NATIVE VEGETATION CLEARING PERMIT
(PURPOSE PERMIT)
SUPPORTING DOCUMENT

BROOMEHILL FIXED RAIL OUTLOADING FACILITY

CO-OPERATIVE BULK HANDLING LIMITED

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Broomehill Fixed Rail Outloading Facility – Co-operative Bulk Handling Limited

Our Reference:

ECO204_01_V1

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1. INTRODUCTION

Co-operative Bulk Handling Limited (CBH), a West Australian based agricultural co-operative, proposes to construct new railway outloading and associated grain storage infrastructure as part of upgrades to the CBH Grain Receival Point at Broomehill (project area) to reduce a network wide shortfall in grain export capacity.

Planned upgrades for the project area include:

-
- Construction of a new railway outloading facility providing 4.4 kt of rapid outload rail storage;
- Construction of a new "full" siding, capable of stabling and loading a 60-wagon train without fouling the mainline or obstructing any roads in the vicinity of the facility; and
- Installing a batch weigher over the rail siding, giving repeatable loading accuracy to within ±0.4%.

In order for construction of the proposed upgrade of the project area to proceed, clearing of 5.43 ha of remnant native vegetation inside a 25.79 ha project area will be required (**Figure 1**).

The 25.79 ha project area is inclusive of all ancillary infrastructure such as signalling, communication equipment, access for maintenance and emergency vehicles, fences and gates, stations, and stormwater drainage.

In accordance with Part V Division 2 of the *Environmental Protection Act 1986* (EP Act), clearing of native vegetation requires a permit except where an exemption applies under Schedule 6 of the EP Act or is prescribed by regulation in the *Environmental Protection (Clearing Native Vegetation) Regulations 2004*.

Clearing of native vegetation for the purpose of constructing additional infrastructure within parts of will therefore require a permit to clear native vegetation under Schedule 2 of the *Environmental Protection [Clearing of Native Vegetation] Regulation 2004* (Clearing Regulations) issued by the Department of Water and Environmental Regulation (DWER).

This document has been prepared to support the granting of a Native Vegetation Clearing Permit (NVCP) for the Project under Part V Division 2 of the *Environmental Protection Act 1986* (EP Act) and includes the following information:

- An overview of the existing environmental conditions of the site;
- An evaluation of potential impacts of the proposed native vegetation clearing;
- An evaluation of compliance of the proposed clearing against the ten clearing principles listed under Schedule 5 of the EP Act; and
- Environmental approvals and management requirements.

1.1 Project Location and Ownership

Situated approximately 302 km south-east of Perth and 126 km north of Albany, the project area is located within the Shire of Broomehill-Tambellup in the Great Southern region and is situated immediately to the south-east of Broomehill townsite.

The project area is surrounded by land to the east zoned 'Rural Residential, to the south zoned 'Industrial', to the west zoned 'Industrial' and 'Recreation and Open Space' and to the north zoned 'Residential' and will occur adjacent to the existing grain receival point. Much of the surrounding area

has been historically cleared for urban residential development (Broomehill townsite), rural-residential housing, Great Southern Highway and areas of dryland agriculture (predominantly cereal cropping).

The project area comprises Lot 2 on Deposited Plan (DP) 57325, Lot 535, 536 and 553 on DP 227477, Lot 1260 on DP 409752. A Certificate of Title for each Lot comprising the project area is contained within **Appendix 1** and information relating to each Lot is shown within **Table 1**.

Table 1: Legal Description of the Project Area

Lot No.	Deposited Plan	Volume	Folio	Registered proprietor
2	57325	2738	256	CBH Ltd
1260	409752	2942	822	CBH Ltd
535	227477	2983	384	CBH Ltd
553	70832	LR3024	124	Minister for Railways
536	227477	2983	383	Pardoo Holdings Pty Ltd

Source: Landgate 2021

1.2 Project Justification

The project is required to reduce a network wide shortfall in grain export capacity, relative to meeting existing market demands. Currently there is a 27,000 tonne per month shortfall in tonnes to port capacity in the Albany region specifically. Broomehill is one of the top five sites on rail in the Albany region and since 2018 an additional 152,000 tonnes of permanent grain storage has been constructed onsite. However, Broomehill has inferior rail loading capability compared to the other top sites on rail and there has been no upgrade to rail infrastructure to help handle the additional storage capacity. As such, it has been identified as a priority for increased rail loading capability. It currently takes a 30-wagon train up to 11 hours to load at Broomehill due to the slow outloading machinery and the short siding at the site.

Key benefits resulting from implement of the project include:

- Reducing loading times at Broomehill from the current 11 hours to approximately 4 hours thereby reducing the port-to-port cycle time from 24 hours to 16 hours;
- Increasing the number of loaded wagons from 30 to 60 resulting in an increased volume of grain per train going to the Port of Albany;
- Allowing storage of a train off the railway mainline to facilitate passing trains at Broomehill;
- Increasing loading capability to two trains per day;
- Improving wagon filling accuracy to prevent underloading and overloading;
- Improving safety with the latest rail technology thereby eliminating the existing rail-road interactions and significantly reducing the amount of shunting required;
- Improving community impact by moving the facility away from the Broomehill townsite thereby reducing noise and associated impacts on resident amenity; and
- Reducing the area of native vegetation required to be cleared compared to the equivalent lower Capex siding option.

In 2018, the WA Department of Transport commenced work on developing a 10-15-year plan for agricultural industries (including grain) in the regions of South-West WA. Following extensive consultation with CBH, the resulting strategy – the Revitalising Agricultural Region Freight Strategy (RARF) – was released in mid-2020 and identifies and prioritises ~130 infrastructure projects, that will make freight more productive, efficient and safe.

In late 2020, the Department of Transport lodged an Infrastructure Australia submission – called the Agricultural Supply Chain Initiative or ASCI - seeking Federal funding for the projects identified in RARF. In February 2021, ASCI was published on the Infrastructure Australia Priority List.

In March 2021, following a proposal from CBH, the WA Labor Government made an election commitment to fund $22M towards 4 of the rail sidings identified in RARF that were prioritised as "high-priority": Moora, Brookton, Cranbrook and Broomehill. In its proposal, CBH said that all 4 projects were "shovel-ready" and CBH would co-contribute ~$80M for works at each of those sites (rail loading infrastructure, and storage expansions).

Following WA Labor's election victory, CBH confirmed to Government that Moora and Broomehill would be the first rail sidings that would be commenced, and the remaining 2 (Brookton and Cranbrook) would be commenced the following year. Subsequently, the Federal Government has committed $160M to ASCI Package 1, and the WA Government increased its pledge from $22M to $40M – a total of $200M. CBH are currently providing feedback to the WA Government on the projects that should receive funding for the remaining $178M, which will need to be delivered over the forward estimates before mid-2025.

1.3 Alternative Project Options

Alternative options to the project considered by CBH included:

Upgrading the existing loadout: this option was ruled out as it is surrounded by roads, bushland and other storages. There would be significant challenges with orientating a new facility or upgrading the existing in a way that fits in with the surroundings. An upgrade to the existing rail facility (and rail) would block access to OBH01/02 when trains are loading. Trains would also block the Tie Line Road level crossing during outloading at this location. Additionally, the existing loadout is located at the northern side of the site, however most of the site grain storage is located at the southern side of the site, with any future expansion likely occurring further to the south. Therefore, the majority of intra silo movements would be from the southern side of the site. A rail facility at the northern side of the site would have longer cycle time for trucks completing intra-silo movements unless more trucks are put onsite resulting in more truck movements through the town of Broomehill.

Mainline loading: this option was not considered viable as the train would block the line for at least 4 hours while it was loading with no way to quickly clear the line. This decreases scheduling flexibility and adds a constraint into the network. There is also increased safety risks associated with the option. Personnel would be required to access the mainline to perform hygiene tasks, exposing them to greater safety risks associated with the rail. It also requires many shunts to swap the locomotives to the other end of the train including a few propulsions (which requires someone to walk in front of the train). These shunts would also occur in the townsite block level crossings introducing more safety hazards.

Short Siding: this option was ruled out as it would inherent safety risks from propelling and shunting wagons. It would also block the mainline for the entirety of the outloading process (approximately 5 hours) without any way to efficiently stabilise the wagons off the mainline if required. Because of the shunting required to swap the locomotives to the other end of the train, the turnaround time at site for this option is about an hour longer than for the "single" or "double" siding options. This siding wouldn't be long enough to serve as a passing loop, not fulfilling one of the key aims of the project. Similarly, to the mainline loading option there is a decrease in scheduling flexibility and this option would add another constraint to the network.

Half Siding: this option was ruled out as the train loads it will foul the mainline for the duration of the loading (approximately 4 hours). If required, loading can be paused, and the train stabled, to allow another train to pass before loading is resumed. This option is not optimal due to the delay in loading when a second train needs to pass.

