



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 9796/1
Permit Holder:	Shire of Chittering
Duration of Permit:	From 31 August 2023 to 31 August 2033

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

PART I – CLEARING AUTHORISED

1. Clearing authorised (purpose)

The permit holder is authorised to clear *native vegetation* for the purpose of constructing mountain bike trails.

2. Land on which clearing is to be done

Lot 3874 on Deposited Plan 175546, Bindoon
Lot 801 on Deposited Plan 423293, Bindoon

3. Clearing authorised

The permit holder must not clear more than 2.3 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

4. Period during which clearing is authorised

The permit holder must not clear any *native vegetation* after 31 August 2028.

PART II – MANAGEMENT CONDITIONS

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

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

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

6. Weed and dieback management

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

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

7. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner towards adjacent *native vegetation* to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

8. Retention of habitat trees

- (a) Immediately prior to undertaking any clearing authorised under this permit, the permit holder must identify, photograph and record all *Eucalyptus* spp. and marri (*Corymbia calophylla*) trees with a diameter at breast height of 200 millimetres or greater within the *proposed clearing footprint* of the area cross-hatched yellow in Figure 1 of Schedule 1.
- (b) The permit holder must retain all *Eucalyptus* spp. and marri (*Corymbia calophylla*) trees with a diameter at breast height of 200 millimetres or greater as identified in condition 8(a).
- (c) Within two months of completing the clearing authorised under this permit within the combined areas cross-hatched yellow on Figure 1 of Schedule 1, the permit holder must provide a report to the *CEO* including the following:
 - (i) the location of all *Eucalyptus* spp. and marri (*Corymbia calophylla*) trees with a diameter at breast height of 200 millimetres or greater identified and retained within the *proposed clearing footprint*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings.
 - (ii) photographs of all *Eucalyptus* spp. and marri (*Corymbia calophylla*) trees retained within the *proposed clearing footprint*, taken after completing the clearing authorised under this permit.

9. Mitigation – Rehabilitation

- (a) The permit holder must *rehabilitate* 6.77 hectares of *native vegetation* within the area cross-hatched red in Figure 1 of Schedule 2 (Lot 3874 on Deposited Plan 175546) of this permit, of which provides suitable foraging habitat for Carnaby's black cockatoo (*Zanda latirostris*) and forest red-tailed black cockatoo species (*Calyptorhynchus banksii naso*).
- (b) The *rehabilitation* required under condition 9(a) of this permit, must be undertaken in accordance with the *Revegetation Plan* prepared by Natural Area (Natural Area, 2023), including but not limited to the following:

- (i) undertake *direct seeding* and tubestock *planting* at an *optimal time*, using species listed in Table 1 of Schedule 2 (Target species) as per Table 2 of Schedule 2 (Planting density);
- (ii) install seven cockatoo foraging nodes using species listed in Table 1 of Schedule 2 (Target species) as per Table 2 of Schedule 2 (Planting density) at an *optimal time*;
- (iii) undertake *weed* control activities to maintain the minimum criteria specified in Table 3 of Schedule 2 (Completion criteria);
- (iv) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the rehabilitation areas;
- (v) establish at least five 10 x 10 metre quadrat monitoring sites within *rehabilitated* areas;
- (vi) monitor quadrats specified in condition 9(b)(v) annually until the completion criteria as per Table 3 of Schedule 2 (Completion criteria) has been met and maintained for a minimum of two years;
- (vii) undertake remedial actions for *rehabilitation* areas where monitoring indicates the completion criteria, outlined in Table 3 of Schedule 2 (Completion criteria), has not been met including:
 - i. deliberately *planting native vegetation* that will result in the minimum targets specified in Table 3 of Schedule 2 (Completion criteria) ensuring only species listed in Table 1 of Schedule 2 (Target species) are used;
 - ii. undertake further *weed* control activities
- (viii) be maintained in accordance with the specifications detailed in the *Revegetation Plan*, for a period of at least ten years.
- (ix) where an *environmental specialist* has determined that the completion criteria, outlined in Table 3 Schedule 2 (Completion Criteria) has been met, that report is to be provided to the *CEO*.

PART III - RECORD KEEPING AND REPORTING

10. 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	<ul style="list-style-type: none"> (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 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings; (c) direction of clearing (d) the date that the area was cleared; (e) the size of the area cleared (in hectares);

No.	Relevant matter	Specifications
		<p>(f) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5;</p> <p>(g) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 6; and</p> <p>(h) actions taken in accordance with condition 8.</p>
2.	In relation to <i>rehabilitation</i> pursuant to condition 9	<p>(a) a description of the <i>rehabilitation</i> activities undertaken;</p> <p>(b) the size of the areas <i>rehabilitated</i> (in hectares);</p> <p>(c) the date that <i>rehabilitation</i> works began;</p> <p>(d) any remediation works undertaken; and</p> <p>(e) the date that completion criteria are considered to be met.</p>

11. Reporting

The permit holder must provide to the *CEO* the records required under condition 10 of this permit when requested by the *CEO*.

DEFINITIONS

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

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
direct seeding	means a method of re-establishing vegetation through establishment of a seed bed and the introduction of seeds of the desired plant species
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the <i>CEO</i> as a suitable environmental specialist.
EP Act	<i>Environmental Protection Act 1986</i> (WA)

Term	Definition
fill	means material used to increase the ground level, or to fill a depression.
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 optimal time for undertaking direct seeding and planting for that region.
planting(s)/plant	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
proposed clearing footprint	means the immediate area of clearing required for the construction of the mountain bike trails and 1 metre either side of these trails.
Revegetation Plan	means the revegetation plan produced by Natural Area Holdings Pty Ltd for this permit and approved by the <i>CEO</i> (Natural area, 2023).
rehabilitate/rehabilitated/ rehabilitation	means actively managing an area containing native vegetation in order to improve the ecological function of that 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.
weed(s)	means any plant – <ul style="list-style-type: none"> (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; 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.

REFERENCES

Natural area (2023). *Bindoon Trails Network Offset Revegetation Plan*. Prepared on 26 May 2023 for the Shire of Chittering, Received by the department on 7 June 2023 (ref: DWERDT789533). Available at [Index of /permit/9796 \(dwer.wa.gov.au\)](https://www.dwer.wa.gov.au/index.php/permit/9796).

END OF CONDITIONS



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20
of the Environmental Protection Act 1986*

