Corrigin Grain Receival Site Expansion – Preliminary Documentation (EPBC Ref. 2021/9024)

CBH Group

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Template 2.8.1

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Abbreviations

Abbreviation	Description
ALA	Atlas of Living Australia
BC Act	*Biodiversity Conservation Act 2016*
CBH	CBH Ltd (the Proponent)
CEMP	Construction Environmental Management Plan
DAWE	Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions
DBH	Diameter at Breast Height
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEC	Department of Environment and Conservation
DEWHA	Department of Environment, Water, Heritage and the Arts
DoE	Department of the Environment
DoEE	Department of Energy and the Environment
DP	Deposited Plan
DPaW	Department of Parks and Wildlife
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
ELA	Eco Logical Australia
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ha	Hectares
IBRA	Interim Biogeographic Regionalisation for Australia
km	Kilometres
MNES	Matters of National Environmental Significance
OBH	Open Bulk Head
OMP	Offset Management Plan
PEC	Priority Ecological Community
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities
TEC	Threatened Ecological Community
TSSC	Threatened Species Scientific Community
WA	Western Australia
WWF	World Wildlife Fund

1. Introduction

1.1. Background

The Cooperative Bulk Handling Ltd (herein 'CBH') proposes to expand its facilities at the existing Corrigin Grain Receival Site (the proposed action), in the Avon-Wheatbelt bioregion of Western Australia (WA). The Corrigin townsite is located approximately 225 kilometres (km) east of Perth, with the Grain Receival Site less than 2 km south-west of the town centre (Figure 1-1).

As part of the expansion, approximately 1.6 hectares (ha) of native vegetation is proposed to be cleared within a 16.69 ha Proposal Area (Disturbance Footprint; Figure 1-2). The remainder of the Disturbance Footprint is devoid of vegetation and comprises agricultural lands or areas previously cleared for the existing development (approximately 15.1 ha, or 90%).

The native vegetation proposed for clearing contains Matters of National Environmental Significance (MNES), including ecological communities and fauna (or fauna habitat) listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As such, the proposed action was referred to the Department of Agriculture, Water and the Environment (DAWE; now known as the Department of Climate Change, Energy, the Environment and Water [DCCEEW]) in August 2021 (EPBC Ref: 2021/9024). On 21 September 2021, a delegate of the Minister for the Environment decided that the proposed action is a controlled action and on 6 October 2021 the delegate decided the proposed action would be assessed by Preliminary Documentation.

The purpose of this document is to provide the requested Preliminary Documentation information to the Minister so the proposed action and potential impacts to MNES can be assessed and a decision made.

1.1.1. Supporting documentation

This Preliminary Documentation is supported by the following documentation, provided as separate attachments:

- Attachment A: DBCA Advice – Development Application for CBH Corrigin
- Attachment B: Corrigin Grain Receival Site Expansion Flora and Fauna Survey Report (ELA 2021)
- Attachment C: CBH Corrigin: Additional Carnaby's Cockatoo information to support environmental approvals (ELA 2023a)
- Attachment D: Corrigin Targeted Red-tailed Phascogale Assessment (ELA 2022)
- Attachment E: Construction Environmental Management Plan (CBH 2023)
- Attachment F: Corrigin Grain Receival Site Expansion Offset Proposal (ELA 2024a)
- Attachment G: Corrigin Grain Receival Site Expansion Offset Management Plan (ELA 2024b).

1.2. Description of the proposed action

The proposed action is an expansion to the existing Corrigin Grain Receival Site in order to provide additional grain receival and storage facilities. The development will progress in two stages. Stage 1 will install two new permanent specification 350 m long Open Bulk Heads (OBHs) to increase the site's permanent storage capacity by a further 91,700 tonnes (t). The new OBHs will be serviced by a fixed grid and conveyor loading system with two stackers/trippers, capable of in-loading at a rate of more

than 500 tph. In addition, each OBH will be serviced by 'drive over grid' stackers, to provide additional in-loading capacity and segregations. A new electrical point of supply is being provided through Western Power off existing powerlines. The on-site marshal, sample and weigh infrastructure and internal roads are to be upgraded and rearranged to improve trafficking and congestion and address off-site truck queuing. A new site exit is also included as part of the expansion upgrade.

Stage 2 will provide additional grain storage, with the installation of three additional OBHs and supporting facilities.

The proposed action will:

- Allow the consolidation of existing grain receival sites, resulting in the closure of the CBH Ainsworth, Jubuk and Bullaring sites
- Cater for forecast harvest growth; the existing Corrigin Grain Receival Site currently has a permanent storage utilisation of 108% and has a forecast permanent storage utilisation of 133% by 2025
- Reduce Grower turnaround times
- Cater for the reduction in storage facilities due to the decommissioning of facilities at end of life.

1.3. State and local government requirements

In Western Australia, native vegetation can only be cleared with a Native Vegetation Clearing Permit (NVCP) granted under Part V Division 2 of the *Environmental Protection Act 1986* (EP Act), or an approval under Part IV of the EP Act, except in some circumstances where exemptions apply. The proposed action qualifies for an exemption under Regulation 5, Item 1 (Clearing to construct a building) of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004.

As part of the proposed action, a Development Application was submitted to the Shire of Corrigin (the Shire) in November 2021. The Shire forwarded the application to the Department of Biodiversity, Conservation and Attractions (DBCA) for further comment and advice. DBCA responded via email on 2 December 2021 with a number of queries, forwarded to CBH, and accompanied by associated queries from the Shire. The queries from DBCA and the Shire, and the responses to these queries are provided in Attachment A. Information provided throughout this Preliminary Document also provides further supporting evidence for many of the queries raised by DBCA and the Shire. The Development Application was approved by the Shire on 24 May 2022 (Approval no. PA06-2021).


581500E
582000E
582500E
6422000N
6421500N
6421000N
6420500N
Tassell St
Channon Ct
Woglin St
Caley Wy
Surburban St
Corrigin South Rd
Lot 20
581732.3 mE
6421118.6 mN
Lot 21
Dilling Railway Rd
Perth
Northam
Kondinin
Bunbury
Katanning
Sources
Project boundaries: supplied by CBH 2024
Remnant Native Vegetation: DPIRD-005, 2023
Cadastre (No attributes) (LGATE-001) Landgate 2024)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024
Figure 1-1: Location of the Proposal Area
Proposal Area (16.69 ha)
Avoidance Area (5.77 ha)
Remnant Native Vegetation (DPIRD-005)
Cadastral Boundary
N
0 62.5 125 250
Metres
Datum/Projection:
GDA 1994 MGA Zone 50
18524-DD/RD/OK Date: 27/03/2024
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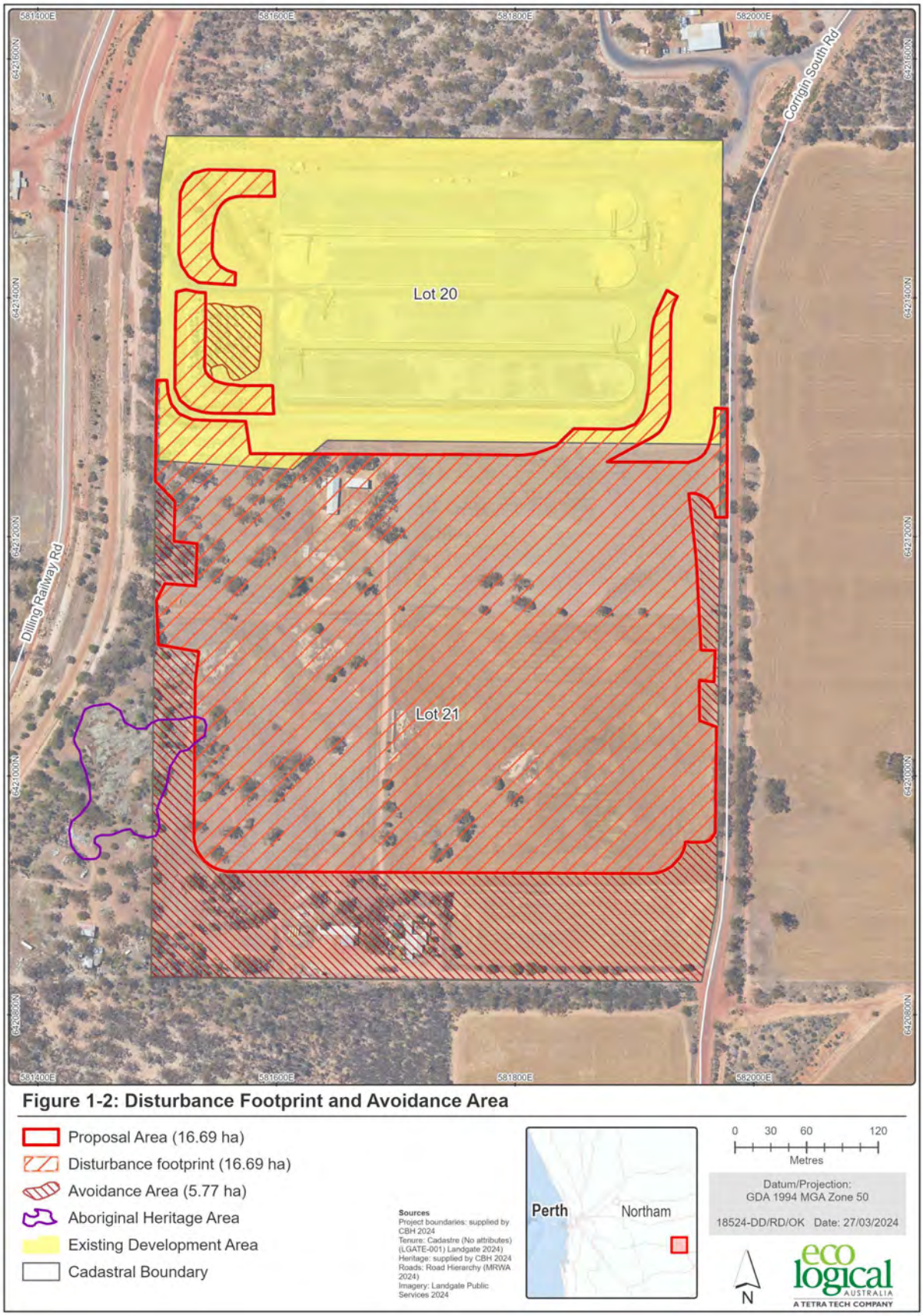

Figure 1-2: Disturbance Footprint and Avoidance Area

2. Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community

This section describes the potential direct and indirect impacts of the proposed action on the Eucalypt Woodlands of the Western Australia Wheatbelt Threatened Ecological Community (Wheatbelt Woodlands TEC). It also addresses consideration of avoidance and mitigation measures and assesses significant residual impacts.

2.1. Overview

The Wheatbelt Woodlands TEC is composed of eucalypt-dominated woodlands in the Western Australian Wheatbelt region as defined by the IBRA Avon Wheatbelt 1 and 2 and Western Mallee subregions, with the specific exceptions of woodlands and forests dominated by Jarrah (*Eucalyptus marginata*) or Marri (*Corymbia calophylla*) where they occur without York Gum (*Eucalyptus loxophleba*) present; and non-woodland communities dominated by eucalypts, specifically those dominated by eucalypts with a mallee growth form (Department of the Environment [DoE] 2015a). The community is defined primarily by its structure as a woodland, with the presence in the canopy layer of eucalypt trees - most commonly Salmon Gum (*E. salmonophloia*), York Gum, Red Morrel (*E. longicornis*) or Gimlet (*E. salubris*). Several of the other emergent eucalypt species which may be present as a defining species (e.g. Kondinin Blackbutt [*E. kondininensis*], *E. myriadena*, Salt River Gum [*E. sargentii*], Silver Mallet [*E. ornata*] and Mallet [*E. singularis*]) are found only in the Western Australian Wheatbelt (DoE 2015a).

2.2. Status, policy and guidance

The Wheatbelt Woodlands TEC is listed as Critically Endangered under the EPBC Act and is also categorised as a Priority 3 Priority Ecological Community (PEC) by DBCA. Approved Conservation Advice (incorporating listing advice) has been developed for the Wheatbelt Woodlands TEC and provides a number of priority conservation actions to assist in achieving the overarching conservation objective to '*to mitigate the risk of extinction of the Eucalypt Woodlands of the WA Wheatbelt ecological community, and maintain its biodiversity and function*' (DoE 2015a). These priority conservation actions include:

- Protect the ecological community to prevent further loss of extent and condition
- Restore the ecological community within its original range by the active abatement of threats, re-vegetation and other conservation initiatives
- Communicate with and support research, land-use planners, landholders, land managers, community members, including the Indigenous community, and others to increase understanding of the value and function of the ecological community and encourage their efforts in its protection and recovery.

The Approved Conservation Advice outlines the main threats to the Wheatbelt Woodlands TEC which include clearance and fragmentation, loss of habitat for key native species, weed invasion, impacts from pest animals, degradation associated with application of chemicals or pesticide/herbicide spray drift from nearby agricultural lands, grazing pressure, increased salinity and waterlogging associated with over-clearing, soil acidification, altered fire regimes, dieback disease, and climate change (DoE 2015a).

The Approved Conservation Advice for this community has been considered in this assessment of impacts in the following ways:

- The guidance for identifying the community has been used to determine the presence of the Wheatbelt Woodlands TEC
- The description of threats has been used to identify how the proposed action could impact the Wheatbelt Woodlands TEC
- The advice on offsets has been used to inform consideration of suitable potential offsets.

The assessment provided in the following sections demonstrates that the proposed action has taken the Approved Conservation Advice into consideration.

2.3. Site values

2.3.1. Wheatbelt Woodlands TEC

A total of 0.76 ha of Wheatbelt Woodlands TEC has been mapped within the ELA (2021) survey area, of which 0.31 ha occurs within the Proposal Area (patches A and B as shown in Figure 2-1; Table 2-1; ELA 2021). The area of potential impact to Wheatbelt Woodland TEC has been reduced from the impact stated in the EPBC Referral (Section 2.3.1.1).

The assessment was underpinned by a Reconnaissance level flora and vegetation survey undertaken in October 2020 within the Proposal Area and surrounds (the survey area; Figure 2-1) (ELA 2021). The survey was undertaken in accordance with the Environmental Protection Authority's (EPA) technical guidance for Reconnaissance level surveys (EPA 2016). Four vegetation communities were mapped within the survey area, comprising three eucalypt woodland communities (ElW, EsElW and EwW) and one Acacia shrubland (AcTS) community (ELA 2021; Figure 2-1). The occurrence of Wheatbelt Woodlands TEC was inferred, and so the vegetation communities were assessed (see ELA 2021) utilising the key diagnostic characteristics of the TEC, as described in Approved Conservation Advice (DoE 2015a). This assessment concluded that approximately 0.76 ha of parts of vegetation communities ElW, EsElW and EwW represents the Wheatbelt Woodlands TEC (and subsequently, the associated State listed PEC); in the survey area (Figure 2-2).

2.3.1.1. Overestimation of Wheatbelt Woodlands TEC within Disturbance Footprint in Referral

The proposed extent of disturbance of Wheatbelt Woodlands TEC reported in the EPBC Act Referral (approximately 0.36 ha) was an overestimation. In reviewing the mapping to prepare the Preliminary Documentation (this document), the actual area of Wheatbelt Woodland TEC to be disturbed is confirmed to be 0.31 ha (Table 2-1; Figure 2-1; Figure 2-2).

2.3.1.2. Review of the extent of Wheatbelt Woodlands TEC

The area of Wheatbelt Woodlands TEC Patch A within the Disturbance Footprint is 0.29 ha, within an inferred total immediate area of approximately 1.86 ha (includes the 1.38 ha 'Patch A extension' and the 0.19 ha within the Avoidance Area/Offset Site [see Section 5]), that includes vegetation that extends west and south of the Proposal Area (Table 2-1; Figure 2-2). Patch A was assessed as meeting the condition threshold in Category D (for Degraded condition), with the patch size >5 ha, as the vegetation inside the survey area is part of a continuous patch of eucalypt woodlands to the west of the survey area (ELA 2021; Figure 2-2). The actual total extent of vegetation representing the TEC outside the

survey area is unknown, the occurrence of more than 5 ha of the TEC is inferred from aerial photography and on-site observations. The entire potential patch has not been surveyed or fully assessed for TEC status and condition.

The total extent of Patch B is 0.21 ha, of which 0.02 ha occurs inside the Disturbance Footprint (Table 2-1; Figure 2-2). Patch B is located within the road reserve along the eastern edge of the Proposal Area and meets the condition threshold Category C (for Good condition), with the roadside patch width being greater than 5 m (ELA 2021).

Patch C (0.05 ha; shown in Figure 2-2) represents the vegetation type EwW (*Eucalyptus wandoo* Woodland) – a candidate to represent Wheatbelt Woodland TEC; however, it does not meet the roadside patch width criterion (i.e. is <5 m; DoE 2015a) and as such, is not considered to represent the TEC (ELA 2021). This area was incorrectly included in the EPBC Act Referral calculations and mapping as representing the TEC.

Patch D is considered Wheatbelt Woodlands TEC but occurs outside the Proposal Area along the adjacent eastern road reserve (some branches overhang the Proposal Area but will not be impacted by the proposed action).

In conclusion, 0.31 ha of Wheatbelt Woodland TEC occurs within the Proposal Area that will be subject to direct impacts. Impacts are described further in Section 2.4. Approximately 0.45 ha of Wheatbelt Woodland TEC has been avoided through project design (i.e. occurs within the Avoidance Area or the road corridor) with at least 5 ha inferred to occur outside the Proposal Area.

Table 2-1: Wheatbelt Woodland TEC areas and calculations

Patch area[1]	Condition	Total area (ha)	Area in Disturbance Footprint (ha)	Area outside Proposal Area (ha)	% Impacted
A[2] (including Patch A extension and surrounds)	Degraded or higher	>5.00	0.29	>5.00	<5.80
B	Good	0.21	0.02	0.19	9.50
D	Degraded	0.07	0.00	0.07	0.00
Total TEC		**5.28**	**0.31**	**5.26**	**5.87**

[1]Areas are shown on Figure 2-2; [2]Patch A is part of a larger patch of TEC that extends to inferred eucalypt woodland to the south (total inferred patch size >5 ha).

2.3.2. Critical habitat

Critical habitat is defined in the Approved Conservation Advice for the Wheatbelt Woodlands TEC as all patches that meet the key diagnostic characteristics and condition thresholds for the ecological community, plus the buffer zones, particularly where this comprises surrounding native vegetation (DoE 2015a). Additional areas that do not meet the minimum condition threshold may still be important for the survival of the ecological community because they could retain some biodiversity or habitat values.

Based on this definition, the areas of Wheatbelt Woodland TEC within the Proposal Area represents habitat critical to the survival of the community.

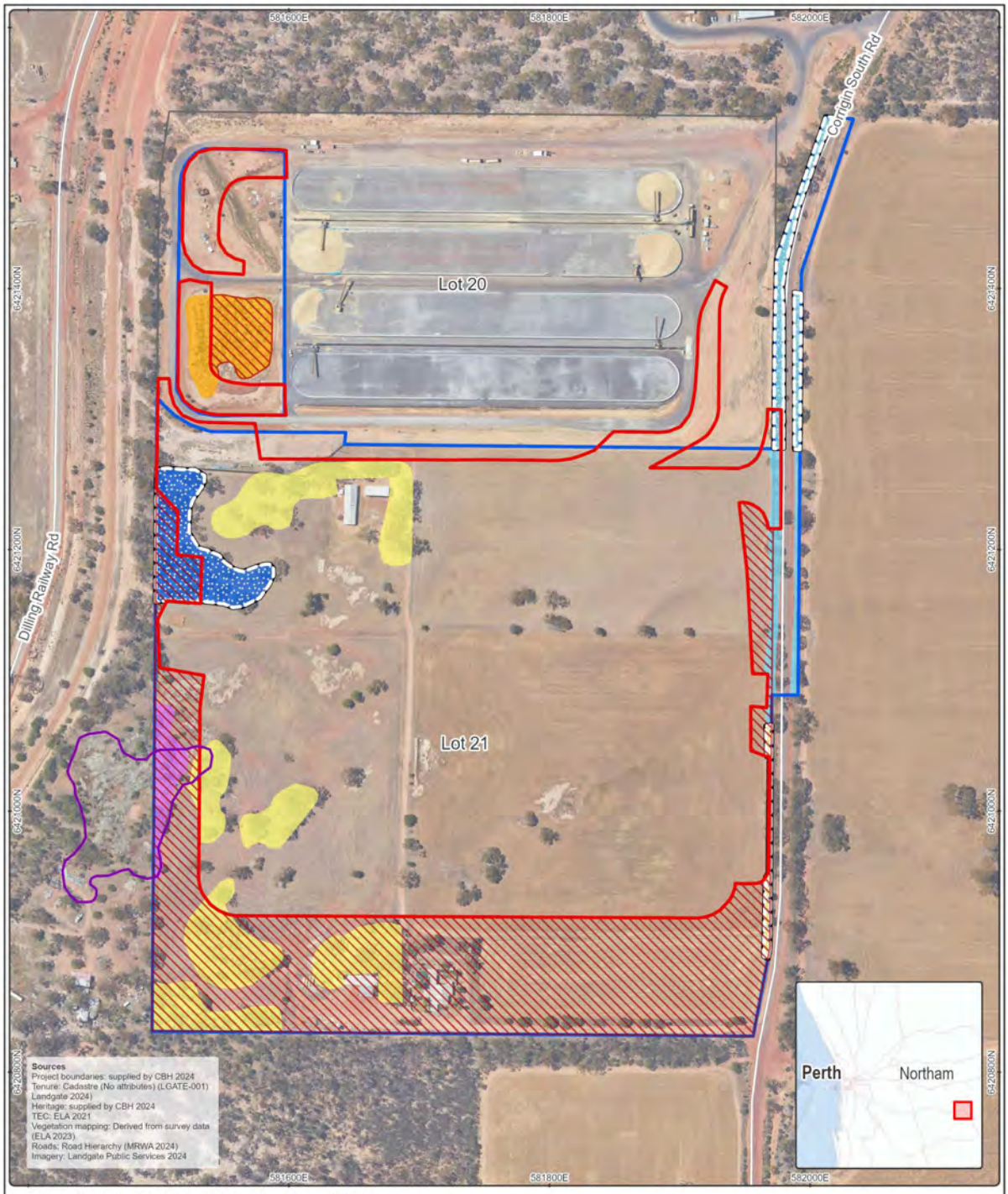

Figure 2-1: Vegetation communities

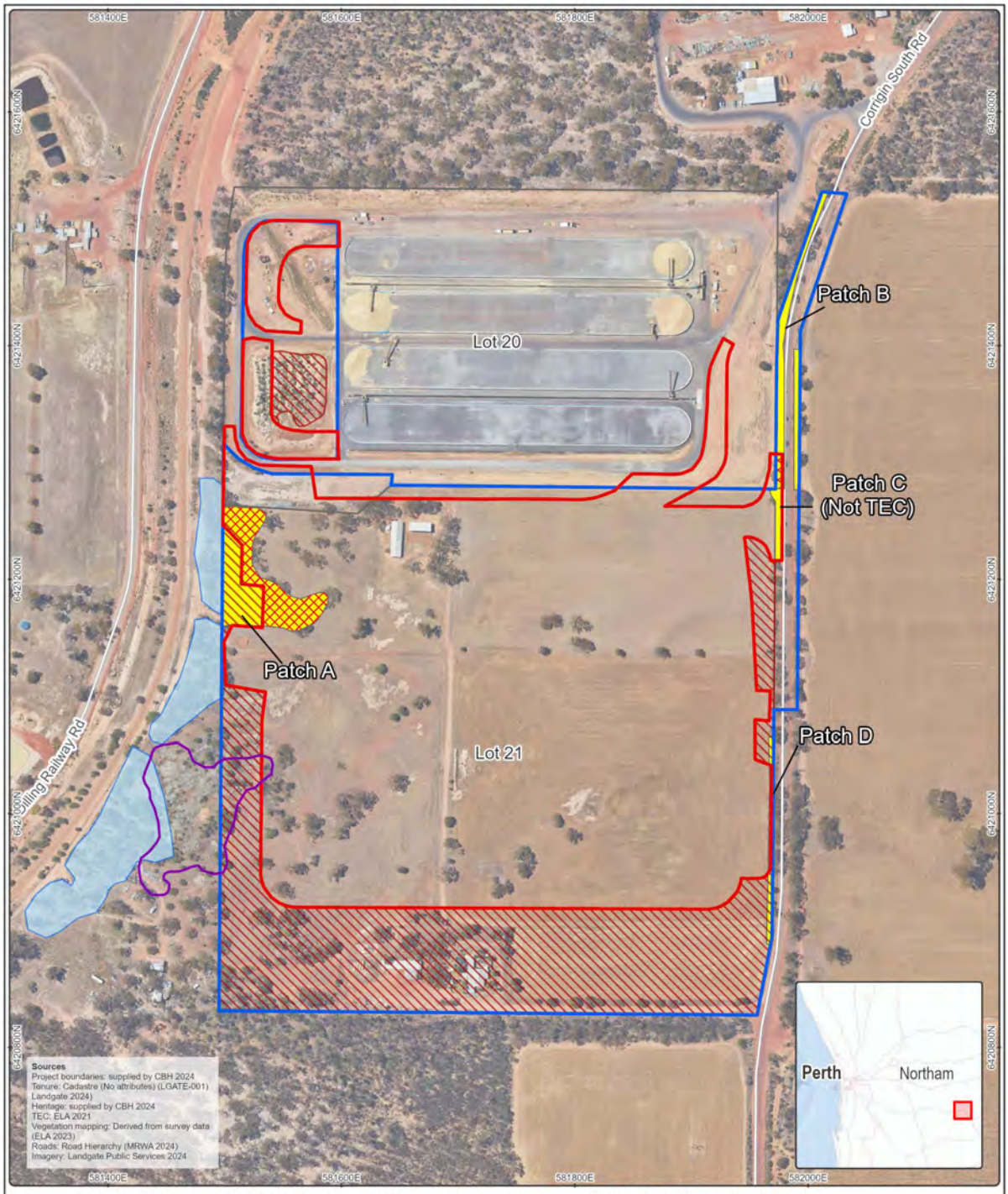

Figure 2-2: Wheatbelt Woodlands TEC within, and adjacent to, the Proposal Area

- Proposal Area (16.69 ha)
- Survey Area (24 ha) (ELA 2021)
- Avoidance Area (5.77 ha)
- Aboriginal Heritage Area
- Wheatbelt Woodlands TEC (0.76 ha) (ELA 2021)
- Extrapolated Wheatbelt Woodlands TEC (Patch A extension)
- Wheatbelt Woodlands TEC within Disturbance Footprint (0.31 ha) (ELA 2021)
- Cadastral Boundary

0 75 150
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

18524-DD/RD/OK Date: 27/03/2024

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2.4. Avoidance, impacts and mitigation measures

2.4.1. Avoidance

CBH undertook a Land Acquisition Due Diligence Study incorporating an environmental desktop assessment in 2019 prior to the commencement of design. The study identified environmental values in the form of potential Carnaby Cockatoo habitat within the proposed area, with the western and southern areas of Lot 21 having higher a relatively higher environmental value due to the denser vegetation in these areas. The initial design phase considered these findings and incorporated clearing avoidance strategies within the primary design revisions. The avoidance design approach included the minimisation of clearing to the more heavily vegetated southern and western areas of Lot 21 by restricting the length of the OBHs from 380m to 350m oriented east to west, thereby mitigating intrusion into the western area. Furthermore, restricting the total expansion capacity to 180,125 tonnes reduces the number of OBHs to 5, preventing disturbance into the southern area.

This has resulted in a Disturbance Footprint (i.e. the Proposal Area) of approximately 16.69 ha and an 'Avoidance Area' of approximately 5.77 ha (Figure 1-2). Approximately 0.45 ha of the mapped Wheatbelt Woodland TEC will be avoided through this project design, including 0.26 ha Wheatbelt Woodland TEC avoided in the road corridor (Patch D and the majority of Patch B). Of this 0.45 ha of Wheatbelt Woodland TEC, 0.19 ha forms part of Patch A on the western boundary of the Proposal Area. This area will remain connected to native vegetation that extends north and to the south (inferred Wheatbelt Woodlands TEC >5 ha in size), which connects to Corrigin Nature Reserve (Figure 2-2). Avoidance of this patch of TEC will assist in maintaining the link between patches of TEC to the north and south of the Proposal Area.

Other avoidance measures include avoiding interfering with groundwater that may be supporting Wheatbelt Woodlands TEC patches by not proposing any abstraction or use of groundwater underlying the subject land.

2.4.2. Direct impacts

The proposed action will result in the direct loss of 0.31 ha of Wheatbelt Woodlands TEC due to vegetation clearing, of which 0.29 ha is in Degraded condition (Category D; Patch A) and 0.02 ha is in Good condition (Category C; Patch B; ELA 2021; Table 2-1).

The mapped area of Patch A is 0.48 ha, of which 0.29 ha occurs within the Proposal Area (i.e. the area to be impacted; Figure 2-2). Patch A was assessed as meeting the condition threshold in Category D (for Degraded condition), with the total patch size >5 ha, as the eucalypt woodland vegetation is inferred to continue to the north and south based on aerial photography and on-site observations. Approximately 0.19 ha of this patch occurs within the Avoidance Area, outside the Proposal Area and will remain connected the inferred TEC that extends to the north and the south (Figure 2-2).

The direct impact to Patch A will include reducing it by <5.8% (based on an inferred patch size of >5 ha; Table 2-1). As this patch is expected to extend even further south into Corrigin Nature Reserve, the calculation of proportion of impact provided is potentially an overestimation. Given that the intact area will be more than the 5 ha threshold for defining a patch of Wheatbelt Woodland TEC in Degraded condition, then the direct impact is unlikely to create an increase in separation distance between

patches of the TEC, or result in reducing a patch size (and therefore functionality) to below <5 ha. The remaining TEC vegetation is expected to therefore still meet the TEC-listing condition threshold.

The mapped area of Patch B (i.e. within the Road Reserve on the east side of the Proposal Area) extends north, into areas outside the Proposal Area (Figure 2-2). Direct disturbance will reduce this patch from 0.21 ha to 0.19 ha, a 9.5% reduction in patch size (Table 2-1). The intact area of Patch B will continue to be a width of ≥5 m; therefore, the proposed impact to Patch B will not result in its remaining vegetation no longer meeting the TEC listing threshold for a roadside patch.

Further fragmentation or reduction of the TEC is not anticipated given the occurrence of the reserve, and cleared agricultural lands and roads, adjacent to the Proposal Area (Figure 2-2).

Mitigation and management measures to avoid and minimise direct impacts to surrounding patches of Wheatbelt Woodland TEC are described in Section 2.4.4. An assessment of the significance of the residual impacts is provided in Section 2.5.

