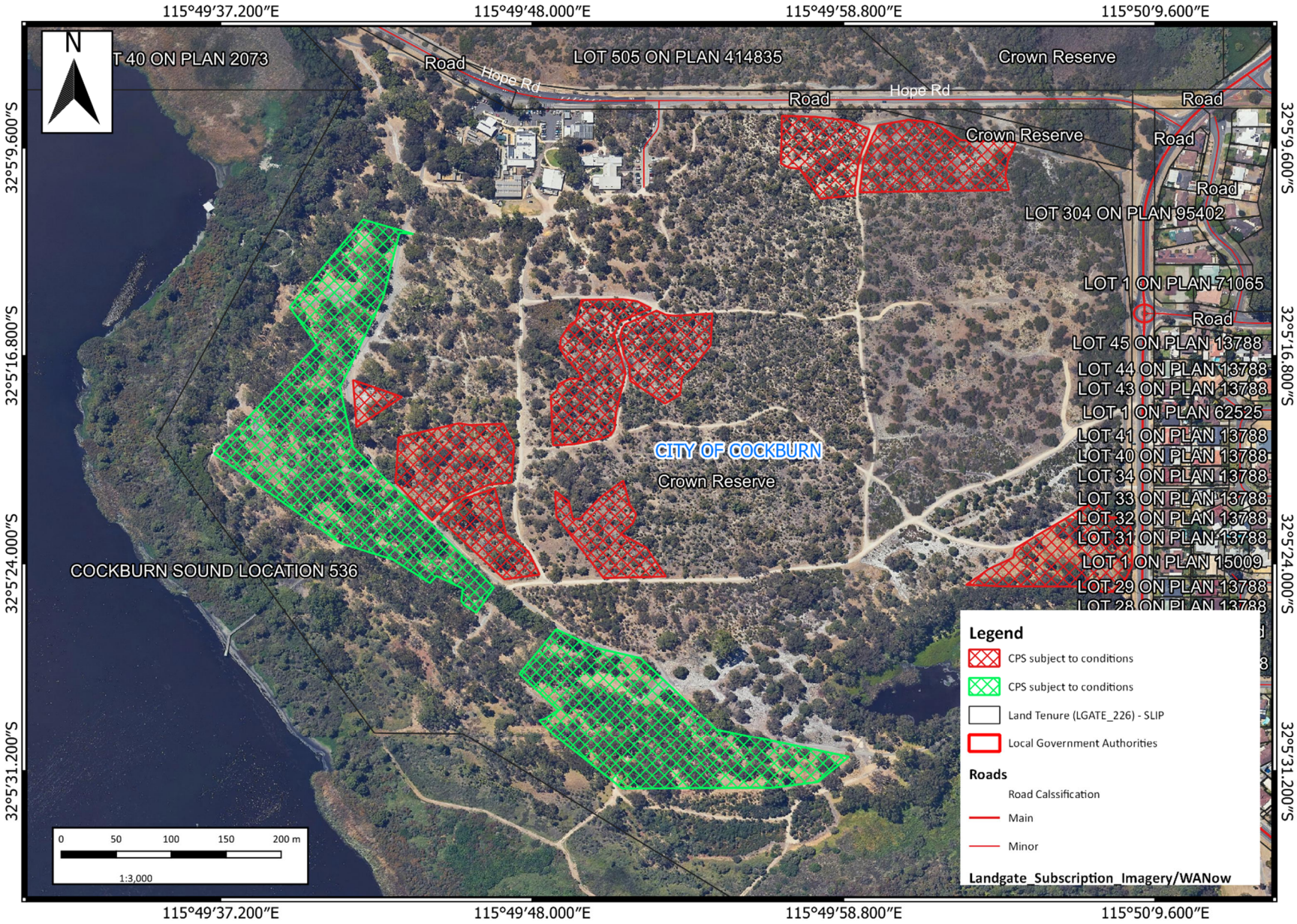

Figure 2: Map of the boundary of the areas (cross-hatched red and green) within which condition 6 applies.

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 10068/1
Permit type:	Area permit
Applicant name:	PSP Properties Pty Ltd as trustee for the Perth Surf Park Property Trust (PSP Properties)
Application received:	7 February 2023
Application area:	5.75 hectares of native vegetation
Purpose of clearing:	Construction of Perth Surf Park
Method of clearing:	Mechanical clearing
Property:	Lot 800 on Deposited Plan 50212 Lot 9001 on Deposited Plan 65564
Location (LGA area/s):	City of Cockburn
Localities (suburb/s):	Jandakot

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area of remnant native vegetation within the Cockburn Central East Local Structure Plan Area (see Figure 1, Section 1.5). The proposed clearing is to facilitate the construction of Perth Surf Park including a 2.2-hectare open water wave lagoon, the import of fill to create the wave lagoon, and the construction of roads, carparking, ancillary amenity buildings, and associated facilities (Coterra, 2023).

1.3. Decision on application

Decision:	Grant
Decision date:	22 November 2023
Decision area:	5.75 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 32 submissions were received. Consideration of matters raised in the public submissions is summarised in Appendix B.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix C), relevant datasets (see Appendix H.1), the findings of a wetland evaluation (PGV Environmental, 2023c), vegetation assessment (PGV Environmental, 2023a), a Level 1 flora and fauna assessment and targeted *Caladenia huegelii* survey (Focused Vision, 2018; Focused Vision, 2016), a detailed flora and vegetation assessment (MRIA, 2017a), and a Level 1 fauna and targeted black cockatoo survey (MRIA, 2017b) (see Appendix G), a site inspection (see Appendix H), expert advice received from the Department of Biodiversity, Conservation and Attractions (DBCA), the

clearing principles set out in Schedule 5 of the EP Act (see Appendix D), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that the proposed Perth Surf Park is a major tourism and development project which is expected to provide a direct public benefit through increased tourism and employment opportunities, generating significant economic activity (see Section 3.3), that development approval has been granted for the proposal and the implementation of the proposal is consistent with the planning framework for the use of the site (see Section 3.3).

The assessment identified that the proposed clearing will result in:

- the loss of 3.16 hectares of native vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plan (Banksia Woodlands) federally listed threatened ecological community (TEC) and priority ecological community (PEC) in Western Australia,
- the loss of 2.08 hectares of significant foraging habitat for Carnaby's cockatoo (*Zanda latirostris*) and forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*),
- the loss of 1.48 hectares of significant wetland vegetation that has values that are commensurate with a conservation category wetland (CCW),
- the loss of native vegetation that provides locally significant habitat for quenda (*Isoodon fusciventer*),
- the loss of potential suitable habitat for threatened flora species *Caladenia huegelii*,
- the potential for indirect hydrological impacts to nearby significant wetland vegetation within Lot 802 on Deposited Plan 50212, Jandakot,
- 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, including local nearby significant wetland vegetation within Lot 802 on Deposited Plan 50212, Jandakot, and other significant remnant vegetation, and
- potential land degradation in the form of wind erosion, subsurface acidification, and phosphorus export.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that some of the impacts of the proposed clearing, including direct impacts to individual fauna, indirect hydrological impacts, the risk of land degradation, and the potential to facilitate the introduction of weeds and dieback, can be minimised and managed to be unlikely to lead to an unacceptable risk to environmental values through permit conditioning and implementation of the applicant's Environmental Management Framework commitments (see Section 3.1). However, impacts to native vegetation that is representative of the Banksia Woodlands TEC, significant foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo, and impacts to significant wetland vegetation remained significant even after the application of minimisation and mitigation measures and constitutes a significant residual impact.

Having considered the environmental impacts outlined above, the applicant's implementation of the mitigation hierarchy and planning and other matters (including the consistency of the proposal with the planning framework and the public benefit of the proposed surf park), the Delegated Officer determined that, on balance, it was appropriate to grant the clearing permit subject to an adequate environmental offset being provided by the proponent, consistent with the *WA Environmental Offsets Policy* (2011) and the *WA Environmental Offsets Guidelines* (2014), to counterbalance the significant residual impacts to native vegetation that is representative of the Banksia Woodlands TEC, significant wetland vegetation, and foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo (see Section 4).

Given the above, the Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise, and reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback,
- engage a fauna specialist to undertake a pre-clearing fauna trapping and relocation program for quenda and to engage a fauna spotter to be present for the duration of clearing activities, where clearing must cease in any areas where quenda are identified until the individual/s have been trapped and relocated,
- provide a monetary contribution to the Part V Offsets Fund to fund the purchase of 21.3 hectares of native vegetation that comprises the Banksia Woodlands TEC in Very Good (Keighery, 1994) or better condition,
- provide a monetary contribution to the Part V Offsets Fund to fund the purchase of 12.72 hectares of vegetation that is growing in or in association with a wetland containing values that are commensurate with a CCW in Good to Very Good (Keighery, 1994) condition on the Swan Coastal Plain, and
- revegetate and rehabilitate a total of 7.24 hectares of significant foraging habitat for Carnaby's cockatoo and 6.64 hectares of significant foraging habitat for forest red-tailed black cockatoo within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake.

1.5. Site map

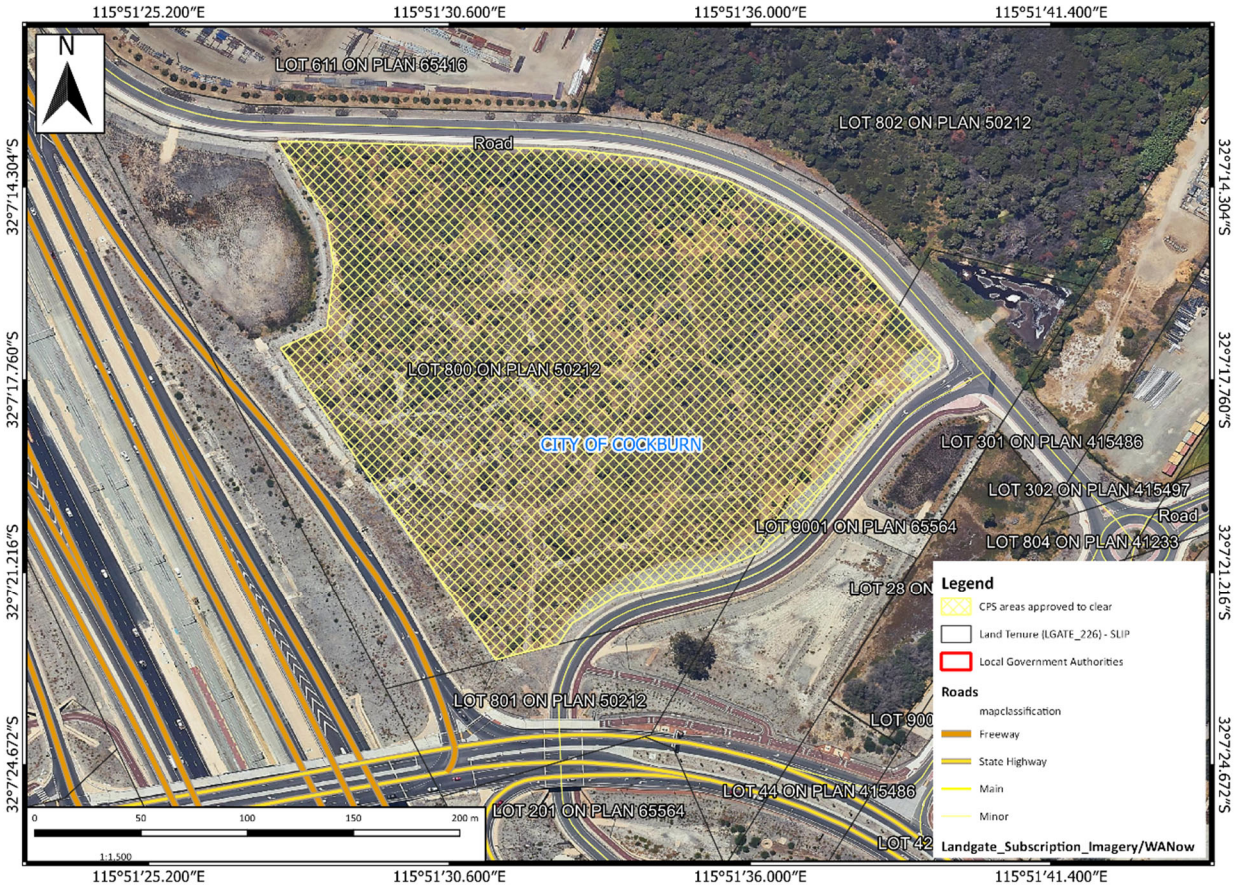

Figure 1: The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Rights in Water and Irrigation Act 1914* (WA) (RIWI 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, 2016b)
- Technical guidance – *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Project background

Perth Surf Park Proposal

The Perth Surf Park facility will feature an open water surfing lagoon, which the applicant has advised will provide a longer, higher quality, and more consistent surfing experience than that of any Perth metropolitan beach (Coterra, 2023). The facility will provide amenities including short-term accommodation, food and beverage venues, an events lawn, function centre, pump track, surf-skate bowl, children's playground, and car parking, and in addition to providing surfing experiences will also be utilised by non-surfers for experiences including yoga and meditation, foundational training programs, live music and cultural festivals and charitable events (Coterra, 2023). In addition to its use by Western Australians, the applicant advises that the facility is expected to be an important domestic and international tourist destination (Coterra, 2023).

The applicant has estimated that the project will create approximately 200 employment opportunities during the planning and construction phases and the Perth Surf Park facility will employ more than 100 people once fully operational (Coterra, 2023). Casual and part-time vocational training programs will also be delivered within the facility and provide employment opportunities (Coterra, 2023).

The applicant has advised that the planning of the Perth Surf Park facility has incorporated several sustainability initiatives and is targeting the achievement of a 5-star Green Star performance rating for its built forms, which assesses the design, construction and operation of buildings to ensure sustainable design and construction practices (Coterra, 2023). The sustainability initiatives that have been incorporated into the design and operation of the Perth Surf Park facility include:

- Rooftops of the built forms, where practical, will be occupied by green roofs or photo voltaic solar panels to limit greenhouse emissions and reduce urban heat island effects,
- Use of high-performance glazing and external shading,
- Design initiatives to ensure maximum energy efficiency,
- Installation of water efficient fixtures and fittings,
- Provision of alternative water sources for non-drinking water demands,
- Minimisation of water demand through the use of Water Sensitive Urban Design principles, including the promotion of passive irrigation with stormwater runoff wherever possible,
- Utilising low or zero-embodied carbon concrete for all structures,
- Limiting the use of single use plastics on site,
- Installing electric vehicle charging stations,
- Providing end of trip facilities and storage for bicycles and e-scooters, and
- Use of endemic, drought tolerant, native species as part of the landscape design (Coterra, 2023).

Stakeholder Engagement

The applicant has advised that the planning of the Perth Surf Park facility has been developed in consultation with a range of government and community groups, and is ongoing (Coterra, 2023). Stakeholder consultation for the Perth Surf Park facility has been extensive and included direct liaison with:

- Department of Planning, Lands and Heritage (DPLH),
- Department of Jobs, Tourism, Science, and Innovation (JTSI),
- Western Australian Environmental Protection Authority (EPA),
- DWER,
- City of Cockburn,
- Surfing Western Australia, and
- Ocean Heroes (Coterra, 2023).

The applicant advised that public consultation and engagement has been positive, with widespread community support for the project (Coterra, 2023) The applicant advised that a market survey was undertaken in December 2021 to determine the key demographic that may utilise the Perth Surf Park facility (Coterra, 2023). The market survey comprised 37 questions about the proposed Perth Surf Park facility and involved more than 1,000 respondents, who were screened to ensure statistically significant results and an accurate representation of the Perth resident population (Coterra, 2023). Approximately 73 per cent of respondents indicated that they would be likely (39 per cent) or extremely likely (34 per cent) to attend the Perth Surf Park facility (Coterra, 2023). Approximately 14 per cent indicated that they would be unlikely or extremely unlikely to attend the facility (Coterra, 2023). In addition, advertising of the Perth Surf Park project during the Development Application process by the City of Cockburn

resulted in 215 submissions, of which 213 supported the development and two were unsure or neutral (Coterra, 2023). The applicant has advised that community consultation will be ongoing to ensure the Perth Surf Park facility meets the perceived needs and expectations of the public (Coterra, 2023).

The applicant has advised that it is committed to ongoing consultation with the Whadjuk Noongar people as the traditional owners of the site (Coterra, 2023). The applicant commissioned Soft Earth to provide a cultural framework document to accompany the Development Application submitted to the City of Cockburn (Coterra, 2023). The cultural framework document included an overview of the site and its locality, as relevant to the Whadjuk Noongar people and was commissioned to explore the cultural contexts and stories relevant to the Perth Surf Park facility to curate a Vision and Themes that would guide the design and development of the facility (Coterra, 2023). The cultural framework is designed to facilitate ongoing consultation and engagement with Whadjuk Noongar people throughout the planning and development process (Coterra, 2023).

Avoidance and minimisation

The proposed Perth Surf Park facility has undergone extensive iterations as part of the strategic planning process, with numerous locations in Perth being explored and subject to feasibility studies, including Thompkins Park in Alfred Cove (Coterra, 2023; PGV, 2023b). The site selection process was facilitated by State Government with the engagement of Local Government Areas (Coterra, 2023). Lot 800 on Deposited Plan 50212 and Lot 9001 on Deposited Plan 65564, Jandakot, were identified as the preferred location for the Perth Surf Park facility due to their transport connectivity and proximity to the Kwinana Freeway and supporting rail infrastructure, surrounding land uses, and appropriate land zoning for development (Coterra, 2023).

Based on the size of the open water wave lagoon and associated infrastructure, the applicant has advised that the physical position of the lagoon within Lot 800 on Deposited Plan 50212 and Lot 9001 on Deposited Plan 65564, Jandakot, is constrained (PGV, 2023b). Therefore, there are limited opportunities to avoid the clearing of native vegetation altogether. However, the selected layout of the Perth Surf Park facility has taken into account various factors, including but not limited to:

- Orientating the lagoon such that it is protected from the prevailing winds,
- Positioning the lagoon to make use of the topography of the site to minimise fill requirements,
- Orientating the facility to ensure an enhanced public realm is created with an activated street edge and grand entry statement upon arrival,
- Orientating the entry for convenience for public transport access (Cockburn train station),
- Positioning the lagoon to preserve to the greatest extent possible existing native vegetation, including mature trees (noting the constraints above), and
- Orientating the facility to ensure there will be no impact on surrounding developments and no shading of native vegetation on the neighbouring lots (Coterra, 2023; PGV, 2023b).

In order to minimise clearing actions associated with the proposed Perth Surf Park facility, the applicant has committed to setting aside 0.46 hectares of Tree Retention Areas around the perimeter of the site, which will be facilitated through the implementation of a Tree Retention Plan, identifying the significant vegetation assets to be retained within the Tree Retention Areas (Coterra, 2023). The applicant has advised that there may be more opportunities to retain existing and mature native vegetation within Tree Retention Areas and landscaping, which will be refined through the final detailed design (PGV, 2023b). The applicant has advised that the further avoidance and minimisation of clearing where possible will be a clear instruction to the landscape architect (PGV, 2023b).

Mitigation

To ensure the direct and indirect environmental impacts of the development are appropriately managed during the clearing, construction, and operational phases, the applicant has developed an Environmental Management Framework, establishing the various environmental management plans that will be implemented and regulated through the relevant decision-making authorities (see Table 1 below). The applicant has advised that the Environmental Management Framework will include provisions to mitigate and manage impacts prior to and for the duration of the proposed clearing, including:

- Survey and fencing of the construction boundary between the approved Development Area and the Tree Retention Area prior to the commencement of clearing, to ensure it is accurately located and demarcated and that no clearing beyond the approved boundaries will occur,
- An induction for all personnel onsite prior to the commencement of clearing, which will outline the environmental values of the site and the importance of remaining within the defined clearing area,
- A fauna relocation program undertaken prior to the commencement of clearing,

- The installation of fencing around the entire perimeter of Lot 800 on Deposited Plan 50212 and Lot 9001 on Deposited Plan 65564, Jandakot, which will be in place for the duration of site works across all stages of development,
- The presence of a fauna handler onsite during clearing activities to facilitate the capture and relocation of fauna, as required,
- Dust management to ensure that surrounding native vegetation is not coated in dust that would impact photosynthesis and adversely affect plant health,
- Management of surf hydrology to prevent run-off into surrounding areas of native vegetation,
- Waste management to ensure that clearing and construction debris does not impact on surrounding areas of native vegetation,
- Hygiene protocols to prevent the spread of disease and weeds into surrounding areas of native vegetation,
- Where possible, the stripping and testing of topsoil for potential re-use on site within landscaping and Tree Retention Areas,
- The mulching of cleared vegetation for re-use on site within landscaping and Tree Retention Areas,
- The salvaging and storage of *Xanthorrhoea preissii* (grass tree) for re-planting onsite within Tree Retention Areas and landscaping areas, and
- Landscaping of the Perth Surf Park facility with native endemic species where possible, as well as using drought tolerant plants to minimise water requirements (PGV, 2022c; Coterra, 2023).

The applicant has advised that a Construction Environmental Management Plan (CEMP) and Operational Management Plan (OMP) are required as a condition of the Development Approval issued by the City of Cockburn and will ensure the mitigation of risks to the environment during native vegetation clearing and construction (Coterra, 2023). The Construction Environmental Management Plan (CEMP) will be prepared in accordance with the *City of Cockburn Construction Management Plan Guidelines* (City of Cockburn, 2021) and relevant policies (Coterra, 2023).

The key management factors addressed in the CEMP will include, but not be limited to:
- Overview of the CEMP objectives and legislative requirements,
- Project program and hours of operation,
- Environmental management, comprising:
    - Noise and vibration management,
    - Air quality and dust management,
    - A visual amenity and lighting management plan,
    - Traffic management,
    - Water management,
    - Land management,
    - A waste management plan,
    - Flora and vegetation management,
    - Weed management,
    - Dieback management,
    - Fauna management, and
    - Aboriginal heritage.
- Protection of council assets, such as surrounding roads,
- Roles and responsibilities,
- Environmental induction and training,
- Incidents and emergency management, comprising:
    - Complaints management,
    - Incident prevention management,
    - Incident investigation,
    - Compliance,
    - Environmental inspections,
    - Environmental monitoring, and
    - Auditing.
- Corrective actions and adaptive management, and
- Reporting (PGV, 2022c).

The OMP will address the following factors, at minimum:
- Overview of operations, OMP objectives, induction and training,
- Hours of operations,
- Licensing,
- Management Plans, comprising:
    - Air Quality Management Plan

    - Traffic Management Plan,
    - Solid Waste Management Plan,
    - Noise and Vibration Management Plan,
    - Emergency Response Management Plan
    - Maintenance Management,
    - Feral Fauna Management Plan,
    - Native Fauna Management Plan,
    - Tree Retention Plan,
    - Landscaping Management Plan,
    - Avifauna Management Plan,
    - Dangerous Goods Management Plan,
    - Water and Wastewater Management Plan,
    - Energy Management Plan,
- Key performance indicators,
- Roles and responsibilities,
- Complaints management,
- Compliance (Environmental inspections, monitoring and auditing),
- Corrective actions and adaptive management, and
- Reporting (PGV, 2022c).

Table 1. Environmental Management Framework for the Perth Surf Park facility (PGV, 2022c).

Management Plan	Relevant Legislation or Agreement	Relevant Decision-making Authority	Environmental Management Outcome
Water Management Plan	P&D Act (development approval) RIWI Act (groundwater license)	City of Cockburn DWER	Implementation of the plan will mitigate the risk of offsite impacts during dewatering, manages the responsible use of water during construction and operation and provides management measures for identified risks.
Monitoring and Maintenance Plan	P&D Act (development approval) RIWI Act (groundwater license)	City of Cockburn DWER	Provides a framework to ensure management measures are effective and that contingency plans can be implemented if required to manage any risks to the surrounding environment.
Bushfire Management Plan	P&D Act (development approval)	City of Cockburn	Implementation of the plan will ensure that bushfire risks to the surrounding environment and public safety are maintained.
Construction Environmental Management Plan	P&D Act (development approval)	City of Cockburn	Implementation of the plan will ensure appropriate management of a number of environmental factors and mitigate the risk to the surrounding environment.
Fauna Trapping and Relocation Plan	P&D Act (development approval) BC Act (fauna taking license) EP Act (clearing permit conditions)	City of Cockburn DBCA DWER	Implementation of the plan will mitigate impacts to native fauna during the clearing and construction phase and ensure that all activities are undertaken in accordance with requirements under the BC Act.
Tree Retention Plan	P&D Act (development approval)	City of Cockburn	Implementation of plan to identify significant vegetation assets to retained through the development of the Site.
Operational Management Plan	P&D Act (development approval)	City of Cockburn	Implementation of the plan provides the framework for environmental management in the operational phase and outlines management of factors that could impact on the surrounding environment to mitigate risks.
Acid Sulphate Soil (ASS) Investigation and Management Plans (as required)	P&D Act (development approval)	City of Cockburn (with advice from DWER)	Implementation of the plan mitigate the risk of any disturbance to ASS has a detrimental impact on the surrounding environment.

Conclusion
After consideration of avoidance and mitigation measures, it was determined that offsets to counterbalance the significant residual impacts to vegetation representative of the Banksia Woodlands TEC, foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo, and significant wetland vegetation were necessary. In accordance with the Government of Western Australia's *Environmental Offsets Policy 2011* and *Environmental Offsets Guidelines 2014*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offsets 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 C) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix D) identified that the impacts of the proposed clearing present a risk to biological values (fauna, flora, and ecological communities), significant remnant vegetation, 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
Noting the findings of biological surveys for the application area (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016), the site characteristics (see Appendix C), and the habitat preferences of the conservation significant fauna species recorded in the local area (10-kilometre radius), the application area is considered to contain suitable habitat for the following fauna species:

- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) (listed as Vulnerable under the BC Act and EPBC Act),
- *Falco peregrinus* (peregrine falcon) (listed as other specially protected fauna by DBCA),
- *Idiosoma sigillatum* (Swan Coastal Plain shield-backed trapdoor spider) (listed as Priority 3 by DBCA),
- *Isoodon fusciventer* (quenda) (listed as Priority 4 by DBCA),
- *Lerista lineata* (Perth slider) (listed as Priority 3 by DBCA),
- *Merops ornatus* (rainbow bee-eater) (listed as marine under the EPBC Act),
- *Neelaps calonotos* (black-striped burrowing snake) (listed as Priority 3 by DBCA),
- *Synemon gratiosa* (graceful sunmoth) (listed as Priority 4 by DBCA),
- *Throscodectes xiphos* (stylet bush cricket) (listed as Priority 1 by DBCA), and
- *Zanda latirostris* (previously *Calyptorhynchus latirostris*) (Carnaby's cockatoo) (listed as Endangered under the BC Act and EPBC Act).

The application area occurs approximately four (4) kilometres east of the modelled distribution of *Zanda baudinii* (previously *Calyptorhynchus baudinii*) (Baudin's cockatoo) (listed as Endangered under the BC Act and EPBC Act), and the closest record of the species is approximately 7.1 kilometres from the application. Furthermore, biological surveys for the application area (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016), have not identified any evidence of this species within the application area or immediate vicinity. Therefore, while the application area contains suitable habitat for Baudin's cockatoo, it is considered unlikely that the species utilises the application area at present and the application area is not considered likely to comprise significant habitat for this species of black cockatoo.

Black cockatoo species
Breeding habitat
Carnaby's cockatoo and the forest red-tailed black cockatoo are known to nest in hollows of live and dead trees, including *Corymbia calophylla* (marri), *Eucalyptus marginata* (jarrah), *Eucalyptus diversicolor* (karri), *Eucalyptus wandoo* (wandoo), *Eucalyptus gomocephala* (tuart), *Eucalyptus rudis* (flooded gum), and other *Eucalyptus* spp. (DAWE, 2022). 'Breeding habitat' for black cockatoos includes trees of these species that either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow, where suitable DBH for nest hollows is 500 millimetres for most tree species (DAWE, 2022).

Biological survey information indicates that there are no suitable breeding trees present within the application area, noting that majority of the site comprises banksia woodland vegetation with scattered *Eucalyptus todtiana* (pricklybark) that is not of suitable size to produce breeding hollows (PGV Environmental, 2023a; MRIA, 2017b;

Focused Vision, 2016). Therefore, the proposed clearing is not considered likely to impact vegetation comprising significant breeding habitat at present or to significantly impact breeding by Carnaby's cockatoo and the forest red-tailed black cockatoo in the local area.

Roosting habitat

It is recognised that habitat trees that provide potential breeding habitat may also represent suitable roosting habitat for black cockatoo species. As the application area does not contain suitable habitat trees for roosting and biological surveys have not identified any evidence of roosting within the application area (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016), the proposed clearing is not considered likely to result in the loss of significant roosting habitat for Carnaby's cockatoo and the forest red-tailed black cockatoo.

Foraging habitat

Black cockatoo species are noted to forage on a range of plant species, with the primary foraging resources varying between species (DAWE, 2022). Carnaby's cockatoos forage on the seeds, nuts, and flowers of a variety of plants, including Proteaceous species (*Banksia* spp., *Hakea* spp., and *Grevillea* spp.), as well as *Allocasuarina* and *Eucalyptus* species, marri and a range of introduced species (Valentine and Stock, 2008). On the Swan Coastal Plain, it is noted that Banksia species (predominantly *Banksia attenuata*, *Banksia menziesii* and *Banksia sessilis*) are the most important natural food source for Carnaby's cockatoo, followed by marri (Groom, et al., 2014). Forest red-tailed black cockatoos feed predominantly on the seeds of marri and jarrah, which comprise approximately 90 per cent of their diet (DEC, 2008) but may also forage on other Eucalyptus species and the cones of *Allocasuarina* species (DAWE, 2022). As the application area contains *Banksia attenuata* and *Banksia menziesii* within the banksia woodland vegetation type, it is considered to provide primary foraging habitat for Carnaby's cockatoo on the Swan Coastal Plain. While it is acknowledged that the majority of the vegetation within the impact site contains non-preferred foraging species for forest red-tailed black cockatoo (i.e., *Banksia* species), the banksia woodland vegetation type contains scattered *Allocasuarina fraseriana* (sheoak) and *Eucalyptus todtiana* (pricklybark), which may provide preferred foraging habitat for forest red-tailed black cockatoo.