7 August 2023

Schedule 2

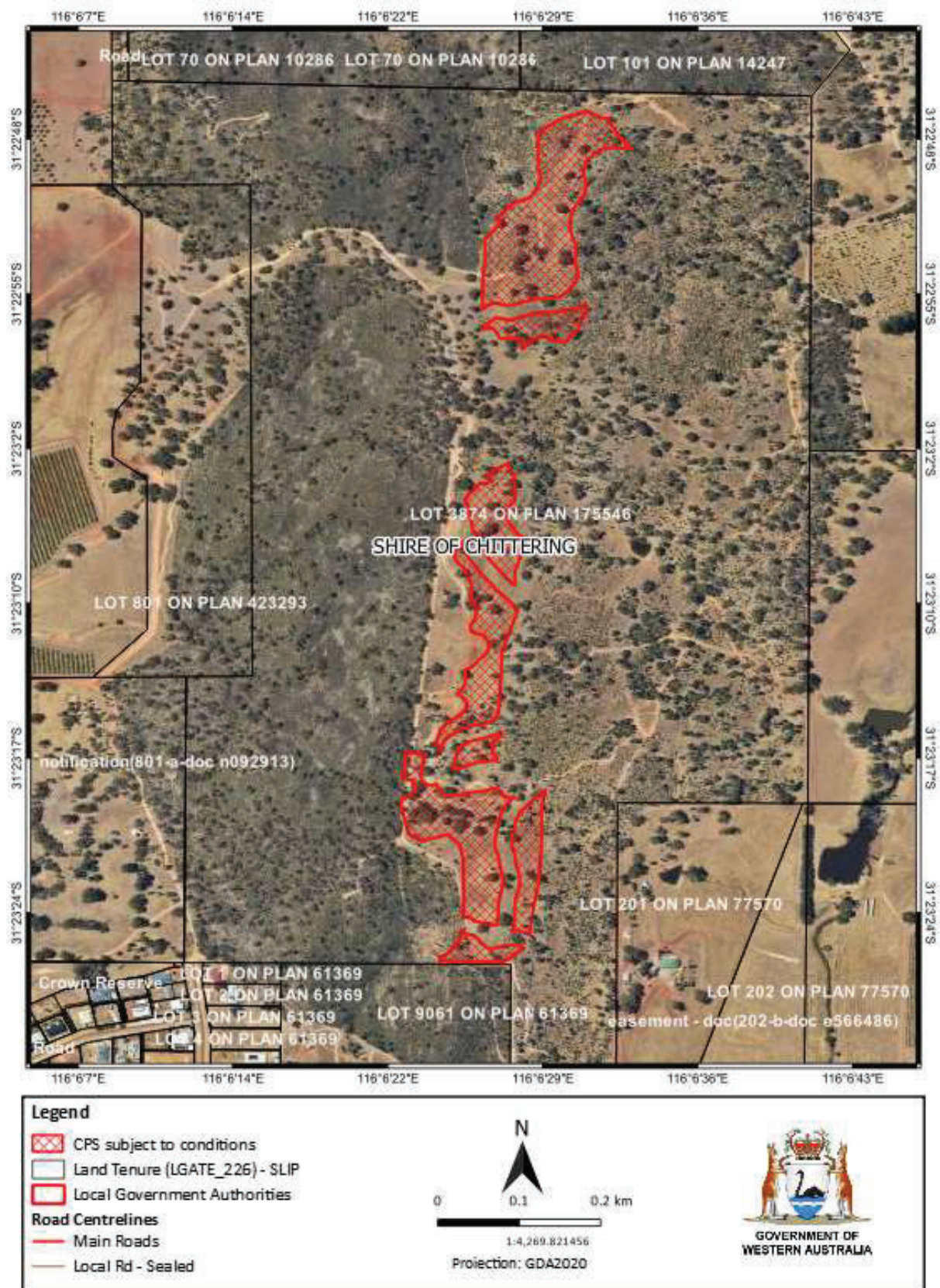


Figure 1: Map of the boundary of the area within which conditions occur

Target species

Table 1: Target species for tubestock supply and direct seeding for the *rehabilitation* within the areas cross-hatched red in Figure 1 of Schedule 2.

Species	Nursery	Seed	Strata (upper, middle or lower)	Max height (m)	Cockatoo value F (Foraging), N (Nesting), R (Roosting), U (Unknown)
<i>Corymbia calophylla</i>	x	x	Upper	60	F,N,R
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	x	x	Upper	15	F,N,R
<i>Acacia pulchella</i> var. <i>goadbyi</i>		x	Mid	1.5	F
<i>Allocasuarina humilis</i>	x	x	Mid	2	F
<i>Banksia fraseri</i>	x		Mid	6	F
<i>Calothamnus sanguineus</i>		x	Mid	2	F
<i>Daviesia horrida</i>	x	x	Mid	2	F
<i>Gastrolobium calycinum</i>		x	Mid	1.5	F
<i>Grevillea bipinnatifida</i>	x		Mid	1	F
<i>Grevillea pilulifera</i>	x		Mid	1	F
<i>Hakea incrassata</i>	x		Mid	1.5	F
<i>Hakea lissocarpa</i>	x		Mid	1.5	F
<i>Hakea trifurcata</i>	x		Mid	3	F
<i>Hakea undulata</i>	x		Mid	2	F
<i>Hypocalymma angustifolium</i>	x		Mid	1.5	U
<i>Melaleuca radula</i>	x		Mid	2.4	F
<i>Lysiandra calycina</i>	x		Mid	1.2	U
<i>Synaphea acutiloba</i>	x		Mid	1	U
<i>Trymalium ledifolium</i>	x		Mid	2.5	U
<i>Verticordia acerosa</i>	x	x	Low	0.5	U
<i>Banksia bipinnatifida</i> subsp. <i>multifida</i>	x		Low	0.3	F
<i>Haemodorum laxum</i>		x	Low	1	U
<i>Banksia dallanneyi</i>	x		Low	0.5	F
<i>Darwinia thymoides</i>	x		Low	0.3	F
<i>Stypandra glauca</i>	x		Low	0.3	U

Planting density

Table 2: Plant installation density for the *rehabilitation* within the areas cross-hatched red in Figure 1 of Schedule 2.

Species	Target stems/m ²	Proposed quantities	
		tubestock (each)	seed (kg)
Tubestock installation	0.25	16,925	-
Direct seeding	1.00	-	27.0
Cockatoo foraging nodes (200 m ² nodes)	0.01	700	-
Herbaceous annuals	0.25	-	2.0
Total	1.51	17,625	29.0

Completion Criteria

Table 3: Completion criteria for the *rehabilitation* within the areas cross-hatched red in Figure 1 of Schedule 2.

Financial Year	Project Stage	Goals	Completion Criteria
2023 - 2024	Project inception, planning, site preparation and procurement of consumables (plants) and seed collection		
2024 - 2027	Initial Implementation		
	Establishment, maintenance, and adaptive management		
2027 - 2028	Maintenance & completion of establishment period	Revegetate Degraded and Completely Degraded vegetation to Good condition increasing connectivity between remnant vegetation pockets.	1. Weed coverage is less than 20 %.
	Final monitoring event to determine completion criteria has been reached	Establish 6.77 ha of vegetation which provides short, medium, and longterm benefit to Black Cockatoo species with a primary focus on establishing foraging habitat.	2. Native stem density achieves an average of 0.5 stems per m ² or at least 70 % coverage.
		Land manager legislative obligations are considered.	3. Species richness consists of a diversity count of ≥13 species, excluding herbaceous annuals (76% of the target attributes).
			4. No Weeds of National Significance (WoNS) or Declared Pest plant species present within the offset area

Financial Year	Project Stage	Goals	Completion Criteria
		Support natural gregarious Black Cockatoo foraging behavior by establishing nodes of dense foraging sites within the offset project area.	5. Five 200 m ² foraging nodes represented within the 6.77 ha. 6. Each foraging node contain a minimum of 50 established plants of known foraging species of the same taxon.
2028 - 2031	General maintenance, and weed control		



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9796/1
Permit type:	Purpose permit
Applicant name:	Shire of Chittering
Application received:	6 July 2022
Application area:	2.30 hectares of native vegetation within a 100.76 hectare clearing footprint
Purpose of clearing:	Constructing mountain bike trails
Method of clearing:	Mechanical clearing
Property:	Lot 3874 on Deposited Plan 175546 Lot 801 on Deposited Plan 423293
Location (LGA area/s):	Chittering
Localities (suburb/s):	Bindoon

1.2. Description of clearing activities

The area proposed to be cleared is part of a large patch of native vegetation. The proposed clearing is for the installation of multiple mountain bike trails within the 100.76 hectare clearing footprint (see Figure 1, Section 1.5).

According to the Shire of Chittering's (the Shire) business case, the need for this project is centred around:

- the growing popularity of mountain biking and the inability of existing trails in WA to keep up with demand, as well as the lack of trails north of Perth,
- the opportunity for WA to become a cycle tourism destination,
- the opportunity for the first mountain bike park north of Perth,
- the opportunity for an urban mountain bike park to be placed in Bindoon, given the natural assets and proximity to the major population centre of Perth,
- the link to the long term ecotourism intentions to make the Chittering Region an attractive cycle and trails destination, as part of the development of the tourism industry in this region,
- the economic benefits that the project will deliver to Bindoon and the wider regional and national economy, and
- the environmental and social benefits of the project, particularly to users, in terms of health and wellbeing (Shire of Chittering, 2022a),

A feasibility study conducted on this proposed project found that the proposed development of a world-class adventure tourism attraction in Bindoon may significantly elevate the tourism status, overall brand awareness, and consumer market appeal to the Chittering Valley (Breakaway tourism Pty Ltd, 2019).

1.3. Decision on application

Decision:	Granted
Decision date:	7 August 2023
Decision area:	2.3 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 (the department) advertised the application for 21 days and one submission was received. Consideration of matters raised in the public submission 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 G.1), the findings of biological surveys (see Appendix F), 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 consider that the project aims to establish broader community benefits by increasing local tourism and stimulating interactions with the surrounding landscape.

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable foraging habitat for Carnaby's and forest red-tailed black cockatoos, and
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that some of the impacts of the proposed clearing, including the potential to facilitate the introduction of weeds and dieback, can be minimised and managed to unlikely lead to an unacceptable risk to environmental values through permit conditioning. However, impacts to foraging habitat for black cockatoos remained significant even after the application of avoidance and minimisation measures, and constituted a significant residual impact.