2.4.3. Indirect impacts

The proposed action could result in indirect impacts from increased run-off, dust, erosion, waste and hazardous materials that have the potential to affect the health and survival of Wheatbelt Woodlands TEC surrounding the Proposal Area. If unmanaged, the proposed action could also result in the introduction or spread of weeds, disease, feral animals or changes in fire regimes. Each of these factors and consideration of relevant pathways for and management of impacts outside the Proposal Area are discussed in more detail below.

2.4.3.1. Abiotic (non-living) factors such as water, salinity, nutrients, and soil

The area of TEC most at risk of indirect impacts associated with changes to abiotic factors is the area of TEC that occurs directly adjacent to the western boundary of the Proposal Area as the site gently slopes to the west (Government of Western Australia 2022). Some of this TEC is located within the Offset Site (see Section 5) and will be actively managed to reduce the impacts of potential threatening processes.

The key ecological processes and abiotic requirements (e.g. soils, hydrology) that contribute to long term resilience and maintenance of the Wheatbelt Woodland TEC are enhanced by managing potential threats of erosion, increased salinity, waterlogging and eutrophication (DoE 2015a).

Significant hydrological changes are not anticipated to occur, given size of the Proposal Area and the lack of surface water features within, or in proximity to, the Proposal Area. Run-off will be controlled through strategically placed drainage basins and culverts. For example, the initial western basin was subsequently divided and relocated to both capture respective water runoff from the bulk heads and to have the least impact on the Wheatbelt Woodlands TEC. This will also enable the depth of excavation to be reduced, allowing for trees located within the vicinity of the drainage basins to also be retained with a more localised detailed earthworks approach.

The Proposal Area is currently cleared and has been grazed and therefore expected to be subject to a higher level of erosion, compaction, and run-off relative to intact native vegetation. The proposed action is not expected to increase erosion, rather this will be reduced due to surface water management and control measures. The land-use change is expected to reduce overall nutrient loads associated with livestock and broadscale fertiliser application, as they will be removed from the Proposal Area.

Overall, indirect impacts associated with changes to abiotic factors are not expected to be significant, rather it is likely that those that exist from the current land use will be removed through the implementation of the proposal. Control measures will be implemented to minimise indirect impacts to areas of Wheatbelt Woodlands TEC outside the Proposal Area.

2.4.3.2. Dust

Excessive dust levels have the potential to smother vegetation which may result in reduced photosynthesis and habitat degradation.

Excessive dust levels would be most likely to occur during site excavation and clearing and therefore be temporary in nature. During the construction activities, CBH will implement a number of management strategies to reduce and prevent excessive dust levels occurring in and around areas of Wheatbelt Woodlands TEC outside the Proposal Area, including water spraying and wetting down of unsealed tracks and clearing areas during earthworks and containment fencing (where appropriate), and implementing reduced speed limits. It is anticipated that indirect impacts associated with dust can be managed accordingly and are not expected to be significant.

2.4.3.3. Waste and hazardous materials

Soil or water contamination from waste and/or hazardous materials could potentially result in degradation of areas of Wheatbelt Woodlands TEC outside the Proposal Area; however, CBH has stringent controls in place to ensure that waste is appropriately disposed of, and hazardous materials are stored correctly and in line with industry standards (Table 2-2).

Hazardous materials and wash down areas will not be stored/located within 50 m of the Wheatbelt Woodland TEC, and hazardous materials will also be appropriately bunded.

Contamination from waste and/or hazardous materials is not anticipated to occur and can be appropriately managed.

2.4.3.4. Introduction of weeds and diseases

Introduction of or spread of weeds and disease, in particular Dieback (*Phytophthora cinnamomi)*, is a major threat to the Wheatbelt Woodlands TEC. Invasive plant species can transform the ecological character of the community and reduce the diversity of the native shrubs and herbs, whilst any spread of the Dieback pathogen to uninfested areas could affect the long-term integrity of flora and vegetation.

Wheatbelt Woodland TEC in the vicinity of the Proposal Area currently exists in a patchwork of remnant vegetation interspersed with cleared farming areas. The Proposal Area comprises largely cleared farming land, with small areas of remnant vegetation primarily in Degraded condition (ELA 2021). During vegetation surveys, a total of 22 introduced (weed) species were recorded in the Proposal Area (ELA 2021). The Wheatbelt Woodlands TEC adjacent to the Proposal Area is already exposed to edge effects including a relatively heavy weed burden.

It is unknown to what extent Dieback occurs within the surrounding area; however, signs of the disease were not observed within the Proposal Area during the October 2020 survey (ELA 2021). Furthermore, Corrigin sits outside the 400 mm rainfall isohyet that defines the 'vulnerable' Dieback zone of the south-west of Western Australia, so the Proposal Area is not expected to be affected and the risk of impact

from Dieback associated with the proposed action, negligible and no specific Dieback management considered necessary (DBCA 2022a).

The construction phase of the proposed action poses the highest risk for an increase in edge effects to adjoining TEC patches due to increased vehicle movements, disturbance of topsoil and potential for uncontrolled access. The associated activities could introduce new weed species or increase the spread of weeds or diseases. Such potential indirect impacts from weeds will be managed according to CBH internal protocols as well as industry standards (Table 2-2). The Offset Area will be fenced, restricting access to areas of Wheatbelt Woodland TEC within this area. These measures will reduce the risk of existing weeds being spread or new weeds or diseases being introduced into surrounding bushland. Indirect impacts to Wheatbelt Woodlands TEC outside of the Proposal Area associated with weeds attributable to the proposed action are expected to be negligible.

2.4.3.5. Feral fauna

Project activities can result in feral fauna dispersing across the surrounding landscape due to habitat removal, noise, and human presence during construction and operation activities. Feral fauna have the potential to degrade Wheatbelt Woodland TEC through grazing and trampling. Two introduced fauna species have been recorded in the Proposal Area and immediate vicinity including sheep (**Ovis aries*) and the Red Fox (*Vulpes vulpes*) (ELA 2021). Given that the Proposal Area is already extensively cleared, project activities are unlikely to result in an increase in the presence of feral fauna species in the surrounding Wheatbelt Woodlands TEC or result in any residual impacts as a result of invasive fauna species.

2.4.3.6. Fire

Fire has the potential to destroy or severely modify adjoining patches of Wheatbelt Woodlands TEC. Construction activities have the potential to result in accidental fires and burning of native vegetation however, management measures will be implemented to reduce the risk of fire (Table 2-2). Fire management is also a significant risk within the grain receival and handling operations and CBH applies strict controls and protocols (e.g. fire first response equipment on hand and appropriate training of staff) to ensure the highest standards are met in this regard. Boundary firebreaks of 3 m will be provided, separating the proposed action from surrounding areas of Wheatbelt Woodlands TEC. Along with existing fire protection mechanisms within operation no increase in the risk of fire to nearby areas of TEC is anticipated attributable to the proposed action.

2.4.4. Mitigation strategies to manage potential impacts

Detail of the proposed mitigation strategies to minimise residual impacts to Wheatbelt Woodlands TEC surrounding the Proposal Area are provided in Table 2-2.

The proposed mitigation measures have been further detailed in a Construction Environmental Management Plan (CEMP) applicable to the proposed action, with which all personnel will be required to comply. This CEMP (CBH 2023; Attachment E) has been prepared consistent with the DCCEEW Environmental Management Plan Guidelines (DoE 2014).

Management measures to minimise potential impacts to surrounding patches of Wheatbelt Woodland TEC include the implementation of an Avoidance Area which will act as a buffer to surrounding areas of TEC, as well as management measures to control wastewater and stormwater run-off, reduce excessive

dust levels, control off-site erosion, minimise the introduction or spread of weeds, prevent the introduction or spread of dieback, contain waste and hazardous materials and reduce the risk of fire (Table 2-2).

Table 2-2: Proposed mitigation strategies for Wheatbelt Woodlands TEC

Proposed mitigation strategies
Wastewater/stormwater run-off • Strategic placement of stormwater drainage basins • Runoff from bulk earthworks will be contained in storage ponds and dams, where possible • Re-use stormwater runoff on site, where applicable, as dust suppression and road watering
Waste and hazardous materials • Hazardous materials, including hydrocarbons and chemicals will be stored appropriately and in accordance with relevant legislation and standards • Equipment servicing will be undertaken in designated areas in a manner than ensures containment of all hydrocarbons and chemicals • Ensure clearly labelled waste disposal facilities are located around the Proposal Area for waste disposal • Ensure waste collected within the Proposal Area is disposed of appropriately • Ensure fuel and chemical storage facilities are appropriately bunded.
Dust The generation of off-site dust emissions will be minimised through physical controls such as: • Avoid dust generating activities during unfavourable weather conditions or direction (e.g. high wind speed) where possible • Water spraying and wetting down of unsealed tracks and stockpiles • Containment fencing (where appropriate). • Minimising areas to be cleared • Implementing reduced vehicle speed limits on unsealed roads.
Erosion • Undertake construction over the dry summer/autumn period where possible • Revegetating disturbed areas as soon as possible.
Weeds and Dieback CBH has established weed and hygiene management measures including: • Contractor inductions will include familiarisation with and discussion of TEC vegetation and hygiene management • Controlled access into and out of the Proposal Area • Clear demarcation of clearing boundaries • The Offset Area will be fenced, restricting access to areas of Wheatbelt Woodland TEC within this area • Construction vehicles will remain on designated roads outside the Proposal Area • Inspecting and cleaning equipment and vehicles prior to entry to site with native vegetation • Identification and targeted control of any outbreaks of declared weeds.
Fire The risk of fire during construction will be minimised by implementing standard CBH and industry protocols, including strict adherence to all Department of Fire and Emergency Services and Local Government Authority restrictions on fire and machinery movement, as well as the following management measures: • Fires within the Proposal Area will be prohibited • All vehicles, plant and equipment will be parked on existing cleared areas only • All vehicles, mobile plant equipment and on-site buildings will be equipped with fire extinguishers • Permits to Work are required for all hot works • Fire service access routes will be established to provide access within and around the edge of the Proposal Area • Boundary firebreaks of 3 m will be provided, separating the proposed action from surrounding areas of Wheatbelt Woodlands TEC

Proposed mitigation strategies
• Designated smoking areas will be placed strategically in cleared areas and at least 50 m away from environmental values including Wheatbelt Woodland TEC • Water will be accessed from stormwater sumps for fire-fighting purposes in accordance with the site Bushfire Management Plan.

2.5. Acceptability of impacts on the Wheatbelt Woodlands TEC

An assessment of the acceptability of impacts (both direct and indirect) on the Wheatbelt Woodlands TEC against the *Matters of National Environmental Significance Significant Impact Guidelines 1.1* (DoE 2013) is provided in Table 2-3. This assessment considers the proposed avoidance and mitigation measures and the statutory documents for this community, including the Approved Conservation Advice for the community (DoE 2015a).

Based on this assessment, the proposed action is likely to have a significant residual impact on Wheatbelt Woodlands TEC after the mitigation hierarchy has been applied, as it will (Table 2-3):

- Reduce the extent of an ecological community
- Adversely affect habitat critical to the survival of an ecological community.

Significant residual impacts and the requirement for offsets are discussed in Section 2.6.

Table 2-3: Assessment of the significance of impacts to Wheatbelt Woodlands TEC

Significant impact criteria	Assessment of impacts to Wheatbelt Woodlands TEC
Reduce the extent of an ecological community	**Likely** The proposed action will reduce the extent of the ecological community through direct loss of 0.31 ha of Wheatbelt Woodlands TEC due to vegetation clearing, of which 0.29 ha is in Degraded condition (Category D TEC; Patch A) and 0.02 ha is in Good condition (Category C TEC; Patch B). This represents a <5.8% reduction in Patch A to the west, and a 9.5% reduction to Patch B in the east. Impacts to surrounding areas of Wheatbelt Woodland TEC have been avoided through redesigning the proposed action and implementing an Avoidance Area.
Fragment or increase fragmentation of an ecological community	**Unlikely** The Wheatbelt Woodland TEC within the Proposal Area will be reduced, but will not be fragmented. Both Patch A and B are surrounded by cleared paddocks and/or roads to the east and west. The patch of TEC on the western boundary (Patch A) is more continuous and extends to the north and south. It is inferred that this patch will be reduced by <5.8%, but will not be fragmented and will remain connected to vegetation extending in a southward direction into Corrigin Nature Reserve. Patch B will also be reduced, but will remain connected to the north. Patch B is already fragmented to the east and west by roads and cleared pasture/existing grain receival site.
Adversely affect habitat critical to the survival of an ecological community	**Likely** The approved conservation advice for Wheatbelt Woodlands TEC defines the area considered most critical to the survival of the TEC as patches that meet diagnostic characteristics (DoE 2015a). The patches within the Proposal Area meet key diagnostic characteristics and condition thresholds for Category D (Patch A) and Category C (Patch B; ELA 2021). The proposed action will, therefore, adversely affect habitat critical to the survival of the ecological community.

Significant impact criteria	Assessment of impacts to Wheatbelt Woodlands TEC
Modify or destroy abiotic (non-living) factors (such as water, nutrients or soil) necessary for an ecological community's survival, including reduction of groundwater levels or substantial alteration of surface water drainage patterns	**Unlikely** Abiotic factors necessary for the TEC's survival will be effectively managed via industry and CBH standards, such that the characteristics of soil, water and nutrients supporting surrounding patches of the TEC are expected to remain unchanged.
Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example, through regular burning or flora or fauna harvesting.	**Unlikely** Indirect impacts will be effectively managed through management measures and via industry standards. No substantial change in the species composition of nearby patches of the TEC is expected.
Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to: • Assisting invasive species that are harmful to the listed ecological community to become established, or • Causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community, which kill or inhibit the growth of species in the ecological community.	**Unlikely** Indirect impacts will be effectively managed through management measures and via industry and CBH standards. No substantial reduction in the quality or integrity of nearby patches of TEC is expected.
Interfere with the recovery of an ecological community	**Unlikely** Recovery actions are outlined in the Approved Conservation Advice for Wheatbelt Woodlands TEC. The projected maximum disturbance for the Wheatbelt Woodlands TEC within the Proposal Area is 0.31 ha, which represents a <5.87% inferred reduction of TEC remaining in the immediate area. This clearing will not result in any smaller patches being created as the patches proposed for clearing are already fragmented by surrounding farmland and roads. Clearing up to 0.31 ha of TEC is not considered to have the potential to interfere with the recovery of the TEC, given the TEC remaining in the surrounding area will continue to provide linkages to the north and south of the Proposal Area.

2.6. Significant residual impacts and requirements for offsets

Significant residual impacts to Wheatbelt Woodland TEC are likely to occur from the proposed action as clearing up to 0.31 ha of Wheatbelt Woodlands TEC will reduce the extent of the ecological community and will adversely affect habitat defined as critical to the communities' survival. As a result, offsets are proposed to compensate for this significant residual impact (Section 5). The proposed *Corrigin Grain Receival Site Expansion Offset Proposal (EPBC 2021/9024)* (the 'Offset Proposal'; ELA 2024a) and the *Corrigin Grain Receival Site Expansion Offset Management Plan (EPBC 2021/9024)* (the 'OMP'; ELA 2024b) are provided as Attachment F and Attachment G, respectively.

3. Carnaby's Cockatoo

The Proposal Area contains suitable habitat for Carnaby's Cockatoo, *Zanda latirostris* (previously *Calyptorhynchus latirostris*). A description of the status, relevant policy and guidance, habitat values, regional context, important populations and critical habitat, planned avoidance, impacts, mitigation and the significance of potential impacts is provided in the sections below.

3.1. Overview

Carnaby's Cockatoo is endemic to, and widespread throughout the south-west of WA where it occurs from the Wheatbelt across to the south-west, including the Swan Coastal Plain and the southern coast (SEWPaC 2012a). The species exists as two genetically distinct subpopulations: a western and an eastern (EPA 2019; Figure 3-2). The Proposal Area occurs within the distribution of the western subpopulation (EPA 2019). The species is highly mobile and displays a seasonal migratory pattern linked to breeding. The western subpopulation breeds in the Avon-Wheatbelt, Geraldton Sandplains and Jarrah Forest IBRA bioregions, as far as Morawa in the north, and migrates to the Swan Coastal Plain during the non-breeding season (EPA 2019).

Carnaby's Cockatoo feeds on native shrubland vegetation, particularly on the flowers, seeds and nectar of proteaceous plants (e.g. *Banksia*, *Hakea* and *Grevillea* species), Marri and *Callistemon* spp. (DoEE 2017, SEWPaC 2012a). They may breed in any tree with suitable hollows within their breeding range and generally roost in tall trees close to a water source (DoEE 2017; SEWPaC 2012a).

There are currently over 24,470 records of Carnaby's Cockatoo from the south-west of WA, with approximately 1,100 records from the Avon-Wheatbelt subregion (ALA 2022).

3.2. Status, policy and guidance

Carnaby's Cockatoo is listed as Endangered under both the EPBC Act and the Western Australian *Biodiversity Conservation Act 2016* (BC Act). The following policy and guidance documents are relevant to this species:

- *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan,* Western Australian Wildlife Management Program No. 52 (DPaW 2013)
- *EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species: Carnaby's Cockatoo (Endangered) Calyptorhynchus latirostris, Baudin's Cockatoo (Vulnerable) Calyptorhynchus baudinii, Forest Red-tailed Black Cockatoo (Vulnerable) Calyptorhynchus banksia naso* (SEWPaC 2012a)
- *Revised draft referral guideline for three threatened black cockatoo species: Carnaby's Cockatoo (Endangered) Calyptorhynchus latirostris, Baudin's Cockatoo (Vulnerable), Calyptorhynchus baudinii, Forest Red-tailed Black Cockatoo (Vulnerable) Calyptorhynchus banksii naso* (DoEE 2017)
- *EPA Technical Report: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region* (EPA 2019)
- *Survey guidelines for Australia's threatened birds* (DEWHA 2010).

Several known and potential threats exist for Carnaby's Cockatoo. Most threats are related to the loss of habitat from clearing or degradation, competition for nest hollows and loss of individuals due to illegal shooting, collisions with motor vehicles and disease (DPaW 2013).

Six broad recovery actions to help reduce threatening processes on Carnaby's Cockatoo are outlined in the Recovery Plan, including (DPaW 2013):

- Protect and manage important habitat – identify, protect and manage habitat critical for survival (nesting, foraging and roosting) for Carnaby's Cockatoos across their breeding and non-breeding range
- Conduct research to inform management – research the biology, ecology, and conservation management of Carnaby's Cockatoo
- Undertake regular monitoring – monitor population parameters, habitat, threats and status of Carnaby's Cockatoo
- Manage other impacts – monitor the impacts and implement strategies to reduce other factors detrimentally affecting Carnaby's Cockatoo, and support rehabilitation programs
- Undertake information and communication activities – develop and distribute awareness raising and guidance materials for decision-makers, establish joint management agreements and provide for improved sharing of information between agencies
- Engage with the broader community – engage with and involve stakeholders across the community regarding the conservation of Carnaby's Cockatoo.

The recovery actions aim to progress towards the long-term recovery of the species, focusing primarily on reducing the rate of decline in the species population and increasing the proportion of the population that is successfully breeding (DPaW 2013).

3.3. Summary of existing environmental values

3.3.1. Site values

3.3.1.1. Survey methodology

An assessment of black cockatoo habitat was undertaken in accordance with the *EPBC Act referral guidelines for three threatened black cockatoo species* (SEWPaC 2012a) in October 2020 (ELA 2021). The survey involved assessing all vegetation present within the survey area ('ELA 2021 survey area') for its potential to provide suitable foraging, breeding and/or roosting habitat for black cockatoos in accordance with SEWPaC 2012a). Suitable foraging, breeding and/or roosting habitat was subsequently delineated and mapped.

For the purposes of the survey, suitable foraging habitat was defined as plant species known to provide food resources for black cockatoos, as listed in Groom (2011), as well as those listed in the Referral Guidelines (SEWPaC 2012a). The quality of foraging habitat for black cockatoo species within the survey area was assessed, based on the availability and density of plant food sources as observed on site (ELA 2021). Potential breeding habitat was defined as suitable tree species with a Diameter at Breast Height (DBH) greater than 500 mm (or >300 mm for Salmon Gum or Wandoo), as described in SEWPaC 2012a). Trees with a DBH greater than 500 mm (or >300 mm for Salmon Gum and Wandoo) are old enough and large enough to contain hollows suitable for nesting black cockatoos or have the potential to develop

suitable hollows over the next 50 years. Roosting habitat was defined as 'groups of tall trees of suitable species (i.e. those over 8 m), often close to a suitable water source, that may provide a roost or rest area for the birds' as described in SEWPaC (2012a).

All potential breeding trees with a DBH of 500 mm (300 mm for Salmon Gum and Wandoo) or greater encountered within the survey area were recorded as GPS waypoints, whereas foraging and roosting habitat was delineated and mapped as polygons.

Potential breeding and roosting trees were inspected with binoculars from the ground to assess for the presence and suitability of hollows for nesting and evidence of current or previous occupancy, including wear and chew marks around the entrance. Potential breeding hollows were considered 'suitable' if the entrance was >100 mm in diameter, >300 mm deep and aligned near vertical. If it was not possible to determine if a hollow was suitable, it was categorised as 'potentially suitable'. Hollows that did not meet any of these requirements were categorised as 'unsuitable'.

A follow up survey was conducted between 28 June and 1 July 2022 in a slightly smaller survey area located within Lots 20 and 21 only ('ELA 2023a survey area') to collect additional information to support the EPBC assessment (ELA 2023a). As part of this survey, a photograph of each potential breeding tree (as identified in ELA 2021) was taken, with potential nesting hollows (if present) inspected with a pole-mounted camera.

During both surveys, any observations of black cockatoo foraging activity or feeding residue such as chewed *Eucalyptus* nuts or branches, or direct sightings of birds were recorded (ELA 2021, 2023a).

3.3.1.2. Survey results

The Proposal Area contains 1.56 ha of Poor quality foraging habitat, with the larger survey area containing 3.32 ha of foraging habitat, also of Poor quality (ELA 2021). Foraging habitat generally occurred within the Eucalyptus woodland vegetation communities and/or stands of isolated paddock trees. Foraging species recorded included York Gum, Salmon Gum, Wandoo and *Allocasuarina campestris*; however, these were only present at a low density (i.e. less than 20% cover), often along roadsides, in small patches within otherwise cleared paddocks and/or in woodland communities that are Degraded and occur in areas historically used for farming (Salmon Gum and York Gum have small fruit which provide low value foraging resource considering the energy requirements needed to extract these when compared to other more favourable foraging species (e.g. *Banksia*; Harewood 2019). Their value as a foraging resource for Carnaby's Cockatoo is also questionable, given recent learnings from areas of revegetation that predominantly used York Gum, but which seems to provide little foraging value for the species (Saunders et. al. 2014). Proteaceous species, which usually make up most of the diet of Carnaby's Cockatoo (Valentine et al. 2008; Johnston 2013; Johnston et al. 2016), were generally absent from the Proposal area (ELA 2021).

Table 3-1). It should be noted that *Hakea* sp. and *Grevillea* sp., were previously reported as being recorded (ELA 2021); however, the two species recorded during the recent survey (i.e. *Hakea meisneriana* and *Grevillea biternata*) are not known or documented food sources for Carnaby's Cockatoo.

Salmon Gum and York Gum have small fruit which provide low value foraging resource considering the energy requirements needed to extract these when compared to other more favourable foraging

species (e.g. *Banksia*; Harewood 2019). Their value as a foraging resource for Carnaby's Cockatoo is also questionable, given recent learnings from areas of revegetation that predominantly used York Gum, but which seems to provide little foraging value for the species (Saunders et. al. 2014). Proteaceous species, which usually make up most of the diet of Carnaby's Cockatoo (Valentine et al. 2008; Johnston 2013; Johnston et al. 2016), were generally absent from the Proposal area (ELA 2021).

Table 3-1: Description and occurrence of foraging species present in Proposal Area

Foraging species	Value	Component	Description and occurrence in the Proposal Area
York Gum	Secondary	Seeds	Generally present at 10-20% cover, or as isolated trees in an otherwise cleared paddock. Represents the main foraging resource within the Proposal Area and which is considered little value to Carnaby's Cockatoo in terms of providing a food source (Saunders et. al. 2014).
Salmon Gum	Primary	Seed	Present at less than 5% cover and only occurs at the western boundary of the Proposal Area (as well as outside).
Wandoo	Primary	Flowers	Present between 10-20% cover and only occurs at the western boundary of the Proposal Area (as well as outside).
Allocasuarina campestris	Secondary	Seed	Present at 5% cover at two locations and mostly outside the area proposed for clearing

The reported extent of 'Poor' quality foraging habitat for Carnaby's Cockatoo relevant to the proposed action has changed to that previously reported (within the survey report [ELA 2021] and the EPBC Act Referral). A small number of paddock trees had been omitted. The survey report has been amended to address this oversight as follows (ELA 2021; Figure 3-1; Attachment B):

- Within the ELA 2021 survey area the area of 'Poor' quality foraging habitat was estimated to be 3.20 ha, it is now estimated to be 3.32 ha
- Within the Disturbance Footprint the area of 'Poor' quality foraging habitat was previously reported to be approximately 1.40 ha - the correct area is 1.56 ha, as shown in Figure 3-1.

The slight increase in area of foraging habitat affected over that reported in the referral is not expected to change the significance of the proposed action's impact on Carnaby's Cockatoo (Section 3.5).

Some areas of foraging habitat also provide suitable breeding and/or roosting habitat for Carnaby's Cockatoo. A total of 18 potential breeding/roosting trees, equivalent to 0.17 ha of potential breeding/roosting habitat, were recorded within the survey area (ELA 2021; ELA 2023a; Figure 3-1). Potential breeding and/or roosting trees included Wandoo with a DBH over 300 mm (n=8), York Gum trees with a DBH over 50 mm (n=9) and River Gum (*Eucalyptus camaldulensis*; previously misidentified as Wandoo; n=1). Two additional potential breeding/roosting trees (Wandoo stags) were located within the survey areas; however, the recent survey observed that these stags were no longer standing (Figure 3-1; ELA 2023a). One additional York Gum was recorded outside of the survey areas on Corrigin South Road (Figure 3-1; ELA 2021).

Nine potential breeding trees occur within the Proposal Area, equivalent to 0.09 ha of potential breeding and roosting habitat (Figure 3-1). The remaining nine potential breeding and roosting trees either occur

within the Avoidance Area where they will be retained (0.05 ha; five trees), or outside the Proposal Area where they will not be impacted (0.03 ha; four trees) (Figure 3-1).

No hollows suitable for nesting were recorded within the Proposal Area. One potentially suitable nesting hollow (i.e. with a diameter opening of >100 mm, albeit only 3 m off the ground) was recorded within the York Gum on Corrigin South Road outside the Proposal Area/survey areas where it will be retained (ELA 2021; Figure 3-1). The recent survey (ELA 2023a) investigated this hollow by a pole-mounted camera and found no evidence of use by Carnaby's Cockatoo (ELA 2023a).

Possible evidence of Carnaby's Cockatoo foraging, in the form of old (i.e. more than 2 years) sheared branches, was observed at three locations during the survey (tree IDs 1052 [York Gum], 1055 and 1056 [both Wandoo]; the latter two trees are located within the Proposal Area), however this can be difficult to confirm (ELA 2021). As a result, the species has been conservatively assessed as being recorded (present) within the Proposal Area (ELA 2021).

3.3.2. Regional context

The Proposal Area occurs within the mapped distribution area of Carnaby's Cockatoo as provided in the Referral Guidelines (SEWPaC 2012a; DoEE 2017); however, the species' distribution mapping has recently been updated by the EPA (EPA 2019). According to this update, Corrigin and the Proposal Area both occur outside the species' current estimated distribution (EPA 2019; Figure 3-2).

Carnaby's Cockatoo has disappeared from more than one-third of its historical breeding range due to extensive clearing and associated habitat loss in the Avon-Wheatbelt region (EPA 2019). As such, there has been an apparent shift in the species' breeding range, further west and south with an increase into the Jarrah-Marri forests of the Darling Scarp and the Tuart forests of the Swan Coastal Plain (EPA 2019). The species generally now appears to be locally extinct from many areas of the central Wheatbelt, including in and around the Corrigin area (EPA 2019; Johnstone and Kirkby 2018; WWF Australia 2022).

Although there is some marginal, poor-quality habitat present within the Proposal Area, there is a general lack of preferred foraging habitat such as kwongan heathlands or extensive *Banksia* and *Hakea* shrubs, within the Proposal Area and surrounding region (ELA 2021; Johnstone and Kirkby 2018). There is approximately 4,700 ha of remnant native vegetation within a 12 km radius of the Proposal Area (Figure 3-3; Department of Primary Industries and Regional Development [DPIRD] 2022); however, whilst some of this is likely to contain woodlands and trees suitable for breeding or roosting, it is unknown how much would provide suitable foraging habitat for the species. This scenario reflects other surveys around Corrigin, Kondinin, Kalgarin and Hyden, that have described woodlands or trees with suitable hollows but lacking adjacent suitable foraging habitat to support breeding (Johnstone and Kirkby 2018).

Corrigin Nature Reserve occurs approximately 70 m south of the Proposal Area (Figure 1-1) and contains suitable breeding and roosting habitat for Carnaby's Cockatoo including Salmon Gum, Wandoo and York Gum (Mills and McPhee 2009). In addition, there is likely to be some foraging habitat present in the sandplain heath habitats within the reserve which contain proteaceous species (Mills and McPhee 2009). Despite this, no evidence of Carnaby's Cockatoo has been recorded in the reserve (Mills and McPhee 2009) and there are no known breeding sites, roosting sites or species records within 12 km of the Proposal Area (Birdlife 2021; DBCA 2022b; ALA 2022; Figure 3-3). The closest known breeding buffer

is approximately 20.5 km south of the Proposal Area, with species records occurring over 56 km to the south, east and west of the Proposal Area (ALA 2022; Birdlife 2021; DBCA 2022b; Figure 3-3).

Despite the lack of regional records and research indicating that Carnaby' Cockatoo may be locally extinct in the Corrigin area, some possible (old) evidence of the species foraging was recorded within the Proposal Area during the 2021 survey (ELA 2021; Figure 3-1). Carnaby's Cockatoo has therefore been included in the impact assessment for the proposed action, and mitigation and management measures are proposed to reduce any potential impacts to the species.

3.3.3. Important populations and critical habitat

Important populations for the species' long-term survival have not been defined for black cockatoos due to the mobile and widely dispersed nature of the species and the variation in flock compositions (SEWPaC 2012a). For black cockatoos, it is more appropriate to consider the significance in terms of impacts on habitat and individuals rather than a resident population (DoEE 2017).