Initial assessment of the application area indicated that the available foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo was aligned with the mapping of the banksia woodland vegetation type, totalling approximately 3.16 hectares (PGV Environmental, 2023a). However, it was acknowledged that some areas of the mapped banksia woodland vegetation type comprised only low shrubs (e.g., *Phlebocarya ciliata* and *Dasypogon bromeliifolius*) and weedy grasses that were contiguous with the Banksia Woodland ecological community but did not contain any suitable foraging species for Carnaby's cockatoo or forest red-tailed black cockatoo (PGV Environmental, 2023b). Consequently, revised detailed black cockatoo foraging habitat mapping was undertaken by the applicant which determined that the total extent of black cockatoo foraging habitat extent within the application area, was 2.08 hectares (PGV Environmental, 2023b) (see Figure 2 below).

While it is acknowledged that Carnaby's cockatoo has been observed feeding on the flowers and seed heads of *Xanthorrhoea preissii* (grass trees) (Johnstone and Kirby, 2008a; Johnstone and Kirby, 2008b; Shah, 2006), there is little published evidence on its importance as a food source. Grass trees are not included in the list of known foraging habitat in the referral guideline for black cockatoo species (DAWE, 2022) or included as a 'high priority' foraging plant species for Carnaby's cockatoo on the Swan Coastal Plain (Johnson, 2013; Glossop et al., 2011). Further, while DWER is not aware of any studies investigating the frequency of use of grass trees as a food resource, the number of grass tree seeds required to meet the daily minimum metabolic rate for Carnaby's cockatoo has been calculated as 2,133 seeds, compared to 567 *Bansksia attenuata*, 764 *Corymbia callophylla* or 873 'pine' seeds (see Stock et al 2013, Table 1), suggesting grass trees are of a lower foraging value to other preferred foraging species. Therefore, based on current scientific knowledge and the available literature, grass trees are not considered to be a critical foraging resource for Carnaby's cockatoo and the clearing of individual grass tress within 0.8 hectares of *Xanthorrhoea preissii* Shrubland (Xp) vegetation type mapped within the application area, is not considered likely to represent a significant impact to Carnaby's cockatoo foraging habitat at a regional or local level. Therefore, the Xp vegetation type within the application area has been excluded from black cockatoo foraging habitat mapping.

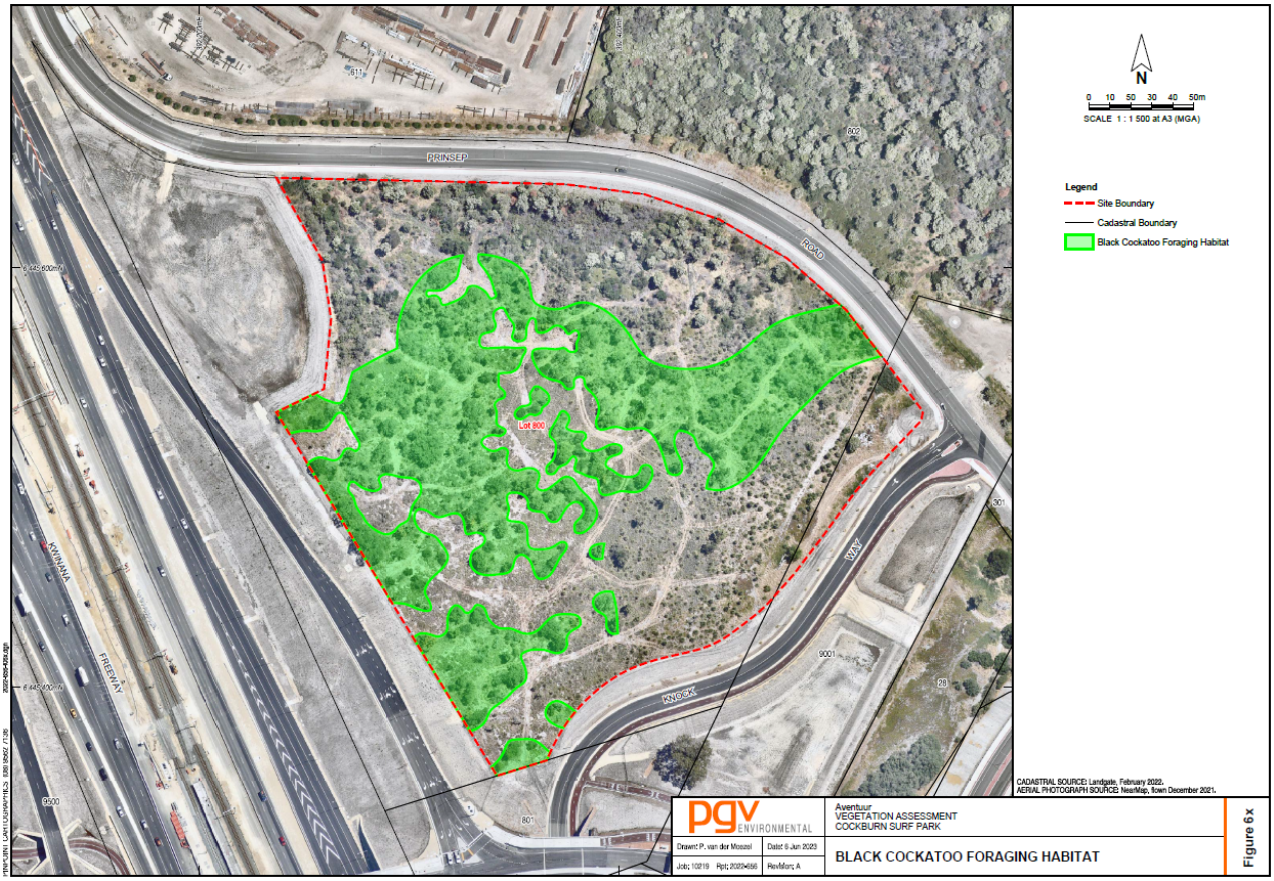

Figure 2. Revised foraging habitat mapping for Carnaby's cockatoo or forest red-tailed black cockatoo within the CPS 10068/1 application area (PGV Environmental, 2023b).

Critical habitat for Carnaby's cockatoo includes any habitat that provides feeding, watering, regular night roosting, or potential for breeding (DPAW, 2013). Given the application area contains 2.08 hectares of preferred foraging habitat for Carnaby's cockatoo and that biological assessment of the application area and nearby remnant vegetation has identified evidence of foraging by Carnaby's cockatoo on banksia cones (Focused Vision, 2016), it is considered that the application area meets the definition of critical habitat for this species. The clearing of foraging habitat on the Swan Coastal Plain is also identified as a key threatening process for Carnaby's cockatoo, with the main factor limiting population growth of Carnaby's cockatoo and ensuring adult survival, related directly to bottlenecks in food resources on the Swan Coastal Plain and the ongoing removal of food resources (EPA, 2019; Williams, et al., 2017; Groom, 2015; DPAW, 2013; Stock, et al., 2013).

In regard to the forest red-tailed black cockatoo, critical habitat for this species is defined as all marri, karri and jarrah forests, woodlands and remnants in the south-west of Western Australia receiving more than 600 millimetres of annual average rainfall (DEC, 2008). According to available databases, the application area has a mean annual rainfall of approximately 817 millimetres (BoM, 2023). While the application area is not a remnant of marri, karri, or jarrah forest, it does contain 2.08 hectares of preferred and supplementary foraging species and biological assessment of the application area has identified evidence of foraging by forest red-tailed black cockatoo in the form of chewed prickly bark fruits (Focused Vision, 2016), as well as individuals landing in trees within the application area while moving through the landscape (MRIA, 2017b). Therefore, the vegetation within the application area is considered to represent critical habitat for forest red-tailed black cockatoo.

While the referral guidelines for black cockatoo species acknowledges that foraging habitat within 12 kilometres of a breeding site is of particular importance for Carnaby's cockatoo and forest red-tailed black cockatoo (DAWE, 2022), it should be noted that the closest recorded breeding site for Carnaby's cockatoo and forest red-tail black cockatoo from the application area is approximately 19 kilometres and 43 kilometres, respectively. According to available databases, the application area is located within 12 kilometres of 20 artificial breeding hollows that have been installed in the local area. However, no evidence of use of these hollows has been recorded and these are considered potential local breeding habitat only. Therefore, it is unlikely that the vegetation within the proposed clearing area is supporting foraging by breeding individuals at present.

The referral guideline also indicates that Carnaby's cockatoo and forest red-tailed black cockatoo generally forage in areas up to 20 kilometres from known night roosting habitat (DAWE, 2022). However, the species' recovery plans

(DPAW, 2013; DEC, 2008) and literature from studies in other regions (Le Roux, 2017; Glossop, et al., 2011) indicate that foraging habitat within six kilometres of nocturnal roost site is of particular importance. According to available databases, approximately 23 black cockatoo roost sites occur within six kilometres of the application and is likely to be supported by the foraging habitat within the application area. The application area also occurs in close proximity to water bodies that may provide watering sites for black cockatoo (e.g., Bibra Lake, Yangebup Lake, Thomsons Lake), increasing the likelihood that the application area supports foraging by birds frequenting the local area and roosting locally.

According to available databases, a maximum of approximately 7728 hectares of suitable foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo persists within six kilometres of the local roosting sites, of which the application area represents approximately 0.03 per cent. However, approximately 84 per cent of all mapped remnants within six kilometres of the local roosting sites are less than two hectares in size, with the median patch size for foraging habitat being 0.55 hectares. Therefore, the application area represents a larger-than-average remnant of foraging habitat within a highly modified and fragmented part of the species' range. Furthermore, approximately 34 per cent (2593 hectares) of the mapped remnants of foraging habitat in the local area occur within secure conservation tenure and ongoing threats such as land clearing and fragmentation, weed invasion, and dieback, may result in further cumulative impacts to the maintenance of foraging habitat in the local area. The ongoing loss of foraging habitat within proximity to roosting sites on the Swan Coastal Plain represents a significant risk to the local flocks of Carnaby's cockatoo and forest red-tailed black cockatoo. This is consistent with advice received from DBCA, which indicated that the cumulative habitat loss on the Swan Coastal Plain is reducing the number of birds that can be supported in the region (DBCA, 2023b).

In considering the definitions of critical habitat for the species, the proximity of the application area to roost sites, past evidence of foraging, and the cumulative loss of foraging habitat on the Swan Coastal Plain, the proposed clearing of 2.08 hectares of foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo is considered to represent a significant residual impact. This is consistent with advice received from DBCA, which stated that all remaining foraging resources are significant for black cockatoos, noting that recovery plans for these species state that a reversal of threats is required before significant increases in black cockatoo populations can occur (DBCA, 2023b).

Other avian fauna species

The peregrine falcon typically nests on rocky ledges in tall, vertical cliff faces and gorges, or in tall trees associated with drainage lines, and can hunt in a range of habitat types including timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings (Australian Museum, 2019). Given the application area contains remnant Banksia Woodland, shrubland, and wetland vegetation in an industrial area, it may provide suitable foraging habitat for the peregrine falcon but is unlikely to provide suitable nesting habitat due to the lack of large eucalypts. No individuals were observed within, or utilising the airspace above, the application area at the time of fauna assessments (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016) or site inspections (DWER, 2023c). Noting that the peregrine falcon is a highly mobile species with a large home range that does not rely on specialist niche habitats, the species is likely to be transient in the application area only and it is unlikely that the application area represents significant habitat for the species.

The rainbow bee-eater is a common seasonal visitor to south-west Western Australia and, while not considered globally or nationally threatened, is a migratory bird protected under international agreements (DCCEEW, 2023). The rainbow bee-eater utilises a wide range of habitat types including open forest and woodland, shrublands, inland and coastal dune systems, and various cleared or semi-cleared habitats (DCCEEW, 2023). A biological survey undertaken in the local area identified the rainbow bee-eater nesting in a sand embankment along North Lake Road in 2015 (GHD, 2015). However, no subsequent fauna assessments (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016) or site inspections (DWER, 2023c) of the application area have identified evidence of individuals. The movement patterns of the rainbow bee-eater are complex and not fully understood, with some populations migrating to southern Australia for breeding and then moving north during the Australia winter, and others remaining breeding residents in northern Australia (DCCEEW, 2023). While the application area may provide suitable habitat for the rainbow bee-eater, it is not considered likely to represent significant habitat for the species or to be necessary for the ongoing maintenance of the species in the region, given the transient nature and versatile habitat preferences of the rainbow bee-eater.

Ground-dwelling vertebrate fauna

Quenda are ground-dwelling marsupials, typically associated with forest or woodlands near watercourses, where understorey consists of dense scrub and leaf litter is abundant (DEC, 2012). An individual quenda was observed utilising the wetland vegetation within the application area during a wetland evaluation (PGV Environmental, 2023c). Previous surveys of the application area have also observed evidence of quenda in the form of diggings (MRIA, 2017b; Focused Vision, 2016). Given the application area is isolated from other remnants of native vegetation by

road infrastructure and that the proposed clearing will remove all native vegetation within Lot 800 on Deposited Plan 50212 and Lot 9001 on Deposited Plan 65564, Jandakot, it is likely that the proposed clearing will result in the loss of the local population of quenda utilising the application area. Advice received from DBCA indicates that the impact of the proposed clearing on quenda is likely to be locally significant (DBCA, 2023b). However, it is not considered likely that the proposed clearing will significantly impact the ongoing maintenance of the species in the region.

In order to mitigate impacts to the local quenda population and reduce the likelihood of direct impacts to individuals, the applicant will implement a salvage relocation program, involving pre-clearing trapping and relocation of quenda for a minimum of four nights immediately prior to the commencement of clearing activities. The salvage relocation program will be undertaken in accordance with a fauna license pursuant to the *Biodiversity Conservation Regulations 2018*, with a suitable site for relocation to be determined by DBCA. This commitment will be conditioned on the clearing permit and is consistent with the management recommendations provided by DBCA (DBCA, 2023b). The applicant will also be required to engage a fauna specialist to traverse the clearing area ahead of the clearing machinery for the duration of clearing, and clearing must cease in any area where quenda are identified, until the individual/s have been trapped and relocated.

While no individuals have been observed in biological surveys of the application area, two reptile species, (the Perth slider and black-striped burrowing snake) are considered to be possibly present within the application area (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016). Perth slider is largely restricted to the Swan Coastal Plain and is known to occur in several bush remnants near Perth, predominantly in pale sands on coastal plains with *Banksia* or *Eucalyptus* species (TSSC, 2020). The black-striped burrowing snake is also largely restricted to the Swan Coastal Plain and Perth region, typically occurring in Banksia woodlands atop soft calcareous sand and, to a lesser extent, coastal heathlands and shrublands (He, 2021). Advice received from DBCA indicates that, if present within the application area, impacts to the Perth slider and black-striped burrowing snake may be locally significant (DBCA, 2023b).

However, both of these species likely have poor dispersal abilities and are reliant on litter ground cover and other debris for shelter, making them vulnerable to fire, predation, and weed infestation which may have an adverse effect on the microhabitats required by fossorial species (He, 2021; TSSC, 2020). Given its susceptibility to these threats, both species rarely occupy small urban bushland remnants (He, 2021; TSSC, 2020). Further, records of the black-striped burrowing snake are more abundant north of the Swan River and records are comparatively scarcer in the south (He, 2021). Given the application area is an isolated urban remnant with significant weed invasion in the understorey and that previous microhabitat searches of areas of leaf litter have not identified any individuals (MRIA, 2017b), it is considered unlikely that the application area represents significant habitat for the Perth slider or black-striped burrowing snake or would be necessary for the ongoing maintenance of these species in the region.

It is also acknowledged that the salvage relocation program employed for quenda may incidentally capture other ground-dwelling fauna species. The permit conditioning will require any other incidentally trapped native fauna to be relocated in accordance with a fauna license pursuant to the *Biodiversity Conservation Regulations 2018*, with a suitable site for relocation to be determined by DBCA.

Invertebrates

The graceful sun moth is a medium-sized diurnal flying sun moth, typically associated with open areas of coastal herbland, heathland, and shrubland on secondary Quindalup dunes containing *Lomandra maritima* and in banksia woodland containing *Lomandra hermaphrodita* (TSSC, 2013). There is little information on the biology and ecology of sun moths, however the graceful sun moth is known to fly between mid-February and late March each year (TSSC, 2013). Noting that the application area comprises banksia woodland on the Swan Coastal Plain and that *Lomandra hermaphrodita* was recorded onsite during flora and vegetation surveys (MRIA, 2017a; Focused Vision, 2016), the application area may provide suitable habitat for the graceful sun moth. However, *Lomandra hermaphrodita* was observed at a percentage cover of approximately one (1) per cent within the banksia woodland vegetation type and is not abundant within the application area (PGV Environmental, 2023a). The species' capacity for dispersion is also limited and adults are rarely found outside a breeding colony, with dispersal across areas of unsuitable habitat being extremely uncommon (TSSC, 2013). It is also acknowledged that the graceful sun moth was delisted from the EPBC Act in 2013, following extensive surveys between 2009 and 2012 which greatly extended the known area of occupancy and population size of the species on the Swan Coastal Plain, including 44 sites in conservation tenure (TSSC, 2013). Given the application area is isolated from other areas of suitable habitat by road infrastructure, over which the species is unlikely to disperse, and that biological surveys of the application area have not identified individuals in the vicinity, the proposed clearing is not likely to impact significant habitat for the graceful sun moth or impact its persistence in the region.

The Swan Coastal Plain shield-backed trapdoor spider is associated with banksia woodland and heathland in sandy soils on the Swan Coastal Plain and is largely restricted to bushland remnants in the Greater Perth region (Rix et al.,

2018). Given the application area includes remnant banksia woodland in the Perth Metropolitan Area and occurs on sandy soils, it is possible that the application area provides suitable habitat for the Swan Coastal Plain shield-backed trapdoor spider. However, it is acknowledged that various fauna assessments of the application area, including microhabitat searches of areas of leaf litter (MRIA, 2017b), have not identified any evidence of individuals (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016). Noting that the application area is an urban remnant with significant weed invasion in the understorey and is separated from other areas of suitable habitat by road infrastructure, it is considered unlikely that the application area represents significant habitat for the Swan Coastal Plain shield-backed trapdoor spider or would be necessary for the ongoing maintenance of this species in the region.

The stylet bush cricket *Throscodectes xiphos* is a poorly recorded species, known only from remnant bushland areas in Jandakot (Jandakot Airport, 2016). There is little known regarding its distribution, biology, or habitat preferences, but all observations of the species have occurred within banksia woodland and heathland, with specimens collected in the axial leaf bases of grass trees (Jandakot Airport, 2016). Given the application area includes remnant banksia woodland and grass tree shrubland in Jandakot and known records occur within 400 metres of the application area, it is possible that the application area provides suitable habitat for *Throscodectes xiphos*. However, previous microhabitat searches of areas of leaf litter within the application area have not identified any individuals (MRIA, 2017b). It is also acknowledged that the most recent records of the species in the local area date back to 1999 and that more recent surveys in local bushland surrounding Roe Highway targeted *Throscodectes xiphos* and did not identify any individuals (Jandakot Airport, 2016). Noting that the application area is an isolated urban remnant with significant weed invasion in the understorey and that suitable habitat for the species will remain in the local area, including within the adjacent Lot 802 on Deposited Plan 50212, Jandakot, and nearby Jandakot Airport, it is not considered likely that the proposed clearing will impact significant habitat for *Throscodectes xiphos*.

Ecological linkage

Given the application area is isolated from other remnants of native vegetation by road infrastructure, it is not considered likely to represent a direct ecological linkage for fauna dispersal. However, it is acknowledged that the application area may provide a 'stepping-stone' for avian fauna moving through the local area. While the proposed clearing will reduce the extent of native vegetation available as a linkage for avian fauna in the local area, other remnants of native vegetation in close proximity to the application area will remain and provide similar 'stepping-stone' functionality, including the adjacent vegetation within Lot 802 on Deposited Plan 50212, Jandakot, and Bush Forever Site 390 within two kilometres of the application. Therefore, it is not considered likely that the proposed clearing will significantly impact ecological linkage values in the local area or significantly reduce the capacity for fauna to disperse through the local area.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 2.08 hectares of significant foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo and will impact locally significant habitat for quenda. The management measures proposed by the applicant are considered adequate to mitigate impacts to the local quenda population and reduce the likelihood of direct impacts to individuals. However, for the reasons set out above, it is considered that the impacts of the proposed clearing to significant foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo constitutes a significant residual impact.

In accordance with the Government of Western Australia's *Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014), this significant residual impact has been addressed through the conditioning of environmental offset requirements, as outlined under Section 4.

Conditions

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

- Fauna management, which requires the applicant to engage a fauna specialist to undertake a pre-clearing fauna trapping and relocation program for quenda. The applicant is also required to engage a fauna spotter to be present for the duration of clearing activities, and clearing must cease in any areas where quenda are identified until the individual/s have been trapped and relocated, and
- Offset – revegetation and rehabilitation, which requires the revegetation and rehabilitation of a total of 7.24 hectares of significant foraging habitat for Carnaby's cockatoo and 6.64 hectares of significant foraging habitat for forest red-tailed black cockatoo within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake.

3.2.2. Biological values (flora) - Clearing principles (a) and (c)

Assessment
It is acknowledged that flora and vegetation assessments of the application area have not identified any threatened or priority flora species (PGV Environmental, 2023a; Focused Vision, 2018; MRIA, 2017a; Focused Vision, 2016). Given that the survey effort included a Level 1 flora survey (Focused Vision, 2016), a detailed flora and vegetation assessment (MRIA, 2017a), and a targeted *Caladenia huegelii* survey (Focused Vision, 2018) undertaken during the 2016 and 2017 spring seasons and that the majority of the conservation significant flora species recorded in the local area are either perennial species or are annual species that would have been identifiable at the time of the surveys, it is considered unlikely that the application area contains significant habitat for threatened or priority flora species. This is consistent with advice received from DBCA that expressed no concerns regarding the potential for rare flora to occur within the application area (DBCA, 2023b).

However, the advice received from DBCA noted that *Caladenia huegelii* has the potential to lay dormant for several years, with flowering closely related to climatic factors such as rainfall, and it is possible that this species may still occur within the application area as targeted surveys have only been completed in one season (DBCA, 2023b). *Caladenia huegelii* (listed as Critically Endangered under the BC Act and Endangered under the EPBC Act) is a perennial herb with green, cream, and red-maroon flowers, associated with woodlands dominated by jarrah, *Banksia* spp., or marri, over low heath or shrub of *Hibbertia* spp., *Sitrlingia latifolia*, *Hypcolymma robustum*, *Adenanthos cuneatus*, *Conostylis* spp., and grass trees, within deep grey-white sandy soils (DEC, 2009). *Caladenia huegelii* flowers from September to October, and outside of this period, persists as a dormant underground tuber (DEC, 2009). Given the application area consists of remnant banksia woodland in grey-white sandy soils, it is likely to provide suitable habitat for *Caladenia huegelii* and its specialised pollinators. Vegetation mapping indicates that the area of suitable habitat for *Caladenia huegelii* within the application area is aligned with the *Banksia menziesii/B. attenuata* Low open Woodland (BmBa) and *Xanthorrhoea preissii* Shrubland (Xp) vegetation types and totals approximately 3.96 hectares (PGV Environmental, 2023a).

However, advice received from DBCA notes that, while it is possible for *Caladenia huegelii* to occur at the site, it is unlikely to be present in large numbers, given no individuals were detected in the targeted surveys (DBCA, 2023b). It is also acknowledged that *Caladenia huegelii* tends to favour areas of dense undergrowth (DEC, 2009) and that the understorey within the banksia woodland of the application area has been highly disturbed and weed infested, making it unlikely to support a large subpopulation of the species (DBCA, 2023b). On this basis, it is unlikely that the application area would represent a significant subpopulation of *Caladenia huegelii*, if present. *Caladenia huegelii* is known from 89 subpopulations with a total of 1566 plants (DBCA, 2023b). The closest extant subpopulation is approximately 1.5 kilometres east of the application area and is a large, self-sustaining population (DBCA, 2023b). Therefore, while the proposed clearing has the potential to impact a remaining area of suitable habitat for *Caladenia huegelii* and its specialised pollinators in a part of its range that has been extensively modified, it is unlikely to impact the overall conservation of the species or its persistence in the local area (DBCA, 2023b).

Conclusion
Based on the above assessment, the proposed clearing will result in the loss of suitable habitat for *Caladenia huegelii*. However, no individuals have been recorded in targeted flora surveys.

For the reasons set out above, it is considered unlikely that the application area would support a significant population of *Caladenia huegelii*, if present, and the proposed clearing is not considered likely to impact the overall conservation of the species or its persistence in the local area.

Conditions
No flora management conditions required.

3.2.3. Biological values (ecological communities) - Clearing principles (a) and (d)

Assessment
According to the approved conservation advice for the Banksia Woodlands TEC, the key diagnostic criterion for the TEC includes the presence of at least one of the four diagnostic *Banksia* species, and distinct low woodland to forest structure comprising a canopy co-dominated by *Banksia attenuata* or *Banksia menziesii*, where the emergent tree layer often includes marri, jarrah, or tuart, over a diverse shrub or herbaceous understorey (DoEE, 2016). The community typically occurs on well drained, low nutrient soils on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands and is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau (DoEE, 2016). The thresholds for patch size and condition for the Banksia Woodlands TEC state that a patch should meet at least Good (Keighery, 1994) condition to be considered part of the listed community, and minimum patch size is dependent on vegetation condition

and its overall contribution to beta diversity, connectivity, and function of the ecological community across the landscape (DoEE, 2016).

Previously, occurrences of the Banksia Woodlands PEC were determined from the composition and location of the vegetation, where no specific patch size or condition thresholds applied. However, the description, area and condition thresholds have since been updated and are now aligned with those that apply to the federally listed Banksia Woodland TEC (DBCA, 2023a). Therefore, any vegetation determined to be representative of the federally listed Banksia Woodlands TEC is also considered representative of the Banksia Woodlands PEC in the state.

Flora and vegetation surveys have identified that the application area contains approximately 3.16 hectares of a *Banksia menziesii/B. attenuata* Low open Woodland (BmBa) vegetation type (PGV Environmental, 2023a; MRIA, 2017a; Focused Vision, 2016). An assessment of the Floristic Community Type (FCT) of surveyed quadrats identified that the BmBa vegetation type has the strongest correlation with FCT23a, as originally described in Gibson et al. (1994) as 'Central *Banksia attenuata* – *Banksia menziesii* woodlands', which is considered to be associated with the Banksia Woodlands TEC (PGV Environmental, 2023a; MRIA, 2017a; Focused Vision, 2016). Noting that the BmBa vegetation type comprises a distinctive upper canopy dominated by *Banksia attenuata* and *Banksia menzeisii*, an understorey containing sclerophyllous shrubs of various heights as well as rushes, sedges and forbs, a condition rating of Good to Very Good (Keighery, 1994), and a total area of 3.16 hectares, this vegetation meets the key diagnostic criteria and minimum patch size and condition thresholds to be considered representative of the Banksia Woodland TEC. While the *Xanthorrhoea preissii* Shrubland (Xp) vegetation type is contiguous with the BmBa vegetation type, this area is not considered likely to be representative of the Banksia Woodland TEC as it lacks a canopy of the diagnostic *Banksia* species (PGV Environmental, 2023a). The Xp vegetation type is considered a buffer to the Banksia Woodland TEC within the application area and, consistent with the approved conservation advice, is not part of the ecological community and is not formally protected as part of the matter of national significance (DoEE, 2016). Therefore, the proposed clearing will result in the loss of 3.16 hectares of native vegetation that is representative of the Banksia Woodlands TEC.

According to available databases, approximately 5445 hectares of vegetation representative of the Banksia Woodlands TEC occurs within the local area, of which the application area represents approximately 0.06 per cent. However, approximately 95 per cent of all mapped remnants in the local area are less than 10 hectares in size, with the median patch size in the local area being 0.72 hectares. Across the entirety of the Swan Coastal Plain, median patch size of the Banksia Woodland TEC is 1.6 hectares and approximately 82 per cent of patches are less than 10 hectares in size (DoEE, 2016). The geographic extent of the ecological community across the Swan Coastal Plain has also substantially declined since European settlement, particularly around the Perth metropolitan region, in the order of 50 to 60 per cent (DoEE, 2016). Therefore, the application area represents a larger-than-average remnant within a highly modified and fragmented part of the ecological community's range. Further, less than 50 per cent of the mapped patches of Banksia Woodlands TEC in the local area occur within secure conservation tenure and ongoing threats such as land clearing and fragmentation, weed invasion, and dieback, may result in further cumulative impacts to the maintenance of the TEC in the local area.

In considering the above, the proposed clearing of 3.16 hectares of native vegetation that is representative of the Banksia Woodlands TEC is considered to represent a significant residual impact. This is consistent with advice received from DBCA, which stated that the proposed clearing of 3.16 hectares of Banksia Woodlands TEC in Good to Very Good (Keighery, 1994) condition will contribute to further decline and fragmentation of the ecological community and is considered a significant impact (DBCA, 2023b).

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 3.16 hectares of native vegetation that is representative of the Banksia Woodlands TEC and PEC. For the reasons set out above, it is considered that the impacts of the proposed clearing on the Banksia Woodlands TEC constitutes a significant residual impact. In accordance with the Government of Western Australia's *Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014), this significant residual impact has been addressed through the conditioning of environmental offset requirements, as outlined under Section 4.

Conditions

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

- Offset – monetary contribution to the Part V Offsets Fund, which requires the applicant to fund the purchase of 21.3 hectares of native vegetation that comprises the Banksia Woodlands TEC in Very Good (Keighery, 1994) or better condition.

3.2.4. Significant remnant vegetation - Clearing principle (e)

Assessment
The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). Noting that the current vegetation extent for the mapped Swan Coastal Plain vegetation complex (Bassendean Complex-Central and South) and vegetation extent within the local area fall below the 30 per cent threshold (see Appendix C.2), the application area is considered to be a remnant within an extensively cleared landscape. Noting that the application area includes vegetation that comprises significant foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo, provides suitable habitat for other conservation significant fauna including quenda, is representative of the Banksia Woodlands TEC, and comprises native vegetation growing in a significant wetland, the application area is considered to be a significant remnant of vegetation.