The Delegated Officer determined that the following measures was sufficient to counterbalance the significant residual impacts of the proposed clearing:

- The revegetation of 6.77 hectares of native vegetation which provides foraging habitat to black cockatoo species within Lot 3874, to mitigate the loss of 2.3 hectares of native vegetation suitable for black cockatoo foraging.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback,
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity,
- the retention of all mature trees (DBH >200 mm) present within the proposed clearing area, and
- undertake revegetation of 6.77 hectares of vegetation from completely degraded to good condition that provides black cockatoo foraging habitat.

1.5. Site map

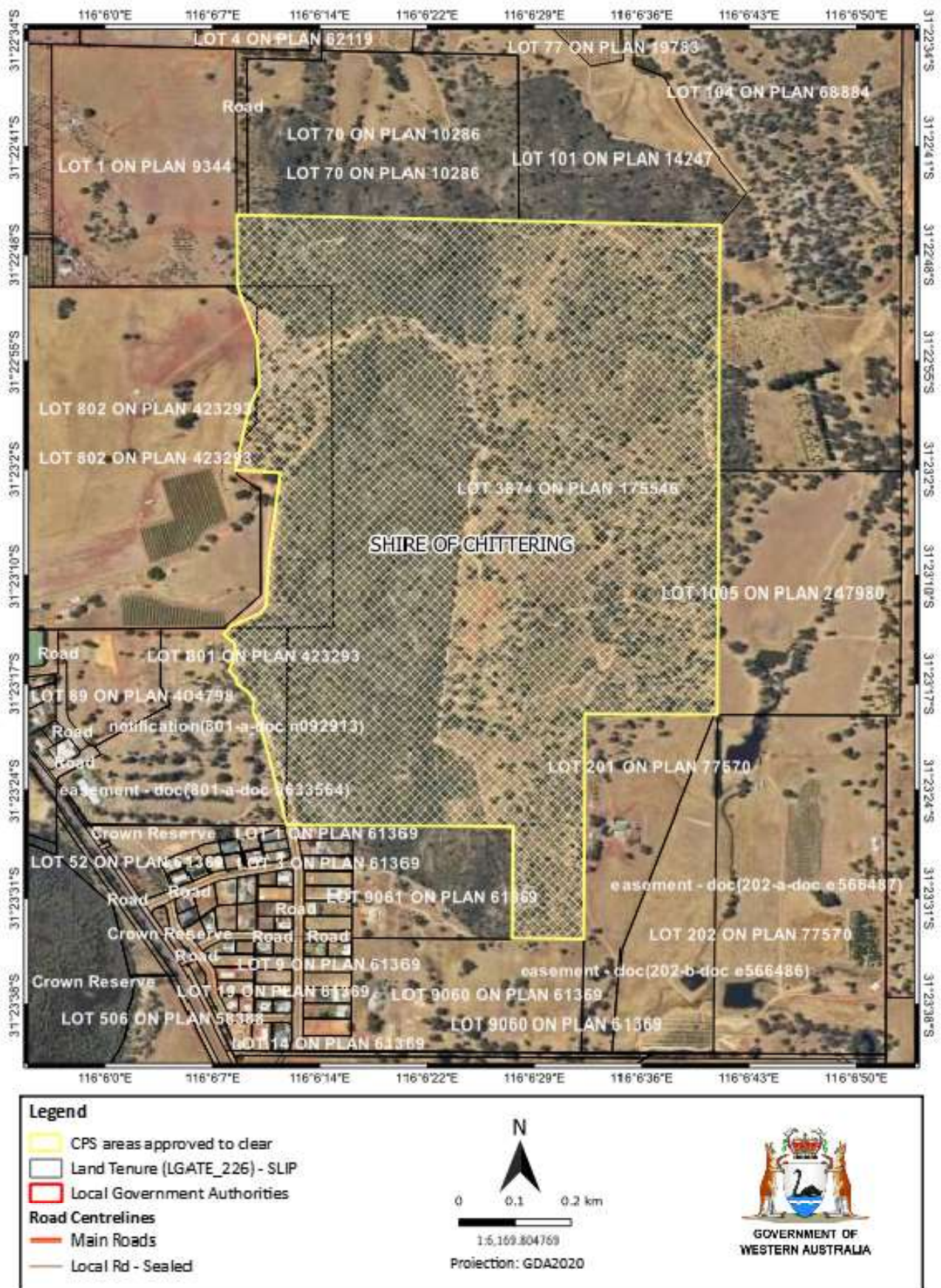


Figure 1 Map of the application area

2 The areas crosshatched yellow indicate the areas authorised to be cleared under the granted clearing permit. 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 principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

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

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011)

The key guidance documents which inform this assessment are:

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

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating avoidance measures undertaken, including (Shire of Chittering, 2022b):

- avoidance of all habitat trees
- erosion is to be mitigated through the use of contouring tracks to the existing slope and aspect of the site.
- the Shire will impose the requirement for submission and implementation of a Construction Environmental Management Plan for persons undertaking the construction of bike trails, to ensure activities will be managed to ensure environmental impacts will be avoided or mitigated.
- the Environmental Management Plan will include the following:
 - Detailed Works Methods
 - on-ground works being undertaken
 - project schedules
 - Site Access and Layouts
 - Protection of the environment in terms of the following
 - waste management and recycling
 - noise and dust management
 - fauna management
 - environmental incident management plan

According to the Shire's business plan (Shire of Chittering, 2022a), the Shire has undertaken considerable stakeholder engagement and consultation throughout the development of this project. During the feasibility study in 2019 (Shire of Chittering, 2019), consultation included a 'Proposed Bindoon Mountain Bike Park' public consultation survey undertaken in April 2019. This survey was distributed to stakeholders, schools in the Perth metropolitan and local area and via social media. There was a total of 824 respondents to the survey from across Western Australia and an overwhelming support for the project (96.1 per cent were interested in using the facility). In addition, the Shire conducted further consultation in August 2020, with an extensive community consultation process undertaken to maximise community engagement (Shire of Chittering, 2022a).

After consideration of avoidance and mitigation measures, it was determined that further avoidance and/or mitigation measures were required to counterbalance the significant residual impacts to black cockatoo habitat. To mitigate the loss of 2.3 hectares of native vegetation that provides foraging habitat for black cockatoos, the Shire has committed

to the revegetation of 6.77 hectares of vegetation surrounding the proposed clearing area within Lot 3874 (see Appendix F).

A revegetation plan was submitted by the Shire (Natural area, 2023a) detailing methods of the revegetation of 6.77 hectares that aims to:

- revegetate degraded and completely degraded vegetation to good condition (Keighery, 1994).
- establish 6.77 hectares of vegetation which provides short, medium and long-term benefit to black cockatoo species with a primary focus on establishing foraging habitat.
- support natural gregarious black cockatoo foraging behaviour by establishing nodes of dense foraging sites within the offset area.
- increase connectivity of habitat by establishing vegetation within degraded and completely degraded areas to link areas of remnant good, very good and excellent condition vegetation.

An assessment of the revegetation was undertaken using the WA Environmental Offsets Metric and having consideration for the Environmental Offsets Policy (2011) and the Environmental Offsets Guidelines (2014). To ensure adequate suitability of the revegetation balancing the significant residual impact of the loss of foraging habitat, the calculation identified that the revegetation of 6.77 hectares of vegetation of black cockatoo foraging species within Lot 3874 would be sufficient to ensure that no significant residual impacts remain.

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

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 and adjacent flora and 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

The proposed clearing area is located within the Jarrah Forest IBRA region of Western Australia. Biological surveys commissioned by the Shire resulted in three vegetation types mapped across the application area (Natural area, 2021): *Corymbia calophylla* and *Eucalyptus wandoo* subsp. *wandoo* open woodland; *Corymbia calophylla* and *Eucalyptus wandoo* subsp. *wandoo* cleared open farmland; and *Eucalyptus accedens* woodland.

Within the local area (10 kilometre radius of the application area), 18 conservation significant fauna species have been recorded. Of these, 10 species occur within either saltmarshes, freshwater or coastal habitats not represented within the application area. In determining the likelihood of conservation significant fauna occurring within the proposed clearing area, consideration was given to the results of the preferred habitat types, proximity of records to the application area, and the type and condition of the vegetation within the application area.