Habitat critical to the survival of Carnaby's Cockatoo is defined in the species recovery plan as (DPaW 2013):

- Breeding and nearby feeding habitat (i.e. within 12 km of a known breeding site)
- Former breeding habitat that has hollows intact
- Vegetation that provides habitat for feeding, watering and regular night roosting.

This definition includes all areas of breeding habitat, including known nesting trees and foraging areas that support breeding.

Based on the above definition and recent feedback from DCCEEW, the black cockatoo habitat values within the Proposal Area have the potential to represent 'habitat critical to the survival of the species' as it contains vegetation that provides habitat for feeding, watering and regular night roosting and occurs within the Wheatbelt region, where all remaining habitat may be considered to have a high value. However, the following should be noted:

- Vegetation present mainly comprises scattered or isolated secondary food sources present at a very low density (i.e. less than 20%) and as such is considered to be Poor quality (i.e. marginal) habitat
- The vegetation does not occur within 12 km of a known breeding site (i.e. closest known breeding site is approximately 20.5 km south (Birdlife 2021)
- The vegetation may potentially have been used in the past for breeding but does not contain any intact hollows, and does not appear to have been recently used by Carnaby's Cockatoo for foraging, roosting or breeding (ELA 2021; 2023a)
- Recent research indicates that the species is locally extinct (EPA 2019; Johnstone and Kirkby 2018; WWF Australia 2022).

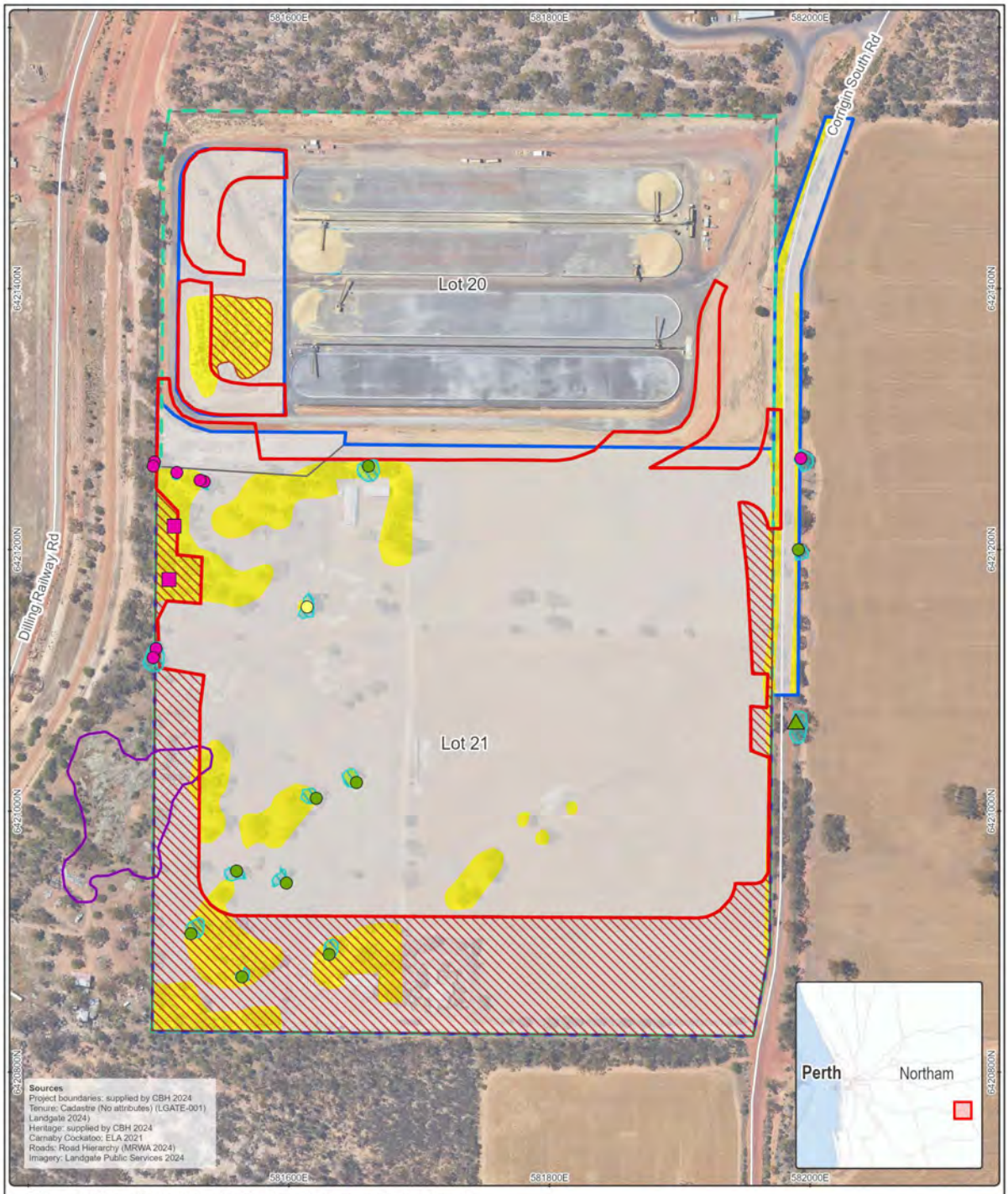

Figure 3-1: Carnaby's Cockatoo habitat values

- Proposal Area (16.69 ha)
- Survey Area (24 ha) (ELA 2021)
- Survey Area (33.24 ha) (ELA 2023a)
- Avoidance Area (5.77 ha)
- Aboriginal Heritage Area
- Cadastral Boundary

Black Cockatoo foraging quality

- Nil (20.67 ha)
- Poor (3.32 ha)

Potential Carnaby's Cockatoo habitat trees

- *Eucalyptus loxophleba* (York Gum), DBH>500mm, No hollows
- *Eucalyptus loxophleba* (York Gum), DBH>500mm, Hollows not utilised
- *Eucalyptus wandoo* (Wandoo), DBH>300mm, No hollows
- *Eucalyptus camaldulensis* (River Red Gum), DBH>500mm, No hollows

No longer Potential Carnaby's Cockatoo habitat trees

- *Eucalyptus wandoo* (Wandoo), stag – no longer standing
- Potential breeding/roosting habitat

0 60 120
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

18524-DD/RD/OK Date: 27/03/2024

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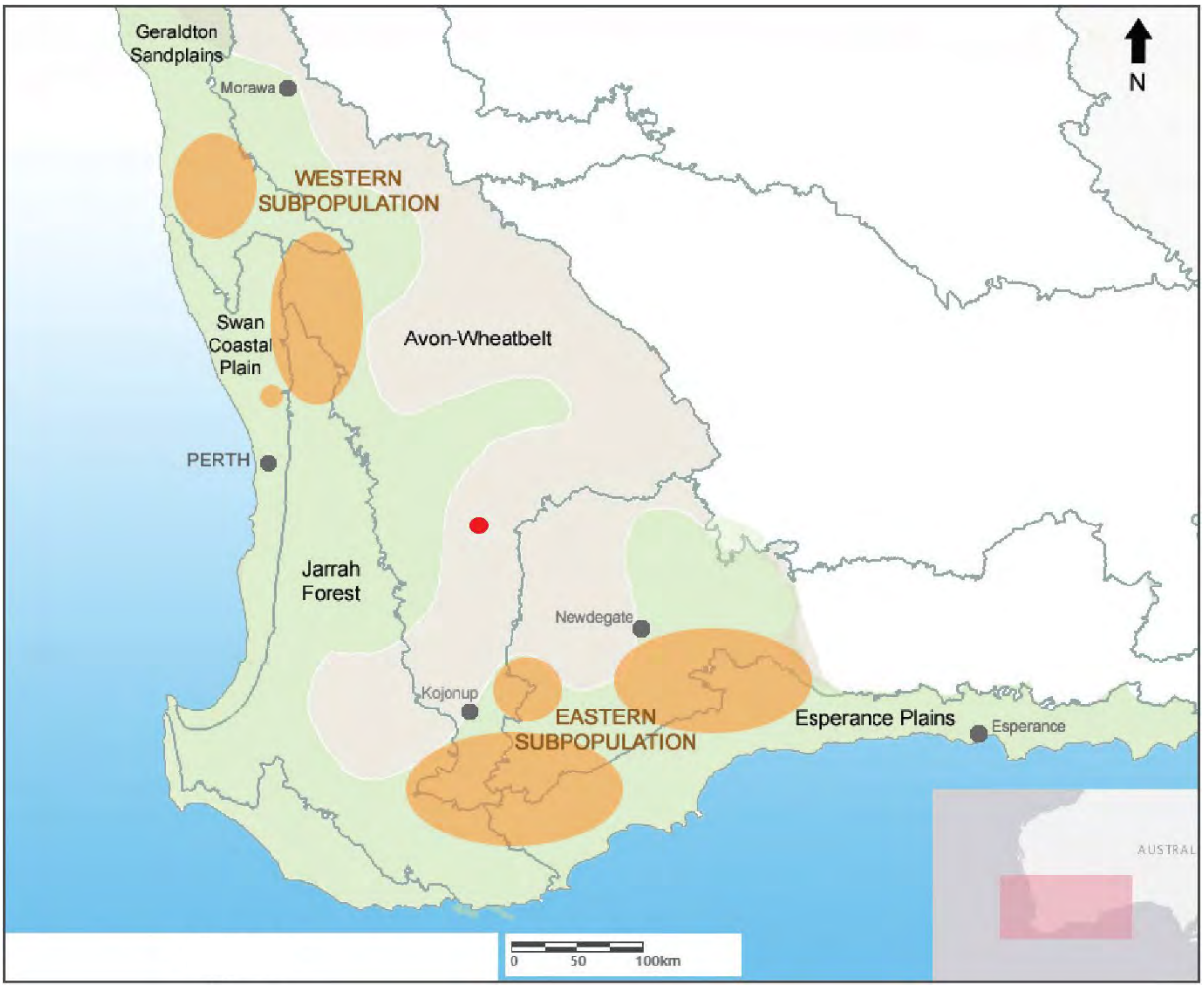

Shows the western and eastern subpopulations (in orange), former distribution (shaded grey) and approximate Proposal Area location (in red). Source EPA 2019.

Figure 3-2: The estimated distribution of Carnaby's Cockatoo (EPA 2019)

Figure 3-3: Regional Carnaby's Cockatoo Habitat Values

3.4. Avoidance of black cockatoo habitat

The proposed action has been redesigned to reduce the size of disturbance. This has resulted in avoiding approximately 1.76 ha of Carnaby's Cockatoo foraging habitat and 0.08 ha of potential breeding and roosting habitat (which includes nine potential breeding and roosting trees).

Further potential avoidance measures will be undertaken where practicable including retention of potential breeding trees/fauna habitat trees through final design and installation of drainage and surface contour levels.

3.5. Identification and management of potential impacts to Black Cockatoos

Development of the Proposal Area will result in the direct loss of 1.56 ha of Carnaby's Cockatoo habitat, including:

- 1.56 ha of Poor quality foraging habitat
- Nine potential breeding and roosting trees, none of which contain suitable nesting hollows, equivalent to 0.09 ha of potential breeding and roosting habitat.

In addition, the following direct impacts also have the potential to occur:

- Loss of individuals from vegetation clearing and/or vehicle strike
- Habitat fragmentation.

As well as direct impacts, the proposed action may result in indirect impacts to black cockatoos due to:

- Degradation of adjacent habitat due to the introduction or spread of weeds or tree disease
- Degradation of adjacent habitat due to altered fire regimes.

The proposed action has the potential to result in both direct and indirect impacts to Carnaby's Cockatoo. Likely impacts are described in further detail in Section 3.5.1 and Section 3.5.2, respectively.

3.5.1. Direct impacts

The majority of the Proposal Area (i.e. approximately 15.10 ha) is devoid of any habitat for Carnaby's Cockatoo. However, the proposed action will result in the direct loss of 1.56 ha of poor-quality foraging habitat for Carnaby's Cockatoo, which includes 0.09 ha of potential breeding and roosting habitat (including nine potential breeding and roosting trees with no suitable nesting hollows).

Whilst the proposed action will reduce the area of Carnaby's Cockatoo habitat within the Proposal Area, it will not fragment the habitat further given that the areas proposed for clearing area are already surrounded by cleared farming/agricultural areas and roads. A total of 1.76 ha of poor-quality foraging habitat for Carnaby's Cockatoo will also be retained in the Avoidance Area and outside the Proposal Area where they will not be impacted. This area includes 0.08 ha of potential breeding and roosting habitat (including a further nine potential breeding and roosting trees). Clearing up to 1.56 ha of Carnaby's Cockatoo habitat is unlikely to impede movement or access for Carnaby's Cockatoo, given the high mobility and migratory nature of the species, and the Poor quality of the habitat present.

Vegetation clearing is unlikely to result in the direct death of individuals given that the species appears to be locally extinct from the general area and no nearby species records occur. This is further reduced

given the high mobility of Carnaby's Cockatoo and given that clearing will be undertaken progressively to allow fauna to move away from the area. Pre-clearance surveys will be undertaken in potential breeding trees with a suitable hollow prior to clearing to avoid the destruction or disturbance of any nests or young (if present).

Vehicle movements associated with vegetation clearing and subsequent construction within the Proposal Area have the potential to result in fauna strike, causing injury or death of individuals. However, given the lack of evidence or recent records of Carnaby's Cockatoo within the Proposal Area or immediate vicinity, this is considered unlikely to occur. However, mortality associated with vehicle or machinery strikes will be minimised by imposing speed limits and educating staff and contractors on-site inductions.

Mitigation and management measures to avoid and minimise direct impacts to Carnaby's Cockatoo are described in Section 3.5.3. An assessment of the significance of the residual impacts is provided in Section 3.6.

3.5.2. Indirect impacts

Indirect impacts to Carnaby's Cockatoo can occur through habitat degradation associated with the spread or introduction of, weeds and disease and changes in fire regimes in adjoining areas of habitat.

During vegetation surveys, a total of 22 introduced (weed) species were recorded in the Proposal Area (ELA 2021). As such, surrounding Carnaby's Cockatoo habitat is already exposed to edge effects including heavy weed burden. No signs of Dieback were observed within the Proposal Area (ELA 2021) and the area sits outside the 'vulnerable' Dieback zone (Section 2.4.3.4).

The construction phase of the proposed action poses the highest risk for an increase in edge effects to retained and adjoining black cockatoo habitat due to increased vehicle movements, disturbance of topsoil and potential for uncontrolled access. These activities could introduce new weed species or increase the spread of weeds or diseases. However, any potential indirect impacts from weeds or diseases will be managed according to industry and CBH standards as described in Section 2.4.3.4.

Fire also has the potential to destroy, or severely modify, areas of adjacent Carnaby's Cockatoo habitat. However, the risk of inadvertent fires is considered low given the management measures proposed.

Mitigation and management measures to avoid and minimise indirect impacts to Carnaby's Cockatoo are described in further detail in Section 3.5.3.

3.5.3. Mitigation strategies to manage potential impacts

The proposed mitigation strategies to avoid and minimise potential impacts to black cockatoo habitat in areas surrounding the Proposal Area are summarised in Table 3-2. Management measures to minimise potential impacts to Carnaby's Cockatoo include pre-clearance breeding tree surveys, low speed limits, minimising the introduction or spread of weeds, preventing the introduction or spread of dieback and reducing the risk of fire.

The proposed mitigation measures have been further detailed in the CEMP applicable to the proposed action, with which all personnel will be required to comply. This CEMP (CBH 2023; Attachment E) has been prepared consistent with the DCCEEW Environmental Management Plan Guidelines (DoE 2014).

Table 3-2: Proposed mitigation strategies for black cockatoos

Proposed strategies
Clearing and earthworks Clearing will be undertaken in a slow, progressive manner, in the direction of a vegetated boundary to allow wildlife to move away from clearing activities into the surrounding remnant vegetation. If vegetation clearing occurs during black cockatoo breeding season, potential breeding trees will be assessed within a week prior to clearing for the presence of nesting black cockatoos. If breeding cockatoos are present, a 10 m radius buffer zone will be placed around the suspected or known breeding tree, and clearing will not take place within that buffer zone until the tree hollow(s) are no longer being used by black cockatoos, as verified by a suitably qualified ecologist. Indirect impacts associated with vehicle and/or machinery strikes during construction will be minimised through traffic management measures, including implementing low speed limits, driver awareness training through site inductions, and vehicle restrictions to marked tracks/roads to reduce potential vehicle strikes. Sightings of dead black cockatoo species will be reported through internal procedures as well as to DBCA. **Weeds and Dieback** Indirect impacts to adjacent habitat associated with habitat degradation from the introduction or spread of weeds and/or tree disease will be managed using industry and CBH standards. Key management measures will include: • Adjoining remnant vegetation within the Offset Site will be fenced and access will be restricted • Contractor inductions will include familiarisation with and discussion of areas adjoining native vegetation and hygiene management • Controlled access into and out of the Proposal Area • Clear demarcation of clearing boundaries • Construction vehicles to remain on designated roads outside the Proposal Area • Inspecting and cleaning equipment and vehicles prior to entry to site with native vegetation • Identification and targeted control of any outbreaks of declared weeds. **Fire** CBH has an appropriate bushfire planning response for the Corrigin Grain Receival Site, identifying specific management measures for on-site bushfire risk, as described in Section 2.4.3.6 and 2.4.4.

3.6. Significant residual impacts and requirement for offsets for Black Cockatoos

Significant residual impacts to Carnaby's Cockatoo are considered likely to occur as a result of the proposed action.

Clearing up to 1.56 ha of Poor quality foraging habitat and nine potential breeding trees with no hollows (0.09 ha of potential breeding and roosting habitat) will adversely affect habitat defined as critical to the species' survival. Offsets are proposed to compensate for this significant residual impact (see Section 5). The proposed Offset Proposal and OMP (ELA 2024a, ELA 2024b) are provided as Attachments F and G, respectively.

4. Red-tailed Phascogale

This section describes the potential direct and indirect impacts of the proposed action on Red-tailed Phascogale (*Phascogale calura*). It also provides information on avoidance and mitigation measures, identification of potential impacts, and assessment of significant residual impacts.

4.1. Overview

The Red-tailed Phascogale is a small, arboreal, nocturnal and carnivorous marsupial growing to 10.5-12.2 cm long and weighing between 48-68 g. The species is found in pockets of remnant vegetation throughout the southern Wheatbelt, where annual mean rainfall is 400−500 mm (Short and Hide 2012). Most species' records are concentrated in an area of about 150 km long in a north-south direction from Brookton to Katanning, and about 80 km wide from Williams to Dumbleyung (Short and Hide 2012). Home ranges range from 1.5 ha to 8 ha, and are generally larger during the breeding season.

The Red-tailed Phascogale is largely confined to woodlands with old-growth hollow-producing eucalypts, particularly Wandoo and York Gum, often with associated Rock Sheoak (*Allocasuarina huegeliana*), but is also known to occur in shrublands and various mosaics of woodland, shrubland and scrub-heath (Short and Hide 2012). The species nests in hollows, hollow logs and the skirts and stumps of grass trees, generally avoids relatively open areas and rocky ridges which are devoid of vegetation, and prefers long unburnt patches of vegetation (TSSC 2016). The best habitat for the species has numerous tree hollows for shelter and a semi-continuous canopy which is likely to provide protection from predation by feral predators.

There are over 200 records of the Red-tailed Phascogale in Western Australia, with one historical record occurring within 1 km of the Proposal Area, and another approximately 15 km north-east of the Proposal Area (DBCA 2007-2021).

4.2. Status, policy and guidance

The Red-tailed Phascogale is listed as Vulnerable under the EPBC Act and Conservation Dependent under the BC Act. There is an Approved Conservation Listing Advice document available for the species (TSSC 2016), as well as a draft conservation management plan (DEC 2009). The following policy and guidance documents are also relevant to this species:

- *Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed as threatened under the EPBC Act* (SEWPaC 2011)
- *Threat abatement plan for predation by feral cats* (DoE 2015b)
- *Threat abatement plan for predation by the European red fox* (DEWHA 2008).

4.3. Summary of existing environmental values

4.3.1. Site values

A Basic fauna survey was conducted in accordance with the EPA *Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020) in October 2020 (ELA 2021). The survey included an assessment of fauna habitats present within the Proposal Area, in terms of their ability to support and sustain populations of fauna, along with an assessment of the likelihood of occurrence of conservation significant fauna species, including for the Red-tailed Phascogale. During this survey, the Red-tailed Phascogale was considered to potentially occur given the occurrence of some suitable, although marginal, habitat and proximity of two historical records (ELA 2021). However, due to the lack of fallen logs, *Xanthorrhoea* skirts and stumps, tree hollows and understorey to provide cover, the potentially suitable habitat was considered unsuitable for breeding and 'marginal' for foraging and dispersal (ELA 2022).

A follow up, targeted survey for the Red-tailed Phascogale was undertaken within a slightly smaller survey area located within Lots 20 and 21 only ('ELA 2022 survey area') in June 2022 (ELA 2022; Attachment D). This survey included trapping, motion camera deployment and a habitat assessment, undertaken over four days. A total of 40 Elliot traps and six motion cameras were deployed in areas of potentially suitable habitat within the survey area (see Figure 2 in Attachment D). A detailed habitat assessment was undertaken within each area of potentially suitable habitat within the survey area. To provide additional context, areas surrounding the ELA 2022 survey area were also assessed for suitability in providing potential habitat for the Red-tailed Phascogale using a 'rapid habitat assessment' (ELA 2022). The survey methodology is described in further detail in Attachment D.

During the survey, none of the woodland habitat present within the Proposal Area was considered suitable for the Red-tailed Phascogale due to the high level of fragmentation between patches of vegetation, the highly degraded condition of the vegetation present, the lack of continuous canopy cover and/or understorey within each patch of habitat, the lack of hollows, and the presence of the European Red Fox. A small area of approximately 0.24 ha in the southern section of the survey area was considered 'potentially suitable' habitat for the Red-tailed Phascogale as it contained hollow bearing Eucalyptus trees (i.e. York Gum) and had some connectivity to Corrigin Nature Reserve (Figure 4-1). This area occurs outside the Proposal Area within the Avoidance Area and Offset Site (see Section 5).

The Red-tailed Phascogale favours old-growth hollow-producing eucalypts, particularly Wandoo, often with associated Rock Sheoak (*Allocasuarina huegeliana*); however, Rock Sheoak was not present within the survey area, and areas of Wandoo woodland generally had a sparse canopy cover, consisting only of a few scattered individual trees (ELA 2022).

Habitat in the immediate surrounds was mostly classed as 'less suitable habitat' due to the same reasons listed above. Some 'potentially suitable' habitat was present within the northern portion of the Corrigin Nature Reserve, and areas to the north of the Proposal Area (Figure 4-1).

No Red-tailed Phascogales were trapped or captured on motion camera during the survey, despite extensive survey effort. Following the field survey, it is considered unlikely that the Red-tailed Phascogale would occur within either the survey area or the Proposal Area (ELA 2022).

4.3.2. Regional values

The Proposal Area occurs on the edge of the species' core range, being approximately 80 km east of Brookton (TSSC 2016). There is a historical record of a preserved specimen from 1963 within Corrigin (1 km north of the Proposal Area), as well as two more recent records from 2007 approximately 12 km southeast of the Proposal Area (DBCA 2007-2021; ALA 2022).

The southern boundary of the Avoidance Area is also the boundary of the Corrigin Nature Reserve, which is considered likely to provide suitable habitat for the Red-tailed Phascogale (Figure 4-1; ELA 2022; Mills and McPhee 2009). Mills and McPhee (2009) undertook an assessment of the reserve's environmental values in 2009, and determined the Corrigin Nature Reserve contains at least 14 different vegetation types, including Salmon Gum, York Gum and Wandoo woodlands, as well as shrublands and various mosaics of woodland, shrubland and sandplain heath, which may provide suitable habitat for the species (Mills and McPhee 2009). However, it is unknown if the Red-tailed Phascogale occurs within the reserve, as no trapping surveys were undertaken within the Corrigin Nature Reserve by Mills and McPhee (2009), or as part of the ELA (2022) Red-tailed Phascogale survey.

Suitable habitat for the Red-tailed Phascogale in areas surrounding the Proposal Area will remain connected in a north to south direction along both the eastern and western boundaries of the Proposal Area, which will continue to provide connectivity between Corrigin Nature Reserve in the south to remnants of native vegetation in the north (Figure 4-1; ELA 2022).

4.3.3. Important populations and critical habitat

Important populations of Red-tailed Phascogale have not been clearly defined but are described as 'a population that is necessary for a species' long-term survival and recovery' in the Significant Impact Guideline (DoE 2013).

Red-tailed Phascogales are unlikely to be present within the Proposal Area due to the lack of suitable habitat and due to the lack of individuals, or evidence of the species, being recorded despite the recent survey effort (ELA 2022). As such, there are no important populations of the species within the Proposal Area.

Critical habitat has not been defined for the Red-tailed Phascogale specifically; however, the Significant Impact Guidelines 1.1 provides a general definition for species or ecological community, as areas necessary for (DoE 2013):

- Activities such as foraging, breeding, roosting, or dispersal
- The long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- Maintaining genetic diversity and long term evolutionary development
- The reintroduction of populations or recovery of the species or ecological community.

Given that there is no suitable habitat for the Red-tailed Phascogale present in the Proposal Area, there is no 'habitat critical to the survival of the species' present.

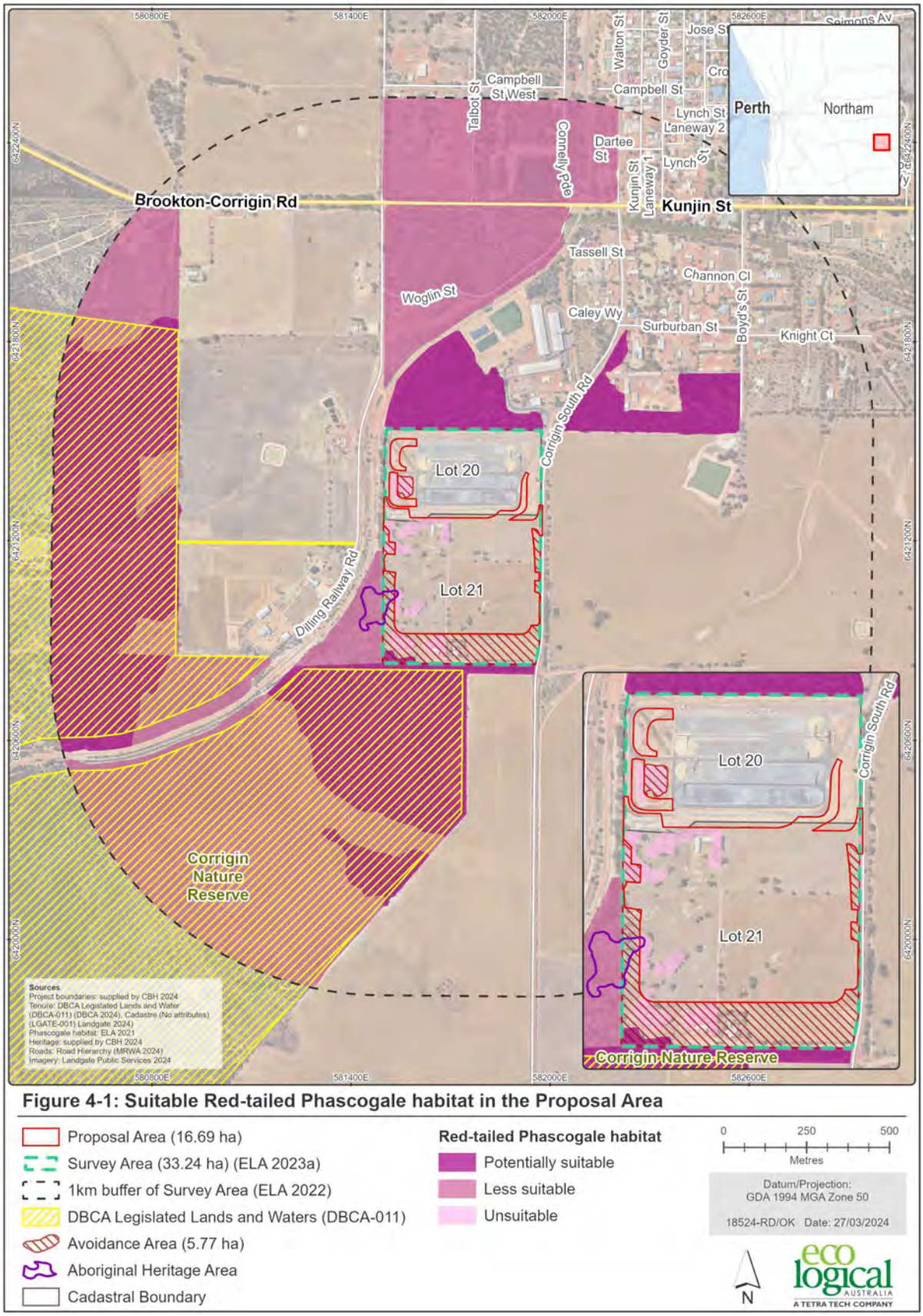

Figure 4-1: Suitable Red-tailed Phascogale habitat in the Proposal Area

- Proposal Area (16.69 ha)
- Survey Area (33.24 ha) (ELA 2023a)
- 1km buffer of Survey Area (ELA 2022)
- DBCA Legislated Lands and Waters (DBCA-011)
- Avoidance Area (5.77 ha)
- Aboriginal Heritage Area
- Cadastral Boundary

Red-tailed Phascogale habitat

- Potentially suitable
- Less suitable
- Unsuitable

0 250 500
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

18524-RD/OK Date: 27/03/2024

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4.4. Avoidance of Red-tailed Phascogale habitat

Given that there is no suitable habitat for the Red-tailed Phascogale present within the Proposal Area, avoidance measures are not applicable.

4.5. Identification and management of potential impacts to Red-tailed Phascogale

No direct impacts to the Red-tailed Phascogale will occur, given that there is no suitable habitat present within the Proposal Area, and the survey effort concluded the species is considered unlikely to occur (ELA 2022). However, the proposed action has the potential to result in indirect impacts associated with the degradation of adjacent habitat, particularly habitat within the Corrigin Nature Reserve, caused by:

- An increase in edge effects
- An increase in dust levels
- An increase in feral fauna (risk of predation)
- Introduction or spread of tree disease (i.e. soil pathogens or insects)
- Disturbance associated with noise and light
- Altered fire regimes.

Indirect impacts are described in further detail in Section 4.5.1 below.

4.5.1. Indirect impacts

Indirect impacts to the Red-tailed Phascogale have the potential to occur through the degradation of adjacent habitats associated with an increase of edge effects, increase in dust levels, an increase in feral fauna occurrence and subsequent predation, disturbance associated with increased noise and light, and/or altered fire regimes.