However, 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 Bassendean Complex-Central and South, and the local area are all above the 10 per cent threshold for constrained areas (see Appendix C.2). The application area represents approximately 0.08 per cent of all remaining native vegetation in the local area, 0.007 per cent of all remaining vegetation representative of the Bassendean Complex-Central and South, and 0.0004 per cent of all remaining vegetation on the Swan Coastal Plain. Therefore, the proposed clearing will not cause the extent of native vegetation to fall below the 10 per cent representation threshold and is not considered to impact extensively cleared vegetation within the Perth Metropolitan Region constrained area.

As discussed under Section 3.2.1, the application area is isolated from other remnants of native vegetation by road infrastructure and other remnants of native vegetation in close proximity to the application area will remain and provide similar 'stepping-stone' functionality. Therefore, it is unlikely that the application area acts as a significant ecological linkage or that the proposed clearing will significantly impact vegetation connectivity in the local area.

However, it is acknowledged that biological surveys of the application area identified a high degree of weed cover in the understorey and that the proposed clearing has the potential to facilitate the spread of weeds and dieback into remnants of native vegetation in the local area, including adjacent wetland vegetation within Lot 802 on Deposited Plan 50212, Jandakot. A weed and dieback management condition is considered to minimise this risk, and it is not considered likely that the proposed clearing will have a significant impact on nearby significant remnant vegetation.

Conclusion
Based on the above assessment, the proposed clearing is unlikely to result in significant impacts to vegetation extent within an extensively cleared area or to impact significant ecological linkages but may facilitate the spread of weeds and dieback into nearby vegetation in the local area, including adjacent wetland vegetation within Lot 802 on Deposited Plan 50212, Jandakot. For the reasons set out above, it is considered that the impacts of the proposed clearing can be managed to be environmentally acceptable by taking steps to minimise the risk of the introduction and spread of weeds and dieback and does not constitute a significant residual impact.

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

- Dieback and weed control, which ensures protocols are put in place to limit the introduction and transportation of dieback- and weed-affected materials.

3.2.5. Land and water resources (wetland) - Clearing principles (f) and (i)

Assessment
Approximately 18 percent of the application area (~1 hectare) intersects a mapped Multiple Use wetland (UFI 6652) in the northern portion of Lot 800 on Deposited Plan 50212, Jandakot. UFI 6652 was historically a continuous wetland spanning approximately 1.9 kilometres in an east west direction, with a total area of 47.6 hectares (DBCA, 2023b). The mapped wetland has now been highly modified by the construction of road infrastructure and development for light industrial, commercial, and peri-urban residential purposes. UFI 6652 is dissected by the Kwinana Freeway, Prinsep Road, and Verde Drive, Jandakot, and is now limited to approximately six patches of remnant wetland vegetation totalling approximately 9.5 hectares (20 per cent of its historical extent) and ranging in size from 0.7 to 3.82 hectares.

Vegetation assessments of the application area identified that the vegetation within the mapped wetland consists of a *Melaleuca preissiana* Low Open Woodland over *Kunzea glabrescens* Tall Shrubland over *Astartea affinis/*

Hypocalymma angustifolium Open Low Heath (Mp) vegetation type (PGV Environmental, 2023a; MRIA, 2017a; Focused Vision, 2016). The boundary of the wetland is considered to be aligned with the Mp vegetation type, which has a total area of 1.48 hectares (PGV Environmental, 2023a; PGV Environmental, 2023c). It is acknowledged that this extent does not align exactly with the DBCA geomorphic wetland mapping of UFI 6652 (see Figure 3 below). Initial mapping indicated the condition of the Mp vegetation type to be Degraded to Good (Keighery, 1994).

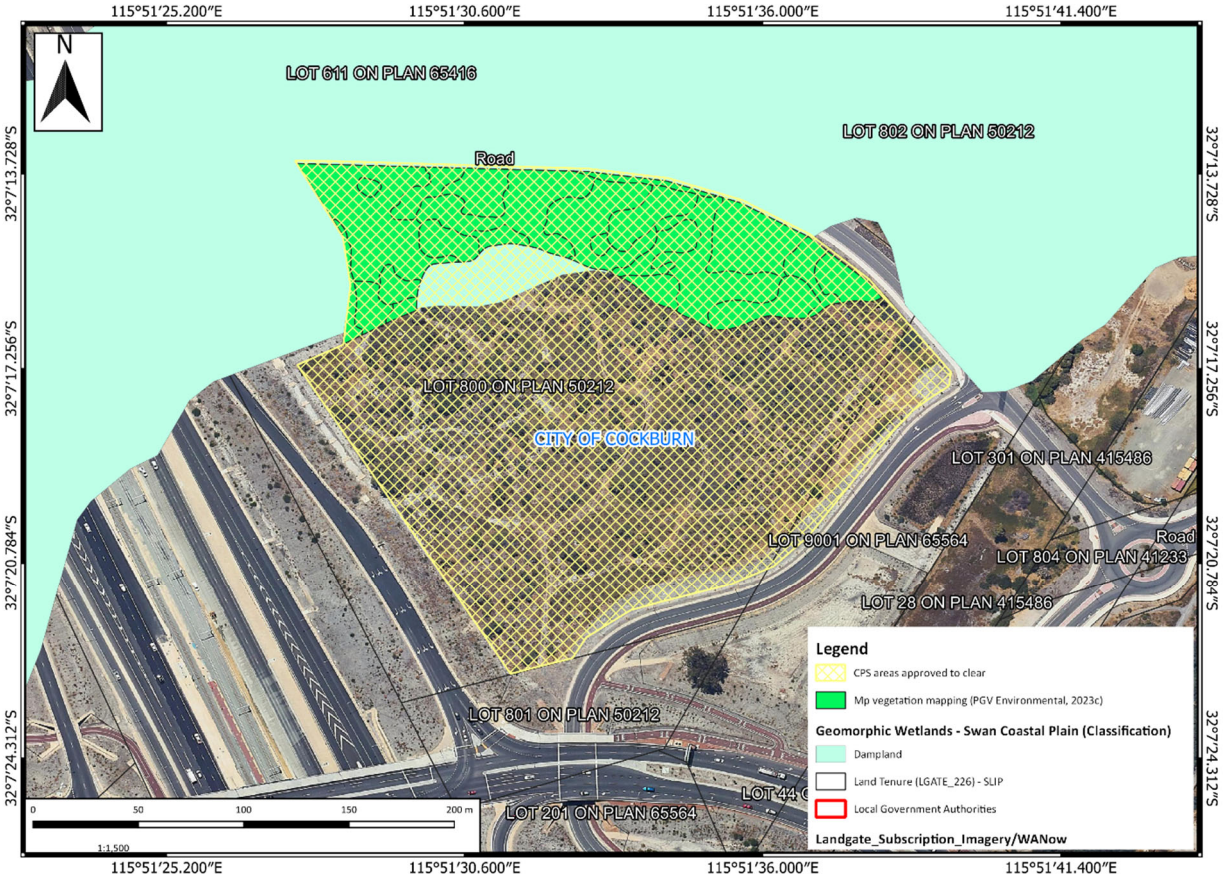

Figure 3. Geomorphic wetland mapping of UFI 6652 (shaded light green-blue) and PGV Environmental (2023c) mapped wetland boundary (shaded bright green), in relation to the application area for CPS 10068/1 (cross-hatched yellow).

While UFI 6652 is mapped as a Multiple Use wetland classification, initial advice received from DBCA indicated that areas in Good (Keighery, 1994) condition or better were likely to contain higher wetland values and the existing wetland classification is likely inaccurate (DBCA, 2023b). Based on the existing vegetation assessments, remote sensing, and aerial imagery indicating a high level of vegetation cover, DBCA advised that a wetland evaluation was required to confirm the appropriate management category of the wetland (DBCA, 2023b).

A wetland evaluation was subsequently undertaken by PGV Environmental (2023c) in accordance with the preliminary and secondary criteria outlined in '*A methodology of the evaluation of wetlands on the Swan Coastal Plain, Western Australia'* (DBCA, 2017). The wetland evaluation involved detailed condition mapping of the wetland vegetation within the application area and identified that vegetation condition ranged from Completely Degraded to Excellent (Keighery, 1994), with approximately 58.8 per cent of the wetland vegetation in Good (Keighery, 1994) condition or better (PGV Environmental, 2023c). PGV Environmental (2023c) evaluated the portion of UFI 6652 within the application area against the preliminary and secondary evaluation criteria and determined that the wetland values were likely to be consistent with a Resource Enhancement management category.

However, DBCA assessed the wetland evaluation and noted that both the Conservation and Resource Enhancement management categories scored highly in the secondary evaluation criteria, particularly in relation to the flora, fauna and habitat values, geomorphology, and cultural attributes of the wetland (DBCA, 2023b). DBCA also noted that the portion of UFI 6652 within the application area was likely to meet the preliminary evaluation criteria for automatic identification as a Conservation management category, noting the wetland supports the adjacent occurrence of the Banksia Woodlands TEC by acting as a buffer (MRIA, 2017), influencing hydrology and groundwater level, and providing flood protection and nutrient filtration (DBCA, 2023b). In considering these factors, DBCA determined that the portion of UFI 6652 within the application area was likely to contain wetland values that are commensurate with a Conservation Category wetland (CCW) (DBCA, 2023b).

It should be noted that the formal classification of the wetland within DBCA's Geomorphic Wetlands of the Swan Coastal Plain dataset cannot be changed without a delineation assessment, followed by an evaluation of the wetland values and determination of the appropriate management category. Therefore, while the portion of UFI 6652 within the application area is considered to have values commensurate with a CCW, the wetland has not been formally reclassified.

In considering the above, the proposed clearing will result in the loss of 1.48 hectares of wetland vegetation that has values commensurate with a CCW. CCWs support a high level of ecological attributes and function through various mechanisms (Water and Rivers Commission, 2001). Noting the significant ecological functions performed by CCWs and the cumulative impact of clearing wetland vegetation on the Swan Coastal Plain (DBCA, 2023b), the proposed clearing of wetland vegetation is considered a significant residual impact.

Based on the available information from geomorphic wetland mapping, remote sensing, aerial imagery, and vegetation assessment (PGV Environmental, 2022b), DBCA advised that the portion of UFI 6652 within the adjacent Lot 802 on Deposited Plan 50212, Jandakot, is also likely to contain values commensurate with a CCW (DBCA, 2023b). According to PGV Environmental (2022b), the portion of UFI 6652 within the adjacent Lot 802 on Deposited Plan 50212, Jandakot, is of higher quality than the portion within the application area, with the majority of Lot 802 being intact wetland vegetation in Very Good to Excellent (Keighery, 1994) condition. DBCA (2023b) advised that the portion of UFI 6652 within Lot 802 is highly likely to be hydrologically connected to the portion of UFI 6652 within the application area, noting that UFI 6652 is a basin landform type wetland. Therefore, the proposed clearing has the potential to lead to hydrological changes, such as impacts in surface and underground water levels and quality, which may also impact the portion of UFI 6652 within Lot 802 (DBCA, 2023b). The proposed clearing also has the potential to impact the wetland vegetation within Lot 802 by removing a vegetated buffer and exposing it to a higher degree of wind, dust, and debris from nearby road infrastructure (DBCA, 2023b).

The applicant advised that the impacts of the proposed clearing and subsequent land use on hydrology and water quality will be managed through an Operating Strategy and Water Management Plan as part of the overall CEMP (see Section 3.1), which will be guided by a H2 level hydrogeological assessment (Aventuur, 2023). The applicant has advised that the measures set out in these documents will manage potential offsite impacts to the adjacent wetland vegetation, as well as indirect impacts to surface and groundwater quality, and will include:

- Dust management during clearing and construction to ensure that surrounding areas of native vegetation are not coated in dust,
- Waste management to ensure that clearing and construction debris does not impact on surrounding areas of native vegetation,
- Management of surface hydrology during clearing and construction to prevent run-off into surrounding areas,
- Installation of observation bores for ongoing monitoring of groundwater levels and quality during clearing and the associated land-use (Aventuur, 2023; Coterra, 2023).

However, it should be noted that impacts to hydrology and water quality resulting from the end land-use (i.e., the operation of the Perth Surf Park) are considered as part of the Development Approval under the P&D Act and water licenses under the RIWI Act (see Section 3.3). The scope of DWER's clearing permit assessment under Part V of the EP Act is limited to the potential hydrological and water quality impacts resulting from the clearing of native vegetation.

In addition to the above measures, a weed and dieback management condition is considered adequate to minimise the risk of degradation to the adjacent wetland vegetation. In considering the above, it is not considered likely that the proposed clearing will have a significant indirect impact on the significant wetland vegetation within the adjacent Lot 802 on Deposited Plan 50212, Jandakot.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 1.48 hectares of significant wetland vegetation that is commensurate with a CCW and may result in indirect impacts to adjacent significant wetland vegetation within Lot 802 on Deposited Plan 50212, Jandakot. The management measures proposed by the applicant are considered adequate to manage the indirect impacts to the significant wetland vegetation within the adjacent Lot 802 on Deposited Plan 50212, Jandakot. However, for the reasons set out above, it is considered that the direct impacts of the proposed clearing on wetland vegetation that is commensurate with a CCW constitutes a significant residual impact.

In accordance with the Government of Western Australia's *Environmental Offsets Policy* (2011) and *Environmental Offsets Guidelines* (2014), this significant residual impact has been addressed through the conditioning of environmental offset requirements, as outlined under Section 4.

Conditions

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

- Dieback and weed control, which ensures protocols are put in place to limit the introduction and transportation of dieback- and weed-affected materials, and
- Offset – monetary contribution to the Part V Offsets Fund, which requires the applicant to fund the purchase of 12.72 hectares of vegetation that is growing in or in association with a wetland containing values that are commensurate with a CCW in Good to Very Good (Keighery, 1994) condition on the Swan Coastal Plain.

3.2.6. Land and water resources (land degradation) - Clearing principle (g)

Assessment

The application area is located within four subsystems (B1, B2, B3, and B4 phases) of the Bassendean soil system, which is generally made up of well-bleached white-grey sands (DPIRD, 2023). Based on available risk mapping, all subsystems have a high risk of land degradation resulting from subsurface acidification and phosphorous export, and two of the subsystems (B1 and B2 phases) have a moderate to high risk of wind erosion (DPIRD, 2023). Noting that the proposed clearing will remove all native vegetation within Lot 800 on Deposited Plan 50212 and Lot 9001 on Deposited Plan 65564, Jandakot, and that limited native vegetation exists in the vicinity of the application area to act as a buffer, the proposed clearing has the potential to result in appreciable land degradation where there is significant disturbance of topsoil, run-off of surface water across cleared areas, and if bare ground is left exposed to weathering for an extended period between the clearing of surface vegetation and development of the Perth Surf Park site.

The applicant has advised that, following clearing, soils on site will be stabilised through the construction of buildings, landscaping, or placement of mulch or hydromulch to prevent wind erosion and unintentional movement of soils (Coterra, 2023). The applicant has also indicated that the wave lagoon layout and orientation has been designed to make use of the existing site topography and minimise the need for earthworks (Coterra, 2023), further reducing the risk of wind erosion and subsurface acidification, noting that the site is mapped as having a moderate to low ASS disturbance risk less than three (3) metres from the surface (DPIRD, 2023). The potential impacts to soils will be minimised and managed during clearing and construction in accordance with the applicant's CEMP (see Section 3.1), which will include the following measures:

- Demarcation of clearing boundaries prior to and for the duration of clearing to avoid unauthorised soil disturbance,
- Stabilisation of batters during clearing and construction to prevent sedimentation,
- Dust management during clearing and construction to prevent wind erosion,
- Management of surface hydrology to prevent run-off into surrounding areas and reduce the risk of phosphorus export, and
- Landscaping of areas not required for buildings or associated infrastructure with native species and drought-tolerant plants to assist in stabilising soils and providing a buffer to wind, dust and soil movement (Coterra, 2023).

In considering the mitigation measures employed by the applicant, it is unlikely that the proposed clearing will result in appreciable land degradation.

Conclusion

Based on the above assessment, the proposed clearing may result in land degradation where there is significant disturbance of topsoil, run-off of surface water across cleared areas, and if bare ground is left exposed to weathering for an extended period between the clearing of surface vegetation and development of the Perth Surf Park site. For the reasons set out above, it is considered that the potential land degradation impacts of the proposed clearing can be appropriately managed through the applicant's CEMP and its provisions for soil and hydrological management. Therefore, the proposed clearing is not considered likely to represent a significant residual impact resulting from land degradation.

Conditions

No land degradation management conditions required.

3.3. Relevant planning instruments and other matters

In accordance with section 51O(4) of the EP Act, in considering a clearing matter the Delegated Officer shall have regard to any development approval, planning instrument, or other matter, that they consider relevant. The planning

instruments and other matters considered relevant by the Delegated Officer in determining to grant Clearing Permit CPS 10068/1, are outlined below.

Necessity of the clearing
DWER's *'A guide to the assessment of applications to clear native vegetation'* (DER, 2013) indicates that the necessity of the clearing is an 'other relevant matter' to be considered when making decisions as to whether a clearing permit should be granted. The assessment guideline prioritises clearing for public use over private benefit or commercial gain (DER, 2013).

In considering the clearing permit application, the Delegated Officer had regard to the fact that the proposed Perth Surf Park is a major tourism and development project which is expected to provide a direct public benefit through increased tourism and employment opportunities, generating significant economic activity.

Consultation
The clearing permit application was advertised on DWER's website on 7 March 2023, inviting submissions from the public within a 21-day period. 32 submissions were received at this time and consideration of matters raised in the public submissions are summarised in Appendix B.

The City of Cockburn (the City) was invited to provide comment on the clearing permit application on 7 March 2023. No formal comments have been received to date. However, it is understood that the applicant is liaising closely with the City with respect to the proposal and the revegetation offset sites within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake, which is under management order to the City. The City has advised that it is supportive of the proposed revegetation offset within Crown Reserve 46787 (City of Cockburn, 2023).

EPBC Act referral
On 20 June 2022, the proposal was referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the EPBC Act (Reference: EPBC 2022/09267). On 18 July 2022, DCCEEW determined that the proposed action was not a controlled action under the EPBC Act.

Referral under Part IV of the EP Act
On 9 November 2022, the Perth Surf Park proposal was referred to the Western Australia Environmental Protection Authority (EPA) under section 38(1) of the EP Act. On 28 February 2023, the EPA determined not to assess the proposal and no advice was given. It is understood that 42 appeals have been lodged against the decision not to assess the proposal under section 100(1)(a) of the EP Act, for consideration by the Office of the Appeals Convenor and Minister for Environment; Climate Action (the Minister) (Appeal Number 008/2023). On 21 November 2023, the Minister determined to dismiss these appeals and determined that while the vegetation proposed to be cleared contains significant environmental values, the environmental impacts of the proposal are not so significant as to warrant formal assessment by the EPA. The Minister further determined that the environmental impacts of the proposal can be adequately assessed and, if approved, appropriately managed through other statutory processes (Minister for Environment; Climate Action, 2023).

The Minister took into account that the Appeals Convenor's investigation, which included a site visit, determined that the vegetation proposed to be cleared contains significant environmental values including approximately three hectares of banksia vegetation which is representative of a Commonwealth-listed TEC, foraging habitat for several black cockatoo species and approximately one hectare of wetland vegetation determined based on available wetland mapping which covers 18 percent of the 5.75-hectare proposal area.

Consistent with previous appeal determinations, the Minister agreed with the Appeals Convenor that all remaining foraging habitat on the Swan Coastal Plain is critical to the survival of black cockatoo species, regardless of quality. On this basis, the proposal will result in the loss of critical foraging habitat for black cockatoos. The Minister also noted that the Commonwealth guidelines on endangered ecological communities considers that any clearing of a TEC may have a significant impact on the community.

In relation to groundwater and wetlands, the Minister understood that the proposal may involve the abstraction of approximately 26,000 kilolitres of water each year, and that this level of abstraction may alter local hydrology and impact drinking water supply. The Minister was advised that the source of water for the proposal is yet to be finalised and that the proponent is still investigating the use of groundwater, scheme water or a combination of both.

The Minister understood that a clearing permit application for the whole of the proposal area is currently under assessment and that this process has identified the significant environmental values proposed to be cleared, including the TEC, significant foraging habitat for Carnaby's and forest red-tailed black cockatoos, locally significant habitat for quenda, and a significant wetland. The Minister was made aware that further information from the

proponent to inform its assessment was obtained by DWER, including measures taken to avoid and minimise clearing impacts, and identification of satisfactory environmental offsets.

Regarding the abstraction of groundwater, the Minister was advised that DWER is currently assessing an application to take groundwater under the *Rights in Water and Irrigation Act 1914 (RIWI Act)*. As part of this process, DWER is evaluating the potential impacts to wetlands and vegetation, and the need to manage potential impacts to ecosystems from changes to hydrology. The assessment includes consideration of a hydrogeological assessment, an operating strategy, and a revised water management plan. If required, it is understood that the proponent is prepared to partially or wholly use scheme water for the proposal.

Based on the above, the Minister determined that while the environmental values impacted by the proposal are significant, other statutory processes are available to consider the acceptability of the impacts without the need for formal assessment by the EPA. If relevant approvals are obtained, approval conditions can be applied to avoid, mitigate and (in the case of vegetation clearing) offset the loss of the vegetation (Minister for Environment; Climate Action, 2023).

Other relevant authorisations
Other relevant authorisations required for the proposed land use include:

- Development approval under the *Planning and Development Act 2005*
- Licence to abstract groundwater under the RIWI Act.

The proposal was granted development approval (DA) by the Metro Outer Joint Development Assessment Panel (JDAP), in accordance with regulation 8 of the *Planning and Development (Development Assessment Panels) Regulations 2011*, on 20 March 2023. The DA is valid for a period of four years from the date of approval, until 20 March 2027. The conditions of this approval include submission of serval management plans to the City of Cockburn for approval, including:

- Native Fauna Management Plan
- Revegetation Plan and Tree Retention Plan
- Noise Management Plan
- Water Management Plan
- Travel Management plan and Parking Management Plan.

Advice received from DWER's Kwinana Peel Region indicates that an application for a groundwater license for the proposed Perth Surf Park was received on 21 January 2022 (DWER, 2023b). The application is for the maximum peak annual water demand of 63,000 kilolitres per annum which includes the initial fill of the wave lagoon of 26,000 kilolitres, lagoon top ups/maintenance, and irrigation of landscaped areas (DWER, 2023b). It is understood that the applicant is in the process of undertaking a H2 level hydrogeological assessment and preparing a Water License Operating Strategy to assess potential groundwater drawdown impacts and satisfy a request for further information from DWER's Kwinana Peel Region (Aventuur, 2023; DWER, 2023b). DWER's Kwinana Peel Region has advised that a decision on groundwater use and allocation will only be possible once the hydrogeological assessment process and associated supporting information is received, reviewed, and approved by DWER (DWER, 2023b). Given the nature of the additional information requested and the applicant's commitment to progress the requested information (Aventuur, 2023), the Delegated Officer determined that the outstanding water license was not a significant barrier to the approval of the clearing permit application, in this instance.

Relevant planning instruments
The Delegated Officer noted that the implementation of the proposal would be consistent with the City of Cockburn's *Town Planning Scheme No. 3* and, as outlined above, that the proposal was granted development approval (DA) by the Metro Outer JDAP. The Delegated Officer also noted that the application occurs within the Cockburn Central East Local Structure Plan area and that the land zoning has been deemed appropriate for the proposed development.

Other relevant matters
The Delegated Officer noted that the EPA's Guidance Statement No. 33, '*Environmental Guidance for Planning and Development*' (EPA, 2008) discusses the need for protection of conservation category wetlands. As outlined in Section 3.2 of this decision report, the proposed clearing will impact 1.48 hectares of vegetation that has been determined to have values that are commensurate with a conservation category wetland. Given this, the Delegated Officer considered Guidance Statement No. 33 to be a relevant 'other matter' for this application.

In having regard to Guidance Statement No. 33, the Delegated Officer noted that the statement considers conservation category wetlands to be wetlands of high conservation significance and of high priority for protection, and that the statement does not consider clearing within conservation category wetlands to be appropriate. Also in accordance with section 51O(4) of the EP Act, the Delegated Officer had regard to the planning context for the

proposal and, as a relevant 'other matter', the necessity of the clearing and associated public benefit. As outlined above, the Delegated Officer noted that the proposal had been granted DA by the Metro Outer JDAP, that the application area was identified by the State Government as the preferred location for the proposal due to its proximity to the existing freeway and supporting rail infrastructure, the surrounding existing land uses and its land zoning being deemed appropriate for the development, and that the proposal is expected to provide direct public benefit through increased tourism and employment opportunities.

The Delegated Officer also noted that the proposal would not entail clearing of the entire existing wetland mapped as UFI 6652. Rather, the proposal would result in the clearing of a 1.48 ha portion of the wetland, already fragmented from the larger, higher-quality portion of the wetland remaining on the adjacent Lot 802 (see Section 3.2.5).

Therefore, in relation to the wetland, having had regard to the environmental impacts to the wetland values in question, the content and status of Guidance Statement No. 33, the planning context for the proposal and the public benefit associated with the proposed clearing, the Delegated Officer considered that, on balance, the environmental impacts associated with the proposed clearing of the wetland were not so significant that they outweighed the necessity of the clearing. The Delegated Officer therefore determined that it was appropriate to grant the clearing permit in relation to the wetland, on the basis that an environmental offset was implemented to counterbalance the impacts to the wetland.

According to available databases, no Aboriginal Sites of Significance have been mapped within the application area. It is the permit holder's responsibility to 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:

- The loss of 3.16 hectares of native vegetation that is representative of the Banksia Woodlands TEC,
- The loss of 2.08 hectares of significant foraging habitat for Carnaby's cockatoo,
- The loss of 2.08 hectares of significant foraging habitat for forest red-tailed black cockatoo, and
- The loss of 1.48 hectares of significant wetland vegetation.

In determining the appropriateness of an offset, the Delegated Officer took into consideration the applicant's implementation of the mitigation hierarchy and the public benefit of the proposed clearing (see Section 3.1). The Delegated Officer noted that the proposed Perth Surf Park is a major tourism and development project which is expected to provide a direct public benefit through increased tourism and employment opportunities, generating significant economic activity. In considering these matters, the Delegated Officer determined that it was appropriate to grant the clearing permit in relation to the significant residual impacts, on the basis that a suitable environmental offset was implemented to counterbalance the impacts.

The applicant proposed an environmental offset consisting of three components:

- A monetary contribution to the Part V Offsets Fund to fund the purchase of 21.3 hectares of native vegetation that comprises the Banksia Woodlands TEC in Very Good (Keighery, 1994) or better condition, to be protected in perpetuity,
- A monetary contribution to the Part V Offsets Fund to fund the purchase of 12.72 hectares of vegetation that is growing in or in association with a wetland containing values that are commensurate with a CCW in Good to Very Good (Keighery, 1994) condition on the Swan Coastal Plain, to be protected in perpetuity, and
- The revegetation and rehabilitation of a total of 7.24 hectares of significant foraging habitat for Carnaby's cockatoo and 6.64 hectares of significant foraging habitat for forest red-tailed black cockatoo within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake (Aventuur, 2023).

Land acquisition of Banksia Woodlands TEC
To counterbalance the significant residual impacts to native vegetation that is representative of the Banksia Woodlands TEC, the applicant has committed to provide a monetary contribution to fund the purchase of 21.3 hectares of native vegetation that comprises the Banksia Woodlands TEC in Very Good (Keighery, 1994) or better condition. Based on preliminary discussions, it is expected that the funds will be used to purchase at least 21.3 hectares of native vegetation that is representative of the Banksia Woodlands TEC situated on a property north of Perth, confirmed to contain vegetation representative of the Banksia Woodlands TEC in Excellent to Pristine (Keighery, 1994) condition. This property is in the final stages of negotiation between DBCA and the current landholder for acquisition, with funds agreed to be provided by DWER from the Part V Offsets Fund, and will be ceded to DBCA for conservation in perpetuity and managed to maintain the quality of its current values. The property is located approximately 170 kilometres north of the impact site, in the northern Swan Coastal Plain. The monetary contribution to be provided by the applicant, totalling $8,675.09, has been guided by the value of this acquisition. The precise location of the offset site is not included in this decision report in acknowledgement that this transaction between DBCA and the landholder is yet to be finalised.

Land acquisition of significant wetland vegetation
To counterbalance the significant residual impacts to significant wetland vegetation, the applicant has committed to provide a monetary contribution to fund the purchase of 12.72 hectares of vegetation that is growing in or in association with a wetland containing values that are commensurate with a CCW in Good to Very Good (Keighery, 1994) condition on the Swan Coastal Plain. The site for acquisition is currently unknown and consideration of the appropriateness of the offset was therefore based on the unimproved land values for the likely Shires of interest for purchasing significant wetland vegetation on the Swan Coastal Plain.

In the assessment of the proposed offset, the Delegated Officer considered the prospects of acquiring land containing similar significant wetland vegetation via the Part V Offsets Fund and determined that a 50-hectare land value, in this instance, is appropriate and is consistent with the *WA Environmental Offsets Policy* (2011). Given the uncertainty surrounding the site for acquisition, the Delegated Officer determined that the unimproved land value in the Shire of Murray (the highest of the 50-hectare unimproved land values in the areas of interest) was appropriate for use in determining a suitable monetary contribution.

Based on unimproved land values for the Shire of Murray, a 50-hectare parcel would have a market value of $7,270 per hectare. Therefore, a monetary contribution of $92,474.40 would be required to fund the acquisition of 12.72 hectares of vegetation that is growing in or in association with a wetland containing values that are commensurate with a CCW in Good to Very Good (Keighery, 1994) condition.

Revegetation and rehabilitation of black cockatoo foraging habitat within Crown Reserve 46787
The applicant originally proposed to revegetate one hectare of suitable black cockatoo foraging habitat within Crown Reserve 1820 (Rose Shanks Reserve), Treeby, and provide a monetary contribution to fund the purchase of 4.2 hectares of significant black cockatoo foraging habitat, to offset the significant residual impact to foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo (PGV Environmental, 2022a). In considering this proposal, the Delegated Officer noted that the proposed offset was not adequately proportionate to the significance of the habitat values being impacted, based on a calculation undertaken using the WA Environmental Offsets Metric. Further, the Delegated Officer took into account that remnant native vegetation comprising significant foraging habitat in the immediate vicinity of the impact site was limited.