From the likelihood assessment, the application area is considered to comprise suitable habitat for six conservation significant fauna species:

- *Zanda latirostris* (Carnaby's black cockatoo), listed as Endangered under the EPBC Act and BC Act;
- *Zanda baudinii* (Baudin's black cockatoo), listed as Endangered under the EPBC Act and BC Act;
- *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo), listed as Vulnerable under the EPBC Act and BC Act;
- *Dasyurus geoffroii* (chuditch), listed as Vulnerable under the EPBC Act and BC Act;
- *Notamacropus Irma* (western brush wallaby), listed as Priority 4 by DBCA; and
- *Isodon fusciventer* (quenda), listed as Priority 4 by DBCA.

Black cockatoos

The application area is located within the mapped breeding distribution of Carnaby's black cockatoo, the mapped vagrant distribution of the forest red-tailed black cockatoo and 30 kilometres north of the mapped distribution for Baudin's black cockatoo. Collectively, these species are referred to as black cockatoos. Habitat requirements for

black cockatoos can be considered in terms of breeding, roosting and foraging habitat. Black cockatoos are known to nest in hollows of live and dead trees, including marri (*Corymbia calophylla*), jarrah (*Eucalyptus marginata*), karri (*Eucalyptus diversicolor*), wandoo (*Eucalyptus wandoo*), tuart (*Eucalyptus gomocephala*), flooded gum (*Eucalyptus rudis*), and other *Eucalyptus* spp. (Commonwealth of Australia, 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 300 - 500 millimetres depending on the tree species (Commonwealth of Australia, 2022).

While breeding, black cockatoos will generally forage within a 6 to 12-kilometre radius of their nesting site (Commonwealth of Australia, 2012). Given the application area is within the known breeding range for Carnaby's black cockatoo, it is a suitable location for breeding if appropriate hollows are present. According to available databases, the closest confirmed breeding site for Carnaby's black cockatoo is approximately 6.2 kilometres northwest of the application area. According to available datasets, mapped black cockatoo foraging habitat is recorded within a 12-kilometre radius of the application area. Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore viewed in the context of known breeding and night roosting sites, particularly within 12 kilometres of an impact area (Commonwealth of Australia, 2022).

Carnaby's cockatoos primarily forage on native shrubland, kwongan heathland and eucalypt woodland and forest that contains foraging species such as proteaceous plant species (*Banksia* spp., *Hakea* spp. and *Grevillea* spp.), as well as *Callistemon* spp. and Marri. Forest red-tailed black cockatoos primarily forage on seeds of Jarrah and Marri in woodlands and forest, and edges of Karri forests, including Wandoo and Blackbutt.

A basic fauna survey was conducted in 2021 across the application area (Natural area, 2021). During this survey, black cockatoo habitat was recorded and Carnaby's black cockatoos were observed flying over the site. A follow up black cockatoo habitat assessment was conducted for the application area in 2022 (Natural area, 2023b) in accordance with the *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black cockatoo* (Commonwealth of Australia, 2022). The assessment included:

- foraging habitat assessment: the quality of potential black cockatoo foraging habitat was noted, with presence of any feed residue observed.
- roosting habitat survey: direct and indirect evidence of black cockatoos roosting within trees on site were noted if observed.
- a suitable Diameter at Breast Height (DBH) tree survey – notes were taken on tree species size, and the number, height and size of hollows classified.

The black cockatoo habitat assessment recorded a total of 466 trees with diameter at breast height (DBH) greater than 300 millimetres. Of these, 92 trees were observed to have hollows, of which, 43 trees contained hollows that may be suitable for black cockatoo breeding based on the size of entrance and angle of entry (Natural area, 2023b; Appendix F). The application area was considered to contain potential roosting habitat due to the presence of tall mature trees, a nearby water source (Brockman River), and favourable foraging species within the site (Natural area, 2023b). The Shire has committed to the retention of all trees with a DBH greater than 200 millimetres. The retention of all large trees within Lot 3874 will not significantly impact any black cockatoo breeding or roosting habitat.

A black cockatoo foraging habitat scoring tool (Commonwealth of Australia, 2022) was applied to determine the quality of black cockatoo foraging habitat present within the application area. This scoring tool assigns a habitat score between one and ten, with a score of ten representing the maximum possible score and very high quality of foraging habitat. Contextual adjustors (attributes that improve or reduce functionality of foraging habitat) such as presence of foraging evidence and proximity to known breeding and roosting sites, were considered and used to evaluate habitat quality. The site was assessed to be of high foraging habitat quality (score of 10) for all three species of black cockatoos based on the Commonwealth foraging quality scoring tool (Natural area, 2023b; Commonwealth of Australia, 2022).

The Shire of Chittering are proposing to remove 2.3 hectares of understorey vegetation for the construction of bike trails (see Appendix F). While no mature trees are proposed to be cleared, the understorey vegetation consists of high quality black cockatoo foraging habitat. To mitigate the loss of 2.3 hectares of native vegetation, the Shire has proposed to revegetate 6.77 hectares of surrounding vegetation within Lot 3874 to maintain dispersal function within the area and ensure the clearing will not contribute to the decline of black cockatoo foraging habitat.

The department has assessed the suitability of this mitigation measure. The mitigation revegetation proposed was input into the WA Environmental Offsets Metric Calculator to determine the area required to mitigate the loss of 2.3 hectares. From this, the revegetation of 6.77 hectares was determined to be a suitable mitigation measure. A

significant residual impact does not remain following the mitigation revegetation. The department considers that the mitigation revegetation aligns with the WA *Environmental Offset Policy* (2011) and WA *Environmental Offsets Guideline* (2014).

Ground-dwelling fauna

Quenda (*Isodoon fusciventer*) 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). According to available databases, a total of 38 records occur within the local area, of which, the closest record is 0.65 kilometres from the application area. The western brush wallaby (*Notamacropus irma*) is usually associated with tall open forests or woodlands that are seasonally damp with low grasses and open scrub. According to available databases, one record occurs within the local area, 0.37 kilometres from the application area. Chuditch (*Dasyurus geoffroii*) are known to occupy a range of habitats including jarrah forests, eucalypt woodlands, mallee shrublands and heathland. They require den resources such as tree hollows, hollow logs, burrows or rock crevices. According to available databases, a total of seven records occur within the local area, of which, the closest record is 1.73 kilometres from the application area.

Given a majority of the application area is mapped as either 'open woodland', 'open farmland' or 'cleared' (Natural area, 2021), the amount of dense scrub and understorey required to provide suitable habitat for the above species is limited to small patches within the application area. Further, it is expected that individuals will be able to disperse into adjacent vegetation at the time of clearing, given the application of slow, progressive directional clearing. The clearing of 2.3 hectares within a larger 100.76 hectare footprint will ensure adequate areas for dispersal. The revegetation of 6.77 hectares within Lot 3874 will also increase the amount of suitable habitat within the broader Lot. Given the extent of the proposed clearing, the condition and type of the vegetation, the application area is not considered likely to comprise significant habitat for quenda, western brush wallaby or chuditch.

Ecological linkage

Given the extent of clearing within the local area, the application area may contribute towards fauna dispersal within the landscape. However, taking into consideration the relatively small extent of clearing proposed, 2.3 hectares within a 100.76 hectare footprint, and the vegetation that will remain within the reserve after the proposed clearing, it is not likely that the proposed clearing will have a significant impact to linkage and dispersal values of fauna within the local area. The proposed clearing may cause degradation of habitat values of adjacent and nearby remnant native vegetation by facilitating the spread of weeds and dieback. It is considered that the impact of clearing can be mitigated through a weed and dieback condition on the permit.

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 2.3 hectares of significant foraging habitat for black cockatoos. Given the revegetation proposed by the Shire within adjacent vegetation, the proposed clearing is not likely result in a significant residual impact.

The proposed clearing is not considered to impact significant habitat for the remaining conservation significant fauna that have been recorded in the local area. However, individuals may utilise the application area to disperse through the landscape and mechanical clearing activities may pose a risk of fauna fatalities should individuals occur within the application area. Slow, directional clearing to allow for dispersal of species into other areas of remnant vegetation will mitigate this risk.

Conditions

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

- slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of clearing activity,
- the retention of all mature trees (DBH > 200 mm) present within the proposed clearing area,
- revegetation of 6.77 hectares, which includes:
 - species suitable for foraging habitat for the endangered Carnaby's black cockatoo and the vulnerable forest red-tailed black cockatoo species.