The Proposal Area is unlikely to increase edge effects to the Corrigin Nature Reserve. The Proposal Footprint is separated from the existing boundary of the Corrigin Nature Reserve by the Avoidance Area and the Offset Site. Both of these provide a buffer between the proposed development and the Corrigin Nature Reserve, which is likely to prevent any potential edge effects encroaching into the reserve. In addition, a number of management measures will be implemented including use of surface water controls, dust suppression techniques, minimal use of chemicals and appropriate bunding and storage where chemicals are used, and active and ad-hoc weed control to prevent weeds spreading to intact areas of vegetation (refer to Section 4.5.2) which will further minimise any potential indirect impacts to the reserve.

The proposed action has the potential to result in increased dust levels in the immediate area, particularly during construction. During peak receival times some dust may be emitted from the grain during handling, and from truck and vehicle traffic but this will be temporary and negligible given traffic will be on paved surfaces. Dust emissions to the Corrigin Nature Reserve are not expected to be significantly different than the reserve would currently receive from surrounding land use. Impacts associated with dust are expected to be temporary and minimal and will be managed through a number of dust suppression strategies as outlined in the CEMP (CBH 2023; Attachment E).

The European fox (*Vulpes vulpes*) and feral or domestic cat (*Felis catus*) are known to be major predators of the Red-tailed Phascogale, with both being listed as a key threatening factor for the species (TSSC 2016). Whilst clearing does not directly cause an increase in feral predators, it does create cleared

areas (e.g. vehicle tracks, roads and other linear structures) that provide corridors that enable foxes and cats to move more easily through the landscape. However, given that the majority of the Proposal Area is already cleared or consists of farmland (approximately 90%), clearing associated with the Proposal is not expected to cause an increase in feral predators.

The Red-tailed Phascogale is arboreal and as such, dependent on habitat trees for its survival. Therefore, the species is susceptible to habitat tree decline caused by pathogens such as Phytophthora Dieback. Pathogens and disease can spread into natural environments by various mechanisms, including wind, water, vehicles, machinery, and fauna (including native fauna and livestock). The most relevant of these mechanisms in relation to the proposed action will include vehicle and earth moving activities that can introduce or spread soil pathogens and disease into surrounding habitats. CBH has established weed and hygiene management measures and adopts a precautionary approach to manage and prevent disease spread adequately. Any potential indirect impacts from weeds or disease will be managed according to industry and CBH standards (described in Section 2.4.3.1 and Section 2.4.4). These measures will reduce the risk of disease and pathogens spreading to retained and surrounding bushland, such as Corrigin Nature Reserve.

The proposed action also has the potential to disturb the species through increased noise and light. The effects of artificial noise and light on the Red-tailed Phascogale are not well understood; however, given that the species is nocturnal, it could be assumed that artificial light has the potential to cause a change in behaviour. Lighting will only be installed at key equipment locations and all internally focused to provide a safe working environment. As the lighting will be inwardly directed and only used to the level required to support any night operations, the potential for light overspill into the Corrigin Nature Reserve is negligible. Given the Proposal Area boundary is also separated from the Corrigin Nature Reserve by the Avoidance Area and Offset Site buffer, any potential impacts are expected to be minimal.

Noise from trucks and other vehicles during peak receival times (harvest period), and during train load out, will be temporary and mostly restricted to daylight hours, and therefore not expected to significantly disturb the nocturnal Red-tailed Phascogale, if present within Corrigin Nature Reserve.

Fire also has the potential to destroy, or severely modify, Red-tailed Phascogale habitat. The recent absence of the species from nature reserves and larger remnants in the Mallee bioregion may be largely due to a scarcity of suitable hollows, probably as the result of too frequent fire (Short and Hide 2012). Too frequent fire reduces the floristic and structural diversity preferred by the species (Short and Hide 2012). Fire management is a significant element of grain receival and handling with CBH applying strict controls and protocols (e.g. fire first response equipment on hand and appropriate training of staff) to ensure the highest standards are met in this regard. The Corrigin facility has been the subject of a bushfire assessment to reduce potential risk from fire external to the facility and being a source of fire to the surrounding environment. This review requires that fire breaks are implemented to reduce the risk to the facility and the surrounding area if a fire were to originate in the vicinity of the facility. The risk of inadvertent fire from the proposed action is considered to be low and considered unlikely to occur in retained or adjoining areas of intact vegetation.

4.5.2. Mitigation strategies to manage potential impacts

The proposed mitigation strategies to minimise potential indirect impacts to Red-tailed Phascogale are summarised in Table 4-1. Management measures to minimise potential impacts to surrounding areas

of potential Red-tailed Phascogale habitat (including Corrigin Reserve) include minimising habitat degradation associated with edge effects, dust suppression, reducing the risk of introduction or spread of plant disease and the risk of fire.

The proposed mitigation measures have been further detailed in Construction Environmental Management Plan (CEMP) applicable to the proposed action, with which all personnel will be required to comply. This CEMP (CBH 2023; Attachment E) has been prepared consistent with the DCCEEW Environmental Management Plan Guidelines (DoE 2014).

Table 4-1: Proposed mitigation strategies for Red-tailed Phascogale

Proposed strategies
Clearing and earthworks Indirect impacts during clearing and earthworks will be mainly associated with increased dust levels and disturbance associated with noise and light. Dust suppression techniques (i.e. water sprays) will be implemented during construction (where required). Lighting will only be installed at key equipment locations and all internally focused to provide a safe working environment and to reduce light emissions to the nearby Corrigin Nature Reserve. **Weeds and Dieback** CBH has established weed and hygiene management measures and adopts a precautionary approach to manage and prevent the introduction and spread of weeds and plant disease. These measures are described in Table 2-2 in Section 2.4.4. **Fire** The risk of fire during construction will be minimised by implementing standard CBH and industry protocols as described in Table 2-2 of Section 2.4.4.

4.6. Assessment of the acceptability of impacts on Red-tailed Phascogale

Given the survey findings, it is now considered unlikely that the Red-tailed Phascogale occurs within the Proposal Area. Consequently, an assessment of the acceptability of potential indirect impacts on the Red-tailed Phascogale has been undertaken against the *Matters of National Environmental Significance Significant Impact Guidelines 1.1* (DoE 2013; Table 4-2). The assessment takes into consideration the proposed avoidance and mitigation measures outlined in Section 4.5.2 and the statutory documents listed in Section 4.2 for the species.

Based on this assessment, the proposed action is unlikely to have a significant residual impact on the Red-tailed Phascogale after the mitigation hierarchy has been applied (Table 4-2).

Table 4-2: Assessment of significance of impacts to Red-tailed Phascogale

Significant impact criteria	Assessment of impacts to Red-tailed Phascogale
Lead to a long-term decrease in the size of an important population	**Unlikely** The proposed action will not lead to a long-term decrease in the size of an important population given that the species does not occur within the Proposal Area, and no suitable habitat is present.
Reduce the area of occupancy of an important population	**Unlikely** The area of occupancy for the Red-tailed Phascogale is estimated to be 244-260 km^2 (TSSC 2016). Given that the species is unlikely to occur within the Proposal Area, clearing associated with the proposed action is unlikely to reduce the area of occupancy for the species.

Significant impact criteria	Assessment of impacts to Red-tailed Phascogale
Fragment an existing important population into two or more populations	**Unlikely** Given that the species is unlikely to occur within the Proposal Area and the lack of suitable habitat, clearing will not fragment an existing important population into two or more populations.
Adversely affect habitat critical to the survival of a species	**Unlikely** There is no suitable habitat for the Red-tailed Phascogale present within the Proposal Area and as such, there is no habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population	**Unlikely** The Red-tailed Phascogale is considered unlikely to occur within the Proposal Area and there is no suitable habitat. The Proposal Area is therefore unlikely to support a breeding population and will not disrupt the breeding cycle of an important population.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	**Unlikely** The Red-tailed Phascogale is considered unlikely to occur within the Proposal Area and there is no suitable habitat present. The proposed action is therefore unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	**Unlikely** The proposed action will not result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat given that there is no suitable habitat for Red-tailed Phascogale present in the Proposal Area. In addition, risks from invasive species which may affect habitat will be effectively managed using industry and CBH standards (described in Section 2.4.4 and Attachment E).
Introduce disease that may cause the species to decline	**Unlikely** Diseases that may cause the species to decline are generally associated with soil pathogens that can cause tree health or canopy cover to decline. The risk of disease introduction to surrounding areas of suitable Red-tailed Phascogale habitat is expected to be low. It will be effectively managed by industry and CBH standards (described in Section 2.4.4 and Attachment E).
Interfere with the recovery of the species	**Unlikely** Priority conservation actions for the species include (TSSC 2016): • Maintaining feral cat and fox control across the species' distribution • Managing and rehabilitating woodlands within remnant vegetation • Developing woodland corridors between small remnants • Encouraging participation by local landholders in programs to re-establish woodland linkages, establish nest boxes at sites where suitable nesting hollows are lacking, and to control feral cats and foxes. The proposed action will not remove any suitable Red-tailed Phascogale habitat. Management measures will be aimed at protecting adjacent areas of vegetation. As such, the proposed action is unlikely to interfere with the recovery of the species and is not at variance with any of the conservation actions.

4.7. Significant residual impacts and requirements for offsets

The proposed action will not result in any significant residual impacts to the Red-tailed Phascogale, given that the species is unlikely to be present, there is no suitable habitat present within the Proposal Area and management measures will be implemented to minimise indirect impacts to areas of adjacent vegetation, in particular the Corrigin Nature Reserve. As such, no offsets are required.

5. Offsets

Environmental offsets need only be applied where the residual impacts of a proposal are determined to be significant after avoidance, minimisation, and rehabilitation have been pursued. After the application of avoidance and mitigation measures, the proposed action is expected to result in the following residual significant impacts for:

- Wheatbelt Woodlands TEC – the proposed clearing of up to 0.31 ha (0.29 ha in Category D and 0.02 ha in Category C)
- Carnaby's Cockatoo – the proposed clearing of 1.56 ha of 'Poor' quality foraging habitat, which includes 0.09 ha of potential breeding and roosting habitat (including nine potential breeding and roosting trees with no suitable nesting hollows).

Offsets are therefore proposed to compensate for these significant residual impacts.

In the EPBC Act Referral CBH indicated that its preferred offset strategy was to provide funds to DBCA for the department to acquire suitable land to be vested with the Conservation and Parks Commission of Western Australia or have a conservation covenant placed on the land, securing it in perpetuity for conservation purposes. The referral also indicated CBH is also considering rehabilitation of vegetation as an alternative to land acquisition or as a component of the offset strategy.

Given the availability of suitable land currently owned by CBH immediately adjacent to the Proposal Area, CBH's preference is to now commit to on-site revegetation as the proposed action offset strategy. This approach is consistent with the Approved Conservation Advice for the Wheatbelt Woodlands TEC (DoE 2015a), which encourages the revegetation of degraded patches of eucalypt woodland. Under this strategy, outlined in detail in the Offset Proposal (ELA 2024a; Attachment F), revegetation is now proposed to be undertaken in a 2.60 ha area (the 'Offset Site') located on Lot 21 on DP 41206, Corrigin South Road, Corrigin. The Offset Site is located directly adjacent to the Proposal Area in the Avoidance Area, running along its western and parts of its southern boundaries. The Corrigin Nature Reserve occurs directly to the south of the Offset Site, with vegetated linkages between the two areas.

Three vegetation communities have been delineated and mapped within the Offset Site, comprising two eucalypt woodland communities, ElW (0.87 ha) and EsElW (0.19 ha; that also represents Category D Wheatbelt Woodlands TEC), and one *Acacia* shrubland community, AcTS (0.18 ha). Vegetation communities ElW and EsElW represent Poor quality Carnaby's Cockatoo foraging habitat (1.10 ha). In addition to foraging habitat, there is approximately 0.05 ha of potential breeding/roosting habitat within the Offset Site, including five potential breeding trees. All vegetation is in Degraded condition, and the remaining half of the Offset Site (1.36 ha) consists of cleared areas including paddocks and tracks. Further information of the biological values of the Offset Site is provided in the Offset Proposal (Attachment F).

The offset package for the Wheatbelt Woodlands TEC includes:

- Protection of the 2.60 ha Offset Site (including areas of Wheatbelt Woodlands TEC) through placement of land under a conservation covenant. Through this action, land and Wheatbelt Woodlands TEC will be protected in perpetuity

- Reducing threatening processes within the Offset Site
- Increasing native vegetation cover within the Offset Site from 1.36 ha to approximately 2.50 ha (the remaining 0.10 ha consists of granite outcrops)
- Creating new areas of Wheatbelt Woodlands TEC thereby increasing the area of Wheatbelt Woodlands TEC within the Offset Site from 0.19 ha to 1. 43 ha through:
  - revegetation[1] of approximately 0.84 ha of existing *Eucalyptus loxophleba* (ELW) woodland in Degraded condition through planting of suitable Wheatbelt Woodland TEC species and activities such as weed control
  - revegetation of approximately 0.40 ha of cleared paddock through planting of suitable TEC species and activities such as weed control
- Increasing the quality of existing 0.19 ha of Wheatbelt Woodlands TEC from Degraded to Good or higher (Category B TEC) through rehabilitation[2] activities such as ongoing weed control, supplementary planting, access control and fire management.

The offset package for Carnaby's Cockatoo includes:

- Reducing all threatening processes within the Offset Site
- Protection of the 2.60 ha Offset Site (including Carnaby's Cockatoo foraging, breeding and roosting habitat) through placement of land under a conservation covenant. Through this action, land and habitat for Carnaby's Cockatoo will be protected in perpetuity
- Increasing the area of Carnaby's Cockatoo habitat within the Offset Site from 1.06 ha to 2.40 ha through revegetation of 1.34 ha of cleared paddock through planting of foraging, breeding and roosting species for Carnaby's Cockatoo to create additional habitat
- Increasing the quality of the existing 1.06 ha of Carnaby's Cockatoo foraging habitat from Poor to Moderate quality through rehabilitation activities such as ongoing weed control, supplementary planting, access control and fire management.

Based on a combination of land protection, habitat creation and on-ground management, the proposed offset package will directly offset over 100% of the residual impact to Wheatbelt Woodlands TEC and Carnaby's Cockatoo. The offset has been determined in accordance with the *EPBC Act Environmental Offsets Policy* (SEWPaC 2012b) and *Offsets Assessment Guide* (SEWPaC 2012c) and is outlined in the Offset Proposal (Appendix F).

The OMP (ELA 2024b; Attachment G) has been prepared to outline the land transfer, protection, rehabilitation and revegetation works that will be undertaken to achieve a successful offset for the proposed action. The OMP details requirements for reporting on the implementation of management measures and achievement towards, and maintenance of, performance and completion criteria. It also

[1]Revegetation is intended to create additional habitat in areas that are currently devoid of any habitat (i.e. cleared pasture; DAWE 2022).

[2]Rehabilitation is intended to improve the quality of habitat through additional plantings of Carnaby's Cockatoo foraging and breeding species, as well as weed and pest management and fencing, to improve low quality habitat so that it becomes higher quality habitat (DAWE 2022).

facilitates adaptive management of the Offset Site including the nomination of milestone targets and a monitoring program.

The proposed offsets package meets the principles of the *EPBC Act Environmental Offsets Policy* (SEWPaC 2012b; Table 5-1).

Table 5-1: Consideration of the principles of the EPBC Act Environmental Offsets Policy

Principles	Responses
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter	Offsets proposed are in accordance with information and guidance provided in the referral guidelines for Black Cockatoos, Carnaby's Cockatoo Recovery Plan and Approved Conservation Advice for Wheatbelt Woodlands TEC to ensure overall conservation outcomes (i.e. improve the viability of Carnaby's Cockatoo habitat and Wheatbelt Woodlands TEC).
Suitable offsets must be built around direct offsets but may include other compensatory measures	The offset package has been developed around direct offsets which are required to account for 90% of the offset package under the EPBC Act. The direct offsets proposed in this package account for over 100% of the offsets required for MNES and therefore other compensatory measures are not proposed.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter	Offsets have been developed in accordance with the EPBC offsets calculator for each significant residual impact. The calculator accounts for the conservation status of each matter.
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter	Offsets have been developed in accordance with the EPBC offsets calculator for each significant residual impact.
Suitable offsets must effectively account for and manage the risks of the offset not succeeding	The uncertainty of offset success is included in the calculation of a suitable offset extent in accordance with the EPBC offsets calculator. The OMP includes objectives and appropriate targets/performance indicators to measure success of achieving the outcomes indicated in the Offset Proposal. It will also provide for appropriate monitoring and setting of triggers for implementation of remedial actions should monitoring indicate issues related to success.
Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs	Only protection or habitat improvement additional to the base case of existing requirements is considered part of the offset.
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable	The proposed offset has been based on biological survey data completed by qualified ecologists that determined the offset land contains values and is suitable for re-establishing values in rehabilitation and revegetation areas.
Suitable offsets must have transparent governance arrangements, including being readily measured, monitored, audited, and enforced.	Any condition regarding the Offset Proposal is expected to include governance arrangement requirements, involving consultation with and endorsement by DCCEEW and other decision-making authorities. The OMP includes appropriate monitoring to measure and respond to success. CBH will be responsible for undertaking conservation actions.

Under the *EPBC Act Offset Assessment Guide* (SEWPaC 2012c), suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action. The proposed offset aims to improve the size and viability of Wheatbelt Woodlands TEC and Carnaby's Cockatoo habitat through

land protection, rehabilitation to remove threatening processes and improve habitat condition, and revegetation to create additional areas of habitat, and therefore achieves this objective.

The proposed offset is proportionate to the level of impact and significance of the environmental values being impacted and aligns with the EPBC Act Principles described above. Through implementation of an adaptive management framework, CBH has factored in risks of failure and provided contingency measures that can be implemented to ensure certainty of success.

Given all the above, the offset proposed is considered more than adequate with over 100% direct offset achieved for both MNES.

6. Ecologically sustainable development

Under the EPBC Act, the following are principles of ecologically sustainable development:

a. Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations
b. If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation
c. The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations
d. The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making
e. Improved valuation, pricing and incentive mechanisms should be promoted.

CBH has a Sustainability Action Plan designed to capture initiatives, drive actions and track progress against areas consistent with the concepts and principles of environmental, social and governance (ESG) commitments. Key sustainability objectives include:

- Prevent harm to the environment
- Strive to enhance the communities in which we operate in
- Reduce greenhouse gas emissions
- Integrate sustainable development principles
- Implement sustainable consumption practices
- Foster more sustainable behaviours and consumption patterns
- Improve water use efficiencies and protect water quality
- Reduce waste produced, maximise resource recovery and recycling.

CBH strives for continuous improvement in its practices and behaviours. To facilitate continued improvement, the Sustainability Action Plan is reviewed annually, with progress outlined in an Annual Report.

In addition to generating value for Western Australian grain growers, CBH advocate for and provide financial support to regional communities, and the wider grain industry to ensure the long-term sustainability of the industry.

CBH aligns its sustainability approach to the United Nations (UN) Sustainable Development Goals framework and have a formal commitment to three of the 17 UN Sustainable Development Goals including:

- Affordable and Clean Energy - via the commitment to increase renewable energy into our energy mix
- Responsible Consumption and Practice - via the commitment to reducing CBH's waste to landfill burden and producing visible sustainability reporting

- Life on Land - via the commitment to minimise or offset biodiversity loss.

Further information about these goals and how they are being met can be found online at https://www.cbh.com.au/our-co-operative/sustainability.

A summary of how the proposed action addresses the five EPBC Act principles of ecologically sustainable development is provided in Table 6-1.

Table 6-1: Compliance of the proposed action with EPBC Act principles of ecologically sustainable development

Principle	Demonstrated compliance with principle
Decision making processes should effectively integrate both long term and short term economic, environmental, social and equitable considerations.	The proposed action is a CBH Network Strategy site of the future and has been identified for expansion in the CBH 2021-25 Network Plan. Project decision making has been influenced by long and short term economic, environmental, social and equitable considerations at the planning and design phase. Examples of proposed action considerations include: • The Proposal Area has been sited adjacent the current grain receival facility to minimise truck movements between de coupled sites. • Utilising adjacent sites also minimises the requirement for multiple site entry and exits, potentially adding to road verge clearing in the area. • The site was chosen due to the extensively cleared nature of the area, as it was previously used for cropping activities. • Redesign of the Disturbance Footprint occurred to avoid conservation significant values in the western and eastern portions of the Proposal Area (i.e. increasing the Avoidance Area). • The proposed action is proposed in order to cater for projected growth in the Corrigin grain catchment. • The nature of the proposed action, to increase grain storage capacity in the Corrigin region, minimises the standing crop risk for grain growers. • The increased storage and handling capacity represented by the proposed action is expected to result in increased job opportunities for residents and flow-on effects on local businesses.
If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.	CBH has commissioned ecological surveys within the Proposal Area and immediate surrounds in order to reduce lack of certainty. This has allowed a comprehensive impact assessment to be undertaken, with a high degree of certainty around extent of impacts and confidence that environmental impacts can be effectively managed. Offsets are proposed for environmental values, such as MNES, where there is a real possibility that significant residual impacts could occur.
The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	The proposed action will avoid impacting significant environmental values in the Avoidance Area which is not proposed for development. The Avoidance Area provides a buffer to conservation significant values in areas surrounding the Proposal Area, as well as providing connectivity and ecological linkages. The Avoidance Area will allow the health, diversity and productivity of the environment in these areas to be maintained for the benefit of future generations. The proposed offsets package will ensure that Wheatbelt Woodland TEC and Carnaby's Cockatoo habitat values are enhanced and protected in perpetuity. The combination of avoiding and offsetting these environmental values will ensure that the occurrence of the Wheatbelt Woodland TEC and Carnaby's Cockatoo habitat is maintained, which will result in benefits for future generations.

Principle	Demonstrated compliance with principle
The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.	This has been demonstrated during the decision making process through the commissioning of numerous studies including baseline surveys, targeted surveys, desktop assessments and geotechnical assessments, as well as consideration of offsets. This has also been demonstrated in project design through the avoidance of significant environmental values in the western and eastern portion of the Proposal Area. This was a fundamental consideration in the decision-making process resulting in the proposed action area being designed to avoid MNES values, where practical.
Improved valuation, pricing and incentive mechanisms should be promoted.	CBH has considered environmental survey and other inputs (e.g. geotechnical assessment) with these a key determining factor in project design to avoid and minimise impacts on site and surrounds' significant environmental values. Emissions and discharges are minimised as far as practicable. CBH understands and accepts all relevant costs for management, mitigation, monitoring, offsets and closure/decommissioning of the proposed action will be borne by it. The proposed action is part of a large rail-based network operated by CBH for grain receival and transport that incentivises its large grower membership (to reduce truck and road usage, bringing economic, safety and environmental benefits to the wider community. CBH chose the Proposal Area given its location adjacent the existing grain site to minimise impacts at an alternate location, and make use of a highly cleared area previously used for cropping as the Proposal Area.

7. Social and economic matters

7.1. Costs and benefits

The estimated costs of this propose action is approximately $10 M. The rationale driving this significant investment includes:

- Grain production in the Corrigin catchment is forecast to grow at 0.2% per annum, driven by improved farming techniques and higher yielding seed varieties
- Corrigin currently has a permanent storage utilisation of 108% and has a forecast permanent storage utilisation of 133% by 2025 (excluding harvest moves)
- Expansion of Corrigin will enable closure of the Ainsworth, Bullaring and Jubuk facilities in line with the CBH Network Strategy – with an estimated 15,438 t diverted from Jubuk, 5,555 t diverted from Ainsworth and 4,445 t diverted from Bullaring
- Expansion of Corrigin will enable the site to become 'full service', improving local grower turnaround times and reducing grower paddock-to-site travel times
- The expanded facility will enable CBH to add up to four new grain segregations (e.g. according to different types or quality grades)
- Corrigin currently makes an average of 33,000 t of essential harvest moves to keep services open, putting additional pressure on the Brookton facility, which is already heavily utilised during harvest and makes 188,000 t of essential harvest moves in an average year.

Construction of additional permanent specification storage capacity at Corrigin will also cater for forecast harvest growth and for end-of-life storage falling out of the CBH Network.

Furthermore, the current site layout and traffic flow results in bottlenecks for trucks delivering to the fixed storages to the north of the site. The existing marshalling area is too small to hold the average number of trucks queueing for sampling and weighing in – the proposed action, including improved cycle time due an increased grid capacity, is designed to ease these congestion issues.

The proposed action will also realise increased job opportunities and local business support during construction and operation, particularly annually during the harvest period, representing a considerable increase in economic activity in the local shire (population of approximately 1,000 [Shire of Corrigin 2022]). Indirect employment opportunities in Corrigin will also increase during the harvest period due to increased resourcing requirements – whether through working directly on receivals or through support activities such as facilities maintenance and supplies. Similarly, the additional capacity is also anticipated to increase traffic to town with flow-on effects in terms of support for local businesses during the harvest period expected.

Other benefits to the region include the effect of – in relative terms – reduced truck movements including reduced road maintenance costs for the Shire (with flow-on effects to boost the local economy) and improved community safety.

In peak years when the site is at capacity, the additional storage is expected to realise increased returns for growers, that in turn can be expected to have a flow-on effect to boost the local economy.

7.2. Consultation and heritage considerations

7.2.1. Aboriginal heritage

The Proposal Area is within the Ballardong People Indigenous Land Use Agreement area. An archaeological and ethnographic Aboriginal heritage survey was undertaken within the Offset Site and Proposal Area on 19 January 2023 with a group of Ballardong representatives (Archae-aus 2023). One Aboriginal archaeological site, AS23-001, was identified and recorded to Site Identification Level in accordance with the *Aboriginal Heritage Act 1972*. It was described as an artefact scatter, reduction area, camping ground, water source and natural feature and is located on and adjacent to the large granite dome situated in the middle of the Offset Site. Site AS23-001 (also referred to as the 'Aboriginal Heritage Area') continues east of the Offset Site and extends into the Proposal Area (Figure 1-2).

A total of 0.016 ha of Site AS23-001 occurs within the Proposal Area. This area contains 0.015 ha of vegetation mapped as ElW (and Carnaby's Cockatoo Poor quality foraging habitat) and 0.001 ha of cleared land (Figure 2-1). Despite being partially located within the Proposal Area, CBH has committed to not disturbing the entirety of Aboriginal Heritage Area. However, the minor reduction to clearing within Site AS23-001 has not be carried across to the projected impacts of the proposed action; i.e. the 0.015 ha of Carnaby's Cockatoo Poor quality habitat contained within the Aboriginal Heritage Area has conservatively been included as part of the calculation of significant residual impacts for the species (Section 3.5 and 3.6), and is proposed to be offset (Section 5).

The Aboriginal Heritage Area covers 0.16 ha of the Offset Site and contains 0.12 ha of vegetation mapped as AcTS (including 0.03 ha of granite), 0.01 ha of vegetation mapped as ElW (and Carnaby's Cockatoo Poor quality foraging habitat) and 0.03 ha of cleared land (Figure 2-1). The Ballardong representatives were 'supportive of the potential vegetation corridor that would act as a natural buffer to AS23-001' (i.e. the Offset Site) and recommended that endemic species should be used in any revegetation/rehabilitation works (Archae-aus 2023). While a portion of the Aboriginal Heritage Area intersects with the Offset Site, management activities (such as weeding and rehabilitation/revegetation actions) are currently not proposed within this area. However, environmental management actions will be potentially undertaken in the future following further consultation with Ballardong representatives.

7.2.2. Stakeholder consultation

In addition to on-going discussions with DCCEEW and consultation in relation to the Aboriginal heritage survey (Section 7.2.1), CBH has engaged with a number of regulators and stakeholders, including:

- CBH liaised with DWER in September 2021 to provide a summary of information on the proposed action and its impacts
- CBH consulted with the Shire regarding the proposed action including the lodgement of a Development Application
- As part of the consultation with the Shire, DBCA were consulted and provided feedback in December 2021, which CBH responded to (refer to Section 1.3; Attachment A).

CBH will continue to engage with internal and external stakeholders. These will include CBH Operations, Grower representatives and Local Government representatives to seek input and align expectations.

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Attachment A DBCA Advice - Development Application for CBH Corrigin

MEMORANDUM			
TO	Graham Penter, CBH Group		
FROM	Nicki Thompson and Jeremy Mitchell, Ecological Australia		
DATE	16 March 2022	PURPOSE	For Information
SUBJECT	DBCA Advice - Development Application for CBH Corrigin		

Purpose

The purpose of this memo is to address queries raised by the Shire of Corrigin (the Shire) and the Department of Biodiversity, Conservation and Attractions (DBCA) in regard to the submission to the Shire of a Development Application (DA) for CBH Group's (CBH) Corrigin Proposal (the Proposal).

Background

CBH is proposing to remove native bushland for the expansion of the existing Corrigin grain receival site, in the Shire of Corrigin. The expansion will include the construction of up to six open bulkheads for grain receival and storage, and associated infrastructure such as internal roads, weighbridges and sampling locations. The Proposal Area (Disturbance Footprint) is approximately 16.7 ha, and contains approximately 1.6 ha of native vegetation proposed for clearing. The rest of the Proposal Area (i.e. approximately 15.1 ha) is already cleared and is mostly devoid of any ecological values (Figure 1).

Clearing associated with the Proposal has the potential to impact on the following Matters of National Environmental Significance (MNES), which either occur or are considered to potentially occur within the Proposal area (Eco Logical Australia [ELA] 2021a):

- Eucalypt Woodlands of the Swan Coastal Plain Threatened Ecological Community (Wheatbelt Woodlands TEC) – listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) (note: not listed under the State *Biodiversity Conservation Act 2016* [BC Act])
- Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) – listed as Endangered under both the EPBC Act and BC Act
- Red-tailed Phascogale (*Phascogale calura*) - listed as Vulnerable under the EPBC Act and as Conservation Dependant (CD) under the BC Act.

No other conservation significant flora, fauna or ecological communities listed under the EPBC Act, BC Act or listed as Priority by DBCA are known, or considered likely, to occur within the Proposal area (ELA 2021a).

CBH submitted the DA to the Shire in November 2021, which was forwarded on to DBCA for comment. DBCA responded via email on 2 December 2021 with a number of queries, forwarded to CBH, and accompanied by associated queries from the Shire, the same day. Further information to respond to

these queries is provided in Table 1 below, as well as within the Preliminary Documentation requested by the Department of Agriculture, Water and Environment (DAWE) as part of the EPBC Act referral and assessment process (Appendix A; and this memo will form an appendix to the Preliminary Documentation).