Information from the flora and fauna surveys has influenced the location and design layout of the proposed action as far as practicable. However, given the site constraints (e.g. location of Great Southern Highway, existing internal storage areas and railway infrastructure), it is not practicable to avoid all environmentally significant areas.

2. CLEARING OF NATIVE VEGETATION

Excluding activities that are exempt under the Clearing Regulations (Section 5 – Prescribed Clearing), all native vegetation clearing completed by CBH will be undertaken in accordance with a Native Vegetation Clearing Permit (NVCP).

2.1 Measures to Avoid and Minimise Clearing

Given the inherent safety aspects of the engineering design for the proposed infrastructure upgrade, the project has been optimised as far as practicable and the opportunity to reduce disturbance further is not available.

2.1.1 Impact Avoidance through Project Design

Information from the flora and fauna surveys has influenced the location and design layout of the proposed action as far as practicable. However, given the site constraints (e.g. location of Great Southern Highway, existing internal storage areas and railway infrastructure), it is not practicable to avoid all environmentally significant areas.

The final project design has resulted in:

- Reduction of potential clearing of the *Eucalypt Woodlands of the Western Australian* ecological community listed as Priority 3 (P3) by the DBCA from 11.23 ha to 0.52 ha;
- Reduction of impacts to mapped native vegetation communities from 24.16 ha to 5.43 ha in Degraded to Completely Degraded condition;
- Reduction of impacts to Carnaby's Cockatoo potential breeding trees from 395 to 20 (7 Class 4 – not suitable; 13 Class 5 – no hollows).

The proposed clearing of native vegetation within the 25.79 ha project area will not exceed the 5.43 ha proposed in this NVCP application.

2.1.2 Impact Avoidance Through Environmental Management

Prior to the commencement of vegetation clearing/construction the Proponent will prepare a Construction Environmental Management Plan (CEMP) to describe how the impacts of activities related to the construction phase of the Project will be managed to reduce potential direct and indirect impacts on the environment.

The CEMP will include, but not be restricted to, the following:

- Vegetation protection: Prior to clearing commencing, the areas of vegetation to be retained will be clearly demarcated with star pickets, coloured tape or bunting, or fencing, and all clearing personnel will be inducted and made aware of the requirement to protect native vegetation in these areas.
- Dieback (*Phytophthora cinnamomi*): The movement of soils and plant material will be strictly managed at the site to ensure Dieback is not introduced into the surrounding vegetated areas. All clearing machinery will be washed down prior to entering and leaving the site. No Dieback or weed-affected soil, mulch or fill will be brought into the disturbance area.
- Environmental induction: All clearing and construction personnel will be required to participate in an environmental induction toolbox session to ensure they are made aware that native fauna/flora are protected under the *Biodiversity Conservation Act 2016* and of the measures to be implemented to prevent undue environmental harm.

- Native fauna protection: Any fauna injured during construction will be taken to a designated veterinary clinic or a DBCA nominated wildlife carer. Clearing will be conducted outside the known breeding season of the Western Rosella (August to November) to avoid disturbing/harming nesting birds.
- Hydrocarbon storage: If hydrocarbons are to be temporarily stored, they will be contained within portable bunds. Precautions will be required to be taken when refuelling and a spill-response kit will be located in close proximity to any refuelling locations.

2.2 Impact Mitigation Through Provision of Offsets

A meeting held between CBH and the DBCA (30 July 2021) identified five priority sites as having strategic benefit to DBCA as they are likely to have environmental values matching those required for offset purposes. All five sites are either located in proximity to existing larger reserves or linked to other patches of remnant vegetation and have been prioritised by DBCA as suitable acquisition sites.

The proposed plan is to agree on a survey strategy to:

- Prove up each site's existing environmental values;
- Discuss possible property acquisition implications
- Determine offset arrangements that may be suitable to DBCA/DWER; and
- Build into the purchase price the ongoing cost of managing the acquisition site(s).

3. PHYSICAL ENVIRONMENT

3.1 Climate

According to the Köppen-Geiger climate classification, the project area experiences a temperate climate with dry, warm summers (Class Csb) (Peel, Finlayson and McMahon 2007). This classification is considered to represent a Mediterranean climate where average summer maximum temperatures lie above 10 °C but are not exceeding 22°C and the coldest month maximum is below 4° C.

The closest Bureau of Meteorology (BoM) station with long term records for rainfall is Broomehill (BoM 2020, station no. 10525, operating since 1891). The mean annual rainfall is 445.4 mm with 43.03% falling during winter. However, there are no records available for 2020 from this station and the next closest station with recent records is Katanning (station 10916, operating since 1999), located 18.4 km to the north. Katanning's mean annual rainfall is 441.4 mm.

The climate of the region is strongly influenced by the position of a band of high pressure known as the sub-tropical ridge. For much of the year the ridge is located to the south allowing the east or south easterly winds to prevail. During the cooler months the ridge periodically moves to the north allowing cold fronts to pass over the west coast and deliver much of the annual rainfall (Beard 1990).

3.2 Land Systems and Geology

According to Department of Primary Industries and Rural Development (DPIRD 2019a) soil landscape mapping, the following land systems intersect the project area (**Table 2** and **Figure 2**).

Table 1: Land Systems

Mapping unit	Land system	Description	Extent (ha)	%
257Ca_2	Carrolup 2 Subsystem	Grey sandy duplex soils on slopes, hill crests and less commonly minor drainage lines within the Carrolup system.	32.01	79.43
257Ca_3	Carrolup 3 Subsystem	Low hills and rises in the Carrolup system with sandy and loamy soils formed on shallow weathered granite and dolerite and small areas of rock outcrop.	8.29	20.57

Source: DPIRD, 2019

The project area is associated with the Dumbleyung map sheet (S150-07) of the 1:250,000 Geological Map of Western Australia (DMIRS 2020) intersecting two geological units:

- Qc – described as Colluvium and minor alluvium – silt, sand and gravel; generally, on slopes adjoining rock and laterite outcrops; and
- Czc – described as Conglomerate – boulders of quartzite, granite and dolerite in sandstone or claystone matrix.

3.3 Hydrology

The project area is located largely in the Hardy Estuary Coblinine River catchment of the Blackwood River, and partly (in the southern portion) in the Nornalup Inlet Frankland River catchment of the Frankland River (Landgate 2020).
The project area does not directly intersect any wetlands or significant drainage lines. No hydrological feature of significance is situated in close proximity to the project area.

3.4 Environmentally Sensitive Areas

The project area does not intersect with any clearing regulations Environmentally Sensitive Areas (ESAs) and no ESAs occur nearby.

3.5 Conservation Lands

While the project area does not intersect any conservation lands, three areas managed for conservation are located in its vicinity:

- Broomehill Nature Reserve, approximately 5 km to the south-east;
- Peringillup Nature Reserve, approximately 10 km to the south; and
- An unnamed Class A Nature Reserve, approximately 13 km to the east.

4. BIOLOGICAL ENVIRONMENT

4.1 Biogeographic Region

The project area is located in the Avon-Wheatbelt Interim Biogeographical Regionalisation for Australia (IBRA) region in the Katanning subregion (AW2 – Rejuvenated Drainage subregion), described as an area of active drainage dissecting a Tertiary plateau in the Yilgarn Craton. The subregion is further described as an erosional surface of gently undulating rises to low hills with abrupt breakaways in which colluvial processes are active resulting in soils formed in colluvium or *in-situ* weathered rock. The drainage of the subregion comprises continuous stream channels that flow in most years. Residual lateritic uplands and derived sandplains are covered by areas of proteaceous scrub-heaths rich in endemic species, and quaternary surfaces of erosional slopes and valley floors support woodlands of Wandoo (*Eucalyptus wandoo*), York Gum (*Eucalyptus loxophleba*), Salmon Gum (*Eucalyptus salmonophloia,* Jam (*Acacia acuminata*) and *Casuarina* sp. (Beecham 2001).

The pre-European vegetation type and extent mapping undertaken by Beard (1979) attempted to depict the native vegetation as it was presumed to be at the time of settlement. Digital mapping (Shepherd, Beeston and Hopkins (2002) updated by DPIRD (2019b) indicates that the project area intersects one pre-European vegetation unit: Association 1085: described as Medium woodlands; wandoo and blue mallet (*Eucalyptus gardneri*). The current extent of Vegetation Association 1085 is 11.46 % of its pre-European extent at State, IBRA bioregion (Avon Wheatbelt) and subregion (Katanning) levels, and 9.80 % at the LGA (Shire of Broomehill-Tambellup) level.

4.2 Ecological Surveys

An Environmental Impact Assessment (EIA) of the project area was conducted in accordance with the relevant Commonwealth and Western Australian environmental legislation and guidelines by Ecoscape (Australia) Pty Ltd. The field survey was conducted over 4.5 days during 26-30 October 2020 within a 'survey area' comprising approximately **40.26 ha** (**Appendix 3 and Figure 3**).