While Carnaby's cockatoos are highly mobile and can travel significant distances when migrating to southern breeding sites, the movement of flocks tend to be restricted during the nonbreeding period, where daily flights are limited to foraging and drinking (Shephard and Warren, 2018). This is also supported by the findings of black cockatoo studies undertaken by Murdoch University, which indicated limited daily movements for both Carnaby's cockatoos and forest red-tailed black cockatoos. The *WA Environmental Offsets Guidelines* (2014) state that "in determining the significance of an impact, it is important to consider the impacts in the regional context. In isolation, a project may not be considered to have a significant impact. However, when considered along with other projects, activities and threats in the region, the cumulative impacts may be significant". Given the limited daily movements of black cockatoo species and the significant pressures on the remaining black cockatoo habitat on the Swan Coastal Plain, the Delegated Officer considered that an appropriate environmental offset should take into account the flocks that currently utilise the food resources being impacted by the proposal and the existing threats to foraging habitat on the Swan Coastal Plain. Noting this, the Delegated Officer determined that a revegetation and rehabilitation offset in close proximity to the clearing area would better meet the requirements of the *WA Environmental Offsets Guidelines* (2014) and directly counterbalance the impacts to 2.08 hectares of significant foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo.

In order to directly counterbalance the significant residual impacts of the proposed clearing, the applicant proposed to undertake revegetation and rehabilitation of a total of 7.24 hectares of significant foraging habitat for Carnaby's cockatoo and 6.64 hectares of significant foraging habitat for forest red-tailed black cockatoo within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake, approximately four kilometres north-west of the application area (see Figure 4 below). Biological survey information for Crown Reserve 46787 confirmed the presence of suitable foraging species for Carnaby's cockatoo and forest red-tailed black cockatoo, as well as evidence of these species currently utilising areas of native vegetation within Crown Reserve 46787 for foraging at present (FaunaTrack, 2023; Natural Area, 2022).

The proposed revegetation areas are spread across 11 separate areas within Crown Reserve 46787, ranging in size from 0.109 to 3.11 hectares (DWER, 2023a). A site inspection of the proposed revegetation offset areas identified a total of approximately 5.31 hectares of Degraded to Completely Degraded (Keighery, 1994) condition banksia woodland foraging habitat available for revegetation, which comprised patches of degraded areas surrounded by areas of suitable foraging habitat in Good to Very Good (Keighery, 1994) condition (DWER, 2023a). As a priority, the applicant has committed to undertaking revegetation within these patches of banksia woodland foraging habitat to increase the availability and quality of foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo (Aventuur, 2023). In order to counterbalance the remaining significant residual impact to foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo, the applicant has committed to undertaking an additional 1.93 hectares of revegetation of foraging habitat for Carnaby's cockatoo and 1.33 hectares of foraging habitat for forest red-tailed black cockatoo within wetland-margin vegetation in Completely Degraded (Keighery, 1994) condition. As a condition of the clearing permit, the applicant will be required to develop and implement a comprehensive revegetation plan with specific completion criteria that ensures the revegetation and rehabilitation of the following values within Crown Reserve 46787:

- 5.31 hectares of suitable banksia woodland foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo from a Completely Degraded-Degraded to a Good-Very Good (Keighery, 1994) condition,
- 1.93 hectares of suitable wetland-margin foraging habitat for Carnaby's cockatoo (e.g., marri) from a Completely Degraded to a Good (Keighery, 1994) condition, and
- 1.21 hectares (within the 1.93 ha mentioned above) of suitable wetland-margin foraging habitat for forest red-tailed black cockatoo (e.g., marri) from a Completely Degraded to a Good (Keighery, 1994) condition.

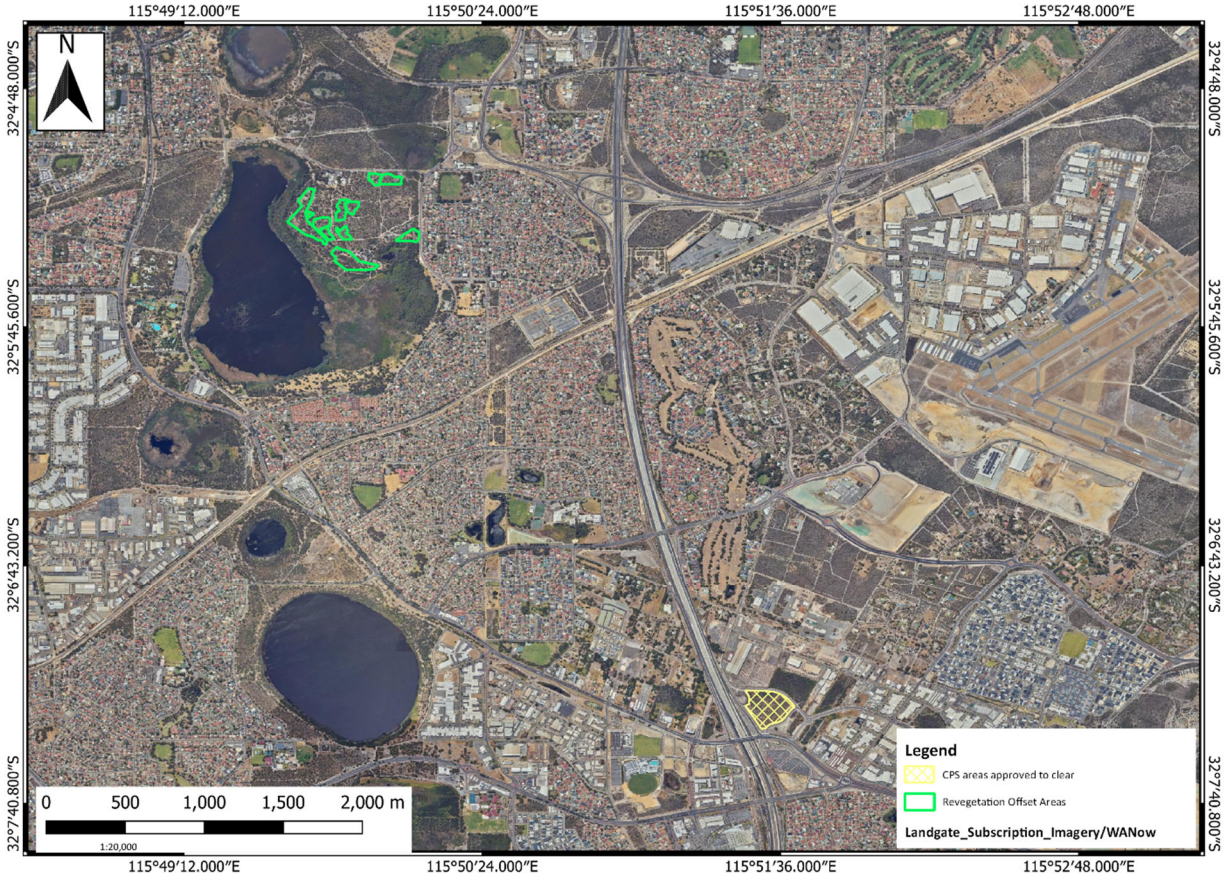

Figure 4. Location of the revegetation offset areas within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake (outlined green), in relation to the application area for CPS 9845/1 (cross-hatched yellow).

Conclusion
The Delegated Officer considers the proposed offset is consistent with the *WA Environmental Offsets Policy* (2011) and the *WA Environmental Offsets Guidelines* (2014), and that it adequately counterbalances the significant residual impacts to native vegetation that is representative of the Banksia Woodlands TEC, significant wetland vegetation, and foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo. The justification for the values used in the offset calculation is provided in Appendix F.

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
The applicant provided the following additional supporting information on 18 April 2023, in response to a formal Request for Further Information issued by DWER: • Evidence of additional avoidance and mitigation measures employed during the planning and design phase of the Perth Surf Park facility, • Additional information as to the survey effort undertaken at the site for *Caladenia huegelii*, • A copy of the current Development Approval from (PGV Environmental, 2023b).	The additional information provided was considered as follows: • The planning and design measures are considered in *Avoidance and mitigation measures* (see Section 3.1), • The targeted flora survey effort is summarised in *Biological survey information excerpts* (see Appendix G), and • The Development Approval is considered in *Relevant planning instruments and other matters* (see Section 3.3).
The applicant provided the following additional information on 19 June 2023, in response to a formal Request for Further Information issued by DWER: • A wetland evaluation undertaken in accordance with *A methodology for the evaluation of wetlands on the Swan Coastal Plain, Western Australia* (DBCA, 2017), • Revised black cockatoo foraging habitat mapping for the proposed clearing area, • Proposal of an alternative revegetation offset site within Bibra Lake Reserve to counterbalance the significant residual impacts to black cockatoo foraging habitat (PGV Environmental, 2023b).	The additional information provided was considered as follows: • The wetland evaluation has been considered in *Assessment of impacts on environmental values* (see Section 3.2), • The revised black cockatoo foraging habitat mapping is considered in *Assessment of impacts on environmental values* (see Section 3.2), and • The alternative revegetation offset site within Bibra Lake reserve is considered in *Suitability of offsets* (see Section 4) and *Offset calculator value justification* (see Appendix F).
The applicant provided the following additional information on 14 August 2023, in response to a formal Request for Further Information issued by DWER: • Evidence of efforts that will be taken to avoid, mitigate, or management indirect impacts and hydrological changes to the adjacent wetland within Lot 802 on Deposited Plan 50212, and • Evidence of efforts that will be taken to avoid, mitigate, or manage direct impacts to quenda during the proposed clearing (Aventuur, 2023).	The additional information provided was considered as follows: • The efforts taken to avoid indirect impacts and hydrological changes to adjacent wetland vegetation has been considered in *Assessment of impacts on environmental values* (see Section 3.2), and • The quenda management measures proposed are considered in *Assessment of impacts on environmental values* (see Section 3.2).
On 28 September 2023, the applicant identified a satisfactory environmental offset to counterbalance significant residual impacts to foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo, vegetation representative of the Banksia Woodlands TEC, and significant wetland vegetation (Aventuur, 2023).	The proposed environmental offset is considered in *Suitability of offsets* (see Section 4) and *Offset calculator value justification* (see Appendix F).

Appendix B. Details of public submissions

DWER advertised the application on 7 March 2023 for 21 calendar days. A total of 32 individual submissions were received. Where submissions raised similar concerns, consideration of the comments provided was combined into one ground of submission to allow a more streamlined response. A total of 28 grounds of submission were raised in total across the 32 submissions. Table 1 below indicates the overlap in grounds of submission between submissions. DWER's consideration of the submissions is summarised in Table 1.

Table 1. Summary of grounds of submission (Submissions, 2023).

	Ground of submission	Submission																														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1.	The mitigation hierarchy has not been adequately applied for the project.	✓					✓		✓			✓			✓																	✓	
2.	The proposed clearing will impact on native vegetation that comprises a high level of biodiversity.	✓	✓	✓	✓	✓	✓	✓		✓			✓	✓		✓		✓		✓	✓	✓	✓			✓	✓	✓	✓				✓
3.	The proposed clearing will result in the loss of significant fauna habitat and ecological linkages.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4.	The proposed clearing will result in the loss of habitat for rare flora.	✓	✓	✓	✓			✓					✓	✓		✓		✓		✓	✓	✓	✓			✓	✓	✓	✓				
5.	The proposed clearing will impact native vegetation that comprises a threatened ecological community.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6.	The proposed clearing will impact a significant remnant within an extensively cleared landscape.	✓	✓	✓	✓	✓		✓		✓			✓	✓		✓		✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓	
7.	The proposed clearing will result in significant impacts to wetland vegetation.		✓	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓		✓		✓	✓	✓	✓			✓	✓	✓	✓				✓
8.	The proposed clearing will result in the spread of weeds and pathogens.	✓																							✓							✓	
9.	The proposed clearing will result in land degradation and the deterioration of groundwater quality.	✓	✓	✓	✓	✓		✓			✓			✓		✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓			✓	
10.	The proposed clearing is likely to have an impact on the environmental values of nearby conservation areas.		✓	✓	✓	✓		✓						✓		✓		✓		✓	✓	✓	✓			✓	✓	✓	✓				

	Ground of submission	Submission																														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
11.	The application of environmental offsets is not appropriate for this proposal and the offsets proposed are inadequate.	✓				✓			✓	✓		✓			✓																	✓	
12.	The cumulative impacts of the clearing must be assessed.												✓																				✓
13.	The proposed clearing will increase greenhouse gas emissions.																																✓
14.	There are inconsistencies and contradictions in the supporting documentation.						✓																									✓	
15.	The supporting documentation overestimates community support for the proposal.	✓																															
16.	The biological surveys fail to meet the requirements of the relevant EPA Technical Guidance.											✓	✓																			✓	
17.	The operation of the proposed Perth Surf Park facility is not of benefit to the public.																																✓
18.	The approval of this proposal does not align with the intent of the Clearing Regulations.	✓	✓	✓	✓		✓	✓						✓		✓		✓		✓	✓	✓	✓			✓	✓	✓	✓				
19.	Assessment against the clearing principles does not give adequate consideration to other relevant matters for this proposal.					✓																											
20.	Inconsistency with City of Cockburn planning policies.																								✓								✓
21.	Inconsistency with State Planning Policy 2.3 – Jandakot Groundwater Protection.										✓						✓															✓	✓
22.	Inconsistency with the *Jandakot Land Use and Water Management Strategy 1995*.																															✓	
23.	The EPA decision not to assess the proposal under		✓	✓	✓			✓				✓		✓		✓		✓		✓	✓	✓	✓			✓	✓	✓	✓				

	Ground of submission	Submission																														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
	s38G(1) of the EP Act remains under appeal.																																
24.	The proposal should be referred to the Commonwealth under the EPBC Act.									✓	✓																						
25.	The proposal is inconsistent with *Australia's Biodiversity Conservation Strategy 2010-2030*.																															✓	
26.	The proposed clearing is not consistent with the objectives of the Native Vegetation Policy (2022).						✓			✓														✓								
27.	The proposal does not address impacts to Aboriginal Heritage Sites and the views of First Nations Peoples.						✓				✓						✓								✓							✓	✓
28.	Potential unauthorised clearing has occurred at the site.								✓																							

Table 2. Details of public submissions (Submissions, 2023) and DWER's consideration of matters raised.

	Ground of Submission	Summary of comments	Consideration of comment
1.	The mitigation hierarchy has not been adequately applied during the planning and design of the Perth Surf Park project.	The applicant has not examined the potential to avoid, minimise or rehabilitate, as outlined in the mitigation hierarchy for environmental factors (EPA, 2021) and proposes an offset in the first instance. There is no justification as to why the proposed clearing is necessary. The supporting documentation states that Lot 800 on Deposited Plan 50212 and Lot 9001 on Deposited Plan 65564, Jandakot, were the preferred location, considering only the positive aspects for this choice in land and does not acknowledge the environmental values present. No information is provided on alternative locations that would retain black cockatoo habitat and Banksia Woodland TEC. There are alternative sites that could have been pursued with minimal clearing of native vegetation required, for example a disused sand quarry within Lot 166 and Lot 167 on Deposited Plan 226009, Canning Vale, and similar sites to the west of Prinsep Road.	The avoidance and minimisation commitments employed by the applicant during the planning, development, and construction phases of the proposal are summarised in *Avoidance and mitigation measures* (see Section 3.1). In considering a clearing permit application, the Delegated Officer shall also have regard to any relevant planning instrument or other matter, in accordance with section 51O of the EP Act. The necessity of the proposed clearing is deemed a relevant matter and has been considered in *Relevant planning instruments and other matters* (see Section 3.3).

	Ground of Submission	Summary of comments	Consideration of comment
2.	The proposed clearing will impact on native vegetation that comprises a high level of biodiversity.	The application area is a remnant within the Swan Coastal Plain biodiversity hotspot. The majority of the vegetation within the application area is in Good to Very Good (Keighery, 1994) condition and contains significant environmental values including a threatened ecological community, habitat for flora and fauna, and extensively cleared bushland in the Perth Metropolitan Region. The flora and vegetation survey undertaken by Focused Vision Consulting (2016) records a high diversity of native species in the mid- and understorey of the application area, despite the weedy presence, and indicates a high level of soil biodiversity. The species listed as occurring at the site in the flora and vegetation surveys are locally rare, further confirming the biological diversity of the vegetation proposed be cleared. The proposed clearing should not be approved as it will impact native vegetation that comprises a high level of biodiversity.	DWER's assessment determined that the proposed clearing is at variance to clearing principle (a) and will impact native vegetation that comprises a high level of biodiversity. DWER's assessment of the impacts of the proposed clearing on biodiversity is outlined in *Assessment of impacts on environmental values* (see Section 3.2).
3.	The proposed clearing will result in the loss of significant fauna habitat and ecological linkages.	The proposed clearing will result in significant impacts to all three threatened species of black cockatoo by adding to the cumulative habitat destruction, fragmentation, and quality decline already occurring the Swan Coastal Plain. The proposal is also contrary to the *Carnaby's Cockatoo Recover Plan* (2013). The conservation value of the proposed clearing area for black cockatoo species should not be reduced just because the site does not contain breeding or roosting habitat. The fauna assessment undertaken by Focused Vision Consulting (2016) confirmed that both Carnaby's cockatoo and the forest red-tailed black cockatoo forage on native vegetation within the proposed development site. The foraging habitat present is critical to the survival of these species as there is no guarantee that the estimated 9000 hectares of black cockatoo foraging habitat within 12 kilometres of the site is of similar or better quality and will be retained in perpetuity. Adult Carnaby's cockatoos foraging with their offspring in significant areas such as the application and the juveniles who because adults and have offspring will utilise the same foraging corridors. The proposed clearing of critical foraging habitat will increase the distance required to travel for quality foraging habitat in the local area, resulting in lower rates of fledgling success and therefore, declines in breeding rates.	DWER's assessment identified that the proposed clearing will result in impacts to significant foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo. DWER's assessment of the impacts of the proposed clearing on black cockatoo species is summarised in *Assessment of impacts on environmental values* (see Section 3.2).

	Ground of Submission	Summary of comments	Consideration of comment
		The proposed clearing will impact potential habitat for conservation significant fauna, including quenda, rainbow bee-eater, Perth slider, black-striped snake, and graceful sun moth as identified in the fauna surveys of the application area undertaken by Focused Vision Consulting (2016). The application area clearly comprises significant habitat for fauna indigenous to WA as evidenced in a visit to the proposed development site on 17 March 2023, which observed a blue butterfly, a weevil, a hobby (little falcon), honeyeaters and two parrots.	DWER's assessment of the impacts of the proposed clearing on conservation significant fauna species is summarised in *Assessment of impacts on environmental values* (see Section 3.2).
		The proposed clearing will result in the loss of an ecological linkage which acts as a 'steppingstone' for avifauna in the landscape.	DWER's assessment of the impacts of the proposed clearing on ecological linkages is outlined in *Assessment of impacts on environmental values* (see Section 3.2).
4.	The proposed clearing will result in the loss of habitat for rare flora.	The proposed clearing area comprises suitable habitat for *Caladenia huegelii*. Although the targeted flora survey for undertaken in September 2017 did not observe any flowering individuals, *Caladenia huegelii* is a terrestrial geophyte and does not emerge unless the environment is conducive. The fact that individuals were not observed during the 2017 survey does not confirm the exclusion of the species from the proposed clearing area.	DWER's assessment of the impacts of the proposed clearing on conservation significant flora is outlined in *Assessment of impacts on environmental values* (see Section 3.2).
		While not a declared rare species, *Banksia ilicifolia* is highly sensitive to *Phytophthora cinnamomi* (dieback) and is an obligate phreatophyte (reliant on accessing groundwater). The proposed clearing is likely to put *Banksia ilicifolia* adjacent to the application area and in adjoining bushland areas at risk. As more clearing on the Swan Coastal Plain is approved, common species are becoming increasingly rarer and should be considered by decision-makers.	As outlined in *'A guide to the assessment of applications to clear native vegetation'* (DER, 2013), 'rare flora' for the purposes of clearing permit assessments relates to threatened flora listed by the Minister for Environment under section 19(1) of the BC Act. Therefore, *Banksia ilicifolia* was not considered in DWER's assessment of impacts to rare flora. However, it is noted that the applicant has committed to minimising offsite impacts to adjacent native vegetation through its Environmental Management Framework and this is likely to be adequate to mitigate indirect impacts to *Banksia ilicifolia* and other native vegetation in the local area (see Section 3.1). DWER's assessment identified that the highest risk of indirect impacts is likely to result from the clearing of wetland vegetation, which may result in altered hydrology and the loss of a vegetated buffer to degradation through weed invasion, dieback spread, and dust. DWER's assessment of the potential indirect impacts of the proposed clearing on nearby native vegetation is outlined in *Assessment of impacts on environmental values* (see Section 3.2).

	Ground of Submission	Summary of comments	Consideration of comment
5.	The proposed clearing will impact native vegetation that comprises a threatened ecological community.	The proposed clearing will impact vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain, which is listed as 'Endangered' under the Commonwealth EPBC Act. The 3.16 hectares of Banksia Woodland proposed to be cleared is in Good to Vergy Good (Keighery, 1994) condition and is functioning as a healthy ecosystem, with recruitment evident at the site. Current land development proposals in the south-western corridor of Perth within 12 kilometres of the Perth Surf Park proposal are resulting in the cumulative clearing of a significant proportion of the remaining patches of the Banksia Woodlands TEC. Therefore, ongoing clearing of this community, in particular healthy patches in good condition, is not appropriate.	DWER's assessment of impacts to the Banksia Woodlands of the Swan Coastal Plain TEC and the cumulative impacts of the proposed clearing under the clearing permit application area summarised in *Assessment of impacts on environmental values* (see Section 3.2).
		The approval of the proposed clearing would be contrary to the EPBC Act Approved Conservation Advice for the Banksia Woodlands of the Swan Coastal Plain TEC, which has objectives to: • Protect the ecological community to prevent further loss of extent and condition, • Restore the ecological community by active abatement of threats, revegetation, and other conservation initiatives, and • Communicate with and support researchers, etc. Precedent has been set by Commonwealth agencies to prevent the clearing of the Banksia Woodlands TEC in line with the EPBC Act Approved Conservation Advice, for example the refusal of a referral by Jandakot Airport Holdings to clear areas of Banksia Woodland TEC within the Jandakot Airport precinct. The State should follow the precedent set by the Commonwealth, as the grant of a clearing permit would be in contempt of the EPBC Act.	While it is acknowledged that the Approved Conservation Advice for the Banksia Woodlands of the Swan Coastal Plain TEC (DoEE, 2016) has a primary objective to protect and restore the ecological community, the conservation advice recognises that offsetting may occur as a last resort. The conservation advice recommends that, where offsets are involved in a proposal, it should be ensured that the offsets are 'like-for-like' and address key priority actions for the TEC (DoEE, 2016). In considering the clearing permit application, the Delegated Officer had regard to the applicant's use of the mitigation hierarchy, the planning context for the proposal and the public benefit associated with the proposed clearing and determined that it was appropriate to grant the clearing permit in relation to the Banksia Woodlands TEC, on the basis that a suitable environmental offset was implemented to counterbalance the impacts to the community. DWER's assessment of the suitability of offsets and associated use of the WA Environmental Offsets Metric calculator is outlined in *Suitability of offsets* (see Section 4) and *Appendix F. Offset calculator value justification*. Noting the proposed offset is 'like-for-like' and ensures the protection of an area of Excellent to Pristine (Keighery, 1994) condition Banksia Woodlands TEC in perpetuity, the Delegated Officer considers that the decision is consistent with the objectives of the approved conservation advice.

	Ground of Submission	Summary of comments	Consideration of comment
6.	The proposed clearing will impact a significant remnant within an extensively cleared landscape.	The proposed clearing will impact on vegetation within the Bassendean Complex Central and South, which retains less than 30 per cent of its pre-European vegetation extent and is below the level required to maintain its biodiversity. Only 2.15 per cent of this complex is protected in the conservation estate and none is protected in the City of Cockburn. The retention rate of 10 per cent of pre-European vegetation extent in constrained areas should be a last resort and not a 'free-for-all' to clear communities down to this extent. The application area is significant as a remnant within an area that has been extensively cleared and should not be cleared.	DWER's assessment of the impacts of the proposed clearing on significant remnant vegetation in an extensively cleared landscape is summarised in *Assessment of impacts on environmental values* (see Section 3.2).
7.	The proposed clearing will result in significant impacts to wetland vegetation.	The wetland associated with the northern section of the application area is classified as a Multiple Use Wetland. It is estimated that between 70 and 80 per cent of all wetlands on the Swan Coastal Plain have been filled, drained or cleared, and the wetlands that remain are highly vulnerable to impacts from urban and rural encroachment (Waters and Rivers Commission, 2001). It is therefore, very important that all wetlands that remain are protected and managed in an ecologically sustainable way (Waters and Rivers Commission, 2001). The proposed clearing will diminish the mapped wetland, as it carries across to Lot 802 on Deposited Plan 50212, Jandakot. The proposed land-use will also result in the abstraction of large quantities of groundwater for use in the wave lagoon will have a significant impact on the wetlands adjacent to the site, which are hydrologically linked.	DWER's assessment of the impacts of the proposed clearing on wetland vegetation is outlined in *Assessment of impacts on environmental values* (see Section 3.2). Consideration of the proposed land-use and relevant statutory instruments, including water licenses under the RIWI Act, is outlined in *Relevant planning instruments and other matters* (see Section 3.3). As outlined previously, it should be noted that DWER undertakes environmental impact assessments for clearing permit applications based on the potential environmental impacts that result from the clearing of native vegetation. It is outside of the scope of DWER's clearing permit assessment under Part V of the EP Act to assess any potential impacts that may be attributable to the proposed end land use and these matters are considered under other statutory processes (e.g., Development Approval under the P&D Act and water licenses under the RIWI Act).
8.	The proposed clearing will result in the spread of weeds and pathogens.	The removal of 5.75 hectares of native vegetation and stripping of its topsoil will result in the introduction of weeds and pathogens, such as *Phytophthora cinnamomi* (dieback), into the application area and local area.	DWER's assessment of the potential for weed and dieback spread to result from the proposed clearing is summarised in *Assessment of impacts on environmental values* (see Section 3.2).
9.	The proposed clearing will result in land degradation and the deterioration of groundwater quality.	The proposed clearing of 5.75 hectares of native vegetation, including wetland vegetation and Banksia Woodlands TEC, will cause the water table to rise and increase salinity levels in the soil and groundwater source. Further, groundwater beneath areas of bushland is usually of high quality and is free from contamination that almost always results from urban development. Therefore, it is highly likely that the groundwater will become contaminated by the clearing of the site.	DWER's assessment of land degradation and water quality impacts resulting from the proposed clearing is outlined in *Assessment of impacts on environmental values* (see Section 3.2).

	Ground of Submission	Summary of comments	Consideration of comment
		The proposed clearing and end land-use has a high risk of contaminating groundwater. The proposed Perth Surf Park facility sits within the Jandakot Underground Water Pollution Control Area (UWPCA) and is categorised as a Priority 3 area. The industrial zone of the Jandakot UWPCA has many land uses considered a medium catchment management priority because they pose either a major or significant contamination threat through the possible leakage of stored fuels and chemicals. The superficial aquifer at Jandakot is extremely vulnerable to contamination from inappropriate land uses because of the direct recharge that occurs from rainfall across the whole Control Area and the shallow depth to the water table. The operation of the proposed Perth Surf Park facility through groundwater drawdown and increased traffic poses a significant risk of groundwater contamination and would potentially concentrate the PFAS carcinogens already existing in the groundwater. The threat of groundwater contamination also poses significant risks to freshwater systems (e.g., Lake Forestdale, Karnup Drain, Canning River and the Swan River) due to the flow of water from the mound.	While the application area is mapped within the Jandakot Groundwater Area, it occurs approximately 200 metres from the Priority 3 area of the Jandakot Underground Water Pollution Control Area. According to available databases, the application is located approximately 450 metres from a Priority 2 area of the Jandakot Underground Water Pollution Control Area, approximately 850 metres from a Priority 3* area, and approximately one kilometre from a Priority 1 area. The application area also occurs more than 600 metres from the nearest Wellhead Protection Zone associated with this PDWSA. Noting the distance and separation from the Jandakot Underground Water Pollution Control Area, it is considered unlikely that the proposed clearing will result in groundwater contamination. It should be noted that DWER undertakes environmental impact assessments for clearing permit applications based on the potential environmental impacts that result from the clearing of native vegetation. It is outside of the scope of DWER's clearing permit assessment under Part V of the EP Act to assess any potential impacts that may be attributable to the proposed end land use and these matters are considered under other statutory processes (e.g., Development Approval under the P&D Act and water licenses under the RIWI Act).
		The proposed clearing of established native vegetation and groundwater abstraction required to fill the wave lagoon will result in impacts to the Jandakot drinking water mound by reducing drinking water availability for the public. The filling of the wave pool with 45-90 million litres per year (assuming a daily evaporation rate of up to 250,000 litres per day) would use up to 1.9 per cent of Perth's allocated drinking water from the Jandakot mound (the drinking water of approximately 40,000 people). The Perth Metropolitan Area draws approximately 36 per cent of its drinking water from underground aquifers and in the face of a drying climate, using this water on a Surf Park is not in line with protecting important groundwater sources.	DWER's assessment of the impacts of the proposed clearing on groundwater quality is outlined in *Assessment of impacts on environmental values* (see Section 3.2). As outlined previously, it should be noted that DWER undertakes environmental impact assessments for clearing permit applications based on the potential environmental impacts that result from the clearing of native vegetation. It is outside of the scope of DWER's clearing permit assessment under Part V of the EP Act to assess any potential impacts that may be attributable to the proposed end land use and these matters are considered under other statutory processes (e.g., Development Approval under the P&D Act and water licenses under the RIWI Act).
10.	The proposed clearing is likely to have an impact on the environmental values of nearby conservation areas.	The proposed clearing will impact an ecological linkage between conservation reserves in a highly fragmented landscape.	DWER's assessment of the impacts of the proposed clearing on ecological linkages is outlined in *Assessment of impacts on environmental values* (see Section 3.2). However, noting the distance and separation between the application area and conservation areas, it is considered unlikely that the proposed clearing will impact ecological linkages between conservation reserves in the local area.