Table 1: Response to Shire and DBCA queries

Shire or DBCA comment	ELA response
Additional mapping of TEC (Shire)	
Please provide some additional mapping of the TEC as requested by the DBCA below and email that to me. I'll then forward it to the DBCA so they can review it and provide some further, more definitive advice to the Shire for review and consideration.	Refer to "Advice on threatened ecological communities (TECs) (DBCA)", Figure 2 and Table 2 below.
Environmental approvals – State and Commonwealth (Shire)	
Confirm if you've received any confirmation from DWER as to the need for environmental approvals under the relevant Commonwealth and State legislation to clear the native vegetation on the land to accommodate the proposed development?	Given the potential impacts to MNES, the Proposal was referred to the Commonwealth Department of Agriculture, Water and Environment (DAWE) on 11 August 2021 (EPBC reference 2021/9024). On 21 September 2021, a delegate of the Minister decided that the proposed action is a controlled action and on the 6 October 2021 a delegate of the Minister decided the Proposal would be assessed by Preliminary Documentation (Appendix A). This assessment is currently in progress. Under State legislation, native vegetation can only be cleared with a Native Vegetation Clearing Permit (NVCP) granted under Part V Division 2 of the *Environmental Protection Act 1986* (EP Act), or an approval under Part IV of the EP Act, except in some circumstances where exemptions apply. ELA undertook a review of Commonwealth and State Environmental Approvals required for the project on behalf of CBH. This included a review of the EP Act and Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Regulations) to consider if any exemptions to the requirement to obtain a NVCP may apply to the Proposal, given the proposed 1.6 ha of native vegetation clearing and in the context that a DA for the proposed development would need to be submitted to the Shire. Based on this review, CBH anticipates the Proposal will qualify for an exemption under Regulation 5, Item 1 (Clearing to construct a building) of the Regulations, subject to an approved DA and relevant conditions, given: • Clearing was to be for the lawful construction of a building or other structure on a property. • Clearing was not, together with all other limited clearing on the property in the financial year in which the clearing takes place, exceeding five hectares and;

Shire or DBCA comment	ELA response
	○ (a) the clearing is planned to be only to the extent necessary; and ○ (b) the vegetation is not riparian vegetation. • The area was also not an Environmentally sensitive area (ESA). In addition to the above CBH also explicitly stated to DWER that should DWER determine a Native Vegetation Clearing Permit be required CBH was happy to lodge one. DWER responded via email on 21 September 2021, extracted below. *We've taken a look at the additional info and it appears that, with an approved Development Approval (DA), the exemption may apply to the open bulkhead storages themselves. However, without knowing the conditions of the DA we're less certain on the associated infrastructure.* *We've previously received legal advice that a hardstand is a 'structure' because technically, it is made out of 'parts' (i.e. cement has been brought in to create a hardstand). If we apply this idea, then the internal sealed roads could be considered structures and the exemption may apply to them (only as long as the roads are part of the DA). However, a laydown (cleared/compacted area) would not be exempt under Regulation 5, Item 1.* *The proposal seems to be fairly complex and without an approved DA, it is difficult for us to advise on which parts may be exempt. Unless you have confidence that the relevant exemptions apply, you should consider applying for a clearing permit for the whole footprint concurrent with the DA application, to reduce the risk of unnecessary delays.* Confirmation was then provided to DWER no laydown area was included. No further correspondence has been received from DWER.
Has CBH formulated any environmental offset proposals to compensate for the loss of vegetation that will arise as a consequence of the proposed works? If so, the Shire needs to see exactly what is proposed in that regard, particularly if no environmental approvals are required under Commonwealth and State legislation to demonstrate it has considered and had due regard for clause 67 of the Deemed	A potential requirement to offset any significant residual impacts to MNES resulting from the Proposal is anticipated, with this to be addressed as is standard via the EPBC Act assessment and approval process in line with the EPBC Act Environmental Offsets Policy (Australian Government 2012) and, were DWER to advise the exemption does not apply and an NVCP is

Shire or DBCA comment	ELA response
Provisions of the Planning and Development (Local Planning Schemes) Regulations 2015 as it applies specifically to the likely effect of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or the water resource.	required, under EP Act processes and the State Offsets Policy [Government of Western Australia 2014]). Further information will be provided in the Preliminary Documentation.
Advice on significant fauna assets (DBCA)	
Carnaby's cockatoo is listed as endangered in WA. Nine potential roosting/breeding trees (none of the trees contain suitable hollows at present), and 1.36 ha of potential poor quality foraging habitat are proposed to be cleared. However, cumulative impact of loss of habitat is reducing the number of Carnaby's cockatoo that can be supported in the region. The Carnaby's cockatoo Recovery Plan states that reversal of threats (including loss of habitat) is required before significant increases in the cockatoo populations can occur. The Recovery Plan identifies the need to protect and manage as much habitat as possible to minimise the impacts of habitat loss. This proposal is unlikely to have a significant impact on Carnaby's cockatoos. However, given all remaining resources are significantly important to black cockatoos, consideration should be given to potential offsets which could include the protection of nearby trees with suitable hollows and potential roosting/breeding trees. These may contribute suitable breeding sites in the future. For example, one *Eucalyptus loxophleba* (York Gum) that had a potentially suitable hollow (100 mm diameter) was recorded just 20 m outside the eastern boundary of the survey area. Despite the consultants concerns raised about the hollow only being 3m of the ground, Carnaby's have been recorded breeding in trees with hollows low to the ground).	The Proposal has been redesigned to reduce the size of disturbance. This has resulted in a Development/Disturbance Footprint (Proposal Area) of approximately 16.7 ha and an 'Avoidance Footprint' of approximately 6.1 ha (Figure 1). It should be noted that the reported extent of 'Poor' quality foraging habitat for Carnaby's Cockatoo relevant to the project has changed to that previously reported (within both the survey report and the EPBC Act Referral). There was a mistake in the mapping as a small number of paddock trees had been omitted. The survey report has been amended to address this oversight as follows (ELA 2021a; Figure 3; also see the Preliminary Documentation): • Within the survey area, the area of 'Poor' quality foraging habitat had been estimated to be 3.2 ha, whereas it is now estimated to be 3.3 ha • Within the Disturbance Footprint, the area of 'Poor' quality foraging habitat was previously reported to be approximately 1.4 ha - the correct area is 1.6 ha, as shown in Figure 3. The black cockatoo breeding habitat assessment (ELA 2021a) identified 20 potentially suitable breeding trees within the larger Survey Area, of which nine occur within the Disturbance Footprint. The other 11 potential breeding trees occur within the Avoidance Footprint where they will be retained. One potential breeding tree recorded during the 2020 survey (outside the 'Survey Area'), had a hollow potentially suitable for nesting (i.e. with a diameter opening of >100 mm); however, this tree is located outside the Disturbance Footprint and will be retained. The survey report states that the hollow is less than 3 m from the ground, however this hollow has still been classed as potentially suitable for nesting (ELA 2021a). CBH has committed to providing a Construction Environmental Management Plan, which will include management measures to reduce indirect

Shire or DBCA comment	ELA response
	impacts to Carnaby's Cockatoo habitat in areas surrounding the Disturbance Footprint, including the location of this potential breeding tree and hollow. CBH has also committed to providing offsets, mainly applicable to the Wheatbelt Woodlands TEC but which is expected to also provide offsets for Carnaby's Cockatoo given the former can provide breeding, roosting and foraging habitat for the latter. This approach is based on the impact assessment provided with the EPBC Act referral, that concluded the impacts on the TEC is expected to be considered significant whereas the impact on Carnaby's Cockatoo was considered not significant. These initial conclusions are naturally subject to DAWE's determination in undertaking its assessment, through which CBH anticipates DBCA would be consulted by DAWE. All of the above will be implemented under the Commonwealth EPBC Act (ELA 2021b). Further information will be provided in the Preliminary Documentation.
Red-tailed phascogales (WA conservation status - conservation dependent) are also recorded within the surrounding area. However proposed habitat to be cleared is unlikely to be significant for the species. Should the proposal be approved, all hollows should be investigated to ensure no fauna area present.	CBH has committed to providing a Construction Environmental Management Plan, as discussed in the EPBC Act Referral submission and expected to be subject to a condition of approval. The CEMP will include a management measure for a licensed fauna handler to inspect hollows prior to clearing to ensure no Red-tailed Phascogale are present. In the event that Red-tailed Phascogale (or any other conservation significant fauna) are found to be present within a hollow, the hollow will be demarcated and not be cleared until the fauna have moved on or are no longer using the hollow.
Advice on threatened ecological communities (TECs) (DBCA)	
Vegetation surveys concluded that 0.76 ha vegetation (parts of vegetation communities ElW, EsElW and EwEsW) is characterised as representing the Eucalyptus Woodlands of the Western Australian Wheatbelt TEC. This is indicated in the Ecological Australia assessment against key indicators of location and physical environment, structure, presence of key species, and presence of native understorey. The related conclusions are considered adequate to determine the presence of the TEC.	A total of 0.76 hectares of Wheatbelt Woodlands TEC has been recorded in the Proposal area (ELA 2021a; Table 2 below). Please note the EPBC Act Referral stated that approximately 0.36 ha of this was proposed for clearing (ELA 2021b); however, there was a mistake in mapping undertaken for the Referral which resulted in an overestimation of the amount of TEC to be cleared. The actual area of Wheatbelt Woodland TEC to be disturbed is approximately 0.31 ha (patches A and B are within in the Disturbance Footprint as shown in Figure 2; Table 2).

Shire or DBCA comment	ELA response
The Commonwealth referral indicates the larger patch (0.29 ha potentially impacted) on the western boundary meets the condition threshold in Category D (for Degraded condition), with the patch size >5 ha, as the vegetation inside the survey area is continuous with vegetation outside. The small area (0.07 ha potentially impacted) of Wheatbelt Woodlands TEC located within the road reserve meets the condition threshold Category C (for Good condition), with the roadside patch width being >5m. Using the Department of the Environment (DoE 2013) Matters of National Environmental Significance Significant Impact Guidelines 1.1 (the Guidelines), the impacts from the proposed action are expected to be considered significant. 92% of the proposal area is noted in Eco Logical Australia (2021) as completely degraded. The 0.76 ha representing the Eucalyptus Woodlands of the Western Australian Wheatbelt TEC, ranges from degraded in the western section on Lot 21, to very good in the EwW portion on the eastern road reserve. 0.36 ha of the TEC is proposed to be cleared and 0.2 ha is to be retained. It is not clear from the report and schematic diagram provided, which areas of the TEC this relates to, and the vegetation condition. We would therefore appreciate more detailed mapping to clarify this matter.	The area of Patch A within the Disturbance Footprint is 0.29 ha, within an inferred total immediate area of approximately 1.86 ha, that includes vegetation that extends west and south of the Proposal Area (Table 2 1; Figure 2). Patch A meets the condition threshold in Category D (for Degraded condition), with the patch size >5 ha, as the vegetation inside the survey area is continuous with vegetation outside the survey area (that eventually connects to Corrigin Nature Reserve on the southern boundary of the Avoidance Footprint) (ELA 2021a; Figure 2). The actual the extent of vegetation representing the TEC outside the survey area is unknown, the occurrence of more than 5 ha of the TEC is inferred from aerial photography and site observation. The total extent of Patch B is 0.21 ha, of which 0.02 ha occurs inside the Disturbance Footprint (Table 2 1; Figure 2). Patch B is located within the road reserve along the eastern edge of the Proposal Area, and meets the condition threshold Category C (for Good condition), with the roadside patch width being greater than 5 m (ELA 2021) Patch C (0.051 ha) in Figure 2 represents the vegetation type EwW (*Eucalyptus wandoo* Woodland) – a candidate to represent in Wheatbelt Woodland TEC but in this case does not represent the TEC as it does not meet the roadside patch width criterion (i.e. is <5 m; Department of the Environment and Energy 2015). This area was mistakenly included in the EPBC Act referral calculations and mapping as representing the TEC. In addition, Patch D in Figure 2 occurs just outside the boundary albeit with branches overhanging the Proposal area, and as such management measures to reduce potential indirect impacts to this patch of Wheatbelt Woodland TEC will be included within the CEMP. In conclusion approximately 0.31 ha of Wheatbelt Woodland TEC is proposed for clearing rather than 0.36 ha, and this will be clarified with DAWE through the CBH response to the Department's request for further information under the EPBC Act Assessment on Preliminary Documentation approval process, currently in preparation. This includes Patches A and B (Table 2; Figure 2). A further 0.45 ha of Wheatbelt Woodland TEC has been avoided through Proposal design and will be retained, with a total of 1.85 ha of mapped TEC occurring outside the Disturbance Footprint (Table 2; Figure 2).

Table 2: Wheatbelt Woodland TEC areas and calculations

Patch area[1]	Condition	Total area (ha)	Area in Disturbance Footprint (ha)	Area outside Proposal Area (ha)	% Impacted
A[2]	Degraded	1.86	0.29	1.57	15.30
B	Good	0.21	0.02	0.21	9.50
D	Degraded	0.07	0	0.07	0.00
Total TEC		**2.14**	**0.31**	**1.85**	**14.49**
C*	Good	0.051	0.051	0	100.00

[1] Areas are shown on Figure 2; [2] Patch A is part of a larger patch of TEC and includes the extrapolated TEC (approximately 1.86 ha); *Patch C was included as Wheatbelt Woodlands TEC in the referral; however, this patch of vegetation type EwW does not meet relevant criteria and therefore does not represent the TEC

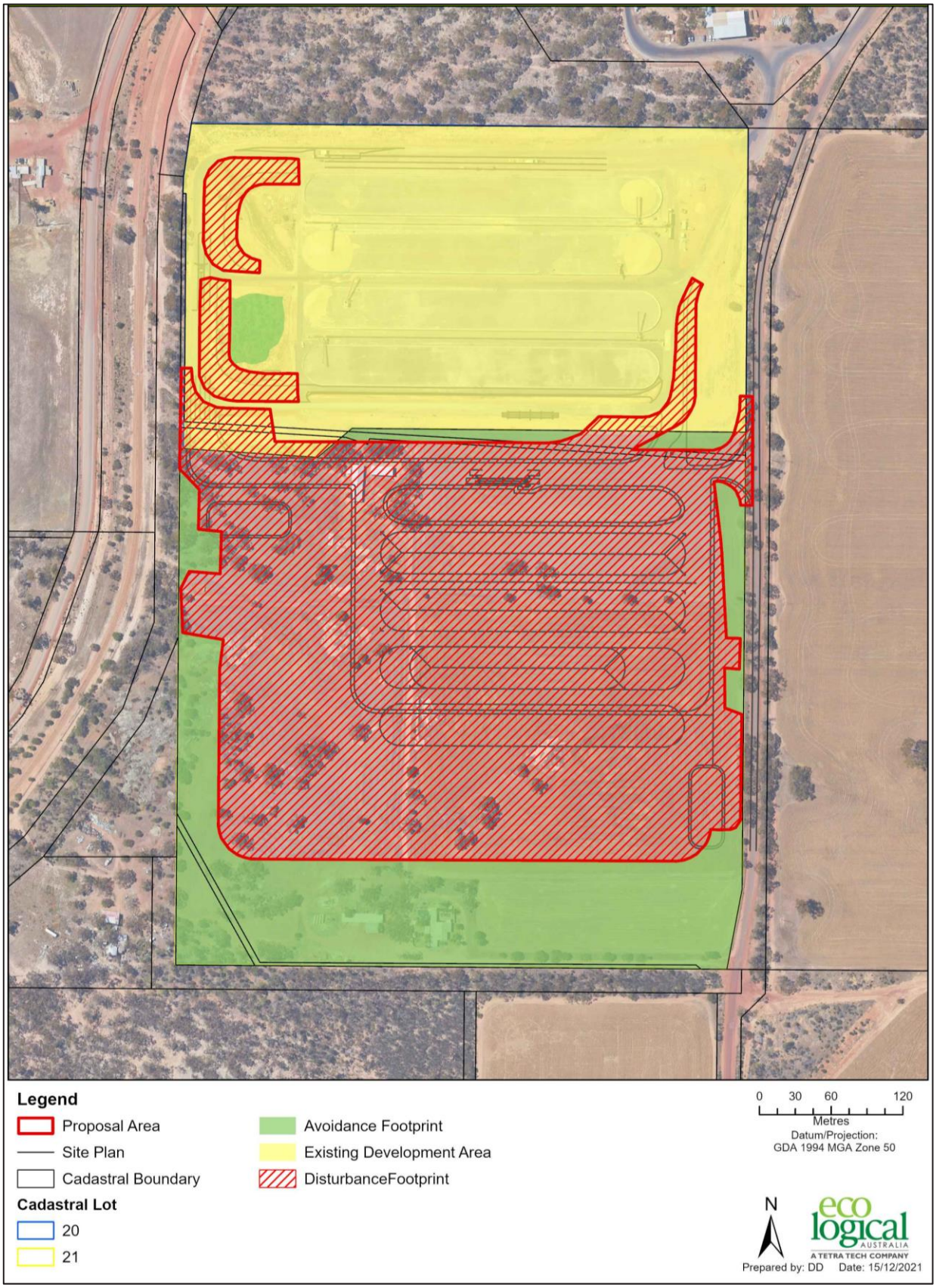

Figure 1: Development/disturbance Footprint (Proposal area) and Avoidance Footprint

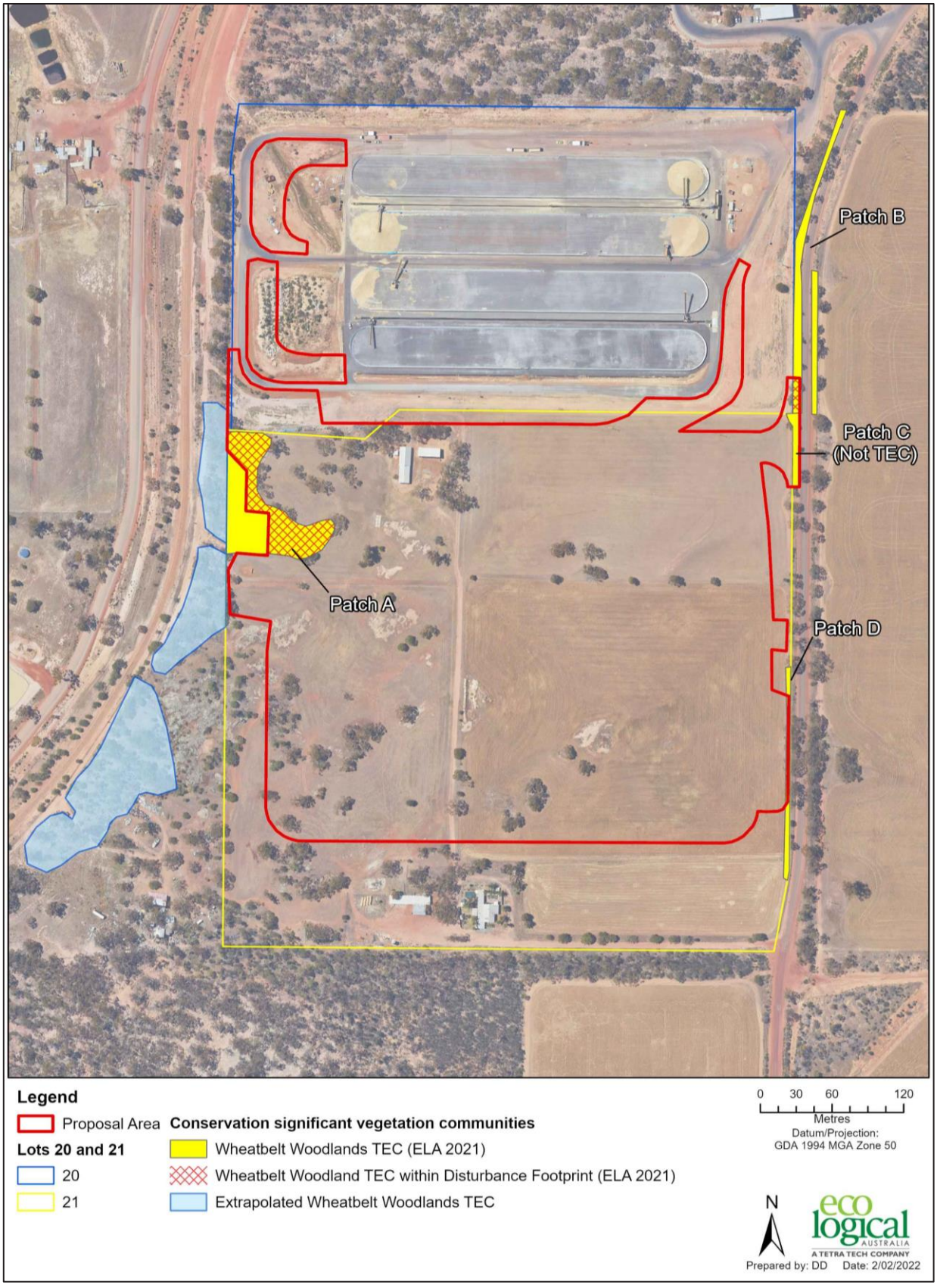

Figure 2: CBH Corrigin - Wheatbelt Woodland TEC Review

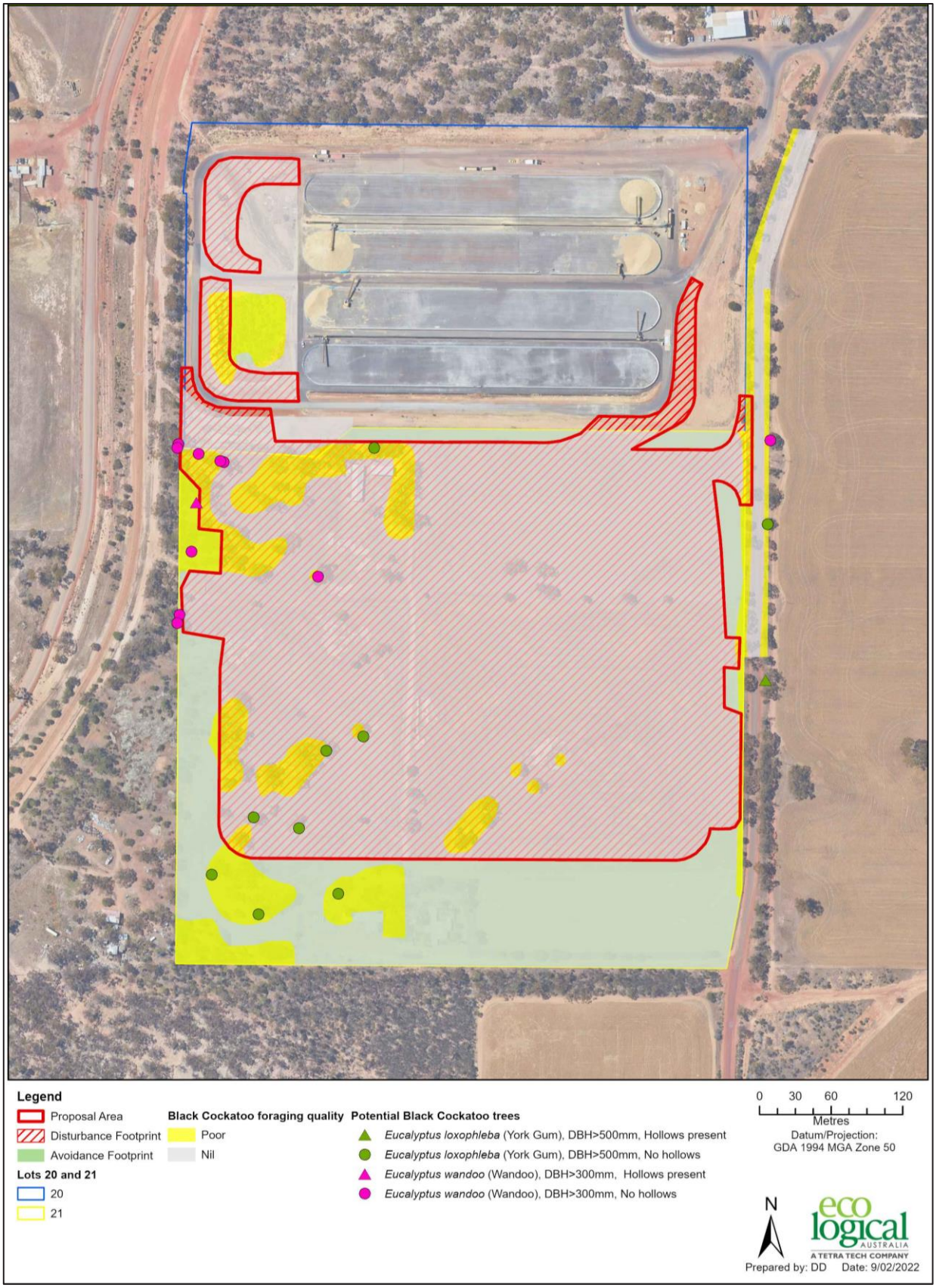

Figure 3: Carnaby's Cockatoo habitat values

References

Australian Government 2012. *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. October. Department of Sustainability, Environment, Water, Population and Communities, Canberra, ACT

Department of the Environment and Energy 2015. *Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt*. Department of the Environment and Energy, Canberra, ACT. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/128-conservation-advice.pdf.

Eco Logical Australia (ELA) 2021a. *Corrigin Grain Receival Site Expansion Flora and Fauna Survey*. Prepared for CBH Group.

Eco Logical Australia (ELA) 2021b. *Corrigin Grain Receival Site EPBC Act Referral*. EPBC 2021/9024.

Government of Western Australia 2014. *WA Environmental Offsets Guidelines*. Environmental Protection Authority, Western Australia. August 2014.

Appendix A: Decision on Assessment Approach (EPBC 2021/9024)

Australian Government
Department of Agriculture, Water and the Environment

Notification of
DECISION ON ASSESSMENT APPROACH

Referral Decision Brief – Corrigin Grain Receival Site Expansion, WA (2021/9024)

This decision is made under Section 87 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed action

proposed action	To clear vegetation and expand the grain receival site across Lots 20 & 21 Corrigin South Road, Corrigin, WA, approximately 220km east of the Perth CBD [See EPBC Act referral 2021/9024]**.**

Decision on assessment approach

assessment approach	The project will be assessed by preliminary documentation.

Person authorised to make decision

name and position	Kylie Calhoun Assistant Secretary Environment Assessments West (WA, SA, NT) Branch
signature	
date of decision	6 October 2021

Attachment B Corrigin Grain Receival Site Expansion Flora and Fauna Survey Report (ELA 2021)

Corrigin Grain Receival Site Expansion Flora and Fauna Survey

CBH Group

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www.ecoaus.com.au

DOCUMENT TRACKING

Project Name	Corrigin Grain Receival Site Expansion Flora and Fauna Survey
Project Number	PER20-17258
Project Manager	Rebecca Hide
Prepared by	Emily Chetwin
Reviewed by	Jeff Cargill
Approved by	Jeff Cargill
Status	**Final**
Version Number	**v3**
Last saved on	**23 December 2021**

This report should be cited as 'Eco Logical Australia 2021. *Corrigin Grain Receival Site Expansion Flora and Fauna Survey*. Prepared for CBH Group.'

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from CBH Group.

Template 2.8.1

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Abbreviations

Abbreviation	Description
BAM Act	Biosecurity and Agriculture Management Act 2007 (Western Australia)
BC Act	Biodiversity Conservation Act 2016 (Western Australia)
BoM	Bureau of Meteorology
CBH	CBH Group
DAWE	Department of Agriculture, Water and the Environment
DBCA	Department of Biodiversity, Conservation and Attractions (Western Australia)
DBH	Diameter at Breast Height
DotEE	Department of the Environment and Energy (now DAWE)
ELA	Eco Logical Australia
EP Act	Environmental Protection Act 1986 (Western Australia)
EPA	Environmental Protection Authority (Western Australia)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESA	Environmentally Sensitive Area
IBRA	Interim Biogeographic Regionalisation for Australia
PEC	Priority Ecological Community
RCC	Roadside Conservation Committee of Western Australia
RCV	Roadside Conservation Value
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities
TEC	Threatened Ecological Community
WAH	Western Australian Herbarium
WAM	Western Australian Museum
WAOL	Western Australian Organism List
Wheatbelt Woodlands TEC	Eucalyptus Woodlands of the Western Australian Wheatbelt Threatened Ecological Community
WoNS	Weed of National Significance

Executive Summary

Eco Logical Australia was engaged by CBH Group to conduct a Reconnaissance level flora and vegetation survey, a Basic fauna survey and Targeted black cockatoo habitat assessment of two parts of the CBH Corrigin Grain Receival Site, totalling approximately 24 hectares. This survey is to inform the proposed expansion at the CBH Corrigin Grain Receival Site.

A desktop assessment reviewed relevant government databases within 5 kilometres of the survey area to evaluate the potential for presence of conservation significant flora and fauna species and ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999*, the *Biodiversity Conservation Act 2016* and by the Department of Biodiversity, Conservation and Attractions.

Of the 34 conservation significant flora species identified from the desktop assessment as possibly occurring in the survey area, three species were assessed prior to the field survey as having the potential to occur based on availability of suitable habitat, seasonal conditions and close proximity to previous records. Database searches identified 12 conservation significant fauna species possibly occurring in the survey area, two of which were assessed as having the potential to occur based on the availability of suitable habitat and close proximity of recent records. One threatened ecological community, *Eucalyptus Woodlands of the Western Australian Wheatbelt*, was identified by the database searches as potentially occurring in the survey area.

The Reconnaissance flora and vegetation survey was undertaken in October 2020 in accordance with the Environmental Protection Authority *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (2016). A total of 67 flora species, representing 31 families and 60 genera, were recorded from a combination of 11 relevés and opportunistic collections. No Threatened or Priority flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* or the *Biodiversity Conservation Act 2016*, or listed by the Department of Biodiversity, Conservation and Attractions were recorded within the survey area. Following the field survey, it was assessed that all conservation significant flora species identified in the desktop assessment are unlikely to occur in the survey area. The taxa recorded in the field survey included 22 introduced (weed) species, one of which, **Echium plantagineum*, is a Declared Pest (s22[2]) under the State *Biosecurity and Management Act 2007*. This taxon was found at seven locations. The high proportion of introduced flora species (33%) was largely expected, given the surrounding pastoral land use.

A total of four vegetation communities, comprising three eucalypt woodland communities and one *Acacia* shrubland community, were delineated and mapped within the survey area. The most widespread community was *Eucalyptus loxophleba* woodland (ElW), which covered 9.2% (2.2 ha) of the survey area. Cleared areas, including roads, tracks and pasture, covered the majority (86.0%; 20.7 ha) of the survey area. The following vegetation communities were mapped within the survey area:

- AcTS: *Acacia acuminata* tall open shrubland over **Arctotheca calendula, *Mesembryanthemum nodiflorum* and *Ptilotus polystachyus* sparse low forbland with scattered *Austrostipa variabilis* grasses and annual weedy forbs and grasses.
- ElW: *Eucalyptus loxophleba* woodland over *Acacia acuminata* tall sparse shrubland over a mixed low sparse forbland/grassland including **Arctotheca calendula, Atriplex semibaccata, *Brassica tournefortii, *Hordeum leporinum, *Lolium rigidum* and *Maireana brevifolia*.