Prior to conducting field surveys, a desktop assessment to identify the potential and possible occurrence of Threatened Ecological Communities (TECs), Priority Ecological communities (PECs) and Threatened and Priority flora and fauna species listed under the EPBC Act and BC Act, and by the DBCA was undertaken. The assessment utilised FloraBase, Australian Government EPBC Act Protected Matters Search Tool (PMST), NatureMap, Department of Agriculture, Water and the Environment (DAWE), and DBCA databases and available literature. A summary of the database searches is presented in **Table 3**.

Table 3: Database Searches undertaken for the Survey Area

Database	Buffer (km)
EPBC Act *Protected Matters Search Tool* (PMST) for Threatened species and communities listed under the EPBC Act	20
DBCA and Western Australian Museum (WAM) *NatureMap* online database for Threatened and Priority flora	50
DBCA Threatened and Priority Ecological Communities database search	50
DBCA Threatened and Priority fauna database searches for Scheduled fauna listed under the EPBC Act or latest WA *Wildlife Conservation (Specially Protected Fauna) Notice* and Priority Fauna	30

Source: Ecoscape (Australia) Pty Ltd, 2021

4.3 Vegetation and Flora

A detailed field survey of the project area was conducted as a 'single-phase survey' in accordance with the *Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016d) and was undertaken by an experienced botanist in October 2020 (**Appendix 3**). The vegetation and flora 'survey area' comprised 40.26 ha which included the project area.

4.3.1 Vegetation Type

Six vegetation types were recorded from within the survey area based on a combination of structural vegetation type as identified in the field, floristic analysis and subsequent desktop review. Four of these are considered to represent native vegetation types, with the other two representing disturbed or planted vegetation types. The vegetation types were:

- Native vegetation:
  - **EaW**: *Eucalyptus astringens* mid woodland over **Ehrharta longiflora*, *Acacia erinacea* and **Avena barbata* low sparse grassland/shrubland, located on more clayey soils
  - **EwAhW**: *Eucalyptus wandoo* and *Allocasuarina huegeliana* mid woodland over *Gastrolobium parviflorum* and *Jacksonia sternbergiana* mid/tall sparse shrubland over *Acacia erinacea*, **Ehrharta calycina* and **Avena barbata* low shrubland/tussock grassland/grassland; parts in slightly higher elevations and on more sandy soil were dominated by *Allocasuarina huegeliana*
  - **HvCtS**: *Hakea varia* and *Calytrix tetragona* tall open shrubland over *Desmocladus asper*, *Borya sphaerocephal*a and **Briza maxima* low rushland/forbland/grassland with *Eucalyptus wandoo* mid isolated trees, located within areas of slightly lower elevation that are winter-wet
  - **JsApW**: *Jacksonia sternbergiana* and **Acacia pycnantha* low woodland over *Gastrolobium parviflorum* mid sparse shrubland over *Dianella brevicaulis*, *Neurachne alopecuroidea* and **Ehrharta calycina* low forbland/tussock grassland
- Disturbed vegetation: **ApS**, **Acacia pycnantha* tall open shrubland over **Romulea rosea*, *Neurachne alopecuroidea* and **Ehrharta calycina* low forbland/tussock grassland
- Planted vegetation: **AaSsS**, *Acacia acuminata* and *Santalum spicatum* tall open shrubland over **Ehrharta longiflora*, **Romulea rosea* and **Oxalis pes-caprae* low closed grassland/forbland (Sandalwood plantation).

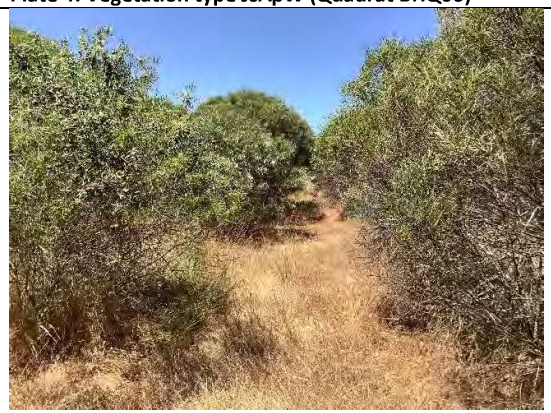
Vegetation type and location are shown in **Figure 2**.

Table 4: Vegetation Types

Mapping unit	Vegetation type	Floristic [1]quadrats/ relevés	Representative photograph	Other characteristic species	Area (ha) and extent (%)
EaW	*Eucalyptus astringens* mid woodland over **Ehrharta longiflora*, *Acacia erinacea* and **Avena barbata* low sparse grassland/shrubland **NVIS**: U+ ^*Eucalyptus astringens*\^tree\7\i;G ^^*Ehrharta longiflora,Acacia erinacea,Avena barbata*\^other grass,shrub\1\r	BHR01 BHR02 **BHR03**	 **Plate 1: Vegetation type EaW (Relevé BHR03)**	*Austrostipa mollis* *Billardiera fusiformis* *Dianella brevicaulis* *Disphyma crassifolium* **Ehrharta calycina* *Eucalyptus wandoo* **Hordeum leporinum* *Hyalosperma glutinosum subsp. glutinosum* **Lolium rigidum* *Lomandra nigricans* *Spergularia marina*	**1.32 ha** **3.28%**
Mosaic	Mosaic of **EaW** and **EwAhW**				**1.58 ha** **3.92%**

[1] **Bold font** in the 'Floristic quadrats/relevés' column indicates the site in the representative photograph

Mapping unit	Vegetation type	Floristic [1]quadrats/ relevés	Representative photograph	Other characteristic species	Area (ha) and extent (%)
EwAhW	*Eucalyptus wandoo* and *Allocasuarina huegeliana* mid woodland *over Gastrolobium parviflorum* and *Jacksonia sternbergiana* mid/tall sparse shrubland *over Acacia erinacea*, **Ehrharta calycina* and **Avena barbata* low shrubland/tussock grassland/grassland **NVIS**: U+ ^*Eucalyptus wandoo*,^*Allocasuarina huegeliana*\^tree\7\i;M ^^*Gastrolobium parviflorum,Jacksonia sternbergiana*\^shrub\4\i;G ^^*Acacia erinacea,Ehrharta calycina,Avena barbata*\^shrub,tussock grass, other grass\1\c	BHQ01 BHQ02 **BHQ03** BHQ04 BHQ07 BHQ08	 **Plate 2: Vegetation type EwAhW (Quadrat BHQ03)**	**Acacia pycnantha* *Bossiaea eriocarpa* **Briza maxima* *Desmocladus asper* *Dianella brevicaulis* **Disa bracteata* **Ehrharta longiflora* *Lomandra nigricans* **Lysimachia arvensis* **Moraea setifolia* *Neurachne alopecuroidea* *Oxalis exilis* **Romulea rosea* *Rytidosperma setaceum* *Thysanotus patersonii* **Ursinia anthemoides* subsp. *anthemoides*	**16.16 ha** **40.13%**
HvCtS	*Hakea varia* and *Calytrix tetragona* tall open shrubland over *Desmocladus asper*, *Borya sphaerocephala* and **Briza maxima* low rushland/forbland/grassland with Eucalyptus wandoo mid isolated trees **NVIS**: U ^*Eucalyptus wandoo*\^tree\7\bi;M+ ^*Hakea varia,^Calytrix tetragona*\^shrub\4\i;G ^^*Desmocladus asper,Borya sphaerocephala,Briza maxima*\^rush,forb,other grass\1\c	BHQ05 **BHQ09** BHR06	 **Plate 3: Vegetation type HvCtS (Quadrat BHQ09)**	*Austrostipa elegantissima* **Avena barbata* **Briza minor* **Disa bracteata* **Hypochaeris glabra* *Juncus pallidus* **Lolium rigidum* **Moraea setifolia* **Romulea rosea* *Rytidosperma setaceum* **Sonchus oleraceus*	**0.61 ha** **1.52%**