	Ground of Submission	Summary of comments	Consideration of comment
11.	The application of environmental offsets is not appropriate for this proposal and the offsets proposed are inadequate.	The application of environmental offsets will result in the net loss of native vegetation with significant conservation value. It is increasingly difficult, if not impossible, to find the equivalent acquisition offsets for the Banksia Woodlands TEC, especially in the vicinity of the application area. A land acquisition offset is highly unlikely to be obtained in the vicinity of the clearing area, defeating the purpose of the offset. Alternatively, offsetting the vegetation loss through revegetation or rehabilitation does not consider the immediate impacts of the clearing and will not replace the lost habitat values for decades.	DWER's assessment of the suitability of offsets and associated use of the WA Environmental Offsets Metric calculator is outlined in *Suitability of offsets* (see Section 4) and *Appendix F. Offset calculator value justification*.
		The supporting documentation provides no information as to how the offsets proposed will address each of the impacts or how there will be a net gain in size, density and diversity of native vegetation and an overall improvement in native vegetation. There are no details of the offsets, fauna management plan, or revegetation plan provided. The proposed offset of one hectare of revegetation within Rose Shanks Reserve in the City of Cockburn along with 14.2 hectares of acquired land fails to result in no net loss for back cockatoo species and is vastly inadequate. The rehabilitation of this reserve should be the responsibility of the landowner and not proposed as an offset.	The Delegated Officer notes that the offset proposal was altered during the assessment of the clearing permit application and no longer relates to the revegetation of native vegetation within Rose Shanks Reserve and acquisition and conservation of 4.2 hectares of native vegetation. DWER's assessment of the suitability of the proposed offset and associated use of the WA environmental offsets calculator is outlined in *Suitability of offsets* (see Section 4) and *Appendix F. Offset calculator value justification*.
12.	The cumulative impacts of the clearing must be assessed.	The cumulative impacts of native vegetation clearing need to be assessed according to the *Environmental Protection Amendment Act 2020*, which states that "the effect of a proposal on the environment includes a reference to the cumulative effect of impacts of the proposal on the environment".	DWER's assessment of the cumulative impacts of native vegetation clearing was considered in accordance with *'A guide to the assessment of applications to clear native vegetation'* (DER, 2013), in regard to significant remnant vegetation and native vegetation extent under clearing principle (e). DWER's assessment of the impacts of the proposed clearing on significant remnant vegetation in an extensively cleared landscape is summarised in *Assessment of impacts on environmental values* (see Section 3.2).
13.	The proposed clearing will increase greenhouse gas emissions.	The Banksia Woodlands vegetation within the application area is a known carbon sink. Clearing the vegetation and replacing it with a concrete wave pool will add extra greenhouse gas emissions into the atmosphere and would create heat islands.	While DWER acknowledges that the clearing of native vegetation contributes to climate change, it is not considered reasonable to attribute a particular climate change impact to this particular proposal. However, DWER is in the process of reviewing its policy and procedures in respect to how climate risks may be relevant to clearing permit assessments to reflect the considerations outlined in the *Native Vegetation Policy* (2022) and *State Climate Policy* (2020). The Department encourages permit holders to seek opportunities to avoid and minimise the impacts of clearing where possible. The State Government is developing a State Climate Policy, which will consider the impacts of clearing on climate change and opportunities to sequester carbon.

	Ground of Submission	Summary of comments	Consideration of comment
14.	There are inconsistencies and contradictions in the supporting documentation.	The supporting document for the clearing permit application contains inconsistencies that affect assumptions and assessment of the likelihood and extent of impacts. For example, the (PGV Environmental) states that the site "has been completely cleared in the past", while evidence elsewhere in the report suggests the site was only thinned or partially cleared. DWER should undertake a critical review of the supplementary information before relying on its adequacy.	The site characteristics of the application area and extent of impacts of the proposed clearing have been determined through relevant datasets (see Appendix H.1), the findings of a wetland evaluation (PGV Environmental, 2023c), vegetation assessment (PGV Environmental, 2023a), a Level 1 flora and fauna assessment and targeted *Caladenia huegelii* survey (Focused Vision, 2018; Focused Vision, 2016), a detailed flora and vegetation assessment (MRIA, 2017a), and a Level 1 fauna and targeted black cockatoo survey (MRIA, 2017b) (see Appendix G), a site inspection undertaken by DWER officers (see Appendix H), and expert advice received from DBCA. The Delegated Officer considers this information to be adequate for the purposes of its clearing permit assessment.
15.	The supporting documentation overestimates community support for the proposal.	The supporting document for the clearing permit application proposes that community engagement and support for the project are adequate to justify the impacts of the proposed clearing. It is considered unlikely that the statistics presented for community support are based on members of the public with a full knowledge and understanding of the environmental impacts of the Perth Surf Park proposal.	DWER understands that the applicant has undertaken consultation with relevant stakeholders and members of the public. The consultation process, as understood from the applicant's support documentation, is summarised in *Avoidance and mitigation measures* (see Section 3.1).
16.	The biological surveys fail to meet the requirements of the relevant EPA Technical Guidance.	The flora and fauna assessment (Focused Vision, 2016) and vegetation assessment (PGV Environmental, 2023a) provided in support of the clearing permit application fail to meet the requirements of the EPA's Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016) and Technical Guidance - *Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA, 2020). A targeted flora survey, TEC assessment, and detailed fauna survey should have been undertaken once the presence of the Banksia Woodlands TEC was confirmed.	The methodology and survey effort of the vegetation assessment (PGV Environmental, 2023a), Level 1 flora and fauna assessment (Focused Vision, 2016), and other biological surveys undertaken over the application area are outlined in *Appendix G – Biological survey information excerpts*. The application area has been subject to various biological surveys since 2016, including reconnaissance flora and fauna assessments, level 1 flora and fauna assessments, black cockatoo habitat assessments, detailed flora and vegetation assessments, and targeted orchid surveys. A review of the survey information indicates that the methodology was largely consistent with the relevant technical guidance. It is acknowledged that some of the biological surveys of the application area were undertaken prior to the publishing of the most recent EPA Technical Guidance but were undertaken in accordance with the most current technical guidance at the time of the survey. The Delegated Officer considers the available biological survey information to be adequate for the purposes of its clearing permit assessment.

	Ground of Submission	Summary of comments	Consideration of comment
17.	The operation of the proposed Perth Surf Park facility is not of benefit to the public.	The operation of the proposed Perth Surf Park facility will result in unwanted noise from the pumping of water that will disturb local residents and wildlife. The use of artificial lighting for the premises will also be intrusive to residents and wildlife. With a proposed one million visitors per annum, the local roads will also have difficulty coping with the increased traffic, inconveniencing local residents.	As outlined previously, DWER undertakes environmental impact assessments for clearing permit applications based on the potential environmental impacts that result from the clearing of native vegetation. It is outside of the scope of DWER's clearing permit assessment under Part V of the EP Act to assess the potential impacts from light, noise, and traffic, that are attributable to the proposed end land use. The regulation of these matters is facilitated under other statutory processes (e.g., Development Approval under the P&D Act and water licenses under the RIWI Act).
		The cost of entry for the proposed Perth Surf Park facility at either $80-140 per hour or at $99 for 12 waves, plus the cost of extra merchandise, does not make attendance at the facility an average family event. Cost is likely to prohibit the public from attending the facility, strongly suggesting that the proposed venture is not of public benefit.	The Delegated Officer considers that the proposed Perth Surf Park is a major tourism and development project which will provide a direct public benefit through increased tourism and employment opportunities, generating significant economic activity. It is outside of the scope of DWER's clearing permit assessment to evaluate the economic feasibility of the operation of the facility.
18.	The approval of this proposal does not align with the intent of the Clearing Regulations.	The Principles for clearing native vegetation listed in Schedule 5 of EP Act clearly state "native vegetation should not be cleared if –". The EP Act outlines that only one principle may be at variance for native vegetation not to be cleared. The proposed clearing of native vegetation for the Perth Surf Park is likely to be at variance with at least nine of the ten clearing principles and therefore, native vegetation within the application area should not be cleared.	DWER's assessment of clearing permit applications is undertaken in accordance with *A guide to the assessment of applications to clear native vegetation* (DER, 2013) and *Procedure: Native vegetation clearing permits* (DWER, 2019). DWER's assessment is a risk-based and evidence-based judgment in accordance with the requirements of the EP Act on whether a clearing permit application is likely to have a significant effect on the environment. In considering whether to grant a clearing permit, the Delegated Officer must take into account not only the clearing principles, but also any planning instruments or other matters considered to be relevant. In accordance with section 51H of the EP Act, a clearing permit may be granted subject to conditions as necessary for the purposes of preventing, controlling, abating, or mitigating environmental harm or directly or indirectly offsetting the loss of the cleared vegetation, and proportionate to the assessed potential impact on the environment. DWER's assessment against the clearing principles set out in Schedule 5 of the EP Act is outlined in *Assessment against the clearing principles* (see Appendix D) and supported by the *Detailed assessment of application* (see Section 3).

	Ground of Submission	Summary of comments	Consideration of comment
19.	Assessment against the clearing principles does not give adequate consideration to other relevant matters for this proposal.	The clearing principles are out of date and do not align with contemporary community values. The clearing principles do not enable consideration of: • Whether a business plan will succeed, • The social and cultural impact of clearing, • The Aboriginal significance of a site, • Insects and soil microbes, and • Whether an offset is like for like.	As outlined in response to Ground 13 above, the Delegated Officer's decision to grant or refuse to grant a clearing permit takes into account not only the clearing principles, but also any planning instruments or other matters considered to be relevant in accordance with section 51O of the EP Act. Consideration of these matters is outlined in *Relevant planning instruments and other matters* (see Section 3.3). It is also acknowledged that invertebrate fauna species and soil microbiota may be considered under Clearing Principles (a), (b) and (c), where relevant. DWER's assessment of these matters is summarised in *Assessment of impacts on environmental values* (see Section 3.2). DWER's assessment of the suitability of offsets and associated use of the WA environmental offsets calculator is outlined in *Suitability of offsets* (see Section 4) and *Appendix F. Offset calculator value justification*.
20.	Inconsistency with City of Cockburn planning policies.	The proposed Perth Surf Park development is inconsistent with the City of Cockburn Town Planning Scheme No 3 and Draft Local Planning Strategy.	The Delegated Officer notes that the Perth Surf Park development has been determined to be consistent with the provisions of the City of Cockburn Town Planning Scheme No. 3 and Local Planning Strategy,and was granted a DA by the Metro Outer JDAP on 28 March 2023.
21.	Inconsistency with State Planning Policy 2.3 – Jandakot Groundwater Protection.	The proposed Perth Surf Park occurs within the Jandakot Groundwater Area, which is protected under State Planning Policy 2.3 – Jandakot Groundwater Protection. The objective of State Planning Policy (SPP) 2.3 is to protect groundwater quality and quantity in the policy area in order to maintain the ecological integrity of important wetlands that are hydraulically connected to that groundwater, including wetlands outside the policy area, and to maintain or increase natural vegetation cover over the policy area. Policy note 6.1 within SPP2.3 also states that the protection and enhancement of native vegetation and wetlands is a key requirement of any new development in the water protection zone. The proposal is in contravention of the key policy objectives of SPP 2.3. SPP 2.3 states that any development within the policy area is subject to the provisions of *Water quality protection note 25: Land use compatibility in public drinking water source area* (DWER, 2021). Table 2 of this document states that aquatic facilities are an incompatible land use in the policy area.	State Planning Policy 2.3 relates to the proclaimed Jandakot Underground Water Pollution Control Area, otherwise referred to as the policy area. As outlined in response to previous grounds of submission, the application area occurs a minimum of 200 metres from the boundary of the Jandakot Underground Water Pollution Control Area and therefore, is not subject to the provisions of SPP 2.3. As the application area is not located within the Jandakot Underground Water Pollution Control Area or any other Public Drinking Water Source Area, it is also not subject to *Water quality protection note 25: Land use compatibility in public drinking water source area* (DWER, 2021).

	Ground of Submission	Summary of comments	Consideration of comment
22.	Inconsistency with the *Jandakot Land Use and Water Management Strategy 1995*.	The proposed development of a Surf Park facility in the Jandakot Water Protection Area is in contravention of the *Jandakot Land Use and Water Management Strategy 1995*, which has an objective to exclude industrial development which is incompatible with the protection of groundwater. The strategy's specific aims are to promote development that is consistent with the protection and management of groundwater and to preserve significant wetlands and remnant vegetation while providing for compatible economic and recreational activities. The proposed development of a Surf Park is inconsistent with these aims.	The *Jandakot Land Use and Water Management Strategy 1995* recommends policy and statutory mechanisms to protect and management the groundwater resources within the Jandakot Public Water Supply Area, which includes the application area. While it is acknowledged that the strategy has an objective to exclude industrial development which is incompatible with the protection of groundwater, this does not explicitly exclude the Perth Surf Park development. The strategy recommends that development within the Jandakot Public Water Supply Area involves environmental and engineering investigations that minimise off-site impacts and provide adequate drainage. Noting the applicant is employing an Environmental Management Framework including hydrogeological investigations and management measures to minimise impacts to groundwater, the proposed clearing and eventual land use are not considered inconsistent with the *Jandakot Land Use and Water Management Strategy 1995.*
23.	The EPA decision not to assess the proposal under s38G(1) of the EP Act remains under appeal.	The decision by the EPA to 'not assess' the proposal under s38G(1) of the EP Act remains under appeal. The clearing permit application process should be halted until the outcome of the appeals process by the Appeals Convenor and Minister for Environment has been completed.	In considering a clearing permit application, the Delegated Officer shall have regard to any development approval, planning instrument, or other matter, that they consider relevant, in accordance with section 51O of the EP Act. The referral to the EPA under Part IV of the EP Act and related appeal to the Minister for Environment (the Minister) is considered a relevant matter and is outlined in *Relevant planning instruments and other matters* (see Section 3.3). The Minister has determined to dismiss these appeals on 21 November 2023 and determined that while the vegetation proposed to be cleared contains significant environmental values the environmental impacts of the proposal are not so significant as to warrant formal assessment. The Minister further determined that these impacts can be adequately assessed and, if approved, appropriately managed through other statutory processes.
24.	The proposal should be referred to the Commonwealth under the EPBC Act.	The proposed clearing will impact on Matters of National Environmental Significance, including Banksia Woodland of the Swan Coastal Plain TEC and habitat for three black cockatoo species, and should be referred to the Commonwealth for assessment under the EPBC Act.	From the supporting information provided by the applicant, the Delegated Officer understands that the proposal was referred to the Commonwealth under the EPBC Act and determined not to be a controlled action. The EPBC Act referral is considered a relevant matter and is summarised in *Relevant planning instruments and other matters* (see Section 3.3).

	Ground of Submission	Summary of comments	Consideration of comment
25.	The proposal is inconsistent with *Australia's Biodiversity Conservation Strategy 2010-2030*.	*Australia's Biodiversity Conservation Strategy 2010-2030* states that "biodiversity is under threat worldwide" and has a five-year strategy to "achieve a national increase of 600,000km^2 of native vegetation managed primarily for biodiversity conservation across terrestrial, aquatic and marine environments". The granting of this clearing permit is in conflict with the shared commitment and overall values and goals of *Australia's Biodiversity Conservation Strategy 2010-2030*.	*Australia's Biodiversity Conservation Strategy 2010-2030* is a guiding framework that sets out the priorities for conserving biodiversity across Australia and outlines targets to progress Australia's biodiversity conservation efforts. The targets are nation-wide landscape-scale increases in biodiversity conservation that cannot be attributed to individual proposals. However, *Australia's Biodiversity Conservation Strategy 2010-2030* states that a significant step in reducing threats to biodiversity is integrating biodiversity conservation into regulatory instruments and implementing a decision-making hierarchy for biodiversity management. The Delegated Officer considers that DWER's assessment against the clearing principles and consideration of the mitigation hierarchy is consistent with the priorities of the Biodiversity Conservation Strategy.
26.	The proposed clearing is not consistent with the objectives of the *Native Vegetation Policy* (2022).	No justification is provided as to why the proposal departs from the objectives of the Native Vegetation Policy for Western Australia (2022), which seeks to protect and reduce the loss of native vegetation.	The Native Vegetation Policy for Western Australia (2022) is intended as a whole-of-government approach to achieving better outcomes for native vegetation, as well as improved clarity and certainty for stakeholders. While it is acknowledged that the policy seeks to enable all stakeholders to contribute to a net gain in native vegetation and conserving biodiversity, the policy does not introduce net gain as a required outcome of individual proposals, but rather as a goal at the landscape-scale. Therefore, the Delegated Officer does not consider the proposed clearing to be inconsistent with the Native Vegetation Policy (2022).
27.	The proposal does not address impacts to Aboriginal Heritage Sites and the views of First Nations Peoples.	The Perth Surf Park proposal does not address the views of First Nations Peoples, not demonstrate that the proposed clearing will be sympathetic to the cultural heritage values that local First Nations People attribute to remnant bushland, landscapes, and ecological communities. There has also not been a full assessment as to whether the application area occurs within an Aboriginal Site of Significance and the applicant has not undergone due diligence procedure for Tier 3 activities according to the *WA Aboriginal Heritage Act 2021*. The applicant has engaged the services of Soft Earth as a consultant on Aboriginal Heritage matters. This consultant sits on the board of the Western Australian Planning Commission, who own the site. This represents a serious conflict of interest and casts doubt on the integrity of any Aboriginal Heritage assessment.	The applicant has advised that it is committed to ongoing consultation with the Whadjuk Noongar people as the traditional owners of the site and is developing a cultural framework as part of the DA for the Perth Surf Park proposal (Coterra, 2023). The relevant consultation undertaken by the applicant is summarised in *Avoidance and mitigation measures* (see Section 3.1). According to available databases, no Aboriginal Sites of Significance have been mapped within the application area. It is the permit holder's responsibility to ensure that no Aboriginal Sites of Significance are damaged through the clearing process and that any relevant legislation is adhered to. However, the Delegated Officer notes that the *Aboriginal Heritage Legislation Amendment and Repeal Bill 2023* repealed the *WA Aboriginal Heritage Act 2021,* and this legislation is no longer active

	Ground of Submission	Summary of comments	Consideration of comment
28.	Potential unauthorised clearing has occurred at the site.	The site appears to have been degraded by numerous cleared tracks and weed infestation, much of which appears to have occurred since as recently as 2020. It is unclear how, by whom, why or under what authority the tracks were cleared. It is possible that the applicant has allowed unfettered access to motor bikes, off-road mountain bikes, and vehicles to allow the land to be degraded. For this reason, it is not appropriate to downgrade the value of the site based solely on condition.	Based on available aerial imagery, the tracks present within the application area were cleared between October and December 2021, prior to the applicant obtaining an agreement to lease the site in May 2022. Therefore, it is likely that the clearing was undertaken by a previous landowner. However, it is noted that more recent aerial imagery from April and August 2023 indicates that some of the cleared tracks are regenerating and recovering well from the historical clearing. Therefore, it is not considered likely that the presence of the cleared tracks within the application area would have resulted in an undervaluation of the environmental values present within the application area.

Appendix C. Site characteristics

C.1. Site characteristics

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

Characteristic	Details
Local context	The area proposed to be cleared is a 5.75-hectare isolated patch comprising of native vegetation in the intensive land use zone of Western Australia. The application area is located within the Jandakot industrial area and is bound by Prinsep Road to the north, Knock Way to the east, Armadale Road to the south, and Kwinana Freeway to the west. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 22.8 per cent of the original native vegetation cover.
Ecological linkage	There are no formal ecological linkages mapped within the application area. As the application area is bordered entirely by sealed roads and is separated from the adjacent patch of remnant vegetation to the north-east by Prinsep Road, it is unlikely to be providing direct ecological linkage values to other remnant native vegetation in the local area. However, the application area is likely to provide steppingstone vegetation and ecological linkage values for avian fauna moving through the landscape.
Conservation areas	The nearest mapped conservation area is Bush Forever Site 390, approximately 1.6 kilometres south-east of the application area. Other nearby conservation areas include Beeliar Regional Park (including Bush Forever Sites 256 and 391) approximately two kilometres west, and Jandakot Regional Park (within Bush Forever Site 390) approximately three kilometres south-east of the application area. It is acknowledged that '*A guide to the assessment of applications to clear native vegetation'* (DER, 2013) includes significant wetlands and watercourses (such Conservation category wetlands) as a relevant information source for assessing impacts to conservation areas. It is noted that, while the portion of wetland UFI 6652 within the application area is considered to have values commensurate with a Conservation category wetland (CCW), the wetland is not formally classified as a CCW currently (see Section 3.2.5). The closest mapped CCW is Yangebup Lake (UFI 6602), approximately two kilometres west of the application area.
Vegetation description	The findings of a Level 1 flora and fauna assessment undertaken in 2017 (Focused Vision, 2016), a vegetation assessment undertaken in September and December 2021 (PGV Environmental, 2023a), a wetland evaluation undertaken in June 2023 (PGV Environmental, 2023c), and site inspections undertaken by DWER officers in 2023 (DWER, 2023c) indicate that the vegetation within the proposed clearing area consists of three vegetation types: • BmBa: *Banksia menziesii/B. attenuata* Low open Woodland over *Xanthorrhoea preissii* Open Shrubland over *Phlebocarya ciliata* Open Low Heath (3.16 hectares). *Eucalyptus todtiana* (prickly bark) *and Allocasuarina fraseriana* (sheoak) are also present in some areas of this vegetation type. The understorey has a high visual cover of *Ehrharta calycina* (perennial veldtgrass) but often has a dense cover of low shrubs beneath the veldtgrass, including *Phlebocarya ciliata*, *Dasypogon bromeliifolius* and *Lyginia barbata*. • Xp: *Xanthorrhoea preissii* Shrubland over *Phlebocarya ciliata* Closed Low Heath (0.8 hectares). This vegetation type occurs on the eastern side of the site and contains no Banksia trees and few sheoak trees, with *X. preissi* and *X. brunonis* being the dominant species. Understorey is moderately dense *Phlebocarya ciliata*, *Dasypogon bromeliifolius* and *Lyginia barbata*.

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>

Mp: Melaleuca preissiana Low Open Woodland over Kunzea glabrescens Tall Shrubland over Astartea affinis/ Hypocalymma angustifolium Open Low Heath (1.48 hectares). This vegetation type occurs at the north end of the site associated with a mapped Multiple Use wetland. Perennial veldtgrass is abundant in the understorey.
The application area also comprises approximately 0.31 hectares of historically cleared area that is almost entirely covered with perennial veldtgrass and has minimal native regeneration.

Survey mapping is available in Appendix G.

This is broadly consistent with the mapped Swan Coastal Plain vegetation complex, the Bassendean Complex-Central and South, which is described as ranging from woodland of Eucalyptus marginata (Jarrah) - Allocasuarina fraseriana (Sheoak) - Banksia species to low woodland of Melaleuca species, and sedgelands on the moister sites (Heddle et al, 1980). This area includes the transition of Eucalyptus marginata (Jarrah) to Eucalyptus todtiana (Pricklybark) in the vicinity of Perth (Heddle, et al, 1980).
</td></tr>
<tr><td>Vegetation condition</td><td>
The findings of a Level 1 flora and fauna assessment undertaken in 2017 (Focused Vision, 2016), a vegetation assessment undertaken in September and December 2021 (PGV Environmental, 2023a), a wetland evaluation undertaken in June 2023 (PGV Environmental, 2023c), and site inspections undertaken by DWER officers in 2023 (DWER, 2023c) indicate that the vegetation within the proposed clearing area ranges from Completely Degraded to Excellent (Keighery, 1994) condition.

The vegetation condition varies between the mapped vegetation types (PGV Environmental, 2023a), as follows:
<table>
<tr><th>Vegetation Type</th><th>Condition</th><th>Extent (hectares)</th></tr>
<tr><td>BmBa – Banksia Woodland</td><td>Good – Very Good</td><td>3.16</td></tr>
<tr><td>Mp - Melaleuca preissiana Woodland</td><td>Completely Degraded - Excellent</td><td>1.48</td></tr>
<tr><td>Xp - Xanthorrhoea preissii Shrubland</td><td>Degraded - Good</td><td>0.80</td></tr>
<tr><td>Cleared</td><td>Completely Degraded</td><td>0.31</td></tr>
</table>
The full Keighery (1994) condition rating scale is provided in Appendix E. Survey mapping is available in Appendix G.
</td></tr>
<tr><td>Climate and landform</td><td>
The application area is located on relatively flat topography, ranging from 30 metres Australian Height Datum (mAHD) at the southern end of the site, to 26 mAHD along the north-western boundary of the application area (Coterra, 2023).

The application area has a mean annual maximum temperature of 24.6 °C and a mean annual minimum temperature of 12.2°C (BoM, 2023). The mean annual rainfall is mapped at 900 millimetres and the annual evapotranspiration rate is mapped at 800 millimetres. However, the mean annual rainfall recorded at the nearest Bureau of Meteorology weather station (Jandakot Airport) is 817 millimetres (BoM, 2023).
</td></tr>
<tr><td>Soil description and land degradation risk</td><td>
The soil within the application area is mapped as the following subsystems (DPIRD, 2023):
<table>
<tr><th>Soil Subsystem</th><th>Description</th><th>Extent (hectares)</th><th>%</th></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Characteristic</th><th>Details</th></tr>
<tr><td></td><td>
<table>
<tr><td>Bassendean B1 phase (212Bs_B1)</td><td>Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands, sometimes with a pale-yellow B horizon or a weak iron-organic hardpan at depths generally greater than two metres; Banksia dominant.</td><td>2.29</td><td>40</td></tr>
<tr><td>Bassendean B2 phase (212Bs_B2)</td><td>Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 metres.</td><td>1.05</td><td>18</td></tr>
<tr><td>Bassendean B3 phase (212Bs_B3)</td><td>Closed depressions and poorly defined stream channels with moderately deep, poorly to very poorly drained bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam.</td><td>0.12</td><td>2</td></tr>
<tr><td>Bassendean B4 phase (212Bs_B4)</td><td>Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 metres by clay or less frequently a strong iron-organic hardpan.</td><td>2.30</td><td>40</td></tr>
<tr><td></td><td></td><td>5.75</td><td>100</td></tr>
</table>
The soil types within the application area are mapped as having a low risk of land degradation resulting from water erosion, salinity, and flooding, but as having a moderate to high risk of wind erosion, phosphorus export, and subsurface acidification (DPIRD, 2023). The mapped wetland in the north of the application area occurs on soils with a high risk of waterlogging, but the remainder of the site has a low risk (DPIRD, 2023). A full summary of the relevant land degradation risk categories is provided in Appendix C.6.
</td></tr>
<tr><td>Waterbodies and hydrogeography</td><td>
The northern portion of the application area intersects a mapped Multiple Use dampland within the Geomorphic Wetlands of the Swan Coastal Plain dataset. Vegetation assessments of the application area (PGV Environmental, 2023a; MRIA, 2017a; Focused Vision, 2016) and site inspections undertaken by DWER officers (DWER, 2023c) have confirmed that the northern portion of the application area comprises wetland vegetation and the wetland boundary is considered to roughly correspond with the mapped boundaries of the Mp vegetation type (PGV Environmental, 2023a). Evaluation of the wetland undertaken by PGV Environmental (2023c) and subsequent advice from DBCA (2023) indicates that the wetland within the application area is commensurate with a Conservation management category. Therefore, impacts to wetland vegetation required further consideration (see Section 3.2.4).
The application area does not transect any mapped watercourses. The closest mapped watercourses are manmade drainage lines within two kilometres of the application area that support a range of natural and manmade waterbodies in the local area. However, the application area is separated from these drainage lines and waterbodies by road infrastructure and residential and industrial developments.
The application area is mapped within the Jandakot Groundwater Area, proclaimed under the Rights in Water and Irrigation Act 1914 (the RIWI Act). The application area occurs approximately 200 metres from a Priority 3 area of the Jandakot Underground Water Pollution Control Area, a Public Drinking Water Source Area (PDWSA) proclaimed under the Metropolitan Water Supply Sewerage and Drainage Act 1909. The application is located approximately 450 metres from a Priority 2 area of the Jandakot Underground
</td></tr>
</table>

Characteristic	Details
	Water Pollution Control Area, approximately 850 metres from a Priority 3* area, and approximately one kilometre from a Priority 1 area. However, the application area is more than 600 metres from the nearest Wellhead Protection Zone associated with this PDWSA. The application area does not transect any proclaimed surface water areas. Groundwater salinity within the application area is mapped at less than 500 milligrams per litre total dissolved solids.
Flora	The desktop assessment identified that a total of 51 conservation significant flora species have been recorded within the local area, comprising five Priority 1 (P1) flora, seven Priority 2 (P2) flora, 19 Priority 3 (P3) flora, 10 Priority 4 (P4) flora, and 10 threatened flora species (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest record being an occurrence of *Caladenia huegelii* (T) approximately 0.5 kilometres from the application area. No threatened or priority flora species have been identified within the application area during a Level 1 flora survey and targeted *Caladenia huegelii* survey (Focused Vision, 2018; Focused Vision, 2016) or a detailed flora and vegetation assessment (MRIA, 2017a).
Ecological communities	The desktop assessment identified that the application area is mapped within an occurrence of the Banksia Woodlands of the Swan Coastal Plain (Banksia Woodlands) ecological community, which is listed as an Endangered threatened ecological community (TEC) under the Commonwealth EPBC Act and is considered a Priority 3 ecological community (PEC) by DBCA in Western Australia. The vegetation assessments of the application area (PGV Environmental, 2023a; MRIA, 2017a; Focused Vision, 2016) confirmed that the BmBa vegetation type is consistent with Floristic Community Type 23a described by Gibson et al. (1994), which is considered part of the Banksia Woodlands TEC and PEC. Based on the vegetation mapping of this community, the application contains approximately 3.16 hectares of the Banksia Woodlands TEC (PGV Environmental, 2023a; MRIA, 2017a; Focused Vision, 2016).
Fauna	The desktop assessment identified that a total of 62 threatened or priority fauna species have been recorded within the local area, including nine threatened fauna species, 18 priority fauna species, two other specially protected fauna species, and 23 fauna species protected under international agreement (DBCA, 2007-). Two of these existing records, both observations of *Isoodon fusciventer* (quenda), occur within the application area. With consideration for the site characteristics set out above, relevant datasets (see Appendix H.1), the habitat preferences of the aforementioned species, site inspections undertaken by DWER officers in 2023 (DWER, 2023c), and biological survey information (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016), the application area may provide suitable habitat for 12 conservation significant fauna species and impacts to these species required further consideration (see Appendix C.5).