- EsElW: *Eucalyptus salmonophloia* and *E. loxophleba* woodland over *Maireana brevifolia* low sparse shrubland over annual weedy grasses and forbs.
- EwW: *Eucalyptus wandoo* and *E. loxophleba* woodland over a variable mid sparse shrubland of *Gastrolobium spinosum, Acacia lasiocarpa, Hibbertia rupicola* and *Dianella revoluta* over *Austrostipa elegantissima* and *A. variabilis* sparse grassland.

The *Eucalyptus Woodlands of the Western Australian Wheatbelt* threatened ecological community, listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999*, and Priority 3 by the Department of Biodiversity, Conservation and Attractions, is inferred to occur within the survey area. An assessment was undertaken utilising the key diagnostic characteristics of the threatened ecological community, as described in *Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt* (Department of the Environment and Energy [now Department of Agriculture, Water and the Environment] 2015). This key diagnostic assessment concluded that 0.76 ha of vegetation (parts of vegetation communities ElW, EsElW and EwEsW) delineated within the survey area is characterised as representing the *Eucalyptus Woodlands of the Western Australian Wheatbelt* threatened ecological community. It is noted that conclusions relating to the presence of this threatened ecological community within the survey area are based on a Reconnaissance level survey, and as such further detailed work may be required.

A Basic fauna survey and Targeted black cockatoo habitat assessment was undertaken within the survey area in accordance with the EPA *Technical Guidance: Terrestrial Fauna Surveys* (2016) and the *Environment Protection and Biodiversity Conservation Act 1999 Referral Guidelines for Three Threatened Black Cockatoo Species*. A total of 23 vertebrate fauna species were recorded within the survey area, comprising 19 birds, three mammals and one reptile. One Threatened fauna species listed under the *Environment Protection and Biodiversity Conservation Act 1999* and the *Biodiversity Conservation Act 2016*, Carnaby's Cockatoo (*Calyptorhynchus latirostris*), was recorded in the survey area from indirect evidence. No Priority fauna species listed by the Department of Biodiversity, Conservation and Attractions were recorded within the survey area. One conservation significant species, Red-tailed Phascogale (*Phascogale calura*) was assessed, following the field survey, as having the potential to occur in the survey area. Two of the fauna species recorded were introduced, namely Sheep (**Ovis aries*) and Red Fox (**Vulpes vulpes*).

Two fauna habitats were recorded within the survey area, covering a total of approximately 14.6% (3.5 ha) of the survey area. Cleared areas, including roads, tracks and pasture, covered 85.4% (20.5 ha) of the survey area. The following fauna habitats were mapped within the survey area:

- *Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* woodland
- *Acacia acuminata* tall shrubland

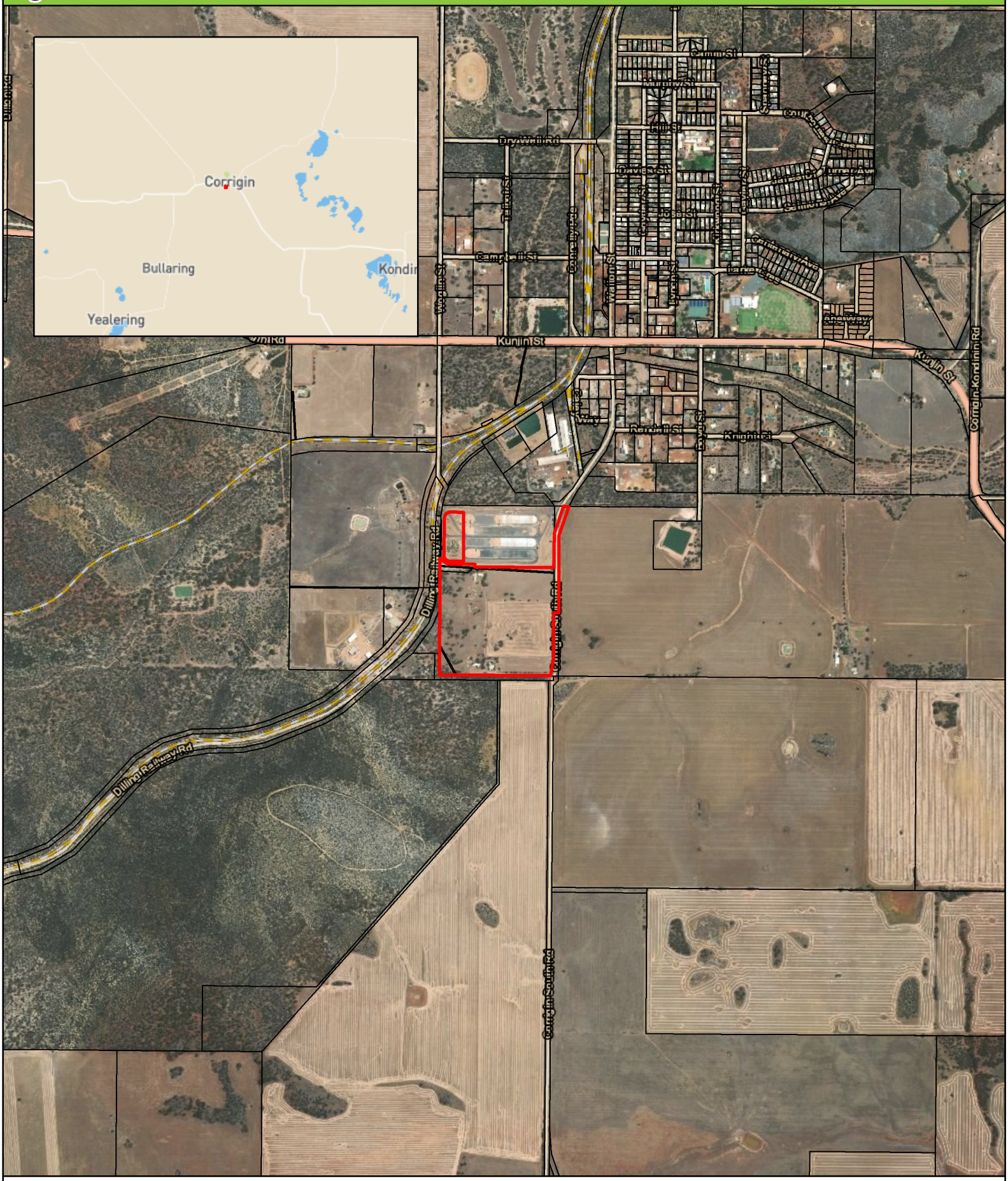
The black cockatoo breeding habitat assessment identified 20 potentially suitable breeding trees within the survey area, none of which contained suitable hollows. Black cockatoo foraging habitat within the survey area was classed as 'Poor' quality (3.3 ha; 13.8%), or 'Nil' quality (20.7 ha; 86.2%) where no suitable habitat was found. Only old evidence of black cockatoo foraging was observed within the survey area (shearing of branches).

1. Introduction

1.1 Project Background

Eco Logical Australia (ELA) was engaged by CBH Group (CBH) to conduct a Reconnaissance level flora and vegetation survey, a Basic fauna survey and Targeted black cockatoo habitat assessment of two parts of the CBH Corrigin Grain Receival Site (the survey area) totalling approximately 24 ha (Figure 1). This survey is to inform the proposed expansion at the CBH Corrigin Grain Receival Site.

Figure 1: Site overview



Legend

- Survey Area
- Cadastre

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 200 400
Metres

Datum/Projection:
GDA 1994 MGA Zone 56

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Prepared by: SC Date: 19/01/2021

2. Environmental setting

2.1 Climate

The survey area is located in the Avon Wheatbelt bioregion, as defined by the Interim Biogeographic Regionalisation for Australia (IBRA; Department of Agriculture, Water and the Environment [DAWE] 2021a). This region is described as having a semi-arid (dry) and warm Mediterranean Climate (Beecham 2001a, b). Based on the Bureau of Meteorology (BoM) Corrigin weather station (station number 10536, climate data 1910-present), the area receives, on average, a total of 371.5 mm of rainfall per year, with most rainfall occurring during the winter months of June and July (59.2 mm and 59.1 mm respectively; BoM 2021; Table 1).

In the 12 months preceding the field survey in October 2020, the area received a total of 235.8 mm which is below the long-term average (BoM 2020). In the three months preceding the field survey, a total of 44.8 mm of rainfall was recorded from the survey area, which is below the long-term average for the same time period (98.6 mm).

Table 1: Rainfall data recorded at the Corrigin weather station (10536) 12 months prior to the field survey compared to the long-term average (BoM 2021).

*No rainfall data available for November 2019; the next nearest station Bilbarin (10807) had 0.0. mm of rainfall in that period.

Rainfall (mm)	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Average rainfall (mm) 1910-present	16.5	12.8	17.4	17.3	21.3	22.8	45.9	59.2	59.1	47.7	29.4	21.5	371.5
Rainfall (mm) 2019-2020	n/a*	2.8	0.0	49.4	16.8	10.2	27.6	52.4	31.8	16.2	23.2	5.4	235.8*

2.2 Landform, topography and soils

The survey area is situated on the Corrigin soil landscape system (Landgate 2021 and Purdie et. al. 2004), details of which are given in Table 2.

Table 2: Soil landscape systems within the survey area

Soil Landscape System	Soil Landscape Zone	Description
Corrigin system	259Co	Gently undulating rises to undulating low hills in the southern wheatbelt, with laterite, sandy and loamy gravels, duplexes, loamy earths and clays over mixed mafic rock. Heath, Mallee and Salmon Gum vegetation.

2.3 Hydrology

The survey area is located in the Avon River Basin, within the Swan/Avon-Lockhart River catchment. No major or minor drainages run through or are adjacent to the survey area.

2.4 Interim Biogeographic Regionalisation for Australia

Under the current version 7 of IBRA, the survey area is situated within the Avon Wheatbelt IBRA Bioregion and AVW02- Katanning subregion (but less than 1 km from the AVW01-Merredin subregion).

The Avon Wheatbelt bioregion is described as a dissected plateau of Tertiary laterite in the Yilgarn Craton with a semi-arid (dry) warm Mediterranean climate (Beecham 2001a, b). The AVW02 subregion is further described as comprised of gently undulating rises to low hills with abrupt breakaways; its drainage is rejuvenated and comprises continuous stream channels that flow in most years. Residual lateritic uplands and derived sandplains are covered by areas of proteaceous scrub-heaths (which are rich in endemic species) and quaternary surfaces of erosional slopes and valley floors support woodlands of Wandoo, York gum, Jam and Casuarina (Beecham 2001a).

2.5 Beard's (1975) Vegetation Mapping

Vegetation type and extent have been mapped at a regional scale by Beard (1975) who categorised vegetation into broad vegetation associations. Based on this mapping at a scale of 1:1,000,000, the Department of Primary Industries and Regional Development (previously Department of Agriculture and Food Western Australia) has compiled a list of vegetation extent and types across WA (Shepherd et al. 2002).

Two vegetation associations occur within the survey area, namely Pikaring 1023 and Pikaring 1147. Pikaring 1023 covers almost all of the survey area and Pikaring 1147 occurs in the southwest corner of the survey area. Details of these vegetation associations are given in Table 3. Both associations have only a small proportion of their Pre-European extent within the AVW02 IBRA subregion remaining (Government of Western Australia 2019).

Table 3: Beard's (1975) vegetation associations of the survey area (Government of Western Australia 2019)

Vegetation association	Description	Pre-European extent within AVW02 subregion (ha)	Current extent within AVW02 subregion (ha)	% remaining within AVW02 subregion
Pikaring 1023	Medium woodland; York gum, wandoo & Salmon gum	1,123,736.23	138,408.96	12.32
Pikaring 1147	Shrublands; scrub-heath in the south-east Avon-Wheatbelt Region	35,808.40	3,382.76	9.45

2.6 Areas of Conservation Significance

Environmentally Sensitive Areas (ESAs) are defined in the *Environmental Protection (Environmentally Sensitive Areas) Notice 2005* under s 51B of the State *Environmental Protection Act 1986* (EP Act). ESAs include areas declared as World Heritage, included on the Register of the National Estate, defined wetlands, and vegetation containing rare (Threatened) flora and Threatened Ecological Communities (TECs).

Priority Ecological Communities (PECs) are biological flora or fauna communities that are recognised by the WA Minister for Environment to be of significance, but which do not meet the criteria for a TEC. There are five categories of PECs, none of which are currently protected under State or Federal legislation.

The *Eucalyptus Woodlands of the Western Australian Wheatbelt* (Wheatbelt Woodlands) TEC, listed as Critically Endangered (CR) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Priority 3 by the Western Australian Department of Biodiversity, Conservation and Attractions (DBCA), occurs throughout the wheatbelt region in southwestern Western Australia, in which the survey area is located.

3. Methodology

3.1 Desktop Assessment

3.1.1 Database Searches

The following Commonwealth and State databases were searched for existing data and information relating to conservation significant flora and ecological communities in order to inform the field survey. Database searches undertaken for the survey area are provided in Table 4 below. Applied search areas given below are considered suitable based on flora and fauna assemblages expected to occur within the survey area. It should be noted that DBCA Threatened and Priority Flora and Threatened and Priority Ecological Communities database searches are not included in the scope of this survey and thus are not included here.

Table 4: Database searches undertaken for the survey area

Database	Reference	Radius of search area (km)
EPBC Act Protected Matters Search Tool for Threatened species and communities listed under the EPBC Act.	DAWE 2021b	5
DBCA and Western Australian Museum (WAM) NatureMap online database for flora and fauna.	DBCA 2007-	5

3.1.2 Likelihood of occurrence assessment

A likelihood of occurrence assessment was undertaken to identify conservation significant flora species that possibly occur within the survey area, identified from a review of key datasets and literature outlined in the above section. Conservation codes, categories and criteria for flora and fauna protected under the EPBC Act and the *Biodiversity Conservation Act 2016* (BC Act) are provided in Appendix A. Criteria used for this assessment are presented in Appendix B. The flora likelihood assessment is shown in Appendix C and that for fauna in Appendix D.

3.2 Field Survey

3.2.1 Survey Team and Timing

A Reconnaissance flora and vegetation survey, a Basic fauna survey and a Targeted black cockatoo habitat assessment were undertaken over one day on 22nd October 2020. The survey team's relevant qualifications, experience and licences are provided in Table 5 below. There was no rainfall recorded during the field survey (BoM 2021).

Table 5: Survey Team

Name	Qualification	Relevant experience	Licences
Daniel Brassington	BSc. Hons. Environmental Science	Daniel has more than 10 years' experience in botanical surveys and environmental services throughout Western Australia. This includes baseline vegetation studies, threatened and priority flora surveys, weed surveys, rehabilitation and vegetation monitoring.	Flora scientific collection licence: SL012503 DRF permit: TFL 15-1920
Briana Wingfield	BSc. Conservation and Wildlife Biology and Environmental Science (Hons)	Briana has seven years' experience conducting fauna surveys across Western Australia, including basic fauna surveys and targeted black cockatoo habitat assessments.	N/A

3.2.2 Flora and Vegetation Survey

A Reconnaissance flora and vegetation survey was conducted in accordance with the Environmental Protection Authority (EPA) *Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016).

A total of 11 relevés were established across the survey area (Figure 2). Dominant vegetation communities were described with respect to dominant species, structure and overall condition. The following data was recorded within each relevé:

- Site details (site name, number, observer/s, date and location);
- Broad vegetation type survey based on an assessment of the dominant flora species for the three traditional strata (upper, mid and ground) and mapping extent; and
- Vegetation condition in accordance with the Keighery (1994) vegetation condition scale, as provided in the EPA Technical Guidance (EPA 2016).

Suitable habitat of the survey area was searched to identify any conservation significant flora or communities potentially occurring, including:

- Threatened flora or TECs listed under the EPBC Act;
- Threatened (Declared Rare) flora listed under the latest Western Australia Wildlife Conservation (Rare Flora) Notice under the BC Act;
- PECs endorsed by the Western Australian Minister for the Environment; and
- Priority flora listed by DBCA.

In addition, any encountered Declared Pests listed under the State *Biosecurity and Agriculture Management Act 2007* (BAM Act) or Weeds of National Significance (WoNS) were recorded and mapped.

Survey methodology involved personnel walking meandering traverses across the survey area, with all relevant vegetation communities visited and areas of potential significant flora habitat traversed at an average spacing of 30 to 50 m, with spacing dependent on factors including suitable habitat, disturbance (e.g. cleared areas) and landform. Locations of survey traverses are presented in Figure 2 below. Flora species able to be identified in the field were recorded, and specimens of unfamiliar species were collected for later identification. All collections were assigned a unique collecting number. For conservation significant flora species identified in the field, the following was recorded:

- A colour photograph;
- GPS location;
- Population size estimate;
- Location of population boundaries;
- Associated habitat/landscape element;
- Time and date observed;
- Observer details; and
- A specimen suitable for use as a reference specimen (where appropriate).

3.2.2.1 Flora Identification and Nomenclature

Flora specimen identification was undertaken by ELA Botanist Daniel Brassington. Species identification utilised taxonomic literature and keys, and where required specimens were confirmed using the Western Australian Herbarium (WAH) collection. Where considered appropriate, specimens that meet WAH specimen lodgement requirements (e.g. Threatened and Priority Flora, range extensions) may be submitted along with Threatened and Priority Report forms to DBCA. Nomenclature used for the flora species within this report follows the WA Plant Census as available on *FloraBase* (WAH 1998-).

3.2.3 Fauna Surveys

3.2.3.1 Basic fauna survey

The Basic fauna survey was conducted in accordance with the EPA *Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020). An assessment of fauna habitat in terms of its ability to support and sustain populations of fauna, along with an assessment of the likelihood of occurrence of conservation significant fauna species, was undertaken during the survey. The habitat characteristics and fauna database records used in assessing likelihood of occurrence for fauna included:

- Vegetation community, structure and condition;
- Soil and landform type;
- Extent and connectivity of bushland;
- Fauna species habitat preferences;
- Proximity of conservation significant fauna records; and
- Signs of species presence.

Opportunistic recordings of fauna species were made at all times during the field survey. These included visual sightings of active fauna such as: reptiles and birds; records of bird calls; and signs of species presence such as tracks, diggings, burrows, scats and any other signs of fauna activity.

Nomenclature used for the vertebrate fauna species within this report follows the WAM *Checklist of the Vertebrates of Western Australia* (WAM 2020). Where common names were not stated for certain species, the following references were consulted:

- Amphibians and reptiles: Bush *et al*. (2010);
- Reptiles: Wilson and Swan (2010);
- Birds: Morcombe (2003); and
- Mammals: Menkhorst and Knight (2011).

3.2.3.2 Black cockatoo habitat assessment

An assessment of black cockatoo habitat was undertaken in accordance with the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) *EPBC Act referral guidelines for three threatened black cockatoo species* (SEWPaC 2012). This involved assessing all significant tree species known to support potential suitable breeding, roosting and foraging habitat. Significant breeding trees are defined as trees of suitable species with a Diameter at Breast Height (DBH) greater than 500 mm; >300 mm for Salmon Gum and Wandoo; SEWPaC 2012). Trees with a DBH greater than 500 mm (or >300 mm for Salmon Gum and Wandoo) are large enough to potentially contain hollows suitable for nesting black cockatoos or have the potential to develop suitable hollows over the next 50 years. Trees of this size may also be large enough to provide roosting habitat (i.e. trees which provide a roost or rest area for the birds). All potential breeding trees with a DBH of 500 mm (300 mm for Salmon Gum and Wandoo) or greater encountered within the survey area were recorded with a handheld GPS unit.

Hollows were considered 'suitable' if the entrance was >100 mm in diameter, >300 mm deep and aligned near vertical. If it was not possible to determine if a hollow was suitable it was categorised as 'potentially suitable'. Hollows that did not meet any of the requirements were categorised as 'unsuitable'. Trees that met the required measurements were inspected with binoculars from the ground to assess suitability of hollows for nesting and/or roosting and evidences of current or previous occupancy, including wear and chew marks around the entrance.

Vegetation present within the survey area was assessed for its potential to provide foraging and roosting habitat for black cockatoos as per the SEWPaC (2012) guidelines, and the extent of potential suitable habitat within the survey area was mapped. Observations were also made of any black cockatoo foraging activity or feeding residue such as chewed *Banksia*, Jarrah and Marri nuts, and any black cockatoo individuals within the survey area.

3.3 Limitations

The EPA *Technical Guide: Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016) recommends including discussion of the constraints and limitations of the survey methods used. One potential constraint was identified for this survey. The lack of DBCA Threatened and Priority flora, fauna and ecological communities database searches potentially limits knowledge of currently recognised patches of the Wheatbelt Woodlands TEC in proximity to the survey area and broader locations for threatened and priority species or communities. Constraints and limitations for the survey are summarised in Table 6.

Table 6: Survey Limitations

Potential survey limitation	Impact on survey
Sources of information and availability of contextual information (i.e. pre-existing background versus new material).	**Potential constraint**. Broad-scale vegetation mapping at a scale of 1:1,000,000 was available. Land system mapping at a scale of 1:2,000,000 and soil and landform mapping was also available. Available information was sufficient to provide context at varying scales; however, the known extent of significant communities and specific locations of significant flora and fauna were not known and therefore were considered a potential limitation, given the likely presence of a TEC within the survey area.
Scope (i.e. what life forms, etc., were sampled).	**Not a constraint**. The survey requirement of a Reconnaissance flora and vegetation survey, a Basic fauna survey and a Targeted black cockatoo habitat assessment in accordance with relevant State and Federal legislation and EPA guidance documents was adequately met.
Proportion of flora collected and identified (based on sampling, timing and intensity).	**Not a constraint**. A Reconnaissance level survey records the dominant and abundant species, with little requirement for a comprehensive account of species richness. Data recorded were sufficient for this level of survey.
Completeness and further work which might be needed (i.e. was the relevant survey area fully surveyed).	**Not a constraint**. The survey area coverage met the requirements of a Reconnaissance level flora and vegetation survey, as outlined in the scope of work.
Mapping reliability.	**Not a constraint**. Map coverage of the survey area was considered to be good. High quality aerial maps were used for both the survey and subsequent vegetation mapping. Due to the nature of vegetation in the survey area, mapping boundaries of individual communities were discrete, and thus are considered accurate.
Timing, weather, season, cycle.	**Not a constraint**. The field survey was undertaken at an appropriate time, as specified by the EPA *Technical Guidance*: *Flora and Vegetation Surveys for Environmental Impact Assessment* (2016). Rainfall in the three months prior to the survey was significantly below the long-term average, limiting the presence and flowering of species present. This did not impact the ability to describe the dominant species present to the level of survey required.
Disturbances (fire, flood, accidental human intervention, etc.).	**Not a constraint**: Disturbances within the survey area included due to agricultural and transport infrastructure, with historical clearing in large portions of the survey area, and weeds dominating the understory in areas. Disturbances did not impact the ability to meet the requirements of the survey.
Intensity (in retrospect, was the intensity adequate).	**Not a constraint**. The survey effort was appropriate for a Reconnaissance and Targeted level flora and vegetation survey, Basic fauna survey and Targeted black cockatoo habitat assessment.
Resources (i.e. were there adequate resources to complete the survey to the required standard).	**Not a constraint**. The number of personnel conducting this field survey in the given time was adequate to perform the required level of survey. Additional resources, including equipment available, additional support and personnel were adequate.
Access problems (i.e. ability to access survey area).	**Not a constraint**. All relevant areas within the survey area were able to be accessed and surveyed.
Experience levels (e.g. degree of expertise in plant identification to taxon level).	**Not a constraint**. The personnel conducting this field survey were both suitably qualified to identify specimens, having multiple years of field experience in flora and fauna surveys across Western Australia.

Figure 2: Survey effort

Legend

- Survey Area
- GPS Track
- Relevé

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors Google

0 25 50 100
Metres

Datum/Projection:
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4. Results

4.1 Desktop assessment

An initial 34 conservation significant flora species were identified as possibly occurring within the survey area, based on the database searches undertaken in Section 3.1.1 and using criteria outlined in Appendix B. These taxa comprise 14 species listed under the EPBC Act and/or BC Act as Threatened flora and 20 species listed as Priority flora by DBCA. Prior to the field survey two flora species were assessed as having the potential to occur: *Grevillea scapigera*, listed as Endangered under the EPBC Act and Critically Endangered under the BC Act; and *Leucopogon amplectens*, listed as Priority 2 by DBCA. One flora species, *Banksia dallanneyi* subsp. *agricola*, listed by DBCA as Priority 2, was assessed prior to the field survey as being likely to occur in the survey area (Appendix C).

Database searches identified 12 conservation significant fauna species listed under the EPBC Act and/or BC Act as Threatened and/or Migratory fauna. No Priority fauna by DBCA were identified. Prior to the field survey two fauna species were assessed as having the potential to occur: Carnaby's Cockatoo (*Calyptorhynchus latirostris*; listed as Endangered under the EPBC Act and BC Act); and Red-tailed Phascogale (*Phascogale calura*; listed as Vulnerable under the EPBC Act and Conservation Dependant under the BC Act). The fauna likelihood of occurrence assessment is presented in Appendix D.

One TEC, *Eucalyptus Woodlands of the Western Australian Wheatbelt*, was identified by the database searches as potentially occurring in the survey area.

4.2 Flora

4.2.1 Flora overview

A total of 67 flora species, representing 31 families and 60 genera were recorded from a combination of 11 relevés and opportunistic collections. Families with the highest number of species recorded were Poaceae (16 species), Chenopodiaceae (five species) and Asteraceae (five species). *Eucalyptus* was the best represented genus with three species, while the genera *Acacia*, *Austrostipa, Bromus, Hibbertia* and *Ptilotus* each had two species recorded. A high proportion (33%) of the flora taxa recorded during the field survey were introduced (weed) species (22 taxa). A full species list is provided in Appendix E, details of the relevés are presented in Appendix F and the flora species matrix is presented in Appendix G.

4.2.2 Conservation significant flora

While 34 conservation significant flora species were identified as possibly occurring within the survey area from the desktop assessment (with 31 taxa unlikely to occur, two having the potential to occur and one being likely to occur), following the field survey it was assessed that all 34 species are unlikely to occur (Appendix C). The field survey involved effort at a level adequate to observe the three potential and likely species identified in the desktop assessment had they been present in the survey area.

No Threatened flora species listed under the EPBC Act or the BC Act, or listed by DBCA were recorded within the survey area during the field survey. No Priority species as listed by DBCA were recorded during the field survey within the survey area.

4.2.3 Introduced flora

A total of 22 introduced (weed) flora species were recorded in the survey area. None of these species is a listed WONS. One species, **Echium plantagineum* (Paterson's curse), is listed as a Declared Pest (s22(2)) under the BAM Act (Western Australian Organism List [WAOL]); this was recorded at seven locations (Figure 3). The remaining 21 species are listed on the WAOL database as s11 (permitted) species, indicating that no specific management of these species is required. The full list of introduced species is included within Appendix E.

4.2.4 Vegetation communities

A total of four vegetation communities, comprising three eucalypt woodland communities (ElW, EsElW and EwW) and one *Acacia* shrubland (AcTS) community, were delineated and mapped within the survey area (Table 7, Figure 3). The most widespread community was *Eucalyptus loxophleba* woodland (ElW), which covered 9.2% (2.2 ha) of the survey area. Cleared areas, including roads, tracks and pasture, covered the majority (86.0%; 20.7 ha) of the survey area.

4.2.5 Conservation significant ecological communities

Three vegetation communities delineated within the survey area are composed of eucalypt woodlands that have the potential to represent floristic and structural aspects of the Wheatbelt Woodlands TEC, as indicated in the Department of the Environment and Energy (DotEE; now Department of Agriculture, Water and the Environment [DAWE]) *Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt* (Approved Conservation Advice; DotEE 2015). This TEC is also categorised as a Priority 3 PEC by DBCA.

In summary, the Wheatbelt Woodlands TEC is composed of eucalypt-dominated woodlands in the Western Australian Wheatbelt region as defined by the IBRA Avon Wheatbelt 1 and 2 and Western Mallee subregions, with the specific exceptions of woodlands and forests dominated by Jarrah (*Eucalyptus marginata*) or Marri (*Corymbia calophylla*) where they occur without York Gum (*Eucalyptus loxophleba*) present; and non-woodland communities dominated by eucalypts, specifically those dominated by eucalypts with a mallee growth form. The community is defined primarily by its structure as a woodland. The presence in the canopy layer of eucalypt trees - most commonly Salmon Gum (*E. salmonophloia*), York Gum (*E. loxophleba*), Red Morrel (*E. longicornis*) or Gimlet (*E. salubris*) defines the Wheatbelt woodlands. Several of the other emergent eucalypt species which may be present as a defining species (e.g. Kondinin Blackbutt [*E. kondininensis*], *E. myriadena*, Salt River Gum [*E. sargentii*], Silver Mallet [*E. ornata*] and Mallet [*E. singularis*]) are found only in the Western Australian Wheatbelt.

An assessment, presented in Appendix H, has been undertaken utilising key diagnostic characteristics of the Wheatbelt Woodlands TEC (DoE 2015). This key diagnostic assessment concluded that 0.76 ha of vegetation (parts of vegetation communities ElW, EsElW and EwW) delineated within the survey area is characterised as representing the Wheatbelt Woodlands TEC (and subsequently, the associated State listed PEC). These areas are mapped in Figure 4.

It is noted that conclusions relating to the presence of this TEC within the survey area are based on results from a Reconnaissance level survey. Given the limitations of such a survey (e.g. relevé data etc.) further work may be required to determine presence/absence with a greater degree of certainty (e.g. single season Detailed flora and vegetation survey utilising quadrat data).

4.2.6 Vegetation condition

Vegetation of the survey area ranged from Very Good to Completely Degraded condition, based on the Keighery (1994) vegetation condition scale provided in EPA (2016) (Figure 5).

Majority of the survey area was classed as Completely Degraded (20.7 ha; 86.0%). The remaining condition categories are: Degraded (3.0 ha; 10.8%), Good (0.3 ha; 1.3%) and Very Good (0.1 ha; <0.1%).