Mapping unit	Vegetation type	Floristic [1]quadrats/ relevés	Representative photograph	Other characteristic species	Area (ha) and extent (%)
JsApW	*Jacksonia sternbergiana* and **Acacia pycnantha* low woodland over *Gastrolobium parviflorum* mid sparse shrubland over *Dianella brevicaulis*, *Neurachne alopecuroidea* and **Ehrharta calycina* low forbland/tussock grassland **NVIS**: U+ ^*Jacksonia sternbergiana*,^*Acacia pycnantha*\^tree\6\i;M ^*Gastrolobium parviflorum*\^shrub\3\r;G ^^*Dianella brevicaulis*,*Neurachne alopecuroidea*,*Ehrharta calycina*\^forb,tussock grass\1\c	**BHQ06**	 **Plate 4: Vegetation type JsApW (Quadrat BHQ06)**	*Allocasuarina huegeliana* *Austrostipa elegantissima* **Briza maxima* **Hypochaeris glabra* **Lolium rigidum* *Oxalis* sp. *Tricoryne elatior* **Ursinia anthemoides* subsp. *anthemoides* **Wahlenbergia capensis*	**0.78 ha** **1.94%**
AaSsS	**Sandalwood Plantation** *Acacia acuminata* and *Santalum spicatum* tall open shrubland over **Ehrharta longiflora*, **Romulea rosea* and **Oxalis pes-caprae* low closed grassland/forbland **NVIS**: M+ ^*Acacia acuminata*,^*Santalum spicatum*\^shrub\4\i;G ^^*Ehrharta longiflora*,*Romulea rosea*,*Oxalis pes-caprae*\^other grass,forb\1\d	**BHR04**	 **Plate 5: Vegetation type AaSsS (Relevé BHR04)**	**Bromus diandrus* **Cynodon dactylon* **Disa bracteata* **Ehrharta calycina*	**2.70 ha** **6.71%**

Mapping unit	Vegetation type	Floristic [1]quadrats/ relevés	Representative photograph	Other characteristic species	Area (ha) and extent (%)
ApS	**Disturbed Vegetation** **Acacia pycnantha* tall open shrubland over **Romulea rosea*, *Neurachne alopecuroidea* and **Ehrharta calycina* low forbland/tussock grassland **NVIS**: M+ ^*Acacia pycnantha*\^shrub\4\i;G ^^*Romulea rosea*,*Neurachne alopecuroidea*,*Ehrharta calycina*\^forb,tussock grass\1\c	BHR05	 **Plate 6: Vegetation type ApS (Relevé BHR05)**	*Austrostipa elegantissima* **Avena barbata* *Calytrix tetragona* **Cynodon dactylon* *Dianella brevicaulis* *Lomandra nigricans* *Oxalis exilis* *Rytidosperma setaceum*	**0.13 ha** **0.31%**
X	No native vegetation				**16.10 ha**	**39.99%**
R	Revegetation (not native vegetation)				**0.88 ha**	**2.18%**
	TOTAL EXTENT				**40.26 ha**	

Source: Ecoscape (Australia) Pty Ltd, 2021

4.3.2 Vegetation Condition

The vegetation condition within the survey area ranged from Very Good to Completely Degraded condition, with the majority of the vegetated portion in Degraded condition (**Table 5, Figure 3**). The main factor affecting vegetation condition was weediness.

Table 5: Vegetation Condition

Vegetation condition	Extent (ha)	Proportion (%)
Very Good	4.85	12.03
Good	4.21	10.46
Degraded	7.83	19.46
Completely Degraded	4.21	10.46
Not vegetated	16.98	42.18
TOTAL	**40.26**	**100.00**

Source: Ecoscape (Australia) Pty Ltd, 2021

Within the proposed clearing application area, vegetation condition comprises Completely Degraded (2.81 ha) and Degraded (2.62 ha).

4.3.3 Vegetation Significance

Database searches identified the EPBC-listed Wheatbelt Woodlands TEC and its Western Australian PEC equivalent has been mapped as corresponding with most of the survey area.

Taking the Approved Conservation Advice (TSSC 2015) for this community into consideration, the following vegetation types have been assessed as being representative of the TEC (as a combination of Eucalypt Woodland types), with the following explanations:

- **EaW** (*Eucalyptus astringens* mid woodland), where in Good or better condition noting that the small patch of this vegetation type near the northwest of the survey area (including the location of relevé BHR03) may also be representative despite its vegetation condition if the vegetation condition of the majority of the patch within which it is located (i.e. between road and railway) is in Good condition or better. Within the survey area the patch of this vegetation type within the larger bush block is incorporated into the broadly described Eucalypt Woodland types that are representative of the TEC.
- **EwAhW** (*Eucalyptus wandoo* and *Allocasuarina huegeliana* woodland):
  - except where the upper stratum is dominated by *Allocasuarina huegeliana* i.e. not a Eucalypt Woodland (e.g. **Plate 7**; quadrat BHQ07)
  - Where in Good or better condition and meeting extent conditions i.e. the larger bush block
  - Where in Degraded-Good condition i.e. where part of the vegetation type assessed as being in Degraded condition but retains important habitat features (but not where the vegetation condition is Completely Degraded or Degraded-Completely Degraded condition) i.e. where the vegetation condition is Degraded verging on Good, but not where in Degraded condition verging on Completely Degraded
  - Where it forms a mosaic with vegetation type **EaW** in Good or better condition[2]
  - Where separated by gravel tracks but not by sealed roads or railway

[2] The portion of vegetation meeting this set of conditions is linear, along the railway and does not meet extent conditions that are applicable to bushland blocks. It does, however, meet the width condition applicable to road reserves and, under the precautionary principle, railway corridors are herein considered in the same manner as road corridors.

- **HvCtS** (*Hakea varia* and *Calytrix tetragona* tall open shrubland) as there is a sparse tree component that meets the minimum requirement for numbers of mature trees (*Eucalyptus wandoo*) per unit area, considering also that the proximity to and small patch size of this vegetation type (**Plate 8**).

The total extent of vegetation considered to represent the Wheatbelt Woodlands TEC within the survey area is **11.23** ha **(**i.e. **27.90%** of the survey area).

Within the proposed development footprint, the Wheatbelt Woodlands TEC comprises **0.52** ha.

Plate 7: Vegetation type EwAhW patch characterised by *Allocasuarina huegeliana* (quadrat BHQ07)

Plate 8: Vegetation type HvCtS showing sparse *Eucalyptus wandoo* trees

4.3.4 Flora

Targeted searches were conducted in areas of habitat suitable for Threatened Flora (TF) and Priority Flora (PF) that were identified during the desktop assessment and previous surveys conducted in the surrounding area as having the potential to occur.

A total of 191 vascular flora were recorded from 134 genera and 49 families from the quadrats, relevés, opportunistic observations and searches for conservation-listed flora. Of these, 51 were introduced (26.70%) and nine (5.26%) could not be identified to species level due to insufficient diagnostic reproductive material. The most commonly represented families were Fabaceae (32 taxa), Poaceae (31) and Asteraceae (19), while the most commonly represented genera were *Acacia* (14 taxa), *Austrostipa* (5) and *Eucalyptus*, *Gastrolobium* and *Hakea* (4).

Fifty-one introduced flora species (weeds) were recorded during the field survey, representing 26.70% of the overall flora inventory. Most were agricultural or otherwise common weed species, with some (*Avena barbata*; Bearded Oat/Wild Oat, *Briza maxima*; Blowfly Grass, *Cynodon dactylon*; Couch Grass, *Ehrharta calycina*; Perennial Veldt Grass, *Ehrharta longifolia*; Annual Veldt Grass, *Eragrostis curvula*; African Love Grass, *Lolium rigidum*; Rye Grass, *Moraea setifolia*; Thread Iris, *Oxalis pes-caprae*; Sour Sob, *Romulea rosea*; Guildford Grass) occurring as dominant species in the groundstratum. *Acacia pycnantha*, Golden Wattle, occurs frequently and, in more disturbed areas, is at times the dominant midstratum species. However, *Asparagus asparagoides*, Bridal Creeper, recorded at one location within the survey area is a Declared Pest plant and Weed of National Significance (WoNS) species.

No Commonwealth EPBC Act or Western Australian BC Act-listed Threatened or Priority Flora were recorded during the field survey.

4.4 Terrestrial Fauna

4.4.1 Methodology

Prior to the field survey, desktop searches of Threatened and Priority fauna databases were undertaken. *NatureMap* identified 540 vertebrate fauna species previously recorded within the applied 30 km buffer area. Of these, 31 (20 birds, 10 mammals and one invertebrate) are conservation-listed. A search of the DBCA databases (search reference: 2020/000669#6460), identified 29 conservation-listed species as having previously been recorded from within the search area buffer.

The *Protected Matters Search Tool* (PMST) (Australian Government & DAWE 2020; search reference PMST_7SFIKO) identified:

- Three mammal species: one 'species or species habitat known to occur within area', two 'species or species habitat may occur within area'
- Fourteen bird species: four 'species or species habitat known to occur within area', five 'species or species habitat likely to occur within area', five 'species or species habitat may occur within area'.

The fauna field survey, with terrestrial vertebrate species being the main targets, incorporated a number of survey techniques as per the *Terrestrial Fauna Technical Guidance* (EPA 2020a). Survey techniques utilised included:

- Opportunistic bird observations while moving through the survey area;
- Turning of surface debris (rocks, logs, vegetation spoil heaps) that reptiles and mammals may shelter beneath;
- Raking of litter beds to locate fossorial reptile species;
- Active searches (day and night-time); and
- Searches for secondary evidence such as scats and tracks.