C.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	14.85

	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
Vegetation complex*					
Bassendean Complex-Central and South 44	87,476.26	23,508.66	26.87	4,377.36	5.00
Local area					
10-kilometre radius	30,464.85	7,389.16	24.25	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

C.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix H.1), the habitat preferences and conservation statuses of flora species known from the local area, the distribution and extent of existing records, and biological survey information (PGV Environmental, 2023a; Focused Vision, 2018; MRIA, 2017a; Focused Vision, 2016), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status (WA)	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
Caladenia huegelii	CR	Y	Y	Y	0.5	68	N

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

C.4. Ecological community analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix H.1), the distribution and extent of existing records, and biological survey information (PGV Environmental, 2023a; MRIA, 2017a; Focused Vision, 2016), impacts to the following conservation significant ecological communities required further consideration.

Community name	Conservation status (WA)	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
Banksia Woodlands of the Swan Coastal Plain TEC (Banksia Woodland TEC)	P3	Y	Y	Y	0.0	1987	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

C.5. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix H.1), the habitat preferences of the aforementioned species, site inspections undertaken by DWER officers in 2023 (DWER, 2023c), and biological survey information (PGV Environmental, 2023a; MRIA, 2017b; Focused Vision, 2016), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status (WA)	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	Y	Y	1.0	98	Y
Falco peregrinus (peregrine falcon)	OS	Y	Y	2.2	57	Y
Idiosoma sigillatum (Swan Coastal Plain shield-backed trapdoor spider)	P3	Y	Y	3.1	27	N
Isoodon fusciventer (quenda)	P4	Y	Y	0.0	1247	Y
Lerista lineata (Perth slider)	P3	Y	Y	1.8	294	N
Merops ornatus (rainbow bee-eater)	MI	Y	Y	N/A	N/A	Y
Neelaps calonotos (black-striped burrowing snake)	P3	Y	Y	3.8	11	N
Synemon gratiosa (graceful sunmoth)	P4	Y	Y	2.3	11	N
Throscodectes xiphos (stylet bush cricket)	P1	Y	Y	0.4	4	N
Zanda latirostris (previously *Calyptorhynchus latirostris*) (Carnaby's cockatoo)	EN	Y	Y	0.9	1772	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, MI: fauna species protected under international agreement, OS: other specially protected fauna species

C.6. Land degradation risk table

Based on relevant datasets (see Appendix H.1) and available land degradation risk mapping (DPIRD, 2023), the land degradation risk varies between soil types across the application area as follows.

Risk categories	Bassendean B4 phase	Bassendean B1 phase	Bassendean B2 phase	Bassendean B3 phase
Wind erosion	M1: 10-30% of map unit has a high to extreme wind erosion risk	H1: 50-70% of map unit has a high to extreme wind erosion risk	M2: 30-50% of map unit has a high to extreme wind erosion risk	L1: <3% of map unit has a high to extreme wind erosion risk
Water erosion	L1: <3% of map unit has a high to extreme water erosion risk	L1: <3% of map unit has a high to extreme water erosion risk	L1: <3% of map unit has a high to extreme water erosion risk	M2: 30-50% of map unit has a high to extreme water erosion risk
Salinity	L1: <3% 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	L1: <3% 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
Subsurface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid	H2: >70% of map unit has a high subsurface acidification risk or is presently acid	H2: >70% of map unit has a high subsurface acidification risk or is presently acid	H2: >70% of map unit has a high subsurface acidification risk
Flood risk	L1: <3% of the map unit has a moderate to high flood risk	L1: <3% of the map unit has a moderate to high flood risk	L1: <3% of the map unit has a moderate to high flood risk	M2: 30-50% of the map unit has a moderate to high flood risk
Water logging	H2: >70% of map unit has a moderate to very high waterlogging risk	L2: 3-10% of map unit has a moderate to very high waterlogging risk	L2: 3-10% of map unit has a moderate to very high waterlogging risk	H2: >70% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	H2: >70% of map unit has a high to extreme phosphorus export risk	H2: >70% of map unit has a high to extreme phosphorus export risk	H2: >70% of map unit has a high to extreme phosphorus export risk	H2: >70% of map unit has a high to extreme phosphorus export risk

Appendix D. 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: The area proposed to be cleared contains regionally significant vegetation and locally significant habitats, including vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain ecological community, foraging habitat for black cockatoo species, suitable habitat for conservation significant flora, vegetation that is representative of an extensively cleared vegetation complex, and significant wetland vegetation.	At variance	Yes *Refer to Sections 3.2.1 – 3.2.5 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 area proposed to be cleared contains significant foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo, as well as suitable habitat for several conservation significant fauna species.	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 area proposed to be cleared contains potential habitat for one flora species listed under the BC Act; *Caladenia huegelii*. Given the ecology of this species, the potential for the species to occur within the application area cannot be ruled out based on the available survey information.	May 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 contains approximately 3.16 hectares of native vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain threatened ecological community, which is listed as Endangered under the EPBC Act.	At variance	Yes *Refer to Section 3.2.3, 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 the mapped vegetation type and native vegetation in the local area is inconsistent with the national objectives and targets for biodiversity conservation in Australia, however is consistent with the 10 per cent threshold for constrained areas. The vegetation proposed to be cleared contributes to vegetation connectivity in the local area.	May be at variance	Yes *Refer to Section 3.2.4, above.*
Principle (h): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area."* Assessment: Given the distance to the nearest mapped conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		

Assessment against the clearing principles	Variance level	Is further consideration required?
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 contains 1.48 hectares of native vegetation that is growing in association with a wetland which has values that are considered commensurate with a Conservation management category.	At variance	Yes *Refer to Section 3.2.5, 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 moderately to highly susceptible to wind erosion, subsurface acidification, and phosphorus export. The proposed clearing has the potential to cause land degradation where there is significant disturbance of topsoil, run-off of surface water across cleared areas, and if bare ground is left exposed to weathering for an extended period between clearing and development.	Not likely to be at variance	Yes *Refer to Section 3.2.6, 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 that a wetland has been recorded within the application area and continues adjacent to the application area separated by a road, the proposed clearing may impact onsite or offsite surface or ground water quality.	May be at variance	Yes *Refer to Section 3.2.5, 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: While the majority of the application area is mapped as having a low risk of flooding and waterlogging, the 1.48 hectares of native vegetation associated with the significant wetland has a high risk of waterlogging and a moderate risk of flooding. However, noting the topographic contours of the site and that the applicant will implement surface water management as part of its Construction Environmental Management Plan and Water Management Plan, it is not considered likely that the proposed clearing will cause, or exacerbate, the incidence or intensity of flooding.	Not likely to be at variance	No

Appendix E. 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.

Condition	Description
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 F. Offset calculator value justification

F.1 Banksia Woodlands of the Swan Coastal Plain TEC

WA Environmental Offsets Calculator
Rationale for scores used in the offset calculator

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Native vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain (Banksia Woodlands) TEC	The proposed clearing will impact on 3.16 hectares of native vegetation that is representative of the Banksia Woodlands TEC.
Type of environmental value	Ecological community	The Banksia Woodlands ecological community is listed as a threatened ecological community under the Commonwealth EPBC Act and considered a priority ecological community by DBCA.
Conservation significance of environmental value	Threatened ecological community - endangered	The Banksia Woodlands TEC is listed as Endangered under the EPBC Act and is considered a Priority 3 ecological community in Western Australia by DBCA. Therefore, the highest level of threat has been applied for this field.
Landscape-level value impacted	yes/no	The impact is to an area of Banksia Woodlands TEC in hectares.
Significant impact		
Description	Clearing of native vegetation that is representative of the Banksia Woodlands TEC.	Native vegetation that is representative of the Banksia Woodlands TEC is proposed to be cleared for the construction of Perth Surf Park.
Significant impact (hectares) / Type of feature	3.16	Based on the available information from the Level 1 flora and fauna assessment (Focused Vision, 2016), detailed flora and vegetation assessment (MRIA, 2017a), vegetation assessment (PGV Environmental, 2023a), and site inspections of the application area (DWER, 2023c), the proposed clearing area includes 3.16 hectares of Banksia woodland vegetation that contains a canopy of *Banksia menziesii* (firewood banksia) and *Banksia attenuata* (slender banksia), and meets the key diagnostic criteria and condition

Calculation	Score (Area)	Rationale
		thresholds to be considered representative of the Commonwealth listed TEC and state PEC. Therefore, the total area of native vegetation that is representative of the Banksia Woodlands TEC is 3.16 hectares.
Quality (scale) / Number	6.00	Based on the available information from the Level 1 flora and fauna assessment (Focused Vision, 2016), detailed flora and vegetation assessment (MRIA, 2017a), vegetation assessment (PGV Environmental, 2023a), and site inspections of the application area (DWER, 2023c), the proposed clearing area consists of Banksia Woodlands TEC in Good to Very Good (Keighery, 1994) condition. The application area occurs on the Swan Coastal Plain, upon which the Banksia Woodlands TEC has been extensively modified and remaining intact patches of the community are limited. The Banksia Woodlands TEC within the application area also provides habitat for significant fauna, including foraging habitat for Carnaby's cockatoo and forest red-tailed black cockatoo, as well as suitable habitat for quenda and other ground-dwelling fauna.
Rehabilitation credit		
N/A	None proposed.	No onsite rehabilitation or revegetation proposed (i.e., within the application area).
Offset		
Description	Acquisition and conservation of native vegetation that is representative of the Banksia Woodlands TEC	A single offset involving the acquisition and conservation in perpetuity of an offset site north of Perth, as outlined in Section 4, that contains native vegetation that is representative of the Banksia Woodlands TEC.
Proposed offset (area in hectares)	21.31	The acquisition and conservation of 21.31 hectares of native vegetation that is representative of the Banksia Woodlands TEC is required to offset the residual impacts to this environmental value.
Current quality of offset site / Start number (of type of feature)	9.00	DBCA has confirmed that the native vegetation at the proposed offset site that is representative of the Banksia Woodland TEC is in Excellent to Pristine (Keighery, 1994) condition. The offset site is also likely to provide habitat for fauna and flora, occurs within an extensively cleared local area, and occurs on the Swan Coastal Plain upon which the Banksia Woodlands TEC has been extensively modified.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	9.00	The offset site is currently zoned as General Agriculture but is not subject to any existing planning approvals and is in the final stages of being acquired. Given the area is already in Excellent to Pristine (Keighery, 1994) condition with minimal disturbance, it is unlikely that the quality of the native vegetation that is representative of the Banksia Woodlands TEC within the offset area will change over a 20-year period, in the absence of the offset.
Future quality WITH offset (scale) / Future number WITH offset	9.00	The offset site will be transferred into conservation estate following purchase and will be managed to maintain the quality of the existing values, including native vegetation that is representative of the Banksia Woodlands TEC.
Time until ecological benefit (years)	1.00	As the acquisition of the offset site is in its final stages, the minimum of one year for this field is applied.
Confidence in offset result (%)	0.95	As the property for acquisition is known and the acquisition is in progress, there is a high level of confidence that the offset will be achieved, and that conservation of the offset site (in

Calculation	Score (Area)	Rationale
		perpetuity) would successfully mitigate the future risk of loss of the site and maintain its current quality.
Duration of offset implementation (maximum 20 years)	20.00	The offset site will be transferred into conservation estate following purchase and will be managed in perpetuity. Therefore, the maximum of 20 years is applied.
Time until offset site secured (years)	1.00	As the properties for acquisition are known and the acquisition is in progress, the minimum of one year for this field is applied.
Risk of future loss WITHOUT offset (%)	15.0%	The offset site is currently zoned as General Agriculture but is not subject to any existing planning approvals and is being negotiated for acquisition. Therefore, there is a moderate likelihood that the site could otherwise be cleared over the next 20 years.
Risk of future loss WITH offset (%)	5.0%	The future conservation (in perpetuity) of the offset site would result in increased security and substantially reduce the risk of loss.
Offset ratio (Conservation area only)	N/A	
Landscape level values of offset?	N/A	

F.2 Significant wetland vegetation

WA Environmental Offsets Calculator
Rationale for scores used in the offset calculator

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Native vegetation growing within a Conservation Category Wetland (CCW).	The proposed clearing will impact on 1.48 hectares of native vegetation that has values that are commensurate with a Conservation Category Wetland.
Type of environmental value	Wetland/watercourse	Wetland vegetation
Conservation significance of environmental value	A category or type of wetland or watercourse for which an offset is required	The clearing of native vegetation that contains values that are commensurate with a CCW is considered to constitute a significant residual impact for which an offset is required.
Landscape-level value impacted	yes/no	The impact is to an area of wetland vegetation in hectares.
Significant impact		
Description	Clearing of native vegetation that contains values consistent with a CCW	Native vegetation that contains values that are commensurate with a CCW
Significant impact (hectares) / Type of feature	1.48	Based on wetland condition mapping from a wetland evaluation of the application area (PGV Environmental, 2023c) undertaken in accordance with *'A methodology for the evaluation of wetlands on the Swan Coastal Plain, Western Australia'* (DBCA, 2017), the total area of wetland vegetation is 1.48 hectares.

Calculation	Score (Area)	Rationale
Quality (scale) / Number	6.00	Based on the available information from PGV Environmental's (2023c) wetland evaluation, the native vegetation growing within the wetland area is in Completely Degraded to Excellent (Keighery, 1994) condition. Approximately 58.8 per cent of the wetland vegetation is in Good to Excellent (Keighery, 1994) condition. The wetland vegetation is likely to provide habitat for fauna, including quenda which were observed utilising the site during the wetland evaluation. The wetland vegetation occurs within the Swan Coastal Plain, on which wetland vegetation has been highly impacted by anthropomorphic activity. The wetland vegetation is also likely to support adjacent native vegetation, including vegetation that is representative of the Banksia Woodlands of the Swan Coastal Plain ecological community, and nearby wetland vegetation within Lot 802 on Deposited Plan 50212. However, the wetland vegetation is isolated from larger remnants of native vegetation in the local area and is subject to ongoing threatening processes including weed invasion and edge effects from adjacent roads.
Rehabilitation credit		
N/A	N/A	No onsite rehabilitation or revegetation proposed (i.e., within the application area).
Offset		
Description	Acquisition and conservation of wetland native vegetation that reflects values of a CCW	A single offset involving the acquisition and conservation in perpetuity of an offset site that contains wetland native vegetation that has contains values that are commensurate with a CCW.
Proposed offset (area in hectares)	12.72	The acquisition and conservation of 12.72 hectares of wetland native vegetation that contains values that are commensurate with a CCW is required to offset the residual impacts to this environmental value.
Current quality of offset site / Start number (of type of feature)	7.00	It is assumed that the native vegetation within the offset site will be in Good to Very Good (Keighery, 1994) condition and occur on the southern Swan Coastal Plain.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	7.00	It is assumed that the offset site is currently rural-zoned freehold land and therefore, that the quality of the wetland native vegetation within the offset site is unlikely to change significantly over a one-year period in the absence of the offset.
Future quality WITH offset (scale) / Future number WITH offset	7.00	It is assumed that the offset site will be transferred into conservation estate following purchase and will be managed to maintain the quality of the existing values.
Time until ecological benefit (years)	1.00	As the proposed offset relates to acquiring and conserving an existing area of native vegetation the minimum of one year for this field is applied.
Confidence in offset result (%)	0.9	There is a high level of confidence that the offset will be achieved, and that conservation of the offset site (in perpetuity) would successfully mitigate the future risk of loss of the site and maintain its current quality.
Duration of offset implementation (maximum 20 years)	20.00	The offsite site will be transferred into conservation estate following purchase and will be managed in perpetuity. Therefore, the maximum of 20 years is applied.
Time until offset site secured (years)	3.00	It is assumed that the offset site will be purchased and secured in conservation estate within 3 years of the proposed clearing commencing.

Calculation	Score (Area)	Rationale
Risk of future loss WITHOUT offset (%)	15.0%	It is assumed that the offset site to be acquired is currently zoned rural or similar and is not subject to any existing planning approvals.
Risk of future loss WITH offset (%)	5.0%	The future conservation (in perpetuity) of the offset site would result in increased security and substantially reduce the risk of loss.
Offset ratio (Conservation area only)	N/A	
Landscape level values of offset?	N/A	

F.1 Carnaby's cockatoo foraging habitat

WA Environmental Offsets Calculator
Rationale for scores used in the offset calculator

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Carnaby's cockatoo foraging habitat	The proposed clearing will impact on 2.08 hectares of significant foraging habitat for Carnaby's cockatoo.
Type of environmental value	Species (flora/fauna)	Carnaby's cockatoo is listed as a threatened fauna species under the Commonwealth EPBC Act and state BC Act.
Conservation significance of environmental value	Rare/threatened species - endangered	Carnaby's cockatoo is listed as Endangered under both the EPBC Act and BC Act.
Landscape-level value impacted	yes/no	The impact is to an area of foraging habitat in hectares.
Significant impact		
Description	Clearing of native vegetation that comprises significant foraging habitat for Carnaby's cockatoo.	Native vegetation that comprises significant foraging habitat for Carnaby's cockatoo is proposed to be cleared for the construction of Perth Surf Park.
Significant impact (hectares) / Type of feature	2.08	Based on the available information from the Level 1 flora and fauna assessment (Focused Vision, 2016), detailed flora and vegetation assessment (MRIA, 2017a), vegetation assessment (PGV Environmental, 2023a), and site inspections of the application area (DWER, 2023c), the proposed clearing area includes Banksia woodland vegetation that contains *Banksia menziesii* (firewood banksia) and *Banksia attenuata* (slender banksia), providing primary foraging habitat for Carnaby's cockatoo on the Swan Coastal Plain. The application area also contains sparse secondary foraging habitat in *Eucalyptus todtiana* (pricklybark). While the patch of Banksia woodland vegetation type covers a total area of 3.16 hectares, revised black cockatoo foraging habitat mapping was undertaken during the assessment of the application to remove areas of the Banksia woodland vegetation type that do not include any suitable foraging species. The black cockatoo foraging habitat extent was subsequently reduced to 2.08 hectares, with the excluded areas containing only low shrubs (e.g., *Phlebocarya ciliata* and *Dasypogon bromeliifolius*) and weedy grasses. Therefore, 2.08 hectares of significant foraging habitat for Carnaby's cockatoo is proposed to be cleared.

Calculation	Score (Area)	Rationale
Quality (scale) / Number	8.00	Based on the available information from the Level 1 flora and fauna assessment (Focused Vision, 2016), detailed flora and vegetation assessment (MRIA, 2017a), vegetation assessment (PGV Environmental, 2023a), and site inspections of the application area (DWER, 2023c), the proposed clearing area consists of Banksia woodland foraging habitat in Good to Very Good (Keighery, 1994) condition. The Level 1 flora and fauna assessment (Focused Vision, 2016) identified evidence of foraging by Carnaby's cockatoo within, or in close proximity to, the application area, in the form of chewed banksia cones. Individuals were also observed flying over the area. In addition, the application is located within six kilometres of approximately 23 mapped roost sites and occurs in proximity to water bodies that may provide watering sites (e.g., Bibra Lake, Yangebup Lake, Thomsons Lake). Therefore, the application area is likely to support foraging by birds frequenting the area and roosting locally, noting the evidence of historical use. The application is also located within an extensively cleared part of the species' range and available foraging habitat in the local area is limited.
Rehabilitation credit		
N/A	N/A	No onsite rehabilitation or revegetation proposed (i.e., within the application area).
Offset		
Description	Revegetation and rehabilitation of native vegetation that comprises significant foraging habitat for Carnaby's cockatoo	A single offset involving the revegetation of native vegetation within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake, in the City of Cockburn that contains significant foraging habitat for Carnaby's cockatoo in the region.
Proposed offset (area in hectares)	5.31	The revegetation of 5.31 hectares of native vegetation that comprises significant foraging habitat for Carnaby's cockatoo is required to offset **79.6 per cent** of the significant residual impact to this value.
	1.93	The revegetation of 1.93 hectares of native vegetation that comprises significant foraging habitat for Carnaby's cockatoo is required to offset **20.4 per cent** of the significant residual impact to this value.
Current quality of offset site / Start number (of type of feature)	4.00	A site inspection undertaken by DWER officers indicates that the revegetation offset area comprises bare, degraded areas with sparse canopy of slender banksia and firewood banksia, with occassional *Banksia ilicifolia* (holly-leaved banksia), *Banksia sessilis* (parrot bush), *Banksia grandis* (bull banksia), *Corymbia calophylla* (marri), *Eucalyptus marginata* (jarrah), *Eucalyptus rudis* (flooded gum), and *Allocasuarina fraserina* (sheoak) in Degraded to Completely Degraded (Keighery, 1994) condition (DWER, 2023a). *Xanthorrhoea preissii* (grass tree) is present in the mid-storey and understorey is primarily weedy grasses. The revegetation offset area is surrounded by Banksia woodland in primarily Good to Very Good (Keighery, 1994) condition with the same canopy and mid-storey species as the offset areas and increased cover of native understorey species (DWER, 2023a). Evidence of foraging by Carnaby's cockatoo was observed in Banksia

Calculation	Score (Area)	Rationale
		woodland adjacent to the revegetation offset areas during the site inspection, in the form of chewed marri fruits (DWER, 2023a). Foraging habitat within the revegetation offset area at present is limited to a sparse canopy of primary foraging trees. However, the revegetation offset area is located within six kilometres of approximately 40 mapped roost sites, occurs in proximity to water bodies that may provide watering sites (e.g., Bibra Lake, North Lake, Yangebup Lake), and is surrounded by suitable primary and supplementary foraging habitat within the greater Crown Reserve 46787. Therefore, the revegetation offset area may support foraging by birds frequenting the area and roosting locally. The revegetation offset area is also located within an extensively modified part of the species' range and available foraging habitat in the local area is limited.
	2.00	A site inspection undertaken by DWER officers indicates that the revegetation offset area comprises bare, parkland cleared areas with sparsely distributed *Eucalyptus rudis* (flooded gum), *Corymbia calophylla* (marri), and *Banksia littoralis* (swamp banksia) in Degraded to Completely Degraded (Keighery, 1994) condition (DWER, 2023a). The revegetation offset area occurs on a wetland margin, surrounded by open flooded gum woodland transitioning into *Melaleuca teretifolia* tall shrubland (DWER, 2023a). Foraging habitat within the revegetation offset area at present is limited to a canopy of secondary or supplementary foraging species (i.e., flooded gum) with occasional primary foraging trees (i.e., marri, swamp banksia). However, the revegetation offset area is located within six kilometres of approximately 40 mapped roost sites, occurs in proximity to water bodies that may provide watering sites (e.g., Bibra Lake, North Lake, Yangebup Lake), and is surrounded by suitable primary and supplementary foraging habitat within the greater Crown Reserve 46787. Therefore, the revegetation offset area may support foraging by birds frequenting the area and roosting locally. The revegetation offset area is also located within an extensively modified part of the species' range and available foraging habitat in the local area is limited. The revegetation offset area is located within 12 kilometres of 20 artificial breeding hollows that have been installed in the local area. However, no evidence of use has been recorded and these are considered potential local breeding habitat only.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	4.00	The revegetation offset area occurs within Crown Reserve 46787, which is currently vested in Recreation and Educational Use. However, the revegetation offset area is also included within Beeliar Regional Park and Bush Forever Site 244, and the City of Cockburn have advised that the Crown Reserve is intended to be managed for conservation

Calculation	Score (Area)	Rationale
	2.00	long-term. Noting this, and that the areas proposed to be revegetated are predominantly open areas of weedy grasses with sparse native foraging species, it is unlikely that the quality of the foraging habitat for Carnaby's cockatoo within the revegetation offset area will change over a one-year period, in the absence of the offset.
Future quality WITH offset (scale) / Future number WITH offset	8.00	The applicant has committed to preparing a Project Revegetation Plan in accordance with DWER's *Guide to preparing revegetation plans for clearing permits* (2018), including measurable completion criteria based on reference sites that provide primary foraging habitat for Carnaby's cockatoo in a Very Good (Keighery, 1994) or better condition. Therefore, with best practice revegetation methodology, weed management, and remedial actions, it is assumed that the revegetation offsets areas will improve the quality of foraging habitat for Carnaby's cockatoo to a Good (Keighery, 1994) condition. The future quality with offset also considers the contextual factors of the revegetation offset areas (i.e., proximity to roost sites, occurring within an extensively modified part of the species' range, etc.).
	5.00	
Time until ecological benefit (years)	12.00	Noting the site characteristics of the revegetation offset area, it is expected that the primary foraging species to be planted in these areas will include common Banksia woodland foraging species (e.g., slender banksia, firewood banksia, holly-leaved banksia, marri, jarrah, etc.). Therefore, it is assumed that the benefits of revegetation of Carnaby's cockatoo foraging habitat will be available after 10 years. This is a conservative measure based on available literature (e.g., Lee et al. (2013) who identified evidence of foraging on marri and Banksia in rehabilitated mine pit areas, ranging from 8-14 years of age) and the understanding that proteaceous species are relatively fast maturing and have high calorific value at a relatively young age. An extra two years have been allowed to account for the delay in commencement of the revegetation (assumed to commence within 2 years of permit start date).
	17.00	Noting the site characteristics of the revegetation offset area, it is expected that the primary foraging species to be planted in these areas will include marri and swamp banksia, that are likely to succeed on wetland margins. Therefore, it is assumed that the benefits of revegetation of Carnaby's cockatoo foraging habitat will be available after 15 years. This is a conservative measure based on available literature (e.g., Lee et al. (2013) who identified evidence of foraging on marri and Banksia in rehabilitated mine pit areas, ranging from 8-14 years of age) and the understanding that marri may take longer to mature and provide calorific benefit. An extra two years have been allowed to account for the delay in commencement of the revegetation (assumed to commence within 2 years of permit start date).
Confidence in offset result (%)	0.8	There is a moderate level of confidence that the offset will achieve the predicted result given revegetation and rehabilitation will be undertaken in accordance with a Project

Calculation	Score (Area)	Rationale
		Revegetation Plan prepared following DWER's *Guide to preparing revegetation plans for clearing permits* (2018).
Duration of offset implementation (maximum 20 years)	20.00	The revegetation offset area occurs within Crown Reserve 46787, which is currently vested in Recreation and Educational Use. However, the revegetation offset area is also included within Beeliar Regional Park and Bush Forever Site 244, and the City of Cockburn have advised that the Crown Reserve is intended to be managed for conservation long-term. Therefore, the maximum of 20 years for this field is applied.
Time until offset site secured (years)	1.00	No change in land tenure or vesting is proposed. The revegetation offset area is already secure as a Crown Reserve vested in Recreation and Educational Use, Regional Park, and Bush Forever Site. Therefore, the minimum of one year for this field is applied.
Risk of future loss WITHOUT offset (%)	10.0%	The revegetation offset area occurs within Crown Reserve 46787, which is currently vested in Recreation and Educational Use. However, the revegetation offset area is also included within Beeliar Regional Park and Bush Forever Site 244. Therefore, there is a relatively low risk of future loss as revegetation and rehabilitation is consistent with the purpose of the reserve and the City of Cockburn have advised that the Crown Reserve is intended to be managed for conservation long-term, with other ongoing revegetation programs in the greater reserve.
Risk of future loss WITH offset (%)	10.0%	No change in land tenure or vesting is proposed. Therefore, risk of loss remains the same with the offset.
Offset ratio (Conservation area only)	N/A	
Landscape level values of offset?	N/A	

F.2 Forest red-tailed black cockatoo foraging habitat

WA Environmental Offsets Calculator
Rationale for scores used in the offset calculator

Calculation	Score (Area)	Rationale
Conservation significance		
Description	Forest red-tailed black cockatoo foraging habitat	The proposed clearing will impact on 2.08 hectares of significant foraging habitat for forest red-tailed black cockatoo.
Type of environmental value	Species (flora/fauna)	Forest red-tailed black cockatoo is listed as a threatened fauna species under the Commonwealth EPBC Act and state BC Act.
Conservation significance of environmental value	Rare/threatened Species - vulnerable	Forest red-tailed black cockatoo is listed as Vulnerable under both the EPBC Act and BC Act.
Landscape-level value impacted	yes/no	The impact is to an area of foraging habitat in hectares.
Significant impact		

Calculation	Score (Area)	Rationale
Description	Clearing of native vegetation that comprises significant foraging habitat for forest red-tailed black cockatoo.	Native vegetation that comprises significant foraging habitat for forest red-tailed black cockatoo is proposed to be cleared for the construction of Perth Surf Park.
Significant impact (hectares) / Type of feature	2.08	Based on the available information from the Level 1 flora and fauna assessment (Focused Vision, 2016), detailed flora and vegetation assessment (MRIA, 2017a), vegetation assessment (PGV Environmental, 2023a), and site inspections of the application area (DWER, 2023c), the proposed clearing area includes Banksia woodland vegetation that contains scattered *Allocasuarina fraseriana* (sheoak) and *Eucalyptus todtiana* (pricklybark), providing primary and secondary foraging habitat for the forest red-tailed black cockatoo on the Swan Coastal Plain. The application area also contains *Banksia menziesii* (firewood banksia) and *Banksia attenuata* (slender banksia) which may provide some supplementary foraging habitat, but are not common foraging species. While the patch of Banksia woodland vegetation type covers a total area of 3.16 hectares, revised black cockatoo foraging habitat mapping was undertaken during the assessment of the application to remove areas of the Banksia woodland vegetation type that do not include any suitable foraging species. The black cockatoo foraging habitat extent was subsequently reduced to 2.08 hectares, with the excluded areas containing only low shrubs (e.g., *Phlebocarya ciliata* and *Dasypogon bromeliifolius*) and weedy grasses. Therefore, 2.08 hectares of significant foraging habitat for the forest red-tailed cockatoo is proposed to be cleared.
Quality (scale) / Number	7.00	Based on the available information from the Level 1 flora and fauna assessment (Focused Vision, 2016), detailed flora and vegetation assessment (MRIA, 2017a), vegetation assessment (PGV Environmental, 2023a), and site inspections of the application area (DWER, 2023c), the proposed clearing area consists of Banksia woodland with sheoak and blackbutt foraging habitat in Good to Very Good (Keighery, 1994) condition for FRTBC. The Level 1 flora and fauna assessment (Focused Vision, 2016) identified evidence of foraging by forest red-tailed black cockatoo within, or in close proximity to, the application area, in the form of chewed pricklybark fruits. Individuals were also observed flying over the area. In addition, the application is located within six kilometres of approximately 23 mapped roost sites and occurs in proximity to water bodies that may provide watering sites (e.g., Bibra Lake, Yangebup Lake, Thomsons Lake). Therefore, the application area is likely to support foraging by birds frequenting the area and roosting locally, noting the evidence of historical use. The application is also located within an extensively cleared part of the species' range and available foraging habitat in the local area is limited. The application is therefore, likely to provide an ecological linkage for forest red-tailed black cockatoo moving through an extensively cleared landscape. As the majority of the vegetation within the impact site contains non-preferred foraging species (Banksia) for forest red-tailed black cockatoo but contains a scattering of sheoak and pricklybark (preferred species), a quality score of 7 is considered appropriate.