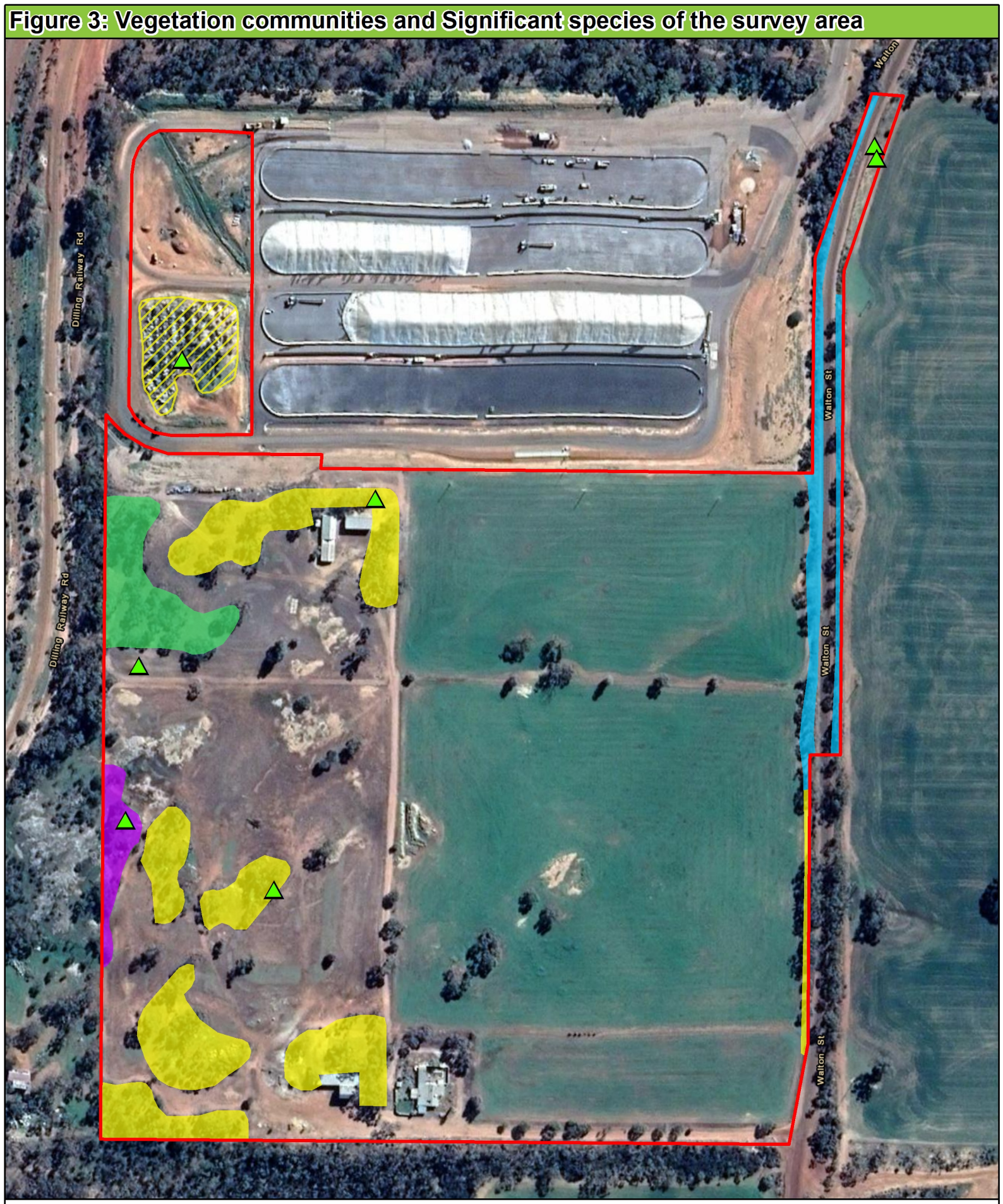
Primary disturbances within the survey area included clearing for agriculture and infrastructure and the presence of introduced (weed) species. The vegetation classed as being in Very Good and Good condition comprised roadside vegetation along the eastern boundary of the survey area within vegetation community EwW.

Table 7: Vegetation communities recorded within the survey area

Photo	Vegetation community code	Description	Relevé/s	Total area (ha)	Proportion of the survey area (%)
	AcTS	*Acacia acuminata* tall open shrubland, over **Arctotheca calendula, *Mesembryanthemum nodiflorum* and *Ptilotus polystachyus* sparse low forbland with scattered *Austrostipa* variabilis grasses and annual weedy forbs and grasses.	ELA09	0.2	0.8
	EIW	*Eucalyptus loxophleba* woodland, over *Acacia acuminata* tall sparse shrubland, over a mixed low sparse forbland/grassland including **Arctotheca calendula, Atriplex semibaccata, *Brassica tournefortii, *Hordeum leporinum, *Lolium rigidum* and *Maireana brevifolia*	ELA06, ELA07, ELA10, ELA11	2.2	9.2

Photo	Vegetation community code	Description	Relevé/s	Total area (ha)	Proportion of the survey area (%)
	EsElW	*Eucalyptus salmonophloia* and *E. loxophleba* Woodland over *Maireana brevifolia* low sparse shrubland over annual weedy grasses and forbs, including **Brassica tournefortii, Crassula colorata, Enchylaena tomentosa, *Hordeum leporinum, *Lolium rigidum* and **Mesembryanthemum nodiflorum*.	ELA08	0.5	2.0
	EwW	*Eucalyptus wandoo* and *E. loxophleba* Woodland over a variable mid sparse shrubland of *Gastrolobium spinosum, Acacia lasiocarpa, Hibbertia rupicola* and *Dianella revoluta* over *Austrostipa elegantissima* and *A. variabilis* sparse grassland (1-2%, 0.5-1m). Other commonly occurring species include *Allocasuarina campestris, Enchylaena tomentosa, Glischrocaryon angustifolium, Lepidosperma resinosum, Opercularia vaginata* and *Rytidosperma caespitosum*.	ELA01, ELA02, ELA03, ELA04, ELA05	0.5	2.0
Cleared (roads, tracks, pasture)			NA	20.7	86.1
Total				**24.0**	**100**

Figure 3: Vegetation communities and Significant species of the survey area



Legend

Survey Area

Paterson's curse (*Echium plantagineum*) (Declared Pest)

Vegetation Communities

- AcTS - *Acacia acuminata* Tall Open Shrubland
- EIW - *Eucalyptus loxophleba* Woodland
- EIW - *Eucalyptus loxophleba* Woodland (young rejuvenating community)
- EsEIW - *Eucalyptus salmonophloia* and *E. loxophleba* Woodland
- EwW - *Eucalyptus wandoo* woodland

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, Google

0 25 50 100
Metres

Datum/Projection:
GDA 1994 MGA Zone 56

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Figure 4: Conservation significant ecological communities mapped within the survey area

Legend

Survey Area

Conservation significant vegetation communities

Wheatbelt Woodlands TEC

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, Google

0 25 50 100

Metres

Datum/Projection: GDA 1994 MGA Zone 56

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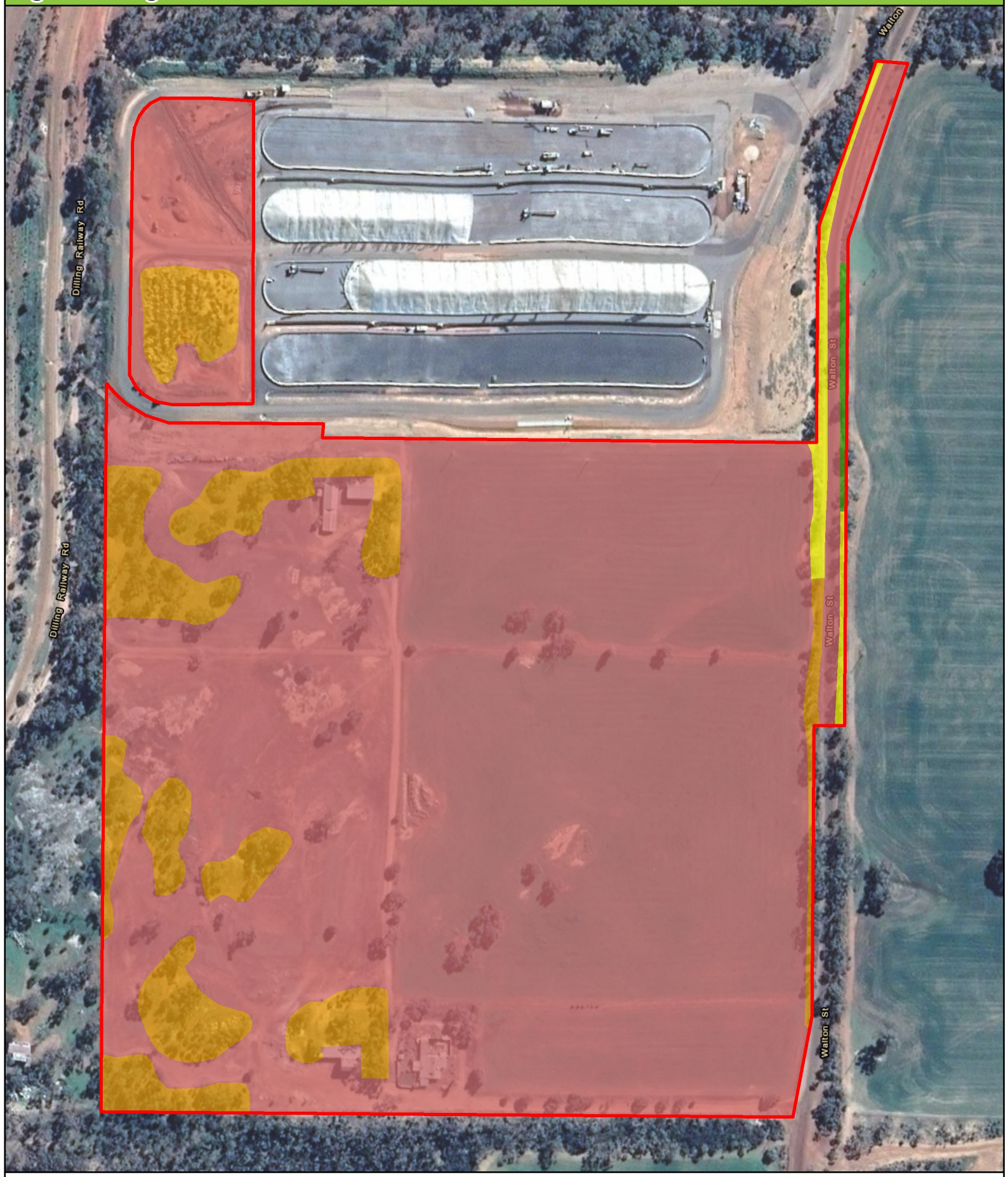
Figure 5: Vegetation condition



Legend

Survey Area

condition

- Completely Degraded
- Degraded
- Good
- Very Good

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors Google

0 25 50 100

Metres

Datum/Projection: GDA 1994 MGA Zone 56

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4.3 Fauna

4.3.1 Fauna overview

A total of 23 vertebrate fauna species were recorded as occurring within the survey area, comprising 19 birds, three mammals and one reptile (Appendix I). No direct (observations) evidence of Threatened or Priority fauna species listed under the EPBC Act or the BC Act, or listed by DBCA were recorded within the survey area; however, old evidence of foraging by Carnaby's cockatoos (shearing of branches) was recorded.

Of the 12 conservation significant fauna species (eight birds, four mammals) identified from the desktop assessment as possibly occurring within the survey area (Appendix D), two species were identified as having the potential to occur based on the availability of suitable habitat and close proximity of recent records. Following the field survey, it was assessed that Carnaby's Cockatoo (*Calyptorhynchus latirostris*; listed as Endangered under the EPBC Act and BC Act) was recorded in the survey area. The Red-tailed Phascogale (*Phascogale calura*; listed as Vulnerable under the EPBC Act and Conservation Dependant under the BC Act) still has the potential to occur in the survey area.

The remaining ten fauna species are considered as unlikely to occur or do not occur within the survey area, based on lack of suitable habitat for these species and proximity of previous records. The fauna likelihood of occurrence assessment is provided in Appendix D.

Two introduced (pest) fauna species were recorded within the survey area, namely Sheep (**Ovis aries;* observed) and Red Fox (**Vulpes vulpes*; secondary signs [diggings]).

4.3.2 Fauna habitat

Two fauna habitats were recorded within the survey area, covering a total of approximately 14.6% (3.5 ha) of the survey area. Cleared areas, including roads, tracks and pasture, covered 85.4% (20.5 ha) of the survey area. The fauna habitat within the survey area is detailed in Table 8 and displayed in Figure 6.

The northernmost mapped patch of vegetation community ElW (Figure 3), covered by rejuvenating *Eucalyptus loxophleba* woodland, is located on an area of dumped granite boulders which may provide habitat for reptiles and mammals.

Table 8: Fauna habitat within the survey area

Description	Total area (ha)	Proportion of the survey area (%)
Eucalyptus salmonophloia, E. wandoo and *E. loxophleba* woodland	3.3	13.8
Acacia acuminata tall shrubland	0.2	0.8
Cleared (roads, tracks, pasture)	20.5	85.4
Total	**24.0**	**100**

Figure 6: Fauna habitat recorded within the survey area

Legend

- Survey Area
- Cleared

Fauna habitat

- *Eucalyptus salmonophloia*, *E. wandoo* and *E. loxophleba* Woodland
- *Acacia acuminata* Tall Open Shrubland

0 25 50 100
Metres
Datum/Projection:
GDA 1994 MGA Zone 50

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4.3.3 Black Cockatoo habitat assessment

4.3.3.1 Foraging habitat

Foraging habitat for black cockatoos is generally defined as the availability of plant food sources within an area (Finn 2012). Food availability for black cockatoos is a function of the diversity, abundance, distribution, energetic and nutritional qualities, and seasonality (phenology) of the food sources within a particular area. Black cockatoo foraging habitat within the survey area has been determined using vegetation associations defined in the vegetation assessment and from ground-truthing in the field. The quality of foraging habitat for black cockatoo species within the survey area (as defined in Table 9) has been assessed based on the availability and density of plant food sources as observed on site.

Table 9: Definition and extent of black cockatoo foraging habitat quality within the survey area

Foraging quality	Justification	Extent (ha) within survey area	% of survey area
Good	High density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species >60%) but food sources only present at one or two strata (e.g. canopy and midstorey).	0	0
Moderate	Moderate foraging value density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species 20-40%) and food sources only present at one or two strata (e.g. canopy and midstorey).	0	0
Poor	Low density of species suitable for foraging by black cockatoos (i.e. foliage cover of suitable species 10-20%) and presence of food sources at only one stratum (i.e. canopy)	3.3	13.8
Nil	Cleared areas or no suitable vegetation present.	20.7	86.2
Total		**24.0**	**100**

Remnant vegetation within the survey area, comprising 3.3 ha, is considered as providing 'Poor' quality foraging habitat for black cockatoo species (SEWPaC 2012) due to a lack of density of suitable or preferred foraging species. Cleared areas and unsuitable vegetation, comprising 20.7 ha, provide 'Nil' foraging habitat for black cockatoo species. Habitat foraging quality is presented in Figure 7. Only old evidence of foraging by Carnaby's Cockatoos (shearing of branches) was observed within the survey area.

4.3.3.2 Breeding and roosting habitat

The black cockatoo breeding habitat assessment identified 20 potentially suitable breeding trees within the survey area comprising 11 *Eucalyptus wandoo* (Wandoo) (including two Stag trees) and nine *Eucalyptus loxophleba* (York Gum) (Figure 7; Appendix J).

All potential breeding trees recorded in the survey area also provide potential suitable roosting habitat for black cockatoos as defined by the referral guidelines (SEWPaC 2012). Of these, 19 trees did not contain hollows and one had a hollow that was not suitable (<100 mm diameter). One *Eucalyptus loxophleba* (York Gum) that had a potentially suitable hollow (100 mm diameter, but only 3 m off the ground) was recorded just 20 m outside the eastern boundary of the survey area (Figure 7). Although not directly observed during the field survey, Carnaby's Cockatoo (*Calyptorhynchus latirostris*) is considered as being recorded within the survey area, due to indirect old evidence of foraging (shearing of branches).

Figure 7: Potential suitable black cockatoo habitat within the survey area

Legend

- Survey Area

Black Cockatoo foraging quality

- Poor
- Nil

Potential Black Cockatoo trees

- *Eucalyptus loxophleba* (York Gum), DBH>500mm, Hollows present
- *Eucalyptus loxophleba* (York Gum), DBH>500mm, No hollows
- *Eucalyptus wandoo* (Wandoo), DBH>300mm, Hollows present
- *Eucalyptus wandoo* (Wandoo), DBH>300mm, No hollows

0 25 50 100
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

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5. Discussion and Recommendations

5.1 Flora

A total of 67 flora species, representing 31 families and 60 genera were recorded within the survey area from both relevé data and opportunistic collections.

No Threatened or Priority flora species listed under the EPBC Act or the BC Act, or listed by DBCA were recorded within the survey area. Of the 34 conservation significant flora species identified from the desktop assessment as possibly occurring in the survey area, none were recorded in this survey. Following the field survey, all of the possibly occurring conservation significant flora taxa were assessed as being unlikely to occur in the survey area (Appendix C).

Twenty-two introduced taxa, dominated by grass species, were recorded during the survey. This forms a high proportion (33%) of the total number of species recorded during this survey and was largely expected, given the surrounding pastoral land use. The introduced taxa included one Declared Pest, **Echium plantagineum* (Paterson's curse), which represents a risk to the structure and composition of native vegetation communities present. Whilst this species is subject to s22(2) of the BAM Act, it is not required to be controlled under the *Biosecurity and Agriculture Management Regulations 2013*.

5.2 Vegetation

A total of four vegetation communities were delineated and mapped within the survey area: three eucalypt woodland communities (ElW, EsElW and EwW) and one *Acacia* shrubland (AcTS). All communities except EsElW are disjunct remnant patches, rather than contiguous suites of native vegetation. The northernmost mapped patch of community ElW comprises rejuvenating woodland growing in an area of dumped granite boulders. Dead stags are evident within the single patch of vegetation community EsElW, indicating this community may have had a denser *Eucalyptus* canopy in the past.

The three eucalypt woodland communities potentially show characteristics associated with the Wheatbelt Woodlands TEC as indicated in the *Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt* (DotEE 2015). An assessment of these communities against DotEE (2015) has concluded that vegetation community EsElW and parts of the communities ElW and EwW likely represent the Wheatbelt Woodlands TEC.

The patch of community EsElW, which covers 0.5 ha within the survey area, is continuous with vegetation outside the western and northern boundaries of the survey area. The total area of this continuous patch of eucalypt woodlands, delineated using aerial maps, is greater than 5 ha. Based on the diagnostic parameters as listed in Appendix H, this patch of vegetation qualifies as forming part of the Wheatbelt Woodlands TEC.

The strip of vegetation along the west side of Corrigin South Rd (and just inside the eastern boundary of the survey area) that is mapped as part of community ElW, whilst in Degraded condition, is approximately 5 m wide and thus is interpreted as being part of the TEC. The patch of vegetation community ElW located in the southwestern corner of the survey area is continuous with vegetation to the south of the survey area. The vegetation that is immediately adjacent to the patch inside the survey

area comprises eucalypt woodland but is known from field observations to grade into *Allocasuarina* woodland to the south and east. The area of continuous eucalypt woodland is less than 1 ha, so this patch does not represent the Wheatbelt Woodlands TEC. Other patches of the vegetation community ElW did not qualify for inclusion in the TEC as no patch met the condition thresholds stated in the Approved Conservation Advice (DotEE 2015) due to a combination of their vegetation condition (Degraded) and patch area (<5 ha).

Vegetation community EwW occurs only in narrow strips along the east and west sides of Corrigin South Rd and contains five relevé sites. The roadside vegetation on both sides of the road immediately east of the cropped field has understorey width <5 m and hence this strip does not form part of the Wheatbelt Woodlands TEC. The strips on both sides of the road to the east of the existing Grain Receival Site have understorey that is >5 m wide and therefore represent the Wheatbelt Woodlands TEC.

It is noted that conclusions relating to the presence of this TEC within the survey area are based on a Reconnaissance level survey. Given the limitations of such a survey (e.g. relevé data etc.) further work may be required to determine presence/absence of the Wheatbelt Woodlands TEC with a greater degree of certainty (e.g. single season Detailed flora and vegetation survey utilising quadrat data).

5.3 Fauna

A total of 23 vertebrate fauna species were recorded within the survey area during the Basic fauna survey. No direct (observations) evidence of Threatened fauna species listed under the EPBC Act or the BC Act were recorded within the survey area, but old indirect evidence of foraging (shearing of branches) by Carnaby's Cockatoo (*Calyptorhynchus latirostris*) was observed. No Priority fauna species listed by DBCA were recorded (directly or indirectly) within the survey area. Only one of the 12 conservation significant flora species identified from the desktop assessment as possibly occurring in the survey area, Carnaby's Cockatoo, was recorded in this survey. The desktop assessment identified that another of these species, Red-tailed Phascogale (*Phascogale calura*), had the potential to occur in the survey area based on previous records and the presence of suitable habitat. The assessment for Red-tailed Phascogale remains unchanged following the field survey, as some suitable habitat for this species was observed within the survey area, but that for Carnaby's Cockatoo has been changed to recorded (Appendix D).

Two fauna habitats were recorded within the survey area: *Eucalyptus loxophleba, E. loxophleba* and *E. salmonophloia,* and *E. wandoo* woodlands; and *Acacia acuminata* tall shrubland.

The survey area is in the breeding range of the Carnaby's Cockatoo (DotEE 2017) and the black cockatoo breeding habitat assessment identified 20 potentially suitable breeding trees within the survey area, but none contained suitable hollows. One *Eucalyptus loxophleba* tree located only 20 m outside the eastern boundary of the survey area contained a potentially suitable hollow (over 100 mm in diameter), but this was only 3 m off the ground, which may be too low to provide appropriate breeding and roosting habitat. No direct observations of Carnaby's Cockatoo were made during the field survey and vegetation within the survey area was considered to provide either unsuitable or 'Poor' quality foraging habitat for black cockatoo species. Only old observations of foraging (shearing of branches) by Carnaby's Cockatoos were made.

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Appendix A Framework for conservation significant flora and fauna ranking

CATEGORIES OF THREATENED SPECIES UNDER THE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (EPBC ACT)

Threatened fauna and flora may be listed in any one of the following categories as defined in Section 179 of the EPBC Act. Species listed as 'conservation dependent' and 'extinct' are not Matters of National Environmental Significance and therefore do not trigger the EPBC Act.

Category	Definition
Extinct (EX)	There is no reasonable doubt that the last member of the species has died.
Extinct in the Wild (EW)	Taxa known to survive only in captivity or as a naturalised population well outside its past range; or taxa has not been recorded in its known and/or expected habitat at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
Critically Endangered (CE)	Taxa considered to be facing an extremely high risk of extinction in the wild.
Endangered (EN)	Taxa considered to be facing a very high risk of extinction in the wild.
Vulnerable (VU)	Taxa considered to be facing a high risk of extinction in the wild.
Near Threatened (NT)	Taxa has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.
Least Concern (LC)	Taxa has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.
Data Deficient (DD)	There is inadequate information to make a direct, or indirect, assessment of taxa's risk extinction based on its distribution and/or population status.
Not Evaluated (NE)	Taxa has not yet been evaluated against the criteria.
Migratory (M)	Not an IUCN category. Species are defined as migratory if they are listed in an international agreement approved by the Commonwealth Environment Minister, including: • the Bonn Convention (Convention on the Conservation of Migratory Species of Wild Animal) for which Australia is a range state; • the agreement between the Government of Australian and the Government of the People's Republic of China for the Protection of Migratory Birds and their environment (CAMBA); • the agreement between the Government of Japan and the Government of Australia for the Protection of Migratory Birds and Birds in Danger of Extinction and their Environment (JAMBA); or • the agreement between Australia and the Republic of Korea to develop a bilateral migratory bird agreement similar to the JAMBA and CAMBA in respect to migratory bird conservation and provides a basis for collaboration on the protection of migratory shorebirds and their habitat (ROKAMBA).

CONSERVATION CODES FOR WESTERN AUSTRALIA FLORA AND FAUNA

The Wildlife Conservation (Specially Protected Fauna) Notice 2018 and the Wildlife Conservation (Rare Flora) Notice 2018 have been transitioned under regulations 170, 171 and 172 of the Biodiversity Conservation Regulations 2018 to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the *Biodiversity Conservation Act 2016* (BC Act).

Specially protected fauna or flora are species which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

Threatened species (T)

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the BC Act.

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the Wildlife Conservation (Rare Flora) Notice 2018 for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

Category	Code	Description
Critically Endangered species	CR	Threatened species considered to be "facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for critically endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for critically endangered flora.
Endangered species	EN	Threatened species considered to be "facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for endangered fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for endangered flora.

Category	Code	Description
Vulnerable species	VU	Threatened species considered to be "facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines". Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018 for vulnerable fauna or the Wildlife Conservation (Rare Flora) Notice 2018 for vulnerable flora.

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild, as follows:

Category	Code	Description
Extinct species	EX	Species which have been adequately searched for and there is no reasonable doubt that the last individual has died. Published as Specially Protected under the Wildlife Conservation Act 1950, in Schedule 4 of the Wildlife Conservation (Specially Protected Fauna) Notice for Presumed Extinct Fauna and Wildlife Conservation (Rare Flora) Notice for Presumed Extinct Flora.
Extinct in the wild species	EW	Species that "is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form", and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act). Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

Categories are detailed below.

Category	Code	Description
Migratory species	M	Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act). Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species. Published as migratory birds protected under an international agreement under schedule 5 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
Species of special conservation interest (conservation dependent fauna)	CD	Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act). Published as conservation dependent fauna under schedule 6 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.
Other specially protected species	OS	Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act). Published as other specially protected fauna under schedule 7 of the Wildlife Conservation (Specially Protected Fauna) Notice 2018.

Priority species (P)

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

Category	Code	Definition
Priority 1	P1	*Poorly-known species*

Category	Code	Definition
		Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.
Priority 2	P2	*Poorly-known species* Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.
Priority 3	P3	*Poorly-known species* Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.
Priority 4	P4	*Rare, Near Threatened and other species in need of monitoring* (a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands. (b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent. (c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

Appendix B Likelihood of occurrence assessment criteria

Likelihood rating	Criteria
Recorded	The species has previously been recorded within survey area from DBCA database search results and/or from previous surveys of the survey area, and/or the species has been confirmed through a current vouchered specimen at WAH.
Likely	The species has not previously been recorded from within the survey area. However, (to qualify requires one or more criteria to be met): • the species has been recorded in close proximity to the survey area, and occurs in similar habitat to that which occurs within the survey area • core habitat and suitable landforms for the species occurs within the survey area either year-round or seasonally. In relation to fauna species, this could be that a host plant is seasonally present on site, or habitat features such as caves are present that may be used during particular times during its life cycle e.g. for breeding. In relation to both flora and fauna species, it may be there are seasonal wetlands present • there is a medium to high probability that a species uses the survey area
Potential	The species has not previously been recorded from within the survey area. However, (one or more criteria requires to be met): • targeted surveys may locate the species based on records occurring in proximity to the survey area and suitable habitat occurring in the survey area • the survey area has been assessed as having potentially suitable habitat through habitat modelling • the species is known to be cryptic and may not have been detected despite extensive surveys • the species is highly mobile and has an extensive foraging range so may not have been detected during previous surveys The species has been recorded in the survey area by a previous consultant survey or there is historic evidence of species occurrence within the survey area. However, (one or more criteria requires to be met) • doubt remains over taxonomic identification, or the majority of habitat does not appear suitable (although presence cannot be ruled out due to factors such as species ecology or distribution) • coordinates are doubtful
Unlikely	The species has been recorded locally through DBCA database searches. However, it has not been recorded within the survey area and • it is unlikely to occur due to the site lacking critical habitat, having at best marginally suitable habitat, and/or being severely degraded • it is unlikely to occur due to few historic record/s and no other current collections in the local area. The species has been recorded within the bioregion based on literature review but has not been recorded locally or within the survey area through DBCA database searches. The species has not been recorded in the survey area despite adequate survey efforts, such as a standardised methodology or targeted searching within potentially suitable habitat.
Does not occur	The species is not known to occur within the IBRA bioregion based on current literature and distribution. The conspicuous species has not been recorded in the survey area despite adequate survey efforts at an appropriate time of year to detect the species within potentially suitable habitat. The survey area lacks important habitat for a species that has highly selective habitat requirements. The species has been historically recorded within survey area or locally; however, it is considered locally extinct due to significant habitat changes such as land clearing and/or introduced predators.

Appendix C Flora likelihood of occurrence assessment

Scientific name	Common name	Conservation status		Habitat	Source	Likelihood of occurrence		Justification
		EPBC Act	BC Act / DBCA			Pre field survey	Post field survey	
Dasymalla axillaris	Native foxglove	CR	CR	Yellow sandy soils on plains in shrubland. Disturbed areas.	PMST	Unlikely	Unlikely	No nearby records.
Gastrolobium diabolophyllum	Bodallin poison	CR	CR	Yellow-brown sand over laterite on broadly undulating dunes in open mallee shrublands amongst *Eucalyptus salmonophloia, Acacia, Allocasuarina, Gastrolobium* and *Banksia* species.	PMST	Unlikely	Unlikely	No nearby records.
Stylidium applanatum	Flat-leaved triggerplant	CR	CR	*Eucalyptus macrocarpa* and *E. pluricaulis* open shrubland with *Banksia, Allocasuarina, Santalum* and other *Stylidium* species in hard grey clay with lateritic gravel on hillslopes.	PMST	Unlikely	Unlikely	No suitable habitat, no proximal records.
Rhizanthella gardneri	Underground orchid	CR	CR	Plants occur under leaf and bark litter in thickets of *Melaleuca scalena* with scattered emergent *Eucalyptus* and *Acacia* species. Soil is either sandy-clay or sandy-loam.	PMST, NatureMap	Unlikely	Unlikely	No suitable habitat, no recent proximal records.
Acacia ataxiphylla subsp. *magna*	Large-fruited Tammin wattle	EN	EN	Grows predominantly in shallow grey-brown gravelly sands over laterite in heath, shrub mallee and low woodland. Associated species include *Allocasuarina campestris, Xanthorrhoea preissii, Eucalyptus macrocarpa* and *Banksia, Hakea* and *Acacia* species.	PMST	Unlikely	Unlikely	No suitable habitat, no nearby records.
Acacia lobulata	Chiddarcooping wattle	EN	EN	Grows exclusively on colluvial quartz gravel loam of decaying kaolinite granite, close to large granite outcrops and laterite breakaways.	PMST	Unlikely	Unlikely	No suitable habitat, no nearby records.
Banksia oligantha	Wagin Banksia	EN	EN	Tall open woodland over heath in association with low lying river systems or higher on dune systems. Pale deep sands.	PMST	Unlikely	Unlikely	No suitable habitat, no nearby records.