Fauna species were identified opportunistically based on sightings, calls, remains, diggings and other signs. Potential habitats for conservation significant species were identified and evaluated and their likelihood of occurrence assessed.

4.4.2 Fauna assemblage

A total of 26 vertebrate fauna species were recorded within the survey area, including two amphibians reported by site personnel. Of these, one is an introduced species (*Oryctolagus cuniculus*; Rabbit).

4.4.3 Conservation listed species

Two conservation-listed fauna species were recorded:

- *Merops ornatus* (Rainbow Bee-eater), protected as a migratory species under international agreements; and
- *Platycercus icterotis xanthogenys* (Western Rosella inland subspecies), listed as P4 by the DBCA.

The Western Rosella may nest within the survey area as suitable nest sites (hollows) are likely to occur. The survey area also provides suitable foraging conditions for this species which consumes Sheoak and

Eucalypt seeds, as well as a limited range of introduced species (DEC 2009). However, its listing as P4 indicates that this species is not considered currently to be threatened.

Rainbow Bee-eaters are protected under international agreements as a migratory species but are not considered to be threatened. There is little habitat suitable for nesting within the survey area, thus they are likely to only utilise the area for foraging and would not be dependent on any resources occurring within it as there is also contiguous similar habitat immediately adjacent.

4.4.4 Fauna habitat

During the field survey, fauna habitats present within the survey area were identified and mapped. Fauna habitats were described as an area which is distinguishable from its surrounding area by its landform, vegetation and fauna assemblage occupying the area. In addition, the likelihood to harbour specialised fauna species which are not found in adjacent areas was taken into consideration.

The following information was used to identify and map all fauna habitats within the survey area:

- Previous fauna habitat mapping;
- Land systems;
- Vegetation type and condition mapping;
- Aerial imagery;
- Landforms;
- Soil characteristic; and
- Fauna assemblage information.

The composition and characteristics of each fauna habitat type was recorded, including noting suitability for various fauna suites or conservation-listed species. Habitat types were delineated in the field and digitised upon return from the field survey.

As shown in **Table 6** (over the page) two fauna habitat types were recorded within the survey area:

- Woodland consisting largely of Eucalypt trees (most frequently Wandoo, occasionally Brown Mallet or introduced, planted species), or Sheoak in patches. Extent: 16.10 ha; 39.99 %; and
- Shrubland consisting largely of Degraded and disturbed vegetation shrubland without a tree component. Extent:3.79 ha; 9.41 %.

Table 6: Fauna habitat types

Habitat type	Description	Photograph
Woodland	**Eucalypt and Sheoak woodland** The Woodland habitat consists largely of Eucalypt trees (most frequently Wandoo, occasionally Brown Mallet or introduced, planted species), or Sheoak in patches. The Eucalypt woodland provides shelter, including nest sites, and foraging for leaf gleaning insectivorous birds and to a lesser extent birds that forage on Eucalypt nuts. The Brown Mallet and planted species Woodlands are virtually bare at ground level and provide little to no cover or food sources, whereas the Wandoo woodland (and Sheoak woodland) have a low understorey of mostly grass species that provide food sources for granivore birds including parrots. There is very little shrub cover in any area, thus predation by introduced predators is highly likely, including domestic cats from the immediately adjacent townsite, as well as by aerial predators. In most cases the soil surface is relatively undisturbed, however, as there is a significant clay component the surface is hard and unsuitable for fossorial species that require or prefer sand. Wandoo trees provide an abundance of hollows, thus suiting hollow nesting birds	 **Plate 9: Woodland habitat (Eucalypt)**  **Plate 10: Woodland habitat (planted)**

Habitat type	Description	Photograph
	including parrots, martins and woodswallows. **Extent**: 16.10 ha; 39.99%	

Habitat type	Description	Photograph
Shrubland	**Degraded and disturbed vegetation shrubland without a tree component** This habitat provides shelter for generalist bird species and suites that require shrubs for shelter or nesting. Granivore birds that forage for seeds are also favoured by this habitat type. However, the disturbed soil surface and weed cover in much of this habitat limits its use by ground-dwelling species. Overall, this habitat type is likely to be used by generalist fauna species that are common in the agricultural area **Extent**: 3.79 ha; 9.41%	 **Plate 11: Disturbed vegetation habitat**  **Plate 12: Degraded vegetation**

Source: Ecoscape (Australia) Pty Ltd, 2021

4.4.5 Black Cockatoo Assessment

The project area is located within the modelled breeding range of Carnaby's Cockatoo (DSEWPaC 2012). The nearest record of this species as identified by the DBCA database search is approximately 15 km from the project area.

During the field survey it became apparent that insufficient time had been allocated to assess the entire 40.26 ha survey area used for the vegetation and flora survey. Discussions with CBH identified that the large bushland block within the survey area was not proposed to be entirely cleared and did not require a tree survey over its entire extent. The survey area for tree assessments was reduced to the portion likely to be included in the proposed development envelope and therefore likely to be cleared and is identified on **Figure 4**.

Habitat Tree Assessment

Potential and active (actual) Black Cockatoo breeding trees were assessed as per Commonwealth guidance (DSEWPaC 2012). Relevant aspects of the recent draft referral guidelines (Commonwealth of Australia 2017) were also incorporated into the survey as this allows data to be gathered that could potentially be used when the updated referral guidelines are finalised.

Potential and actual Black Cockatoo habitat trees are:

- Listed tree species as provided in the Commonwealth guidance (DSEWPaC 2012);
- Minimum size of 500 mm diameter at breast height (DBH) for most species, or 300 mm DBH for Salmon Gum and Wandoo.

The following were recorded for each potential and actual habitat tree:

- Location, recorded using a handheld GPS device with an accuracy of approximately 5 m;
- Species;
- Identifying if tree hollows of suitable size and orientation are present, and recording evidence of use by cockatoos such as chewing at the hollow entrance;
- Habitat value according to the scoring system developed by Dr Mike Bamford (2016); this score reflects the existing value of the tree characteristics with respect to its potential to be used as a nesting tree;
- Photograph of each tree in the rail and road corridor and Class 3 and above trees in the bushland block, showing hollows if possible; and
- Known nesting trees as per DBCA data.

Breeding Habitat Assessment

Black Cockatoo habitat trees were assessed according to the criteria outlined in Commonwealth guidelines (Commonwealth of Australia 2017; DSEWPaC 2012), with additional information recorded using the Bamford (2016) grading classifications to identify the potential suitability of trees to be used for nesting based on the presence of, size and orientation of hollows. Brown Mallet (*Eucalyptus astringens*) trees were not assessed as they do not form suitable hollows as their branches rapidly narrow as the trees get taller and the tree core rarely forms hollows.

A total of 395 trees met the criteria to be considered as potential nest trees in the modified tree survey area (i.e. having a DBH of >300 mm if Wandoo (*Eucalyptus wandoo*; 364 trees) or 500 mm if other species; 29 dead trees; two *Eucalyptus kondininensis*). Of these, 247 (62.5%) were assessed as being Class 5 trees that do not currently have large hollows, and 121 (30.6%) were assessed as being Class 4 trees that have large hollows, however, the hollows are not of a suitable orientation to be preferred for breeding by Black Cockatoo species. Twenty-seven trees (6.8%) had potentially suitable hollows (i.e. large and vertical) for Black Cockatoos although no evidence of use (i.e. no chew marks) was observed. The hollows were not investigated in detail thus may not be of sufficient depth or width below the opening to be used (i.e. they are potentially suitable only). One of the Class 3 trees was dead; all others were Wandoo.

Tree locations and class are shown on **Figure 4**.

In terms of habitat value, the Woodland habitat scored 5 (of possible total of 21) identifying the Woodland habitat as a 'valued' habitat type for Carnaby's Cockatoo. The Shrubland habitat scored -3, identifying the Shrubland habitat type as not being suitable for Carnaby's Cockatoo.

Foraging and Roosting Habitat Assessment

In addition to the specific tree survey, the suitability of the survey area as foraging and roosting habitat as per the Commonwealth (2017) scoring tool was also assessed and mapped, taking into consideration:

- Presence of species favoured for foraging (as listed in the Commonwealth guidance, including Proteaceous species, Eucalypt species, *Pinus* species etc.);
- Evidence of foraging (e.g. chewed Eucalypt nuts);
- Location of known nesting or night roosting trees;
- Surrounding vegetation, up to at least 12 km from the survey area and taking into consideration the proximity to any known breeding habitat and watering points; and
- Presence of disease, such as *Phytophthora cinnamomi* or Marri Canker (*Quambalaria coyrecup*).

Both Woodland (16.1 ha) and Shrubland (3.79 ha) habitat types have the potential to be used as foraging by Carnaby's Cockatoo. A more detailed assessment of habitat quality, using the tool in the *Revised Draft Referral Guidelines for the three Black Cockatoo species* (Commonwealth of Australia 2017) was used for each habitat type in **Tables 7 and 8**.