Calculation	Score (Area)	Rationale
Rehabilitation credit		
N/A	N/A	No onsite rehabilitation or revegetation proposed (i.e., within the application area).
Offset		
Description	Revegetation and rehabilitation of native vegetation that comprises significant foraging habitat for forest red-tailed black cockatoo	A single offset involving the revegetation of native vegetation within Crown Reserve 46787 (Lot 506 on Deposited Plan 414835), Bibra Lake, in the City of Cockburn that contains significant foraging habitat for forest red-tailed black cockatoo in the region.
Proposed offset (area in hectares)	5.31	The revegetation of 5.31 hectares of native vegetation that comprises significant foraging habitat for forest red-tailed black cockatoo is required to offset **76.9 per cent** of the significant residual impact to this value.
	1.21	The revegetation of 1.21 hectares of native vegetation that comprises significant foraging habitat for FRTBC cockatoo is required to offset **23.1 per cent** of the significant residual impact to this value.
Current quality of offset site / Start number (of type of feature)	4.00	A site inspection undertaken by DWER officers indicates that the revegetation offset area comprises bare, degraded areas with sparse canopy of slender banksia and firewood banksia, with occassional *Banksia ilicifolia* (holly-leaved banksia), *Banksia sessilis* (parrot bush), *Banksia grandis* (bull banksia), *Corymbia calophylla* (marri), *Eucalyptus marginata* (jarrah), *Eucalyptus rudis* (flooded gum), and *Allocasuarina fraserina* (sheoak) in Degraded to Completely Degraded (Keighery, 1994) condition (DWER, 2023a). *Xanthorrhoea preissii* (grass tree) is present in the mid-storey and understorey is primarily weedy grasses (DWER, 2023a). The revegetation offset area is surrounded by Banksia woodland in primarily Good to Very Good (Keighery, 1994) condition with the same canopy and mid-storey species as the offset areas and increased cover of native understorey species (DWER, 2023a). Evidence of foraging by forest red-tailed black cockatoo was observed in Banksia woodland adjacent to the revegetation offset areas, in the form of chewed marri fruits, and a flock of four forest red-tailed black cockatoos were observed landing in marri trees within the greater Crown Reserve 46787 during the site inspection (DWER, 2023a). Foraging habitat within the revegetation offset area at present is limited to a sparse canopy of primary foraging trees. However, the revegetation offset area is located within six kilometres of approximately 40 mapped roost sites, occurs in proximity to water bodies that may provide watering sites (e.g., Bibra Lake, North Lake, Yangebup Lake), and is surrounded by suitable primary and supplementary foraging habitat within the greater Crown Reserve 46787. Therefore, the revegetation offset area may support foraging by birds frequenting the area and roosting locally. The revegetation offset area is also located within an extensively modified part of the species' range and available foraging habitat in the local area is limited.

Calculation	Score (Area)	Rationale
	2.00	A site inspection undertaken by DWER officers indicates that the revegetation offset area comprises bare, parkland cleared areas with sparsely distributed *Eucalyptus rudis* (flooded gum), *Corymbia calophylla* (marri), and *Banksia littoralis* (swamp banksia) in Degraded to Completely Degraded (Keighery, 1994) condition (DWER, 2023a). The revegetation offset area occurs on a wetland margin, surrounded by open flooded gum woodland transitioning into *Melaleuca teretifolia* tall shrubland (DWER, 2023a). Foraging habitat within the revegetation offset area at present is limited to a canopy of secondary or supplementary foraging species (i.e., flooded gum) with occasional primary foraging trees (i.e., marri, swamp banksia). However, the revegetation offset area is located within six kilometres of approximately 40 mapped roost sites, occurs in proximity to water bodies that may provide watering sites (e.g., Bibra Lake, North Lake, Yangebup Lake), and is surrounded by suitable primary and supplementary foraging habitat within the greater Crown Reserve 46787. Therefore, the revegetation offset area may support foraging by birds frequenting the area and roosting locally. The revegetation offset area is also located within an extensively modified part of the species' range and available foraging habitat in the local area is limited. The revegetation offset area is located within 12 kilometres of 20 artificial breeding hollows that have been installed in the local area. However, no evidence of use has been recorded and these are considered potential local breeding habitat only.
Future quality WITHOUT offset (scale) / Future number WITHOUT offset	4.00	The revegetation offset area occurs within Crown Reserve 46787, which is currently vested in Recreation and Educational Use. However, the revegetation offset area is also included within Beeliar Regional Park and Bush Forever Site 244, and the City of Cockburn have advised that the Crown Reserve is intended to be managed for conservation long-term. Noting this, and that the areas proposed to be revegetated are predominantly open areas of weedy grasses with sparse native foraging species, it is unlikely that the quality of the foraging habitat for forest red-tailed black cockatoo within the revegetation offset area will change over a one-year period, in the absence of the offset.
	2.00	
Future quality WITH offset (scale) / Future number WITH offset	7.00	The applicant has committed to preparing a Project Revegetation Plan in accordance with DWER's *Guide to preparing revegetation plans for clearing permits* (2018), including measurable completion criteria based on reference sites that provide primary foraging habitat for FRTBC in a Very Good (Keighery, 1994) or better condition. Therefore, with best practice revegetation methodology, weed

Calculation	Score (Area)	Rationale
	6.00	management, and remedial actions, it is assumed that the revegetation offsets areas will improve the quality of foraging habitat for forest red-tailed black cockatoo to a Good to very good (Keighery, 1994) condition with the planting of Marri (preferred food source). The future quality with offset also considers the contextual factors of the revegetation offset areas (i.e., proximity to roost sites, occurring within an extensively modified part of the species' range, etc.).
Time until ecological benefit (years)	12.00	Noting the site characteristics of the revegetation offset area, it is expected that the primary foraging species to be planted in these areas will include common Banksia woodland foraging species (e.g., slender banksia, firewood banksia, holly-leaved banksia, marri, jarrah, etc.). Therefore, it is assumed that the benefits of revegetation of forest red-tailed black cockatoo foraging habitat will be available after 10 years. This is a conservative measure based on available literature (e.g., Lee et al. (2013) who identified evidence of foraging on marri and Banksia in rehabilitated mine pit areas, ranging from 8-14 years of age) and the understanding that proteaceous species are relatively fast maturing and have high calorific value at a relatively young age. An extra two years have been allowed to account for the delay in commencement of the revegetation (assumed to commence within 2 years of permit start date).
	17.00	Noting the site characteristics of the revegetation offset area, it is expected that the primary foraging species to be planted in these areas will include marri and swamp banksia, that are likely to succeed on wetland margins. Therefore, it is assumed that the benefits of revegetation of forest red-tailed black cockatoo foraging habitat will be available after 15 years. This is a conservative measure based on available literature (e.g., Lee et al. (2013) who identified evidence of foraging on marri and Banksia in rehabilitated mine pit areas, ranging from 8-14 years of age) and the understanding that marri may take longer to mature and provide calorific benefit. An extra two years have been allowed to account for the delay in commencement of the revegetation (assumed to commence within 2 years of permit start date).
Confidence in offset result (%)	0.8	There is a moderate level of confidence that the offset will achieve the predicted result given revegetation and rehabilitation will be undertaken in accordance with a Project Revegetation Plan prepared following DWER's *Guide to preparing revegetation plans for clearing permits* (2018).
Duration of offset implementation (maximum 20 years)	20.00	The revegetation offset area occurs within Crown Reserve 46787, which is currently vested in Recreation and Educational Use. However, the revegetation offset area is also included within Beeliar Regional Park and Bush Forever Site 244, and the City of Cockburn have advised that the Crown Reserve is intended to be managed for conservation long-term. Therefore, the maximum of 20 years for this field is applied.
Time until offset site secured (years)	1.00	No change in land tenure or vesting is proposed. The revegetation offset area is already secure as a Crown

Calculation	Score (Area)	Rationale
		Reserve vested in Recreation and Educational Use, Regional Park, and Bush Forever Site. Therefore, the minimum of one year for this field is applied.
Risk of future loss WITHOUT offset (%)	10.0%	The revegetation offset area occurs within Crown Reserve 46787, which is currently vested in Recreation and Educational Use. However, the revegetation offset area is also included within Beeliar Regional Park and Bush Forever Site 244. Therefore, there is a relatively low risk of future loss as revegetation and rehabilitation is consistent with the purpose of the reserve and the City of Cockburn have advised that the Crown Reserve is intended to be managed for conservation long-term, with other ongoing revegetation programs in the greater reserve.
Risk of future loss WITH offset (%)	10.0%	No change in land tenure or vesting is proposed. Therefore, risk of loss remains the same with the offset.
Offset ratio (Conservation area only)	N/A	
Landscape level values of offset?	N/A	

Appendix G. Biological survey information excerpts

Wetland Evaluation (PGV Environmental, 2023c)

The applicant commissioned the Wetland Evaluation (PGV Environmental, 2023c) to confirm the appropriate management category for the mapped wetland within Lot 800 on Deposited Plan 50212, Jandakot, following advice from (DBCA, 2023b).

The wetland evaluation was undertaken in accordance with '*A methodology for the evaluation of wetlands on the Swan Coastal Plain, Western Australia*' (DBCA, 2017) and involved detailed vegetation condition mapping across a 10m^2 grid, with vegetation condition recorded using the Keighery (1994) scale within a 2-metre radius of the grid point (PGV Environmental, 2023c). A vegetation condition map was prepared using the grid point results and interpolating the condition between the points using aerial imagery (PGV Environmental, 2023c). The wetland vegetation condition mapping and grid points are provided in Table 3 and Figures 5 and 6 below.

Table 3. Wetland vegetation condition within the CPS 10068/1 application area (PGV Environmental, 2023c).

Vegetation condition (Keighery, 1994)	Area (ha)	Percentage (%)
Excellent	0.07	5.0
Very Good	0.37	25.2
Good	0.43	28.7
Degraded	0.53	35.6
Completely Degraded	0.08	5.6
TOTAL	**1.48**	**100**

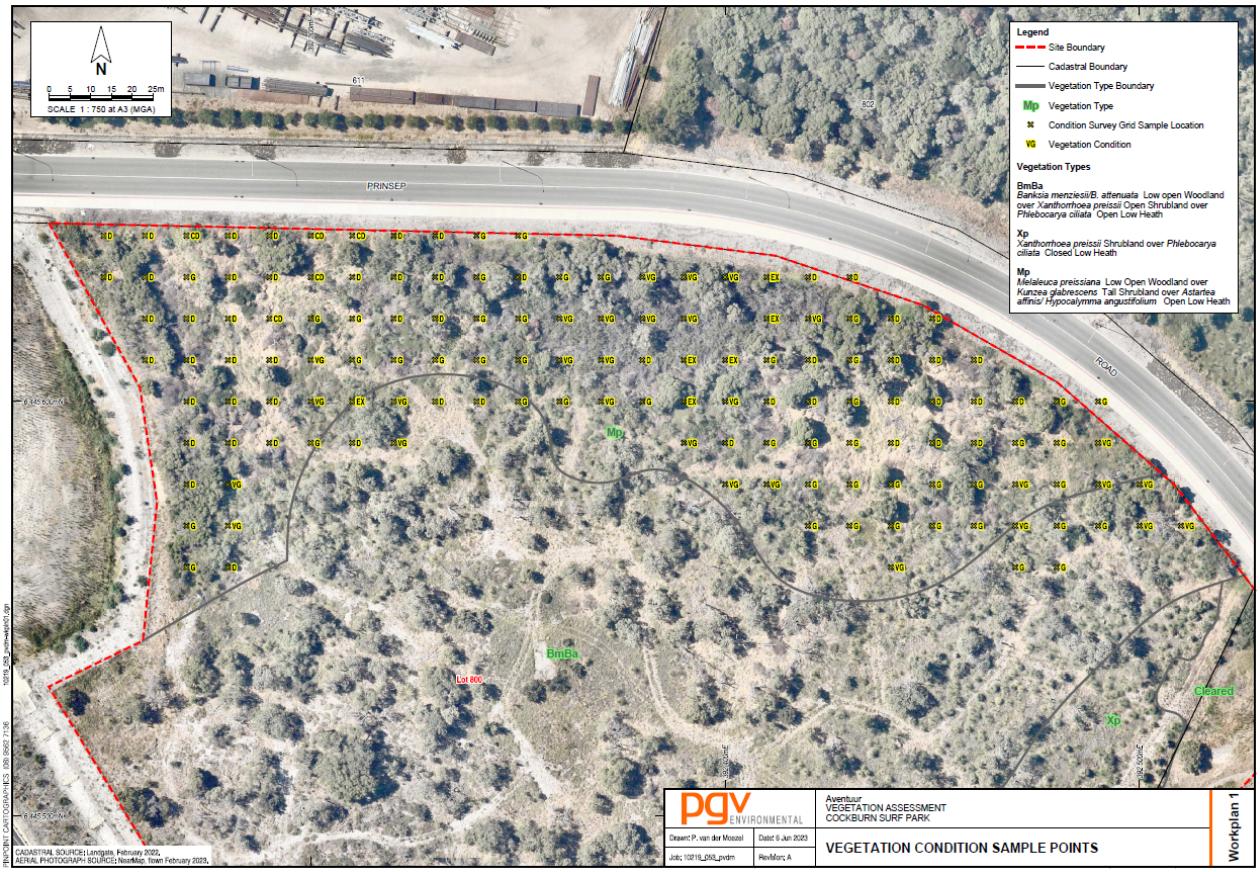

Figure 5. Wetland vegetation evaluation grid points within the CPS 10068/1 application area (PGV Environmental, 2023c).

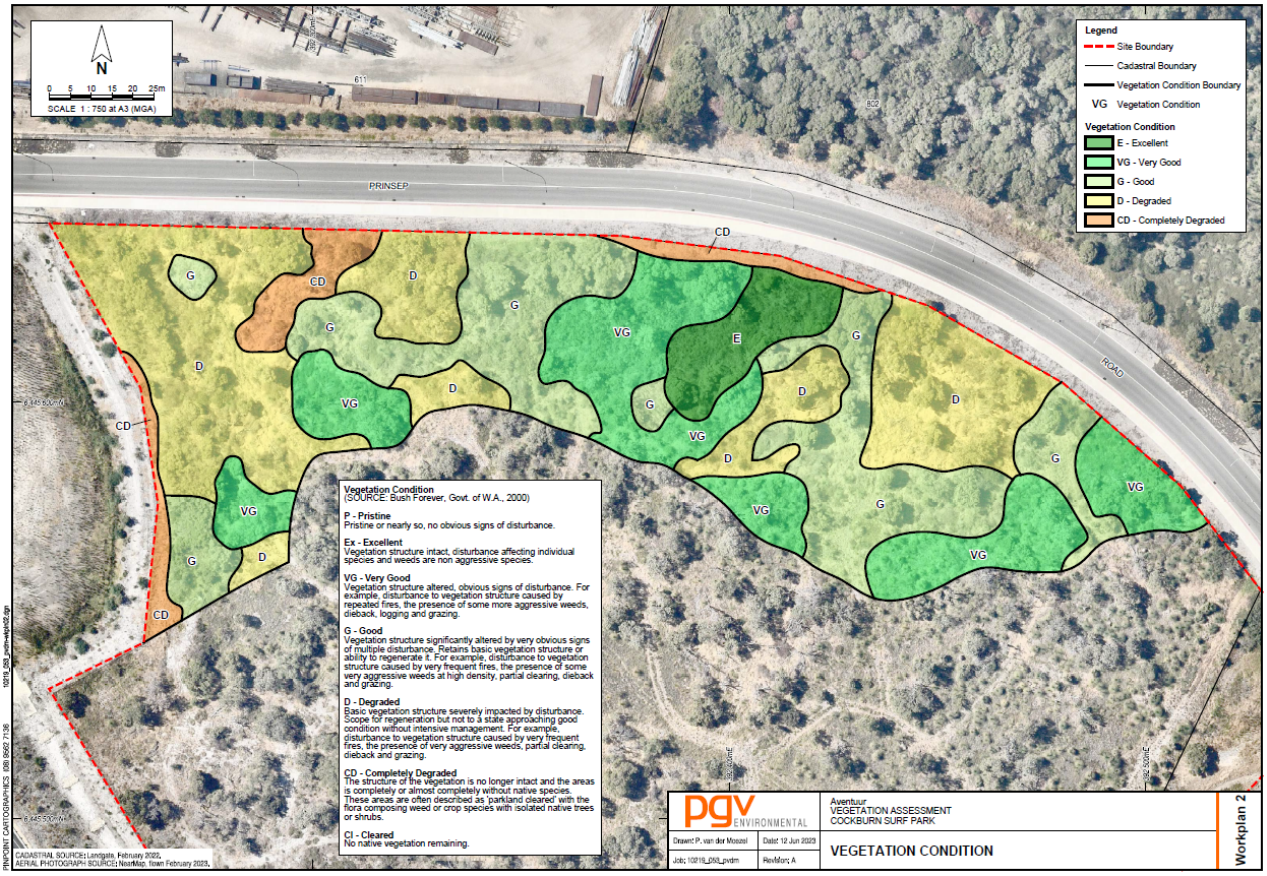

Figure 6. Wetland vegetation condition mapping within the CPS 10068/1 application area (PGV Environmental, 2023c).

Cockburn Surf Park Vegetation Assessment (PGV Environmental, 2023a)

The applicant commissioned the *'Cockburn Surf Park Vegetation Assessment'* (PGV Environmental, 2023a) to provide information on the vegetation types, vegetation condition, and black cockatoo habitat present within Lot 800 on Deposited Plan 50212 and Lot 9001 on Deposited Plan 65564, Jandakot, to inform of the conservation significance of the vegetation and relevant environmental approvals required for the construction of Perth Surf Park. The vegetation assessment was intended to substantiate the findings of previous flora, vegetation, and fauna surveys of the site.

The vegetation assessment involved traversing the site to describe vegetation type and condition, wetland boundaries, fauna habitat, and presence of black cockatoo habitat on two occasions: 30 September 2021 and 3 December 2021 (PGV Environmental, 2023a). In the December 2021 assessment, three quadrats were established in the Banksia Woodland vegetation type to facilitate an assessment of the Floristic Community Type (FCT) by comparing the species present in the sampled quadrats with the data available in Table 12 of *'A Floristic Survey of the Swan Coastal Plain'* (Gibson et al., 1994). The vegetation type descriptions and condition mapping are provided in Table 4 and Figures 7-10 below.

Table 4. Vegetation type descriptions within the CPS 10068/1 application area (PGV Environmental, 2023a).

Vegetation Type		Description	Photograph
BmBa	*Banksia menziesii*/*B. attenuata* Low open Woodland over *Xanthorrhoea preissii* Open Shrubland over *Phlebocarya ciliata* Open Low Heath	This is the most common vegetation type on the site occurring on the southern two-thirds of the site on dry, sandy upland soils. *Banksia menziesii* and *B. attenuata* were 4-6m high and 5-20% canopy cover. *Eucalyptus todtiana* and *Allocasuarina fraseriana* (sheoak) are also tree species occurring in some areas. The understorey was low and often appeared very weedy with a high visual cover of Veldtgrass (*Ehrharta calycina*). However, beneath the Veldtgrass is an often-dense cover of low shrubs particularly *Phlebocarya ciliata*, *Dasypogon bromeliifolius* and *Lyginia barbata*. Total area = 3.16ha	
Xp	*Xanthorrhoea preissii* Shrubland over *Phlebocarya ciliata* Closed Low Heath	This vegetation type occurred on the eastern side of the site on dry, sandy soils. The area contained only a few *Allocasuarina fraseriana* (sheoak) trees and no *Banksia* trees. *Xanthorrhoea preissi* and *X. brunonis* occurred up to 1m high and moderately dense over a dense ground cover of *Phlebocarya ciliata*, *Dasypogon bromeliifolius* and *Lyginia barbata*. Total area = 0.80ha	
Mp	*Melaleuca preissiana* Low Open Woodland over *Kunzea glabrescens* Tall Shrubland over *Astartea affinis*/ *Hypocalymma angustifolium* Open Low Heath	This vegetation type occurs at the northern end of the site associated with a mapped Multiple Use wetland. *Melaleuca preissiana* (Paperbark) trees are 5-6m high and low density mixed with the introduced woody weed small tree *Acacia longifolia*. *Kunzea glabrescens* (spearwood) is a common large shrub over an open understorey of native wetland species such as *Astartea affinis* and *Hypocalymma angustifolium* and abundant Veldtgrass (*Ehrharta longiflora*). Total area = 1.48ha	

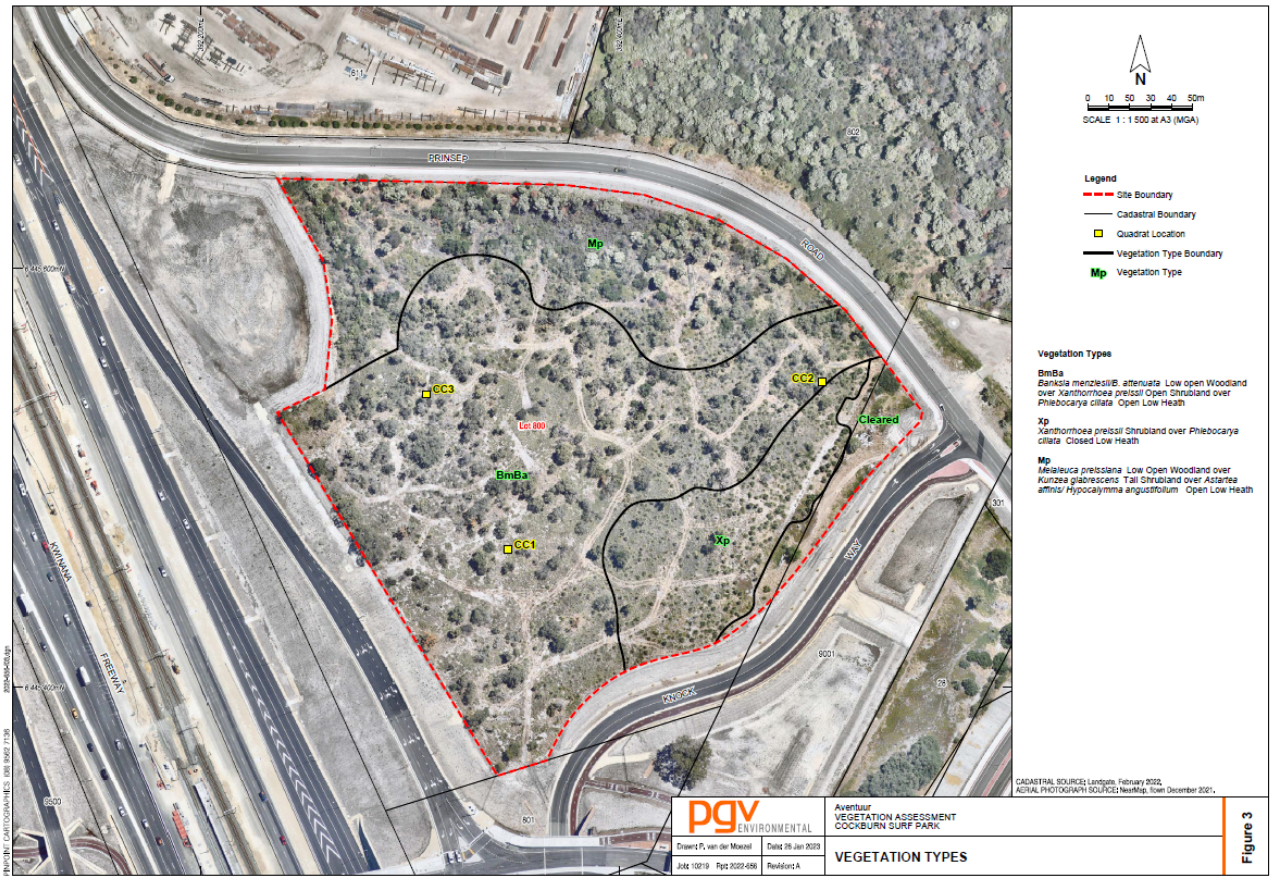

Figure 7. Vegetation type mapping within the CPS 10068/1 application area (PGV Environmental, 2023a).

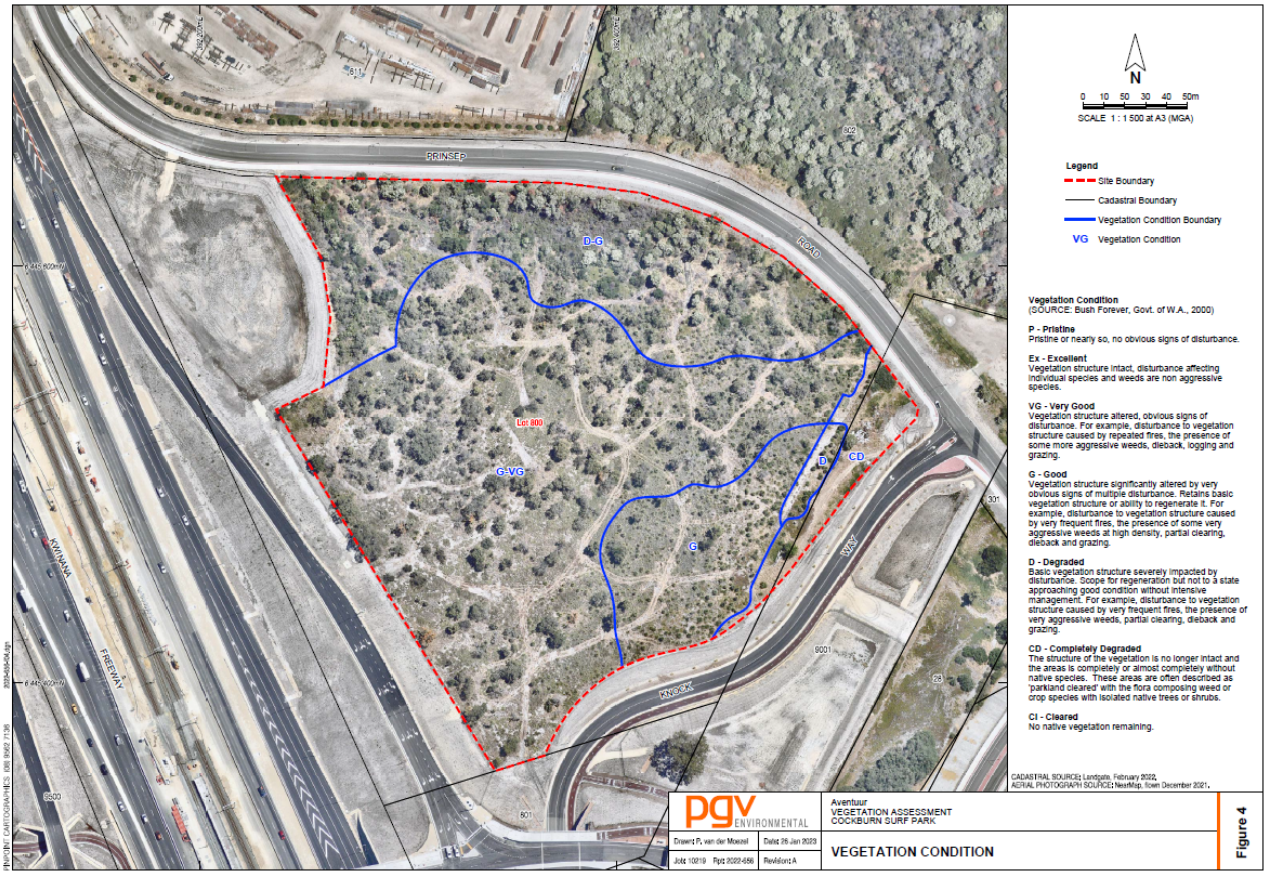

Figure 8. Vegetation condition mapping within the CPS 10068/1 application area (PGV Environmental, 2023a).

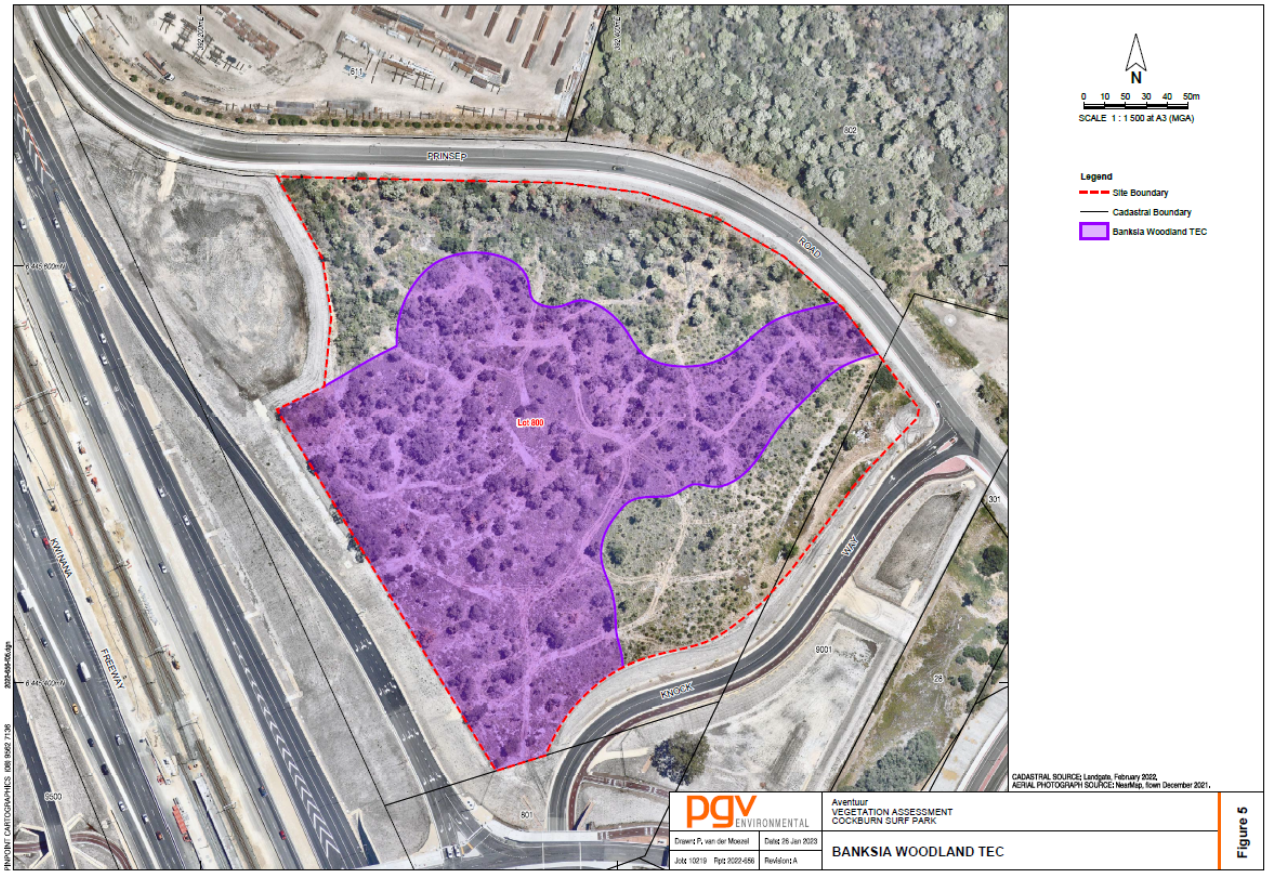

Figure 9. Banksia Woodland TEC mapping within the CPS 10068/1 application area (PGV Environmental, 2023a).