3.2.2. Significant remnant vegetation– Clearing Principle (e)

Assessment

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

The application area is located within the Jarrah Forest IBRA region. The Jarrah Forest bioregion has approximately 4,506,660.25 hectares of native vegetation remaining, equating to approximately 53.25 per cent of its pre-European extent (Government of Western Australia 2019) (Appendix C.2). Southwest vegetation complex descriptions of Heddle et al, (1980) as updated by Webb et al. (2016) mapped two complexes over the application area:

- the 'Yalanbee' complex, described as *Eucalyptus wandoo* and *Eucalyptus accedens* woodlands overlapping adjacent complexes with minor occurrences of Wandoo-Marri and open forest of Jarrah-Marri woodlands, and,
- the 'Bindoon' complex, described as predominantly *Eucalyptus loxophleba*, flanked by Wandoo woodlands on the upper slopes. The occurrence of *Casuarina huegeliana* is associated with the rock outcrops.

The 'Yalanbee' and 'Bindoon' complexes retain approximately 46.54 per cent and 29.18 per cent of their pre-European extent respectively (Appendix C.2). The 'Bindoon' complex is therefore inconsistent with the national objectives and targets for biodiversity conservation in Australia.

The flora and vegetation survey conducted by Natural Area (2021) recorded three vegetation communities across the application area, consisting of *Corymbia calophylla* and *Eucalyptus wandoo* subsp. *wandoo* open woodland; *Corymbia calophylla* and *Eucalyptus wandoo* subsp. *wandoo* cleared open farmland; and *Eucalyptus accedens* woodland. The survey did not record any occurrences of *Eucalyptus loxophleba* within the proposed clearing area, however, *Allocasuarina huegeliana* (previously known as *Casuarina huegeliana*) was recorded as a minor occurrence. Given this, the vegetation within the application area is not considered representative of the 'Bindoon' complex.

Based on the above, and that the remnant vegetation within the local area retains 46.50 per cent of its pre-European extent, the vegetation proposed to be cleared is not considered to be a significant remnant of the 'Bindoon' complex nor is it considered a significant remnant within an extensively cleared landscape. In addition, the Shire have committed to undertaking 6.77 hectares of revegetation within the application area to mitigate the loss of 2.3 hectares of native vegetation.

Given the flora and vegetation survey identified weed species within the application area (Natural area, 2021), it is acknowledged that the proposed clearing may cause degradation of adjacent and nearby remnant native vegetation by facilitating the spread of weeds and dieback. 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 adjacent remnant vegetation.

Conclusion

Given the lack of representation of the 'Bindoon' complex within the area proposed to be cleared, the revegetation proposed by the Shire and the extent of remaining vegetation within the local area, the vegetation proposed to be cleared is not considered to be a significant remnant within an extensively cleared landscape.

The proposed clearing has the potential to facilitate the spread of weeds and dieback into the remaining vegetation. It is considered that the impact of clearing can be mitigated through the Shire's implementation of a Construction Environmental Management Plan and through the conditioning of weed and dieback minimisation measures on the permit.

Conditions

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

- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.

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

Assessment

Hydrology

The application area intersects several minor tributaries of the Brockman River located approximately 400 metres to the west of the application area. The flora and vegetation survey conducted across the application area (Natural

Area, 2021; Appendix F) recorded three vegetation types, however none are representative of riparian vegetation. Given this, the proposed clearing area is not considered to be growing in, or in association with, an environment associated with a watercourse or wetland. It is acknowledged that the local area has been modified through historical clearing for road infrastructure, urban development and agriculture, and it is therefore considered unlikely that the vegetation within the application area is contributing significantly to the function of riparian communities in the local area.

The minor non perennial tributaries located within the application area are likely to be highly modified, and if present, likely to be seasonally dependant. Based on this, impacts to surface water resulting from the proposed clearing, if any, are likely to be minor, localised and short-term. It is therefore not considered that the proposed clearing will result in significant or long-term deterioration in the quality of surface or underground water.

Land degradation

Noting that the mapped soil type within the application area is susceptible to land degradation resulting from water erosion, waterlogging, and subsurface acidification, the proposed clearing has the potential facilitate land degradation. The proposed clearing will result in the loss of 2.3 hectares of understory vegetation for mountain bike trails only a few metres wide, with approximately 98.46 hectares of native vegetation to be retained, including all mature trees (Natural area, 2021). In addition, the Shire has committed to undertake revegetation of 6.77 hectares of native vegetation within the larger clearing footprint (see section 3.1; Appendix F).

The retained vegetation, paired with the revegetation within the clearing footprint, are expected to provide a buffer for the impacts of waterlogging and subsurface acidification. Given the extent and location of the proposed clearing in the context of the site, the proposed clearing is not considered likely to cause appreciable land degradation.

Conclusion

Based on the above assessment, the proposed clearing is unlikely to result in significant impacts to the ecological values of vegetation communities associated with a watercourse or wetland, or to cause appreciable land degradation, or result in significant or long-term deterioration in the quality of surface or underground water.

Conditions

No conditions are required to be imposed on the permit in relation to this environmental value.

3.3. Relevant planning instruments and other matters

Since lodgement of the Clearing Permit Application, two of the land parcels where clearing is proposed to occur, Lot 100 on Deposited Plan 402781 and Lot 88 on Deposited Plan 404798 have been amalgamated into Lot 801 on Deposited Plan 423293 (see 1.5 site map).

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

End

Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
Avoidance and mitigation measures	Details of further avoidance and mitigation measures were provided including the commitment to revegetate 6.77 hectares of native vegetation and retain all trees greater than 200 millimetres DBH. This information is presented in Section 3.1 of the Decision Report.
Targeted flora survey	The Shire conducted an additional targeted survey in Spring of 2022. No conservation significant flora were recorded (Shire of Chittering, 2023b). This information is presented in Appendix D of the Decision Report.
Revegetation plan	The Shire provided a Revegetation Plan (Natural Area, 2023a). This information is presented in Section 3.1 and Section 3.2.1 of the Decision Report.

Appendix B. Details of public submissions

One submission was received during the public consultation period and is summarised below.

Summary of comments	Consideration of comment
Fauna habitat - Concerns regarding the removal of significant habitat for black cockatoo species (foraging, breeding and nesting).	This is addressed in section 3.2.1 of the report. The Shire will be revegetating 6.77 hectares of native vegetation within Lot 3874 that is suitable foraging habitat for black cockatoos and will retain all trees greater than 200 millimetres DBH. These measures will reduce any potential significant impacts to black cockatoo foraging, breeding or roosting habitat.

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 the department at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of a large (>100 hectare) patch of native vegetation within the intensive land use zone of Western Australia. It is surrounded by sparse patches of remnant vegetation and areas cleared for farmland and urban development.</p> <p>Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 46.50 per cent of the original native vegetation cover.</p>
Ecological linkage	The application area does not form part of any formal mapped ecological linkage. It may however, function as an informal linkage, facilitating the movement of fauna across remnant patches of vegetation within the surrounding area.
Conservation areas	Six conservation areas are located within the local area. The two closest are the Chittering Lakes Nature Reserve located 0.3 kilometres to the west and the Mount Byroomanning Nature Reserve located 0.8 kilometres to the east of the application area.
Vegetation description	<p>A flora and vegetation survey (Natural area, 2022) described and mapped three vegetation types for the application area:</p> <ul style="list-style-type: none"> • Woodland of <i>Eucalyptus accedens</i> • Open Woodland of <i>Corymbia calophylla</i> and <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> • Cleared Open Farmland of <i>Corymbia calophylla</i> and <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>