Table 7: Foraging Habitat Scoring Tool – Carnaby's Cockatoo (Woodland Habitat)

Habitat Summary for Carnaby's Cockatoo Foraging Habitat	Score
Starting Score:	
Native Eucalypt woodland that has proteaceous species in the understorey[3]	+7
Attributes improving functionality of foraging habitat:	
Impact area contains trees with potential to be used for breeding (DBH ≥300 mm)	+2
Attributes reducing functionality of foraging habitat:	
No clear evidence of feeding debris	-2
Is >12 km from known breeding location[4]	-1
Is >12 km from known roosting site[5]	-1
FINAL SCORE	**5**

Table 2: Foraging Habitat Scoring Tool – Carnaby's Cockatoo (Shrubland Habitat)

Habitat Summary for Carnaby's Cockatoo Foraging Habitat	Score
Starting Score:	
Individual foraging plants	+1
Attributes improving functionality of foraging habitat:	
None	0
Attributes reducing functionality of foraging habitat:	
No clear evidence of feeding debris	-2
Is >12 km from known breeding location[6]	-1

[3] Small areas having *Hakea* species occurred within the Woodland habitat type.
[4] The nearest mapped breeding site is approximately 22 km south (Landgate 2020).
[5] There are no confirmed or unconfirmed roosting sites within 50 km of the survey area (Landgate 2020).
[6] The nearest mapped breeding site is approximately 22 km south (Landgate 2020).

Is >12 km from known roosting site[7]	-1
FINAL SCORE	**-3**

The score (5 of a possible total of 21) indicated in **Table 7** identifies the Woodland habitat as a 'valued' habitat type for Carnaby's Cockatoo. The score indicated in **Table 8** identifies the Shrubland habitat type as not being suitable for Carnaby's Cockatoo.

Within the proposed clearing area, 20 potential habitat trees were located. Of these, 13 were assessed as being Class 5 trees that do not currently have large hollows, and seven were assessed as being Class 4 trees that have large hollows however the hollows are not of a suitable orientation to be preferred for breeding by Carnaby's Cockatoo.

However, given the lack of nearby records of this species (the closest recorded breeding is 22 km south of the site), the only marginally suitable habitat (there were only few preferred foraging species present) and proximity to human disturbance it is highly unlikely that Carnaby's Cockatoo actually occur on site (Very low likelihood).

[7] There are no confirmed or unconfirmed roosting sites within 50 km of the survey area (Landgate 2020).

5. APPLICATION OF THE TEN CLEARING PRINCIPLES

An assessment of the proposed clearing of 6.56 Ha of native vegetation from within the project area against the Ten Clearing Principles outlined in Schedule 5 of the EP Act is provided in **Sections 5.1 – 5.10**.

A summary of the assessment is shown in **Table 9** below.

Table 9: Summary of Assessment Against the Ten Clearing Principles

Clearing principle	Unlikely to be at variance	May be at variance	Likely to be at variance
Principle (a) Native vegetation should not be cleared if it comprises a high level of biological diversity (**Section 5.1**)		X	
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 indigenous to Western Australia (**Section 5.2**)	X		
Principle (c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora (**Section 5.3**)	X		
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 (**Section 5.4**)			X
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 (**Section 5.5**)			X
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 (**Section 5.6**)	X		
Principle (g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation (**Section 5.7**)	X		
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 (**Section 5.8**)	X		
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 (**Section 5.9**)	X		
Principle (j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding (**Section 5.10**)	X		

5.1 Principle (a)

Native vegetation should not be cleared if it comprises a high level of biological diversity.

5.1.1 Assessment

The flora and fauna survey area, comprising 40.26 ha, is located in the Avon-Wheatbelt Interim Biogeographical Regionalisation for Australia (IBRA) region in the Katanning subregion (AW2 – Rejuvenated Drainage subregion), described as (DPIRD 2019b):

> *…an area of active drainage dissecting a Tertiary plateau in Yilgarn Craton. Gently undulating landscape of low relief. Proteaceous scrub-heaths, rich in endemics, on residual lateritic uplands and derived sandplains; mixed eucalypt, Allocasuarina huegeliana and Jam-York woodlands on Quaternary alluvials and eluvials. Within this, AW2 is the erosional surface of gently undulating rises to low hills with abrupt breakaways. Continuous stream channels that flow in most years. Colluvial processes are active. Soil formed in colluvium or in-situ weathered rock. Includes woodland of Wandoo, York Gum and Salmon Gum with Jam and Casuarina.*

The survey area corresponds with the Association 1085 pre-European vegetation association described as Medium woodlands; wandoo and blue mallet (*Eucalyptus gardneri*). The current extent of Vegetation Association 1085 is 11.46 % of its pre-European extent at State, IBRA bioregion (Avon Wheatbelt) and subregion (Katanning) levels, and 9.80 % at the LGA (Shire of Broomehill-Tambellup) level.

During the flora and vegetation survey conducted in October 2020, vegetation within the survey area consisted of six vegetation types:

- **Native vegetation:**
  - **EaW**: *Eucalyptus astringens* mid woodland over **Ehrharta longiflora*, *Acacia erinacea* and **Avena barbata* low sparse grassland/shrubland, located on more clayey soils
  - **EwAhW**: *Eucalyptus wandoo* and *Allocasuarina huegeliana* mid woodland over *Gastrolobium parviflorum* and *Jacksonia sternbergiana* mid/tall sparse shrubland over *Acacia erinacea*, **Ehrharta calycina* and **Avena barbata* low shrubland/tussock grassland/grassland; parts in slightly higher elevations and on more sandy soil were dominated by *Allocasuarina huegeliana*
  - **HvCtS**: *Hakea varia* and *Calytrix tetragona* tall open shrubland over *Desmocladus asper*, *Borya sphaerocephal*a and **Briza maxima* low rushland/forbland/grassland with *Eucalyptus wandoo* mid isolated trees, located within areas of slightly lower elevation that are winter-wet
  - **JsApW**: *Jacksonia sternbergiana* and **Acacia pycnantha* low woodland over *Gastrolobium parviflorum* mid sparse shrubland over *Dianella brevicaulis*, *Neurachne alopecuroidea* and **Ehrharta calycina* low forbland/tussock grassland
- **Disturbed vegetation: ApS**, **Acacia pycnantha* tall open shrubland over **Romulea rosea*, *Neurachne alopecuroidea* and **Ehrharta calycina* low forbland/tussock grassland
- **Planted vegetation: AaSsS**, *Acacia acuminata* and *Santalum spicatum* tall open shrubland over **Ehrharta longiflora*, **Romulea rosea* and **Oxalis pes-caprae* low closed grassland/forbland (Sandalwood plantation).

Database searches identified the EPBC-listed Wheatbelt Woodlands TEC and its Western Australian PEC equivalent has been mapped as corresponding with most of the survey area. Taking the Approved Conservation Advice (TSSC 2015) for this community into consideration, the following vegetation types

have been assessed within the survey area as being representative of the TEC (where the specific criteria for the TEC are met):

- **EaW** (*Eucalyptus astringens* mid woodland), where in Good or better condition
- **EwAhW** (*Eucalyptus wandoo* and *Allocasuarina huegeliana* woodland)
- **HvCtS** (*Hakea varia* and *Calytrix tetragona* tall open shrubland).

The total extent of vegetation considered to represent the Wheatbelt Woodlands TEC within the survey area is **11.23** ha **(**i.e. **27.90%** of the survey area). Of this, **0.52 ha** lies within the project area.

Vegetation condition was assessed broadly and continuously throughout the survey area and at each quadrat. All vegetation was assessed as being in Very Good to Completely Degraded condition (**Figure 3**).

Within the survey area, 191 vascular flora were recorded from 49 families and 134 genera. At least 51 of the recorded taxa were introduced, representing at least 26.7 % of all recorded taxa. The most commonly represented families were Fabaceae (32 taxa), Poaceae (31) and Asteraceae (19), while the most commonly represented genera were *Acacia* (14 taxa), *Austrostipa* (5) and *Eucalyptus*, *Gastrolobium* and *Hakea* (4).

No Threatened Flora (TF) pursuant to the *Biodiversity Conservation Act 2016* (BC Act) nor the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were recorded during the survey. No Priority Flora (PF) pursuant to State legislation were recorded during the survey.

Within the survey area, 26 vertebrate fauna species were recorded (1 mammal, 21 bird, 2 amphibian and 2 reptile); of these two are conservation-listed:

- *Merops ornatus* (Rainbow Bee-eater), protected as a migratory species under international agreements
- *Platycercus icterotis xanthogenys* (Western Rosella), listed as P4 by the DBCA.