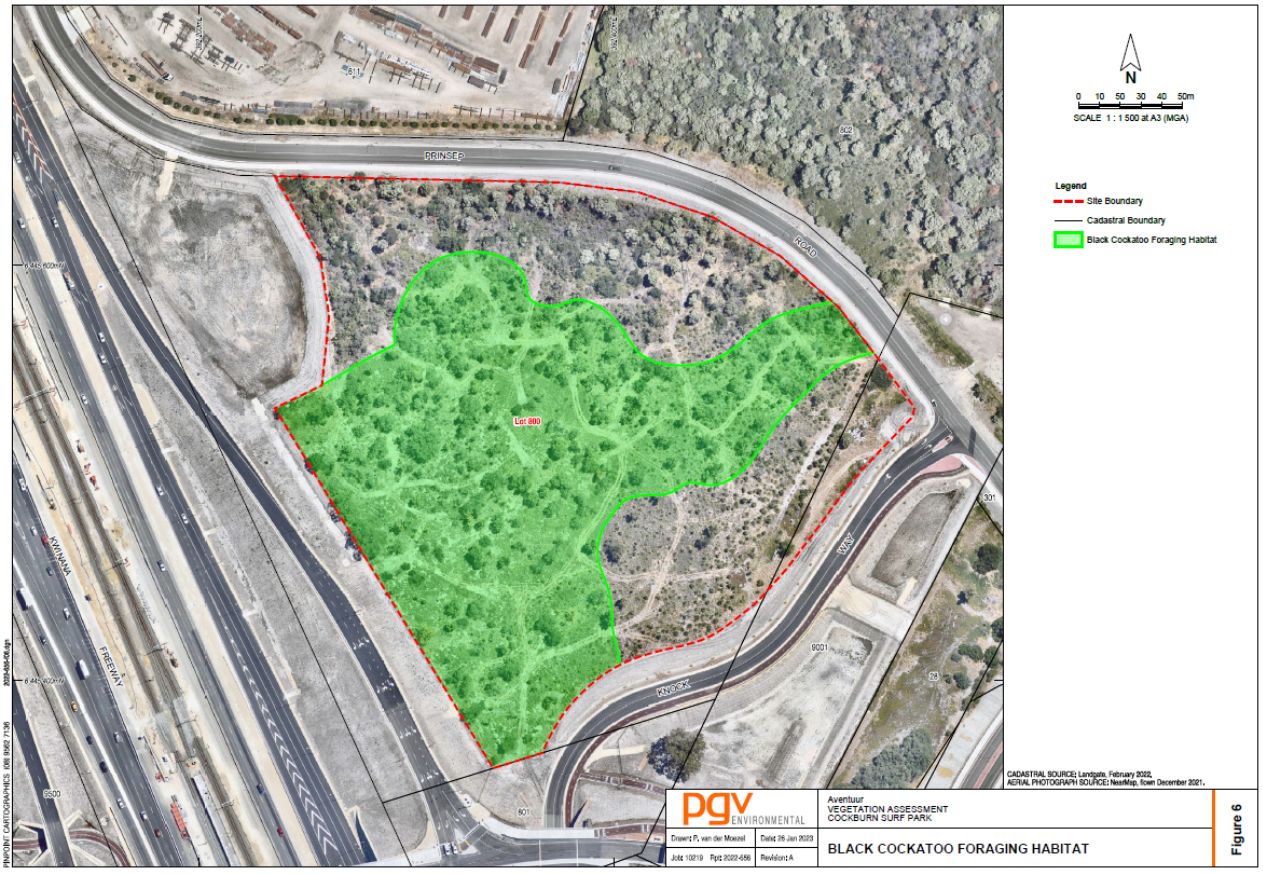

Figure 10. Black cockatoo foraging habitat mapping within the CPS 10068/1 application area (PGV Environmental, 2023a).

Targeted *Caladenia huegelii* Survey (Focused Vision, 2018)

The City of Cockburn commissioned the *'Targeted Caladenia huegelii Survey'* (Focused Vision, 2018) over the Cockburn Central East Local Structure Plan area (the study area), which included the vegetation within the CPS 10068/1 application area. The survey was commissioned to identify suitable habitat for *Caladenia huegelii* and observe individuals, if present (Focused Vision, 2018).

The *'Targeted Caladenia huegelii Survey'* was undertaken in accordance with the *Draft survey guidelines for Australia's threatened orchids* (Commonwealth of Australia, 2013) and involved:

- Systematic assessment of suitable habitat areas identified in the *'Level 1 Flora and Fauna Assessment'* (Focused Vision, 2016) by two experienced botanists on 27 September 2017, and
- Traversing a series of parallel transects spaced approximately 10 metres apart throughout areas of suitable habitat and recording GPS location, vegetation type, and condition at the location of any individual plants observed (Focused Vision, 2018).

No flowering *Caladenia huegelii* individuals were observed within the study area during the targeted survey. The survey effort is provided in Figures 11 and 12 below.

Figure 11. Suitable habitat for *Caladenia huegelii* identified in the Cockburn Central East Local Structure Plan area (Focused Vision, 2018).

Figure 12. Targeted survey effort for *Caladenia huegelii* within the Cockburn Central East Local Structure Plan area (Focused Vision, 2018).

Detailed Flora and Vegetation Assessment (MRIA, 2017a)

Main Roads Western Australia commissioned the *'Detailed Flora and Vegetation Assessment: Armadale Road to North Lake Road Bridge Project'* (MRIA, 2017a) to identify environmental values within the survey area (extending from Armadale Road at Tapper Road to North Lake Road and includes the southbound collector distributor (CD) roads from Berrigan Drive to approximately 1.6 kilometres south of Armadale Road), which included the vegetation within the CPS 10068/1 application area. The *'Detailed Flora and Vegetation Assessment: Armadale Road to North Lake Road Bridge Project'* included a desktop study, field survey, threatened species targeted survey, and vegetation classification, data analysis and mapping (MRIA, 2017a). The survey effort, vegetation type and condition mapping are provided in Figures 13-16 below.

Desktop Study

The desktop study was undertaken by experienced botanists and involved the following:

- A review of databased sources and other biological surveys undertaken in the local area, including;
    - DBCA Threatened and Priority flora and communities database,
    - WA Herbarium database, Protected Matters Search Tool,
    - Naturemap, and
    - Relevant technical reports for biological surveys undertaken in the local area.
- A likelihood of occurrence assessment for conservation significant flora and ecological communities identified in the vicinity of the survey area, including consideration of the distance of existing records to the survey area and the potential for appropriate habitat to occur within the survey area (MRIA, 2017a).

Field Survey

The field survey was undertaken by experienced botanists and included:

- Two flora and vegetation surveys; the first undertaken on three days between 21 June and 26 July 2017 and the second undertaken on 1 September 2017,
- Establishment of 10m^2 permanent quadrats following DBCA's *'Standard Operating Procedure (SOP) No. 6.1 – Establishing Vegetation Quadrats'* (DEC, 2009),
- Traversing all areas of native vegetation within each quadrat and collecting data on the presence of plant species, their cover abundance, structural composition of vegetation, vegetation condition using the Keighery (1994) scale, physical environment (soil details and landform), and presence/absence of disturbance (MRIA, 2017a).

Threatened Species Targeted Survey

Targeted surveys for two threatened orchid species were undertaken by experienced botanists and involved:

- Targeted searches for *Drakaea elastica* within areas of suitable habitat on 10 August 2017 by traversing transects at 5-10 metre spacing, and
- Targeted searches for *Caladenia huegelii* within areas of suitable habitat on 26 and 27 September 2017 by traversing parallel transects at 5-15 metres apart, with survey timing informed by observations of flowering individuals at known populations in nearby Jandakot Airport (MRIA, 2017a).

Vegetation Classification, Data Analysis, and Mapping

Vegetation Classification, data analysis, and mapping were undertaken following the field survey (MRIA, 2017a). The National Vegetation Information System (NVIS) (ESCAVI, 2003) classification system was used to map and describe the vegetation types at a Level VI sub-association scale and vegetation types were defined by analysing floristic data using cluster dendrograms and similarity indices (MRIA, 2017a). The FCT was inferred by the most similar Swan Coastal Plain quadrat datasets (Keighery et al., 2012; Gibson et al., 1994) and the quadrat information from the field survey and desktop study (MRIA, 2017a). Patches of vegetation that may represent the Banksia Woodlands TEC were assessed using the patch size and condition thresholds outlined in the '*Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community*' (DoEE, 2016).

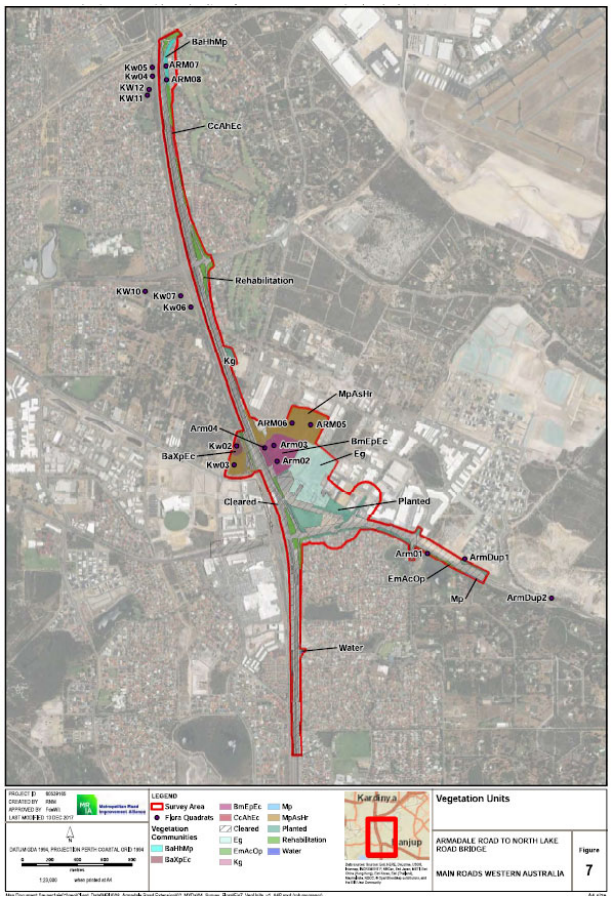

Figure 13. Vegetation type mapping within the Armadale Road to North Lake Road Bridge Project study area (MRIA, 2017a).

Figure 14. Vegetation condition mapping within the Armadale Road to North Lake Road Bridge Project study area (MRIA, 2017a).

Figure 15. Banksia Woodlands of the Swan Coastal Plain TEC mapping within the Armadale Road to North Lake Road Bridge Project study area (MRIA, 2017a).

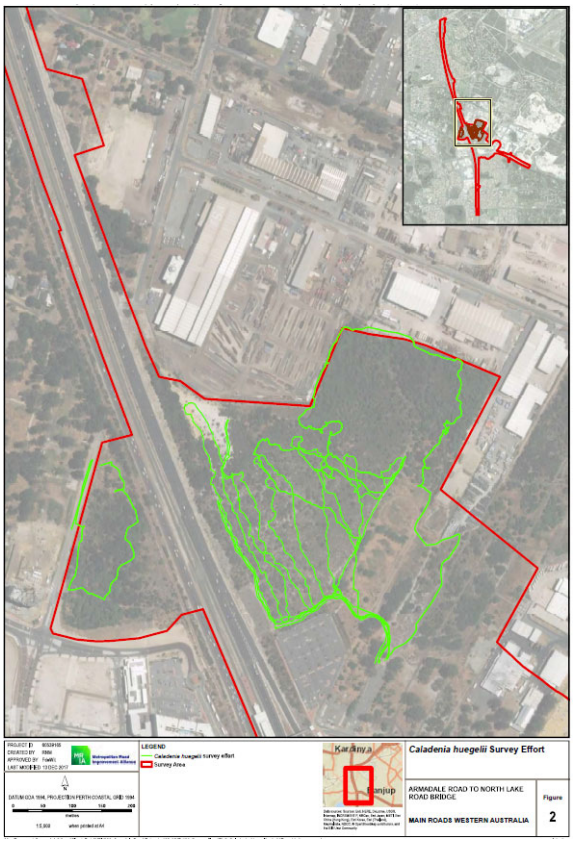

Figure 16. Targeted survey effort for *Caladenia huegelii* within the Armadale Road to North Lake Road Bridge Project study area (MRIA, 2017a).

Level 1 Fauna and Targeted Black Cockatoo Surveys (MRIA, 2017b)

Main Roads Western Australia commissioned the *'Level 1 Fauna and Targeted Black Cockatoo Surveys: Armadale Road to North Lake Road Bridge Project'* (MRIA, 2017b) to characterise and quantify the fauna habitat and potential environmental impacts within the survey area (extending from Armadale Road at Tapper Road to North Lake Road and includes the southbound collector distributor (CD) roads from Berrigan Drive to approximately 1.6 kilometres south of Armadale Road), which included the vegetation within the CPS 10068/1 application area. The *'Level 1 Fauna and Targeted Black Cockatoo Surveys: Armadale Road to North Lake Road Bridge Project'* included a desktop assessment, field survey, and targeted black cockatoo survey (MRIA, 2017b). The survey effort, fauna habitat mapping, and black cockatoo habitat mapping are provided in Figures 17-19 below.

Desktop Assessment

The desktop study was undertaken by experienced ecologists and involved the following:

- A review of databased sources and other biological surveys undertaken in the local area, including DBCA Threatened and Priority flora and communities database, Protected Matters Search Tool, and Naturemap, and
- A likelihood of occurrence assessment for conservation significant fauna identified in the vicinity of the survey area, including consideration of the distance of existing records to the survey area and the potential for appropriate habitat to occur within the survey area (MRIA, 2017b).

Field Survey

The field survey was undertaken in accordance with the '*Guidance for Assessment of Environmental Factors: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia'* (EPA, 2016) and *'Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment'* (EPA, 2016), and included:

- A Level 1 fauna survey undertaken by experienced ecologists from 24 to 28 July 2017,
- Traversing the survey area and assessing changes in habitat features to develop fauna habitat mapping, including recording of location, habitat description, habitat condition and disturbance types, dominant flora species and vegetation, presence of habitat variables such as hollows, fallen logs, and rock crevices, and connectivity of habitat,
- Thorough microhabitat searches of areas of leaf litter, bark, fallen logs, rocks, rubbish and building materials in areas of high abundance, and
- Opportunistic observations and secondary signs of fauna within the survey area (MRIA, 2017b).

Targeted Black Cockatoo Survey

The targeted black cockatoo survey was undertaken in accordance with the '*EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species'* (Commonwealth of Australia, 2012) and '*Revised Draft Referral Guidelines for Three Threatened Black Cockatoo Species'* (DoEE, 2017), and included traversing the survey area to:

- Quantify potential breeding and roosting trees,
- Search for evidence of foraging, breeding, and roosting, and
- Assess the quality of foraging habitat using the DoEE (2017) foraging habitat scoring tool MRIA, 2017b).

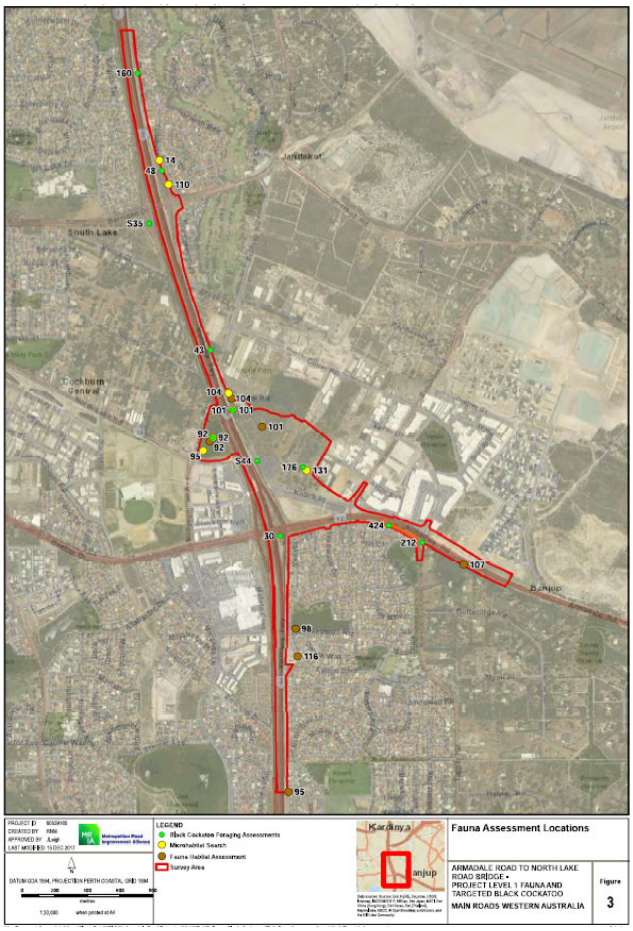

Figure 17. Fauna survey effort within the Armadale Road to North Lake Road Bridge Project study area (MRIA, 2017b).

Figure 18. Fauna habitat mapping within the Armadale Road to North Lake Road Bridge Project study area (MRIA, 2017b)

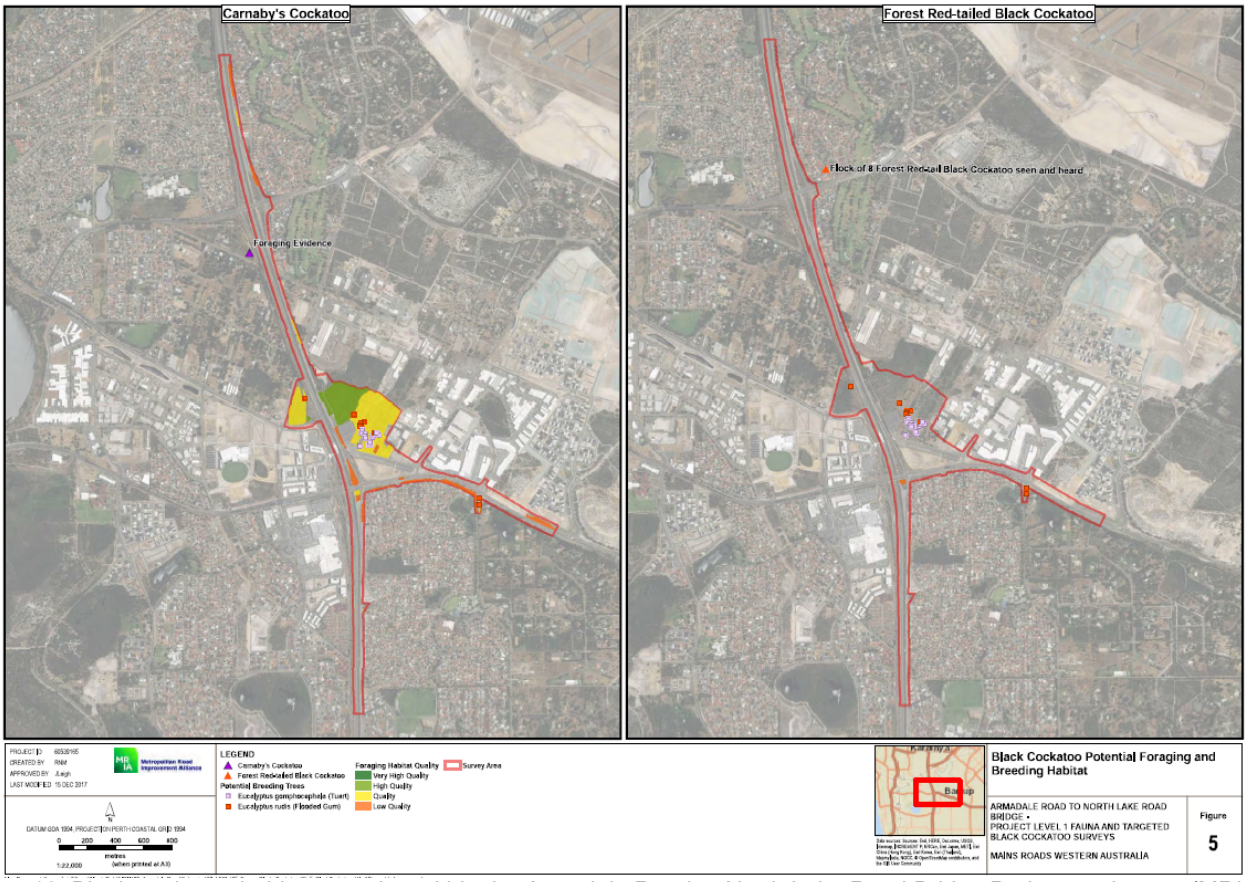

Figure 19. Black cockatoo habitat mapping within the Armadale Road to North Lake Road Bridge Project study area (MRIA, 2017b).

Cockburn Central East Local Structure Plan Area Level 1 Flora and Fauna Assessment (Focused Vision, 2016)

The City of Cockburn commissioned the *'Cockburn Central East Local Structure Plan Area Level 1 Flora and Fauna Assessment'* (Focused Vision, 2016) over the Cockburn Central East Local Structure Plan area (the study area), which included the vegetation within the CPS 10068/1 application area. The *'Cockburn Central East Local Structure Plan Area Level 1 Flora and Fauna Assessment'* involved a desktop study and level one field assessment (Focused Vision, 2016), carried out in accordance with:

- *'Guidance for Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia'* (EPA, 2014),
- *'Technical Guide – Terrestrial Vertebrate Flora and Vegetation Surveys for Environmental Impact Assessment'* (EPA and DPAW, 2015),
- *'Guidance for Assessment of Environmental Factors: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia'* (EPA, 2016),
- *'Technical Guide – Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment'* (EPA, 2016), and
- '*EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species'* (Commonwealth of Australia, 2012).

The survey effort and mapping are provided in Figures 20-23 below.

Desktop Study

The desktop study was undertaken by an experienced ecologist and an experience zoologist and involved the following:

- A review of databased sources and other biological surveys undertaken in the local area, including;
    - Naturemap,
    - EPBC Protected Matters Search Tool,
    - Spatial data provided by the City of Cockburn,
    - DPAW database search results for threatened and priority flora, threatened and priority vertebrate fauna, threatened and priority ecological communities, and
    - Relevant technical reports for surveys undertaken in the local area.
- A likelihood of occurrence assessment for conservation significant flora and ecological communities identified in the vicinity of the survey area, including consideration of the distance of existing records to the survey area and the potential for appropriate habitat to occur within the survey area (Focused Vision, 2016).

Field Survey

The field survey was undertaken by an experienced ecologist and an experience zoologist, and included:

- A single-phase Level 1 flora and vegetation assessment:
    - Flora and vegetation assessment was undertaken on 27 and 29 September 2016,
    - Field data including vegetation structure, condition, and diversity, was collected from five non-permanent quadrats to characterise vegetation in Good (Keighery, 1994) condition or better and from relevès in areas of degraded vegetation,
    - Flora identifications were undertaken by a specialist taxonomist, and
    - Vegetation communities present within the study area were described to NVIS Level 5 and spatial extents of these communities were digtised based on georeferenced aerial imagery and geo-tagged photographs (Focused Vision, 2016).
- A Level 1 fauna assessment:
    - A daytime assessment using site traverses was undertaken on 27 September 2016,
    - Fauna habitats present within the survey area were described based on site observations and community data, as well as habitat aspects such as soil, rocks, bare ground, leaf litter, tree hollows, and proximity to surface water, and
    - Direct and secondary evidence of fauna activity was opportunistically recorded during traverses of the site (Focused Vision, 2016).
- A targeted black cockatoo habitat assessment:
    - A daytime reconnaissance assessment using site traverses and a visit to the site at dusk was undertaken on 27 September 2016,
    - A habitat tree survey was undertaken to identify and quantify suitable breeding and roosting trees within the survey area,
    - Identified hollows were examined using binoculars for evidence of use,
    - Direct and indirect evidence of black cockatoos roosting within trees was noted, if observed, and
    - The location and nature of black cockatoo foraging were recorded (Focused Vision, 2016).

Figure 20. Vegetation community mapping within the Cockburn Central East Local Structure Plan area (Focused Vision, 2016).

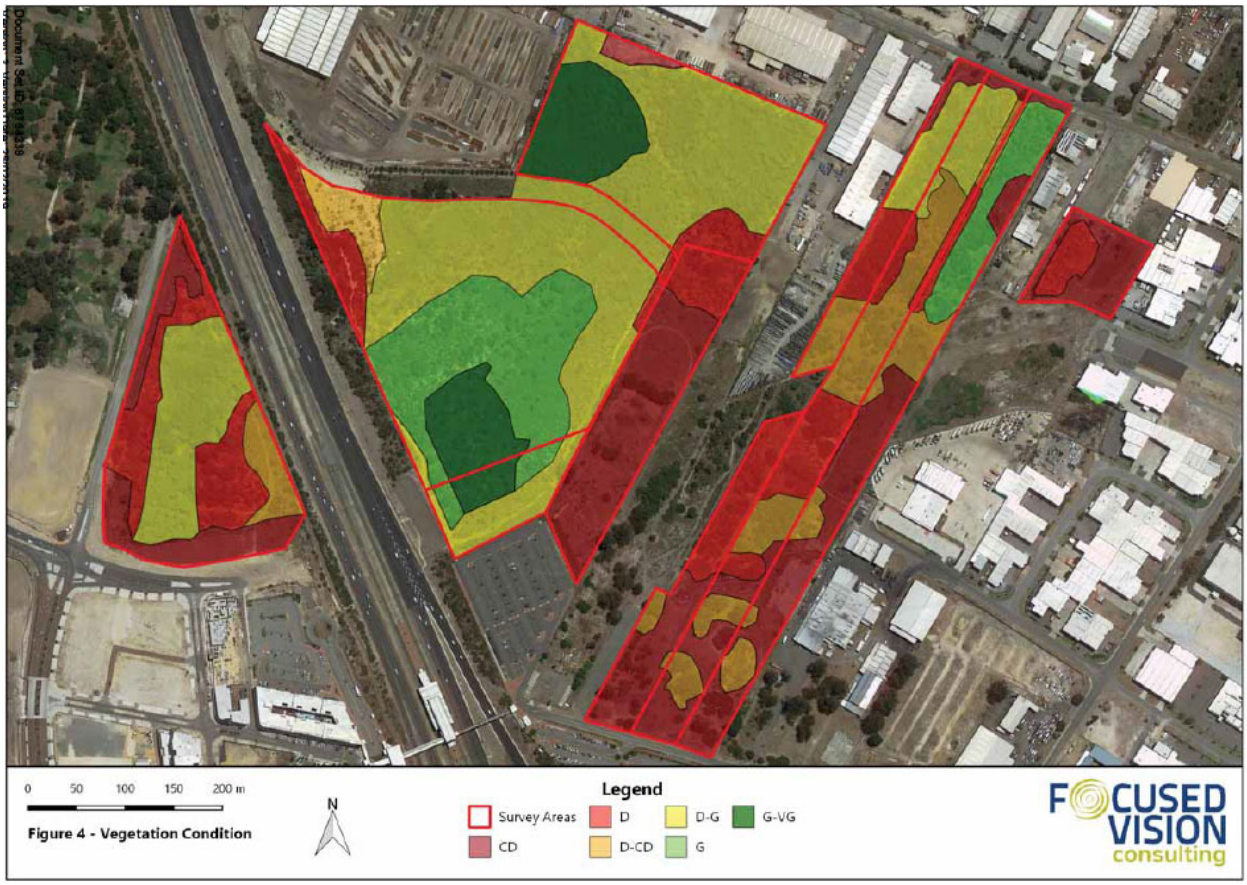

Figure 21. Vegetation condition mapping within the Cockburn Central East Local Structure Plan area (Focused Vision, 2016).

Figure 22. Fauna habitat mapping within the Cockburn Central East Local Structure Plan area (Focused Vision, 2016).

Figure 23. Habitat tree mapping within the Cockburn Central East Local Structure Plan area (Focused Vision, 2016).

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)
- Bush Forever Areas 2000 (DPLH-019)
- Cadastre (LGATE-218)
- Consanguineous Wetlands Suites (DBCA-020)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- DBCA Statewide Vegetation Statistics
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments - Catchments (DWER-028)
- Hydrographic Catchments - Divisions (DWER-029)
- Hydrography, Linear (Hierarchy) (DWER-031)
- 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 (DPIRD-006)
- 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 (DPIRD-027)
- Soil Landscape Mapping – Systems (DPIRD-064)
- Vegetation Complexes - Swan Coastal Plain (DBCA-046)

Restricted GIS Databases used:

- Conservation Covenants Western Australia (DPIRD-023)
- Contaminated Sites Database - Restricted (DWER-073)
- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
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