Characteristic	Details
	<p>Representative photos and survey descriptions are available in Appendix F.</p> <p>This is partially consistent with the mapped vegetation types:</p> <ul style="list-style-type: none"> • Yalanbee (312) described as a Woodland of <i>Eucalyptus wandoo-Eucalyptus accedens</i>, less consistently open forest of <i>Eucalyptus marginata</i> subsp. <i>thalassica-Corymbia calophylla</i> on lateritic uplands and breakaway landscapes in arid and perarid zones. • Bindoon (22) described as a Woodland of <i>Eucalyptus loxophleba</i> on the slopes, flanked by woodlands of <i>Eucalyptus wandoo-Eucalyptus accedens</i> on the breakaways and upper slopes in the perarid zone. <p>The mapped vegetation types retain approximately 46.54 and 29.18 per cent respectively, of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>A flora and vegetation survey (natural area, 2022) described and mapped the vegetation within the proposed clearing area in completely degraded to excellent (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix E.</p> <p>Representative photos and survey descriptions are available in Appendix F.</p>
Climate and landform	<p>The area proposed to be cleared is elevated and undulating with Australian Height Datum ranging from 255 metres towards the centre of the application area, to 160 metres towards the edge of the application area (DPIRD, 2021).</p> <p>Climate within the Perth Metropolitan Region is characterised by a Mediterranean climate, with hot dry summers and mild wet winters.</p>
Soil description	<p>Two soil types are present within the site:</p> <ul style="list-style-type: none"> • Bindoon 1x Phase, described as very gentle to moderately sloping (<15%) crests and hill slopes. Fine to medium textured, often shallow soils with much coarse fraction. <i>Eucalyptus marginata</i>, <i>Corymbia calophylla</i>, <i>E. wandoo</i> and <i>E. accedens</i> and some <i>Allocasuarina huegeliana</i> on rock. • Bindoon 2s Phase, described as gentle to moderate (3-25%) middle and lower hill slopes. Mixed red and yellow duplex soils with some uniform fine and medium textured, structured soils.
Land degradation risk	<p>The soil types above are mapped as having a low risk of land degradation resulting from wind erosion and salinity (Schoknecht et al., 2004).</p> <p>The soil types may have a moderate to high risk of land degradation resulting from, flooding, water erosion, phosphorus export and subsurface acidification (Schoknecht et al., 2004).</p>
Waterbodies	<p>The desktop assessment and aerial imagery indicate that several minor nonperennial rivers intersect the application area.</p> <p>Lake Needonga conservation category sumpland is located 0.34 kilometres west of the application area.</p>
Hydrogeography	<p>The application area is mapped within the Swan Avon Surfacewater catchment and the Swan River System Groundwater Areas proclaimed under <i>the Rights in Water and Irrigation Act 1914</i> (the RIWI Act). The application area does not transect any water resources proclaimed under either the <i>Metropolitan Water Supply Sewerage and Drainage Act 1909</i> or <i>Country Areas Water Supply Act 1947</i> (CAWS Act).</p>
Flora	<p>The desktop assessment identified a total of 33 conservation significant flora species occur within the local are. Of these, four species are recorded within 1 kilometre of the application area and nine occur on the same soil type as the application area.</p> <p>Flora surveys conducted across the application area (Natural area, 2022, 2023) did not record any conservation significant flora species within the application area.</p>
Ecological communities	<p>The desktop assessment identified that the closest threatened ecological community (TEC), includes an occurrence of the <i>Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region</i> TEC, approximately 5.5 kilometres west of the application</p>

Characteristic	Details
	area. This community is synonymous with the state listed priority ecological community, <i>Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region</i> PEC.
Fauna	The desktop assessment identified a total of 18 conservation significant fauna species within the application area. The application area is within the mapped breeding distribution for Carnaby's black cockatoo and within the mapped vagrant distribution of the forest red-tailed black cockatoo. According to available databases, a known black cockatoo roost site 2.4 kilometres from the application area and a known breeding site is 6.3 kilometres away.

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*					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
Vegetation complex**					
Yalanbee (312)	197,849.01	92,080.88	46.54	42,555.73	21.08
Bindoon (22)	36,053.79	10,521.91	29.18	857.84	2.35
Local area					
10km radius	34,376.00	16,010.73	46.50	-	-

*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 G.1), and flora and vegetation survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Calothamnus pachystachyus</i>	4	Y	Y	Y	0.24	1	Y
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>	3	N	N	N	0.24	2	Y
<i>Senecio gilbertii</i>	1	N		Y	0.24	1	Y
<i>Eucalyptus exilis</i>	4	Y	Y	Y	0.50	3	Y
<i>Lasiopetalum caroliae</i>	3	Y	Y	N	1.11	2	Y
<i>Halgania corymbosa</i>	3	Y	Y	N	1.13	1	Y
<i>Acacia anarthros</i>	3	N	N	N	1.18	1	Y
<i>Hibbertia miniata</i>	4	Y	Y	N	1.18	16	Y
<i>Darwinia</i> sp. Bindoon (S. Patrick 281)	1	N	N	N	1.18	3	Y

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Gastrolobium crispatum</i>	1	N	N	Y	1.76	11	Y
<i>Cyanicula ixioides</i> subsp. <i>candida</i>	2	Y	Y	N	1.81	5	Y
<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i>	3	Y	Y	N	1.95	9	Y
<i>Persoonia sulcata</i>	4	Y	Y	Y	2.26	4	Y
<i>Synaphea rangiferops</i>	2	Y	Y	N	3.31	1	Y
<i>Acacia drummondii</i> subsp. <i>affinis</i>	3	Y	Y	N	3.46	7	Y
<i>Hibbertia glomerata</i> subsp. <i>ginginensis</i>	2	Y	Y	Y	3.72	10	Y
<i>Tetratheca pilifera</i>	3	Y	Y	N	3.90	1	Y
<i>Acacia browniana</i> var. <i>glaucescens</i>	2	Y	Y	N	5.51	10	Y
<i>Goodenia arthrotricha</i>	T	Y	Y	Y	7.34	3	Y

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

C.4. Fauna analysis table

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

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
Carnaby's cockatoo	EN	Y	Y	0.24	98	Y
white-tailed black cockatoo	EN	Y	Y	0.37	7	Y
<i>Notamacropus Irma</i> (western brush wallaby)	P4	Y	Y	0.37	1	Y
<i>Isoodon fusciventer</i> (quenda)	P4	Y	Y	0.65	38	Y
forest red-tailed black cockatoo	VU	Y	Y	0.73	5	Y
<i>Oxyura australis</i> (blue-billed duck)	P4	N	N	1.48	9	Y
<i>Dasyurus geoffroyi</i> (chuditch)	VU	N	Y	1.73	7	Y

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

Appendix D. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>Biological surveys conducted across the application area (Natural area 2021; 2023b) did not record any conservation significant flora species or ecological communities. The surveys however, recorded significant habitat for Carnaby’s and forest red-tail black cockatoo species within the proposed clearing area.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared contains foraging habitat for Carnaby’s and forest red-tail black cockatoo species.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared is considered unlikely to contain habitat for threatened flora. No threatened flora were recorded within the flora and vegetation survey conducted across the application area (Natural area, 2021; 2023b).</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain species that indicate the presence of a threatened ecological community (TEC). The flora and vegetation survey conducted across the application area did not identify any vegetation representative of a TEC (Natural area, 2021; 2023b).</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle €:</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia.</p> <p>The mapped ‘Bindoon’ vegetation complex retains less than 30 per cent of its pre-European extent and is therefore inconsistent with the national objectives and targets. However, the vegetation proposed to be cleared is not considered representative of the ‘Bindoon’ vegetation complex.</p> <p>The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>Given the distance to the nearest conservation area, and that they are separated by previously cleared land and road infrastructure, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not likely to be at variance	No
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>Given, several minor non perennial water courses are recorded within the application area, the application area may be considered to be growing in, or in association with, an environment associated with a wetland or watercourse. However no riparian vegetation was identified during the flora survey (Natural area, 2021; 2023b).</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are moderately to highly susceptible to water erosion, nutrient export and subsurface acidification. Noting the extent of the application area and the condition of the vegetation, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (i):</u> <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.”</i></p> <p><u>Assessment:</u></p> <p>Several minor non perennial water courses are recorded within the application area. However it is acknowledged that the local area has been modified through historical clearing for road infrastructure, urban development and agriculture. Therefore, any impacts to surface water resulting from the proposed clearing are likely to be minor, localised and short-term.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The application area intersects several minor intermittent watercourses, no permanent rivers or wetlands intersect the proposed clearing area. Given the extent of clearing proposed and the retention of mature trees, the proposed clearing is unlikely to exacerbate the incidence or intensity of flooding.</p>	Not likely to be at variance	No