5.1.2 Conclusion

The project area is located within the eastern part of the Avon Wheatbelt which is considered as a biodiversity hotspot. The flora survey resulted in 191 taxa of vascular flora being recorded, of these 51 species (26.70 %) were introduced species. The floral diversity is likely to be considered high.

The project area contains vegetation considered representative of a Threatened Ecological Community, however, there is not a wide range of vegetation types present thus diversity at this level is unlikely to be considered high.

The fauna survey resulted in 26 vertebrate fauna species being recorded. This is unlikely to be considered to represent a high diversity of this taxonomic group.

The proposed clearing of the project area <u>may</u> be at variance with this Principle.

5.2 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 indigenous to Western Australia.

5.2.1 Assessment

The *NatureMap* search identified 540 vertebrate fauna species previously recorded within the applied 30 km buffer area. Of these, 31 (20 birds, 10 mammals and one invertebrate) are conservation-listed.

A search of the DBCA's Threatened Fauna database was undertaken to establish whether species listed under the BC Act have been recorded in a 30 km buffer to the site. In total, 29 conservation-listed were identified as having previously been recorded from within the search area buffer, consisting of seven mammals, 21 birds and one invertebrate (noting that invertebrates were not included in the assessment).

The EPBC Act PMST identified three mammals and 14 bird Threatened and Migratory species that could potentially occur within or in proximity to the survey area. Given the lack of water occurring within the survey area, marine and migratory bird species are unlikely to occur.

A pair of Western Rosellas inland subspecies (*Platycercus icterotis xanthogenys*; P4) were observed in Wandoo Woodland during the field survey. P4 species are rare, near threatened or in need of monitoring but not currently considered as threatened (DBCA 2019b). The Western Rosella has undergone a significant contraction in its distribution since the 1970s due to removal of its feeding and breeding habitat. Although they feed on Sheoak and Eucalypt seeds, Western Rosellas only consume a limited variety of introduced species (DEC 2009), unlike more common parrot species that were also recorded (e.g. Australian Ringneck and Elegant Parrot), both of which were frequently observed foraging at ground level. They nest in tree hollows, with Wandoo being a favoured species (*ibid*.), although the hollows are usually 1 m or more deep (Birdlife Australia 2020a).

Rainbow Bee-eaters were heard calling and observed in Wandoo woodland. They are protected under international agreements as migratory species, however, they have no other conservation significance and are listed by the IUCN as Least Concern (DAWE 2020b).

Rainbow bee-eaters nest in sandy banks, digging long tunnels (Birdlife Australia 2020b). Only limited nesting sites are available within the survey area in the form of low embankments along track edges or old workings (e.g. clearing for telephone cables) in some of the more sandy sites near the railway, or possibly the railway embankments.

No nest holes were observed during the survey, and it is unlikely that the survey area is used for nesting although it does provide good foraging habitat for this insectivorous species.

The survey area is within the mapped breeding range of Carnaby's Cockatoo (DSEWPaC 2012a) thus a Black Cockatoo habitat assessment was conducted including a tree assessment. A total of 395 trees met the criteria as potential breeding trees (according to the Bamford 2016 grading system):

- 247 (60.25 %) were assessed as Class 5 (trees without suitable hollows);
- 121 (30.6 %) were assessed as Class 4 (trees with large hollows or broken branches, but not having the features preferred by Black Cockatoos for nesting); and
- 27 were assessed as Class 3 (trees with potentially suitable hollows but with no evidence of use by Black Cockatoos).

No trees were assessed as Class 2 (trees with suitable hollows and evidence of use, but not currently occupied) or Class 1 (having an active nest) (**Figure 5**).

Within the survey area 16.10 ha (39.99 %) was assessed as being Woodland habitat that is considered to be 'valued' habitat type for Carnaby's Cockatoo according to the scoring tool in the Draft Revised Referral Guideline (Commonwealth of Australia 2017).

5.2.2 Conclusion

The project area is located in an area that has been subject to significant clearing, with less than 20% of the pre-European vegetation association remaining at larger scales and less than 10% at local government scale. Therefore, it is possible that the habitat present within the project area could be considered as significant habitat for indigenous fauna.

The major fauna habitat type is Woodland, with an abundance of hollow trees suitable for a range of bird species. However, the project area is adjacent to similar vegetation that would also provide this resource. No evidence of use by Carnaby's Cockatoo was observed during the field survey and a very low desktop and post-survey likelihood of occurring was attained. Despite numerous records identified by the DBCA database search from within 30 km of the project area, the nearest confirmed record is approximately 15 km from the project area.

The proposed clearing of the project area is <u>unlikely</u> to be at variance with this Principle.

5.3 Principle (c)

Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

5.3.1 Assessment

Targeted searches were conducted in areas of habitat suitable for Threatened Flora (TF) and Priority Flora (PF) that were identified during the desktop assessment and previous surveys conducted in the surrounding area as having the potential to occur.

A total of 191 vascular flora were recorded from 134 genera and 49 families from the quadrats, relevés, opportunistic observations and searches for conservation-listed flora. Of these, 51 were introduced (26.70%) and 9 (5.26%) could not be identified to species level due to insufficient diagnostic reproductive material. The most commonly represented families were Fabaceae (32 taxa), Poaceae (31) and Asteraceae (19), while the most commonly represented genera were *Acacia* (14 taxa), *Austrostipa* (5) and *Eucalyptus*, *Gastrolobium* and *Hakea* (4).

Fifty-one introduced flora species (weeds) were recorded during the field survey, representing 26.70% of the overall flora inventory. Most were agricultural or otherwise common weed species, with some (*Avena barbata*; Bearded Oat/Wild Oat, *Briza maxima*; Blowfly Grass, *Cynodon dactylon*; Couch Grass, *Ehrharta calycina*; Perennial Veldt Grass, *Ehrharta longifolia*; Annual Veldt Grass, *Eragrostis curvula*; African Love Grass, *Lolium rigidum*; Rye Grass, *Moraea setifolia*; Thread Iris, *Oxalis pes-caprae*; Sour Sob, *Romulea rosea*; Guildford Grass) occurring as dominant species in the groundstratum. *Acacia pycnantha*, Golden Wattle, occurs frequently and, in more disturbed areas, is at times the dominant midstratum species. However, *Asparagus asparagoides*, Bridal Creeper, recorded at one location within the survey area is a Declared Pest plant and Weed of National Significance (WoNS) species.

No Commonwealth EPBC Act or Western Australian BC Act-listed Threatened or Priority Flora were recorded during the field survey.

5.3.2 Conclusion

No rare flora (TF listed for protection under the Commonwealth EPBC Act or Western Australian BC Act) have been recorded from the survey area.

The proposed clearing of the project area is unlikely to be at variance with this Principle.

5.4 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.

5.4.1 Assessment

Database searches identified the EPBC-listed *Eucalypt Woodlands of the Western Australian Wheatbelt* is listed as a Critically Endangered TEC under the EPBC Act and its Western Australian PEC equivalent has been mapped as corresponding with most of the survey area.

A vegetation survey of the 40.26 ha survey area found that the TEC was present within the project area and surrounding area assessed during the survey (**Appendix 3**). Within the survey area, this ecological community consists of the **EaW** (*Eucalyptus astringens* mid woodland), **EwAhW** (*Eucalyptus wandoo* and *Allocasuarina huegeliana* woodland) and **HvCtS** (*Hakea varia* and *Calytrix tetragona* tall open shrubland) vegetation communities (**Figure 3**).

While this ecological community is listed as a TEC under the EPBC Act, it has not been assessed as such under this clearing principle, as the definition of a TEC under this clearing principle is that from Section 27(1) of the BC act and therefore does not include federally listed TECs. As this community is not a state-listed Threatened Ecological Community, the impacts to this community have already been described in an EPBC Referral lodged by the proponent in August 2021.

In terms of the DBCA listed Priority Ecological Communities (PEC) and vegetation includes the following: *Brown mallet (Eucalyptus astringens) communities in the western Wheatbelt on alluvial flats* (P1), *Red Morrel woodland of the Wheatbelt* (P1), *Yate (Eucalyptus occidentalis) dominated alluvial claypans of the Jingalup soil system* (P2) (Ecoscape (Australia) Pty Ltd 2021).

5.4.2 Conclusion

The 40.26 ha survey area includes 11.23 ha that has been assessed as being suitable for representing the *Eucalypt Woodlands of the Western Australian Wheatbelt* EPBC-listed TEC and is DBCA PEC equivalents. Of this, the proposed clearing of the 5.43 ha from within the project area will result in the loss of 0.52 ha of the listed TEC/PEC equivalents.

The proposed clearing of the project area is at variance with this Principle.

5.5 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.

5.5.1 Assessment

The survey area is located within the Avon-Wheatbelt Interim Biogeographical Regionalisation for Australia (IBRA) region in the Katanning subregion (AW2 – Rejuvenated Drainage subregion) and corresponds with the Association 1085 pre-European vegetation association described as Medium woodlands; wandoo and blue mallet (*Eucalyptus gardneri*).