Appendix E. Vegetation condition rating scale

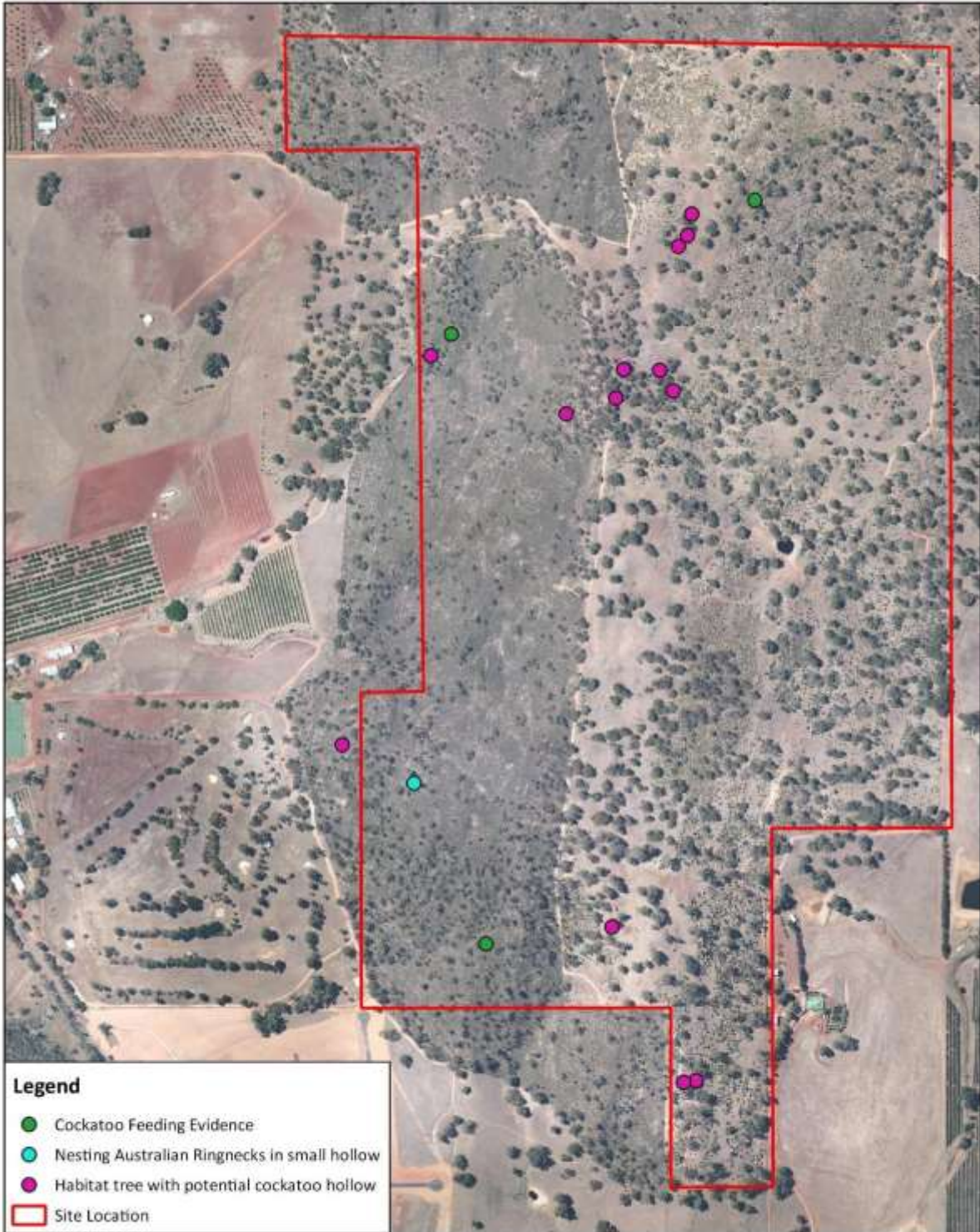
Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree 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.
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.

Habitat trees and cockatoo feeding (Natural area, 2021)



- Legend**
- Cockatoo Feeding Evidence
 - Nesting Australian Ringnecks in small hollow
 - Habitat tree with potential cockatoo hollow
 - Site Location



Figure 11:
Habitat Trees and Cockatoo Feeding
Bindoon, Shire of Chittering



Client: Shire of Chittering
Date: 21/10/2021
Created by: K. Sadgrove
Image Source: Nearmap 2021
Datum: GDA 94

Evidence of black cockatoo feeding within the application area (Natural area, 2021; 2023b)



Black cockatoo feeding evidence on Marri (*Corymbia calophylla*) nuts



Evidence of previous Black Cockatoo foraging, aged Marri nuts with mandible marking



Evidence of recent Black Cockatoo foraging, freshly chewed Marri nuts

Types of tree hollows observed (Natural area, 2023b)



Tree 124- Large chimney hollow



Tree 93 - Near vertical chimney hollow






Tree 280- Large chimney hollows

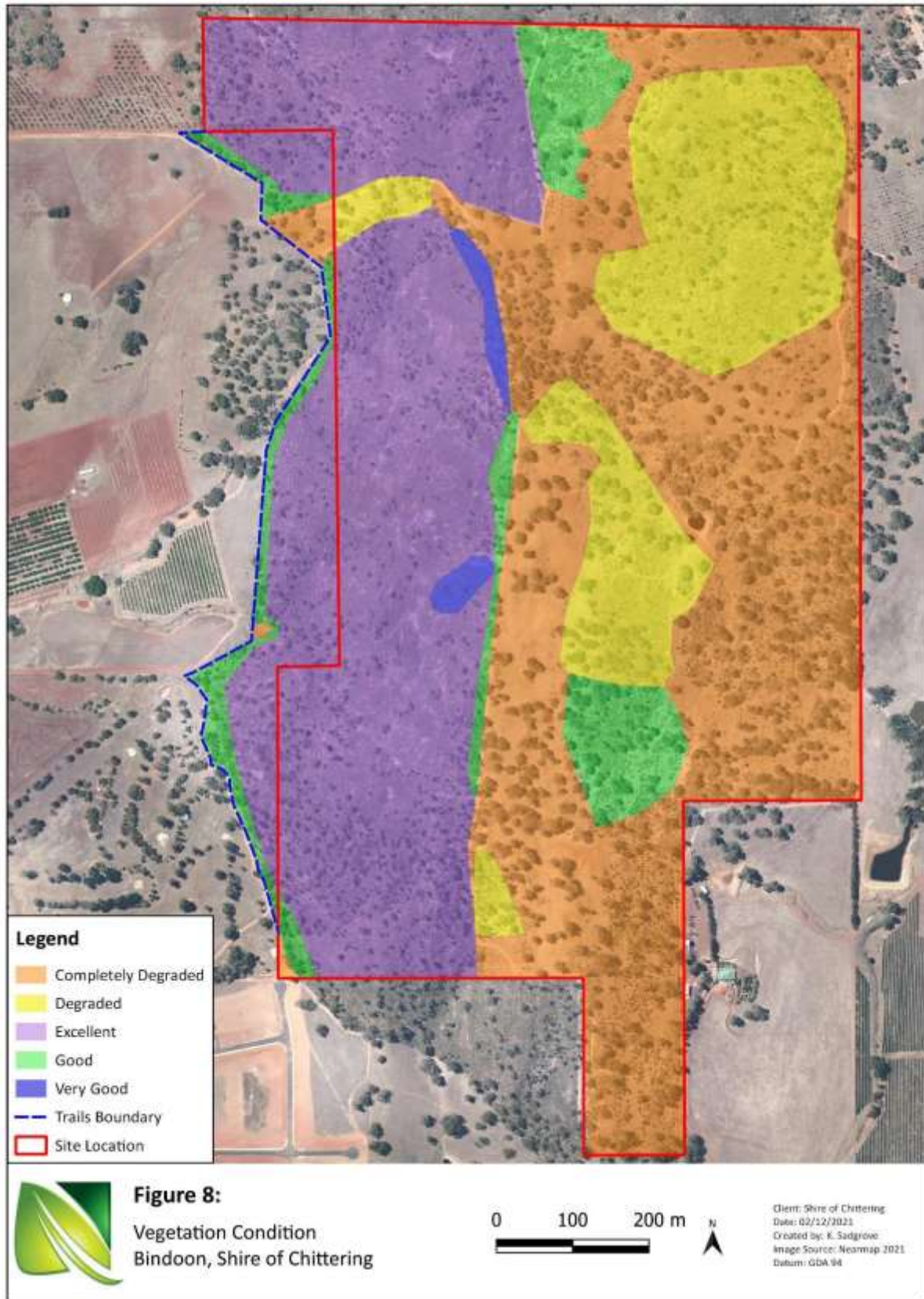


Tree 220- Large chimney hollow and side hollow

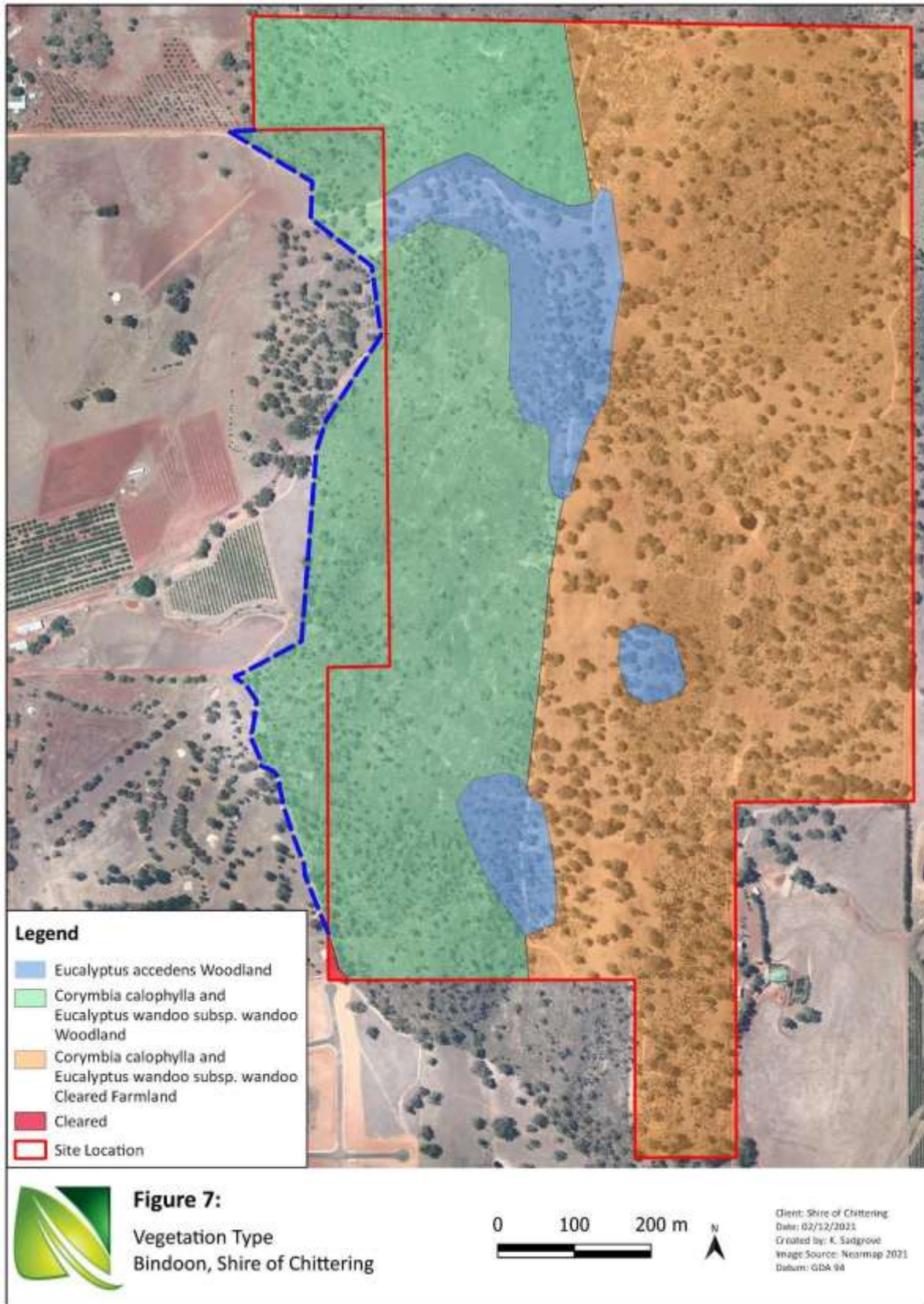
Vegetation types recorded within the application area (Natural area, 2021)

Vegetation Type	Description	Photograph
<i>Corymbia calophylla</i> and <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> Open Woodland	Open woodland of <i>Corymbia calophylla</i> (Marri) and <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> (Wandoo) over a dense middle storey of <i>Xanthorrhoea acanthostachya</i> and <i>Gastrolobium calycinum</i> over an understorey <i>Desmodcladus flexuosus</i> and mixed native herbs and grasses.	
<i>Corymbia calophylla</i> and <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> Cleared Open Farmland	Open Woodland of <i>Corymbia calophylla</i> (Marri) and <i>Eucalyptus wandoo</i> subsp. <i>wandoo</i> (Wandoo) over a middle storey which has been majority cleared of vegetation although sparse pockets consisting of <i>Xanthorrhoea acanthostachya</i> remaining. Understorey within this vegetation type consists of mixed introduced herbs and grasses.	
<i>Eucalyptus accedens</i> Woodland	A woodland of <i>Eucalyptus accedens</i> (Powderbark Wandoo) over a middle storey comprising of <i>Gastrolobium calycinum</i> and <i>Xanthorrhoea acanthostachya</i> shrubland and an understorey of mixed native herbs.	

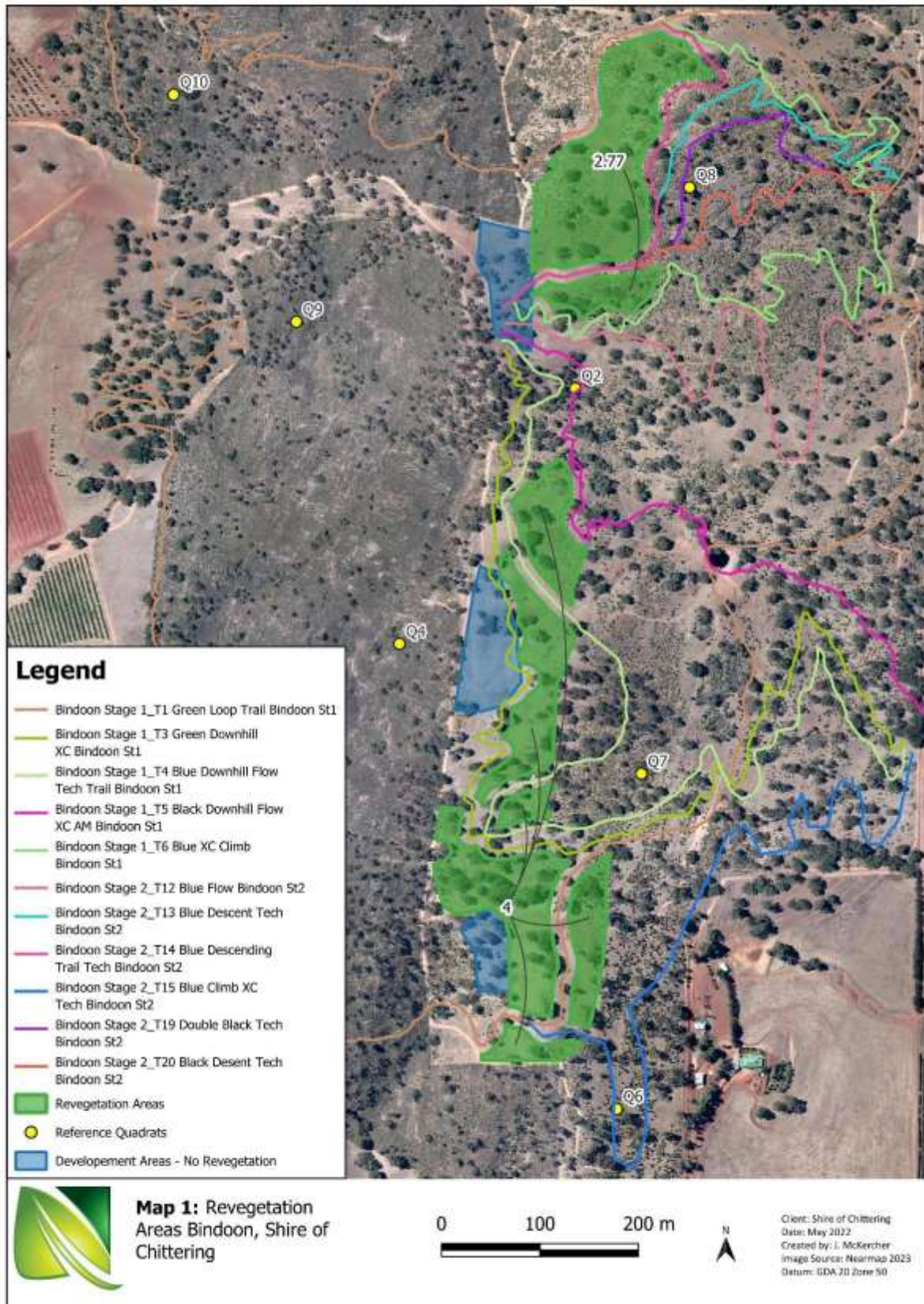
Vegetation condition mapped across the application area (Natural area, 2021)



Vegetation types mapped across the application area (Natural area, 2021)



Areas to be revegetated (Natural Area, 2023a)



Appendix G. Sources of information

G.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

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

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