The current extent of Vegetation Association 1085 is 11.46 % of its pre-European extent at State, IBRA bioregion (Avon Wheatbelt) and subregion (Katanning) levels, and 9.80 % at the LGA (Shire of Broomehill-Tambellup) level.

5.5.2 Conclusion

There is less than 10% of the pre-European vegetation association (1085) remaining at local government scale, and only 11.46% remaining at other scales.

The proposed clearing of the project area is at variance with this Principle.

5.6 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.

5.6.1 Assessment

The project area is located largely in the Hardy Estuary Coblinine River catchment of the Blackwood River, and partly (in the southern portion) in the Nornalup Inlet Frankland River catchment of the Frankland River (Landgate 2020).

Detailed flora and vegetation surveying conducted within the survey area did not identify the presence of native vegetation types or flora species that are generally associated with watercourses and/or wetlands within the region. Nor were any watercourses or wetlands identified as being located within the survey area.

5.6.2 Conclusion

There are no significant watercourses or wetlands within or in close proximity to the project area that would be affected by any clearing.

The proposed clearing of the project area is unlikely to be at variance with this Principle.

5.8 Principle (g)

Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

5.7.1 Assessment

The project area is associated with the Dumbleyung map sheet (S150-07) of the 1:250,000 Geological Map of Western Australia (DMIRS 2020) intersecting two geological units:

- Qc – described as Colluvium and minor alluvium – silt, sand and gravel; generally, on slopes adjoining rock and laterite outcrops; and
- Czc – described as Conglomerate – boulders of quartzite, granite and dolerite in sandstone or claystone matrix.

Two soil landscape units intersect the project area:

- 257Ca_2 (Carrolup 2 subsystem) comprising grey sandy duplex soils on slopes, hill crests and less commonly minor drainage lines within the Carrolup system (32.01 ha); and
- 257Ca_3 (Carrolup 3 subsystem) comprising low hills and rises in the Carrolup system with sandy and loamy soils formed on shallow weathered granite and dolerite and small areas of rock outcrop (8.29 ha).

5.7.2 Conclusion

The project area does not have sandy soils that are susceptible to erosion, nor would any adjacent areas be significantly affected by clearing within the project area.

The proposed clearing of the project area is <u>unlikely</u> to be at variance with this Principle.

5.9 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.

5.8.1 Assessment

The project area is located immediately to the east of a Shire reserve (Boot Rock Reserve), however it does not intersect any conservation lands that would be affected by any works within the project area. The nearest areas managed for conservation are located at:

- Broomehill Nature Reserve, approximately 5 km to the south-east;
- Peringillup Nature Reserve, approximately 10 km to the south; and
- Unnamed Class A Nature Reserve, approximately 13 km to the east.

5.8.2 Conclusion

The project area is not near any lands vested for conservation that would be affected by any works within the project area.

The proposed clearing of the project area is <u>unlikely</u> to be at variance with this Principle.

5.10 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.

5.9.1 Assessment

The project area is located largely in the Hardy Estuary Coblinine River catchment of the Blackwood River, and partly (in the southern portion) in the Nornalup Inlet Frankland River catchment of the Frankland River (Landgate 2020).

The project area does not directly intersect any wetlands or significant drainage lines. No hydrological feature of significance is situated in close proximity to the project area.

5.9.2 Conclusion

Clearing and developing the project area is unlikely to have any impact on surface water as there are no major drainage lines nearby, only a small local stream, or underground water.

The proposed clearing of the project area is <u>unlikely</u> to be at variance with this Principle.

5.11 Principle (j)

Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

5.10.1 Assessment

The scale of the project was not considered significant enough to warrant conducting flood modelling of the local catchment.

The project area is not sited within any special control areas relating to flooding and has not historically been subject to flooding.

5.10.2 Conclusion

The proposed clearing of vegetation from within the project area is unlikely to cause, or exacerbate, the incidence or intensity of flooding.

The proposed clearing of the project area is <u>unlikely</u> to be at variance with this Principle.

6. SUMMARY AND CONCLUSION

Approximately 5.43 ha of native vegetation is proposed to be cleared from within the 25.79 ha project area. The clearing is required to enable the construction and/or upgrade of facilities that are integral to improving grain storage capacity and outloading time at CBH's Broomehill facility.

A desktop review of published Western Australian and Commonwealth databases pertaining to the 40.26 ha survey area was undertaken prior to field surveying being conducted. The desktop review included data and information relating to TF, PF and TECs, Threatened and Migratory fauna species, ESAs, water and wind erosion risk, groundwater dependent ecosystems, hydrology and hydrogeology.

The significant findings of the desktop assessment were:

- The pre-European vegetation association intersecting the project area has 9.80% of its original extent remaining at local government area scale, and 11.46% remaining at higher scales;
- The project area is included in mapped extents of the EPBC-listed *Eucalypt Woodlands of the Western Australian Wheatbelt* Threatened Ecological Community and its Western Australian equivalent Priority Ecological Community;
- 18 Threatened Flora are known or likely to occur within 50 km of the project area; 92 Priority Flora species have been recorded from within 50 km;
- No Threatened or Priority-listed flora were known to occur within the project area, although one TF and three PF were considered to have a Possible likelihood of occurring at desktop assessment stage;
- No Threatened, Priority-listed or otherwise conservation-listed fauna species were known to occur within the survey area, although one EPBC-listed species was considered a High likelihood of occurring at desktop assessment stage;
- The project area is within the mapped extent considered as Carnaby's Cockatoo breeding habitat, although none have been recorded from within 15 km of the site.

The flora and vegetation survey identified the following from the 40.26 ha survey area:

- 191 vascular flora taxa recorded from nine floristic quadrats, six relevés and opportunistic observations:
  - no conservation-listed species, and none are considered likely to occur
  - 51 introduced species including one Declared Pest plant and WoNS species; **Asparagus asparagoides* (Bridal Creeper) that has no management requirements in relation to its presence
  - six flora species having significance according to the Flora and Vegetation Technical Guidance as range extensions or poorly known species
- Six vegetation types:
  - **EaW**: *Eucalyptus astringens* mid woodland (1.32 ha, plus 1.58 ha as a mosaic with the following vegetation type)
  - **EwAhW**: *Eucalyptus wandoo* and *Allocasuarina huegeliana* mid woodland (15.98 ha); parts in slightly higher elevations and on more sandy soil were dominated by *Allocasuarina huegeliana*
  - **HvCtS**: *Hakea varia* and *Calytrix tetragona* tall open shrubland (0.61 h)
  - **JsApW**: *Jacksonia sternbergiana* and **Acacia pycnantha* low woodland (0.96 ha)
  - Disturbed vegetation: **ApS**, **Acacia pycnantha* tall open shrubland (0.13 ha)
  - Planted vegetation: **AaSsS**, *Acacia acuminata* and *Santalum spicatum* tall open (Sandalwood plantation; 2.73 ha).

- Where meeting the extent and condition criteria, parts of vegetation types **EaW**, **EwAhW** (except where dominated by *Allocasuarina huegeliana*) and **HvCtS** were considered to represent the Eucalypt Woodlands of the Western Australian Wheatbelt TEC and PEC (11.23 ha); and
- The vegetation condition ranged from Very Good to Completely Degraded.

The vertebrate fauna survey that incorporated a Black Cockatoo habitat assessment identified the following from the survey area:

- 26 vertebrate fauna species including one introduced species (Rabbit) and two conservation-listed species:
  - *Merops ornatus* (Rainbow Bee-eater), protected as a migratory species under international agreements but not considered threatened
  - *Platycercus icterotis xanthogenys* (Western Rosella), listed as P4 by the DBCA.
- Two fauna habitat types (Woodland and Shrubland);
- 395 trees of suitable size to be considered as Black Cockatoo habitat trees although only 27 of these had hollows that potentially may be suitable for nesting (noting that not all of these trees were within the portions that CBH is considering for its expansion);
- The Woodland habitat type (16.1 ha) was considered as 'valued' Black Cockatoo foraging habitat, however, there were few preferred foraging species present;
- The post-survey likelihood considered that Black Cockatoo species (specifically Carnaby's Cockatoo) has a Very low likelihood of occurring within the survey area; and
- No conservation-listed fauna species (other than those recorded) are considered to have a High likelihood of occurring within the survey area.

Potential impacts associated with the proposed vegetation clearing to allow for the expansion of the Broomehill facility have been considered with respect to the 10 Clearing Principles outlined in Schedule 5 of the EP Act.

As discussed in **Section 5**, it is concluded that the proposed clearing of **5.43 ha** of native vegetation from within the 25.79 ha project area includes **0.52 ha** of TEC and is likely to be at variance with Clearing Principles (d) and (e) and, in terms of floral diversity, may be at variance with Clearing Principle (a).

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