Scientific name	Common name	Conservation status		Habitat	Source	Likelihood of occurrence		Justification
		EPBC Act	BC Act / DBCA			Pre field survey	Post field survey	
Boronia capitata subsp. *capitata*	-	EN	VU	Grows below lateritic breakaways in white sandplains with scattered *Eucalyptus wandoo*, *Banksia sessilis, Banksia sphaerocarpa, Allocasuarina, Melaleuca, Petrophile, Xanthorrhoea* and *Hibbertia* species.	PMST	Unlikely	Unlikely	No suitable habitat, no nearby records.
Roycea pycnophylloides	Saltmat	EN	VU	Plants grow along shorelines or on slight rises above open saline flats and major drainage channels in white to pale brown sand over sandy clay, either on their own or within nearby fringing vegetation.	PMST	Unlikely	Unlikely	No suitable habitat, no nearby records.
Symonanthus bancroftii	Bailey's Symonanthus	EN	CR	Limited data suggest residual or colluvial soils derived from granitic rocks, possibly adjacent to granite outcrops or closer to drainage lines.	PMST	Unlikely	Unlikely	No proximal records.
Grevillea dryandroides subsp. *hirsuta*	Hairy phalanx grevillea	EN	CR	Grows in yellow sandy loam over laterite or clay in open heath or *Banksia* woodland, with proteaceous and myrtaceous species.	PMST, NatureMap	Unlikely	Unlikely	No suitable habitat, no proximal records.
Grevillea scapigera	Corrigin grevillea	EN	CR	Flat country on sandy, or gravelly, lateritic soils associated with low heath amongst tall shrubland.	PMST, NatureMap	Potential	Unlikely	Some suitable habitat, several proximal historical records. However, survey effort was adequate with no observations made of this species.
Thelymitra stellata	Star sun-orchid	EN	EN	Gravelly loam among low heath and scrub in *Eucalyptus marginata* and *E. wandoo* woodland, and in low heath on lateritic hill tops.	PMST, NatureMap	Unlikely	Unlikely	Some suitable habitat, no nearby records, except one historical record near Dumbleyung.

Scientific name	Common name	Conservation status		Habitat	Source	Likelihood of occurrence		Justification
		EPBC Act	BC Act / DBCA			Pre field survey	Post field survey	
Acacia caesariata	-	-	VU	Gritty loam and clay in mallee scrub and eucalypt woodland.	NatureMap	Unlikely	Unlikely	No suitable habitat, no recent nearby records.
Acacia arcuatilis	-	-	P2	Sand or sandy loam, sometimes with lateritic gravel, on undulating plains and rises in mallee scrub and open heath.	NatureMap	Unlikely	Unlikely	No suitable habitat, proximal records exist.
Banksia dallanneyi subsp. *agricola*	-	-	P2	Sandy loam or sand over laterite in *Allocasuarina* or eucalypt open woodland or mallee open shrubland on flats and gentle slopes.	NatureMap	Likely	Unlikely	Suitable habitat present, several proximal records. However, survey effort was adequate with no observations made of this species.
Leucopogon amplectens	-	-	P2	Sandy soils on slopes and plains in *Allocasuarina* shrubland or eucalypt woodland or open heathland.	NatureMap	Potential	Unlikely	Suitable habitat present, no recent proximal records. However, survey effort was adequate with no observations made of this species.
Styphelia cymbiformis	-	-	P2	White/grey or yellow sand and lateritic gravelly soils on sandplains, wet flats and foothills.	NatureMap	Unlikely	Unlikely	No nearby records.
Acacia campylophylla	-	-	P3	Lateritic gravelly sand or loam in *Allocasuarina* woodland or heath.	NatureMap	Unlikely	Unlikely	No suitable habitat, no recent nearby records.

Scientific name	Common name	Conservation status		Habitat	Source	Likelihood of occurrence		Justification
		EPBC Act	BC Act / DBCA			Pre field survey	Post field survey	
Acacia deflexa	-	-	P3	Yellow gravelly lateritic sand and gravelly sandy loam on plains in heath and low scrub.	NatureMap	Unlikely	Unlikely	No suitable habitat, several proximal records.
Banksia fasciculata	-	-	P3	Lateritic clay and sand over laterite in open mallee woodland or low shrubland on flats and gentle slopes.	NatureMap	Unlikely	Unlikely	No suitable habitat, no recent proximal records.
Banksia horrida	Prickly dryandra	-	P3	Sand, sometimes with gravel, on slopes in heath and mid shrubland.	NatureMap	Unlikely	Unlikely	No suitable habitat, no proximal records.
Banksia rufa subsp. *obliquiloba*	-	-	P3	Gravelly loam on plains and slopes in heath and *Allocasuarina* mid shrubland.	NatureMap	Unlikely	Unlikely	No suitable habitat, no recent proximal records.
Beaufortia burbidgeae	Column Beaufortia	-	P3	Lateritic gravel and sand on slopes in mallee woodland and *Allocasuarina* heathland.	NatureMap	Unlikely	Unlikely	No suitable habitat, no recent proximal records.
Conospermum scaposum	-	-	P3	White-grey sand and sandy clay on flats, low swampy areas and road verges.	NatureMap	Unlikely	Unlikely	No suitable habitat, no nearby records.
Daviesia uncinata	-	-	P3	Gravelly lateritic sand and loam sand on undulating plains in mid-low shrubland and heathland.	NatureMap	Unlikely	Unlikely	No suitable habitat, no recent nearby records.
Guichenotia impudica	-	-	P3	Laterite and sand on undulating plains in heath with scattered mallees and *Allocasuarina* woodland.	NatureMap	Unlikely	Unlikely	No suitable habitat, no nearby records.
Microcorys cephalantha	-	-	P3	Sandy loam with lateritic gravel on rises and sandplains in heath with emergent mallees.	NatureMap	Unlikely	Unlikely	No suitable habitat, no recent proximal records.

Scientific name	Common name	Conservation status		Habitat	Source	Likelihood of occurrence		Justification
		EPBC Act	BC Act / DBCA			Pre field survey	Post field survey	
Phebalium brachycalyx		-	P3	Sand and gravelly soils on lateritic uplands and hills in open mallee woodland over heath.	NatureMap	Unlikely	Unlikely	No suitable habitat, no recent nearby records.
Synaphea tripartita	-	-	P3	Lateritic gravel and clay on plains or gentle slopes in tall shrubland or heath	NatureMap	Unlikely	Unlikely	No nearby records.
Xanthoparmelia subimitatrix	-	-	P3	Stones and rocks on scree slopes below breakaways and exposed outcrops, sometimes in tall shrubland.	NatureMap	Unlikely	Unlikely	No suitable habitat.
Calothamnus brevifolius	-	-	P4	White/grey or yellow sand on undulating plains in *Allocasuarina* shrubland or heathland.	NatureMap	Unlikely	Unlikely	No suitable habitat, no proximal records.
Daviesia oxylobium	-	-	P4	Sandy lateritic soils on undulating plains in eucalypt woodland over heathland or *Allocasuarina* shrubland.	NatureMap	Unlikely	Unlikely	No recent proximal records.
Rinzia affinis	Two-flowered Rinzia	-	P4	Yellow sand or loam with lateritic pebbles on hills.	NatureMap	Unlikely	Unlikely	No suitable habitat.

Appendix D Fauna likelihood of occurrence assessment

Scientific name	Common name	Conservation status		Habitat	Source	Likelihood of occurrence	Justification
		EPBC Act	BC Act / DBCA				
Calidris ferruginea	Curlew Sandpiper	CR, M	CR, M	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand.	PMST	Unlikely	No suitable habitat occurs within the survey area.
Calyptorhynchus latirostris	Carnaby's Cockatoo	EN	EN	Carnaby's Cockatoo occurs in uncleared or remnant native eucalypt woodlands and in shrubland or kwongan heathland. Forages seasonally in pine plantations, around Perth metropolitan, and forests containing Marri, Karri and Jarrah.	PMST	Recorded	The survey area occurs within the breeding range of this species. Mature woodland present within the survey area. Old shearing of branches recorded within survey area.
Dasyurus geoffroii	Chuditch, Western Quoll	VU	VU	Chuditch use a range of habitats including forest, mallee shrublands, woodland and desert. The most dense populations have been found in riparian jarrah forest. Chuditch require adequate numbers of suitable den and refuge sites (horizontal hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles and small mammals) to survive.	PMST	Unlikely	No suitable habitat occurs within the survey area. Nearby records for this species are historical.
Leipoa ocellata	Malleefowl	VU	VU	Occurs in scrubland and woodland dominated by mallee and wattle species. In Western Australia they are also found in some shrublands dominated by *Acacia*, and occasionally in woodlands dominated by	PMST, NatureMap	Unlikely	Habitat within the survey area is not suitable and would not provide enough cover and shelter for this species.

Scientific name	Common name	Conservation status		Habitat	Source	Likelihood of occurrence	Justification
		EPBC Act	BC Act / DBCA				
				eucalypts such as Wandoo (*E. wandoo*), Marri (*Corymbia calophylla*) and Mallet (*E. astringens*).			
Phascogale calura	Red-tailed Phascogale	VU	CD	Historically widespread throughout woodland habitats, however, now they are restricted to remnant mature *Eucalyptus wandoo* or *Allocasuarina huegeliana* woodlands in the south of the wheatbelt. A preference for unburnt habitat with a continuous canopy and the presence of tree hollows.	PMST, NatureMap	Potential	One record occurs within 1km from the survey area; however, it is from the 1960s. Marginal habitat for this species occurs within the survey area.
Macrotis lagotis	Bilby	VU	VU	Preferred habitat includes hummock grassland in plains and alluvial areas, open tussock grassland on uplands and hills, and mulga woodland/shrubland on ridges and rises.	NatureMap	Unlikely	Regionally extinct and no habitat present within survey area. Small relocated populations are present within enclosed reserves.
Mymecobius fasciatus	Numbat	EN	EN	Currently occur in upland Jarrah forest, open Eucalypt woodland, Banksia woodland and tall closed shrublands. The habitats would usually have an abundant number of termites in the soil, hollow logs and branches for shelter.	NatureMap	Unlikely	Locally extinct except for relocated populations within enclosed reserves.
Actitis hypoleucos	Common Sandpiper	M	M	Wide range of coastal wetlands and some inland wetlands. Is mostly found around muddy margins or rocky shores and rarely on mudflats.	PMST	Unlikely	No suitable habitat within survey area.
Apus pacificus	Fork-tailed Swift	M	M	In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree	PMST	Unlikely	This species, although has a wide variety of habitat requirements, is rarely recorded inland.

Scientific name	Common name	Conservation status		Habitat	Source	Likelihood of occurrence	Justification
		EPBC Act	BC Act / DBCA				
				swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes.			
Calidris acuminata	Sharp-tailed Sandpiper	M	M	In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland. They also occur in saltworks and sewage farms.	PMST	Unlikely	No suitable habitat within survey area.
Calidris melanotos	Pectoral Sandpiper	M	M	In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	PMST	Unlikely	No suitable habitat occurs within the survey area.
Motacilla cinerea	Grey Wagtail	M	M	This species inhabits fast-flowing mountain streams and rivers with riffles and exposed rocks or shoals, often in forested areas. It is also found in more lowland watercourses, even canals, where there are artificial waterfalls, weirs, millraces or lock gates. Outside of the breeding season it occupies a wider variety of habitats, including farmyards, sewage farms, forest tracks, tea estates and even town centres.	PMST	Unlikely	No suitable habitat occurs within the survey area.

Appendix E Flora species list

Family	Species
Aizoaceae	**Mesembryanthemum nodiflorum*
Amaranthaceae	*Ptilotus manglesii*
Amaranthaceae	*Ptilotus polystachyus*
Asparagaceae	*Acanthocarpus canaliculatus*
Asparagaceae	*Lomandra effusa*
Asparagaceae	*Thysanotus patersonii*
Asteraceae	**Arctotheca calendula*
Asteraceae	**Erigeron bonariensis*
Asteraceae	**Hypochaeris glabra*
Asteraceae	**Sonchus oleraceus*
Asteraceae	*Olearia subspicata*
Boraginaceae	**Echium plantagineum*
Brassicaceae	**Brassica tournefortii*
Casuarinaceae	*Allocasuarina campestris*
Chenopodiaceae	*Atriplex semibaccata*
Chenopodiaceae	*Enchylaena tomentosa*
Chenopodiaceae	*Maireana brevifolia*
Chenopodiaceae	*Rhagodia preissii*
Chenopodiaceae	*Salsola australis*
Crassulaceae	*Crassula colorata*
Cyperaceae	*Lepidosperma resinosum*
Ericaceae	*Hibbertia exasperata*
Ericaceae	*Hibbertia rupicola*
Ericaceae	*Styphelia serratifolia*
Euphorbiaceae	*Beyeria sulcata*
Fabaceae	**Trifolium arvense*
Fabaceae	*Acacia acuminata*
Fabaceae	*Acacia lasiocarpa* var. *sedifolia*
Fabaceae	*Gastrolobium spinosum*
Geraniaceae	*Erodium cygnorum*
Goodeniaceae	*Dampiera lavandulacea*
Haloragaceae	*Glischrocaryon angustifolium*
Hemerocallidaceae	*Dianella revoluta*

Family	Species
Iridaceae	**Romulea rosea*
Lamiaceae	*Hemiandra pungens*
Malvaceae	*Malva parviflora*
Myrtaceae	*Eucalyptus loxophleba*
Myrtaceae	*Eucalyptus salmonophloia*
Myrtaceae	*Eucalyptus wandoo*
Myrtaceae	*Scholtzia drummondii*
Orobanchaceae	**Orobanche minor*
Pittosporaceae	*Marianthus bicolor*
Poaceae	**Aira cupaniana*
Poaceae	**Avena barbata*
Poaceae	**Briza maxima*
Poaceae	**Bromus diandrus*
Poaceae	**Bromus rubens*
Poaceae	**Ehrharta longiflora*
Poaceae	**Eragrostis curvula*
Poaceae	**Hordeum leporinum*
Poaceae	**Lolium rigidum*
Poaceae	**Vulpia myuros* forma *megalura*
Poaceae	*Amphipogon strictus*
Poaceae	*Aristida contorta*
Poaceae	*Austrostipa elegantissima*
Poaceae	*Austrostipa variabilis*
Poaceae	*Chloris truncata*
Poaceae	*Rytidosperma caespitosum*
Polygalaceae	*Comesperma scoparium*
Polygonaceae	**Polygonum aviculare*
Polygonaceae	**Rumex hypogaeus*
Proteaceae	*Grevillea biternata*
Proteaceae	*Hakea meisneriana*
Rhamnaceae	*Cryptandra* sp.
Rubiaceae	*Opercularia vaginata*
Rutaceae	*Phebalium megaphyllum*
Santalaceae	*Santalum acuminatum*

Appendix F Relevé details

Relevé:	ELA01					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	EwW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Very Good		581992 m E	*Eucalyptus wandoo*	20	12
			6421389 m S	*Gastrolobium spinosum*	4	1
Photograph:				*Acacia lasiocarpa* var. *sedifolia*	5	0.4
				Austrostipa variabilis	1	0.4
				Austrostipa elegantissima	1	0.4
				Rytidosperma caespitosum	1	0.3
				Dampiera lavandulacea	0.5	0.2
				Other species		
				Beyeria sulcata		
				Dianella revoluta		
				Enchylaena tomentosa		
				Glischrocaryon angustifolium		
				Opercularia vaginata		
				Phebalium megaphyllum		

Relevé:	ELA02					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	EwW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Very Good		581989 m E	*Eucalyptus wandoo*	15	12
			6421296 m S	*Gastrolobium spinosum*	1	1
Photograph:				*Grevillea biternata*	1	1
				Comesperma scoparium	1	0.5
				Glischrocaryon angustifolium	1	0.5
				Other species		
				**Avena barbata*		
				**Briza maxima*		
				**Romulea rosea*		
				Amphipogon strictus		
				Austrostipa elegantissima		
				Austrostipa variabilis		
				Dianella revoluta		
				Hibbertia rupicola		
				Opercularia vaginata		
				Scholtzia drummondii		

Relevé:	ELA03					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	EwW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Good		581990 m E	*Eucalyptus loxophleba*	10	10
			6421201 m S	*Eucalyptus wandoo*	10	1
Photograph:				*Olearia subspicata*	5	1
				Rhagodia preissii	1	1
				Rytidosperma caespitosum	4	0.3
				Other species		
				**Lolium rigidum*		
				**Romulea rosea*		
				Acacia acuminata		
				Acanthocarpus canaliculatus		
				Allocasuarina campestris		
				Austrostipa elegantissima		
				Austrostipa variabilis		
				Dianella revoluta		
				Gastrolobium spinosum		
				Lepidosperma resinosum		
				Marianthus bicolor		

Relevé:	ELA04					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	EwW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Degraded		581975 m E	*Eucalyptus loxophleba*	10	10
			6421121 m S	*Eucalyptus wandoo*	5	10
Photograph:				*Austrostipa elegantissima*	1	0.4
				Austrostipa variabilis	1	0.4
				Other species		
				**Avena barbata*		
				**Ehrharta longiflora*		
				**Romulea rosea*		
				Atriplex semibaccata		
				Enchylaena tomentosa		
				Lepidosperma resinosum		
				Lomandra effusa		
				Rytidosperma caespitosum		

Relevé:	ELA05					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	EwW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Good/Very Good		581983 m E	*Eucalyptus wandoo*	20	12
			6421445 m S	*Allocasuarina campestris*	5	2
Photograph:				*Santalum acuminatum*	1	2
				Gastrolobium spinosum	3	1.5
				Hibbertia rupicola	1	1
				Acacia lasiocarpa var. sedifolia	1	1
				Austrostipa variabilis	0.5	1
				Dianella revoluta	0.5	0.8
				Austrostipa elegantissima	1	0.4
				Hemiandra pungens	2	0.3
				Other species		
				**Arctotheca calendula*		
				**Avena barbata*		
				**Briza maxima*		
				**Vulpia myuros* forma *megalura*		
				Hakea meisneriana		
				Thysanotus patersonii		

Relevé:	ELA06					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	ElW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Degraded		581550 m E	*Acacia acuminata*	5	2
			6421353 m S	*Maireana brevifolia*	20	1
Photograph:				**Lolium rigidum*	4	0.5
				**Hordeum leporinum*	1	0.2

Other species
**Arctotheca calendula*
**Brassica tournefortii*
**Bromus diandrus*
**Sonchus oleraceus*
**Trifolium arvense*
Austrostipa elegantissima
Eucalyptus loxophleba
Grevillea biternata
Ptilotus polystachyus

Relevé:	ELA07					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	ElW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Degraded		581689 m E	*Eucalyptus loxophleba*	20	12
			6421203 m S	**Hordeum leporinum*	1	0.2

Photograph:

Other species
**Brassica tournefortii*
**Lolium rigidum*
**Mesembryanthemum nodiflorum*

Relevé:	ELA08					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	EsElW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Degraded		581536 m E	*Eucalyptus loxophleba*	15	10
			6421250 m S	*Eucalyptus salmonophloia*	5	20
Photograph:				*Maireana brevifolia*	0.2	1

Other species
**Brassica tournefortii*
**Hordeum lepinorum*
**Lolium rigidum*
**Mesembryanthemum nodiflorum*
Crassula colorata
Enchylaena tomentosa

Relevé:	ELA09					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	AcTS	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Degraded		581512 m E	*Acacia acuminata*	10	6
			6421045 m S			
Photograph:				**Other species**		

**Arctotheca calendula*
**Bromus rubens*
**Erigeron bonariensis*
**Ehrharta longiflora*
**Hypochaeris glabra*
**Hordeum lepinorum*
**Lolium rigidum*
**Mesembryanthemum nodiflorum*
**Vulpia myuros* forma *megalura*
Austrostipa variabilis
Ptilotus polystachyus

Relevé:	ELA10					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	EIW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Degraded		581558 m E	*Eucalyptus loxophleba*	10	12
			6420887 m S	*Acacia acuminata*	2	8
Photograph:				*Austrostipa variabilis*	0.5	0.4
				**Arctotheca calendula*	1	0.1

Other species
**Aira cupaniana*
**Brassica tournefortii*
**Bromus rubens*
**Erigeron bonariensis*
**Ehrharta longiflora*
**Hordeum lepinorum*
**Lolium rigidum*
**Mesembryanthemum nodiflorum*
**Vulpia myuros* forma *megalura*

Relevé:	ELA11					
Date:	22/10/2020	**Site:**	CBH Corrigin			
Vegetation Unit:	EIW	**Location (UTM):**	50 H	**Dominant species**	**Cover**	**Height**
Condition:	Degraded		581973 m E	*Eucalyptus loxophleba*	15	12
			6420956 m S	*Acacia acuminata*	1	6
Photograph:				*Atriplex semibaccata*	2	0.1
				**Ehrharta longiflora*	2	0.3

Other species
**Brassica tournefortii*
**Bromus diandrus*
**Hordeum lepinorum*
**Lolium rigidum*
Austrostipa elegantissima
Austrostipa variabilis
Enchylaena tomentosa
Maireana brevifolia

Appendix G Flora species matrix

Species	Relevé / Vegetation Community										
	ELA01 W1	ELA02 W1	ELA03 W1	ELA04 W1	ELA05 W1	ELA06 W2	ELA07 W2	ELA10 W2	ELA11 W2	ELA08 W3	ELA09 S1
**Aira cupaniana*								+			
**Arctotheca calendula*					+	+		+			+
**Avena barbata*		+		+	+						
**Brassica tournefortii*						+	+	+	+	+	
**Briza maxima*		+			+						
**Bromus diandrus*						+			+		
**Bromus rubens*								+			+
**Conyza bonariensis*								+			+
**Ehrharta longiflora*				+				+	+		+
**Hordeum leporinum*						+	+	+	+	+	+
**Hypochaeris glabra*											+
**Lolium rigidum*			+			+	+	+	+	+	+
**Mesembryanthemum nodiflorum*							+	+		+	+
**Romulea rosea*		+	+	+							
**Sonchus oleraceus*						+					
**Trifolium arvense*						+					
**Vulpia myuros* forma *megalura*					+			+			+

Species	Relevé / Vegetation Community										
	ELA01 W1	ELA02 W1	ELA03 W1	ELA04 W1	ELA05 W1	ELA06 W2	ELA07 W2	ELA10 W2	ELA11 W2	ELA08 W3	ELA09 S1
Acacia acuminata			+			+		+	+		+
Acacia lasiocarpa var. *sedifolia*	+				+						
Acanthocarpus canaliculatus			+								
Allocasuarina campestris			+		+						
Amphipogon strictus		+									
Atriplex semibaccata				+					+		
Austrostipa elegantissima	+	+	+	+	+	+			+		
Austrostipa variabilis	+	+	+	+	+			+	+		+
Beyeria sulcata	+										
Comesperma scoparium		+									
Crassula colorata										+	
Dampiera lavandulacea	+										
Dianella revoluta	+	+	+		+						
Enchylaena tomentosa	+			+					+	+	
Eucalyptus loxophleba			+	+		+	+	+	+	+	
Eucalyptus salmonophloia										+	
Eucalyptus wandoo	+	+	+	+	+						
Gastrolobium spinosum	+	+	+		+						
Glischrocaryon angustifolium	+	+									
Grevillea biternata		+				+					
Hakea meisneriana					+						
Hemiandra pungens					+						

Species	Relevé / Vegetation Community										
	ELA01 W1	ELA02 W1	ELA03 W1	ELA04 W1	ELA05 W1	ELA06 W2	ELA07 W2	ELA10 W2	ELA11 W2	ELA08 W3	ELA09 S1
Hibbertia rupicola		+			+						
Lepidosperma resinosum			+	+							
Lomandra effusa				+							
Maireana brevifolia						+			+	+	
Marianthus bicolor			+								
Olearia subspicata			+								
Opercularia vaginata	+	+									
Phebalium megaphyllum	+										
Ptilotus polystachyus						+					+
Rhagodia preissii			+								
Rytidosperma caespitosum	+		+	+							
Santalum acuminatum					+						
Scholtzia drummondii		+									
Thysanotus patersonii					+						

Appendix H Assessment of the Eucalypt woodlands of the Western Australia wheatbelt ecological community

KEY DIAGNOSTIC CHARACTERISTICS

Key diagnostic characteristics (DotEE 2015)	Outcome
Indicators	
Location and physical environment The distribution of the ecological community is limited to these IBRA bioregions and subregions: • Avon Wheatbelt - subregions AVW01 Merredin and AVW02 Katanning; • Mallee - MAL02 Western Mallee only; and • Jarrah Forest – outlying patches in the eastern parts of JAF01 Northern Jarrah Forests and JAF02 Jarrah Forests adjacent to the Avon Wheatbelt, that are off the Darling Range, and receive less than 600 mm mean annual rainfall. They are effectively an extension of the Avon Wheatbelt landscape in that they comprise areas subject to similar climate, landscape and threats.	Yes. The survey area is located in the Avon Wheatbelt IBRA Bioregion and AVW02 Katanning subregion.
Structure The structure of the ecological community is a woodland in which the minimum crown cover of the tree canopy in a mature woodland is 10% (crowns measured as if they are opaque).	Yes. Crown cover in the woodland vegetation communities EwW, ElW and EsElW are ≥10%.
Presence of key species The key species of the tree canopy are species of *Eucalyptus* as identified in Table 2a (DotEE 2015). These are species that typically have a single trunk. One or more of the tree species in Table 2a are dominant or co-dominant within a patch of the ecological community. If other species are present in the tree canopy (e.g. species in Table 2b or other taxa) then these collectively do not occur as dominants in the tree canopy.	Yes. *Eucalyptus salmonophloia, E. loxophleba* and *E. wandoo* are dominants/co-dominants within vegetation communities EwW, ElW and EsElW, and are listed in Table 2a (DotEE 2015).
Presence of native understorey A native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs, as specified in section 2.3.2 and in Table A1 of Appendix A (DoE 2015).	Yes. Native understorey is present. 16 of the 52 native flora taxa recorded in the survey area occur within Table A1 of Appendix A (DotEE 2015). It should be noted that the plant species list in Tables A1 and A4 of Appendix A (DotEE 2015) do not include all plant species that may be encountered in the WA Wheatbelt woodland ecological community.

Key diagnostic characteristics (DotEE 2015)	Outcome
Contra-indicators	
Mallees dominant A dominant presence of eucalypts with a mallee growth form. However, mallee species can occur as an understorey or minor canopy component of the ecological community, as noted in the diagnostic features, above.	No. Mallee eucalypts are not dominant in vegetation communities EwW, ElW and EsElW.
Non-eucalypts dominant A dominant presence of non-eucalypt species in the tree canopy, for instance *Acacia acuminata* (jam) or *Allocasuarina huegeliana* (rock sheoak). However, these non-eucalypt species can be present as an understorey or minor canopy component of the ecological community.	No. Some non-eucalypt species are present but are not dominant in the tree canopy in vegetation communities EwW, ElW and EsElW.
Shrublands or Herblands Shrublands or herblands in which the tree canopy layer is very sparse to absent, either naturally or maintained so through long-term disturbance. Native vegetation where a tree canopy was formerly present is often referred to as 'derived' or 'secondary' vegetation. These sites would fall below the 10 per cent minimum canopy cover threshold for a woodland, noted in the diagnostic features, above.	No. Vegetation communities vegetation communities EwW, ElW and EsElW are woodlands with a tree canopy present.
Adjacent bioregions Woodlands that have the same key eucalypt species but occur in adjacent bioregions, notably the Coolgardie, Esperance Sandplains, Yalgoo and Geraldton Sandplains bioregions. These are not part of the national ecological community. All woodlands that occur in bioregions outside the wheatbelt, as defined in this conservation advice, are not part of the WA Wheatbelt Woodland ecological community.	No. The survey area is not located in the Coolgardie, Esperance Sandplains, Yalgoo or Geraldton Sandplains bioregions.
Habitat-restricted eucalypt species Woodlands dominated by eucalypts that are restricted to granite outcrops and rocky rises, for instance *Eucalyptus caesia* (caesia or gungurru). However, some woodlands occur on the base around rock outcrops, but not on the actual outcrop, and these may be part of the ecological community, for instance York gum – jam woodlands.	No. The woodlands within the survey area do not occur on granite outcrops or rocky rises.
Condition thresholds and minimum patch size	
Where native vegetation meets the description and key diagnostic characteristics of the WA Wheatbelt Woodland ecological community, above, the condition thresholds and considerations in Table 3 (DotEE 2015) apply. There are four categories a patch can be classified as: Category A: Patches likely to correspond to a condition of Pristine / Excellent / Very Good (Keighery 1994) or a High Roadside Conservation Value (RCV; Roadside Conservation Committee of WA [RCC] 2014). Category B: Patches likely to correspond to a condition of Good (Keighery 1994) or a Medium-High RCV (RCC 2014), AND retains important habitat features.	Yes. Parts of vegetation community EwW meet the following criteria: Category A (for Very Good condition): • Exotic plant species account for 0 to 30% of total vegetation cover in the understorey layers (i.e. below the tree canopy). • Mature trees may be present or absent. • Roadside patch width ≥5 m.

Key diagnostic characteristics (DotEE 2015)	Outcome
Category C: Patches likely to correspond to a condition of Good (Keighery 1994) or a Medium-High RCV (RCC 2014). Category D: Patches likely to correspond to a condition of Degraded to Good (Keighery 1994) or a Medium-Low to Medium-High RCV (RCC 2014) BUT retains important habitat features. The criteria for these categories are listed below.	Category C (for Good condition): • Exotic plant species account for >30% to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy). • Mature trees either absent or when present have < 5 trees per 0.5 ha. • Roadside patch width ≥5 m. Some patches of vegetation community EIW meet the criteria for Category D (for Degraded condition): • Exotic plant species account for >50% to 70% of total vegetation cover in the understorey layers (i.e. below the tree canopy); • Mature trees present with ≥5 trees per 0.5 ha; • Roadside patch width ≥5 m (for EIW); • However, non-roadside patches are not >5 ha. The patch of vegetation community EsEIW meets the criteria for Category D (for Degraded condition): • Exotic plant species account for >50% to 70% of total vegetation cover in the understorey layers (i.e. below the tree canopy); • Mature trees present with ≥5 trees per 0.5 ha; • Patch size is >5 ha, as the vegetation inside the survey area is continuous with vegetation outside.

CONDITION THRESHOLDS

Cover of exotic plants (weeds) AND	Mature trees[1] AND	Minimum patch size (non-roadside patches)[2] OR	Minimum patch width (roadside patches only)[3]
Category A: Patches likely to correspond to a condition of Pristine / Excellent / Very good (Keighery 1994) or a High RCV (RCC 2014).			
Exotic plant species account for 0 to 30% of total vegetation cover in the understorey layers (i.e. below the tree canopy).	Mature trees may be present or absent.	2 hectares or more	5 metres or more
Category B: Patches likely to correspond to a condition of Good (Keighery 1994) or a Medium-High RCV (RCC 2014) AND retains important habitat features.			
Exotic plant species account for more than 30, to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy)	Mature trees are present with at least 5 trees per 0.5 ha.	2 hectares or more	5 metres or more
Category C: Patches likely to correspond to a condition of Good (Keighery 1994) or a Medium-High RCV (RCC 2014).			
Exotic plant species account for more than 30, to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy).	Mature trees either absent or less than 5 trees per 0.5 ha are present.	5 hectares or more	5 metres or more
Category D: Patches likely to correspond to a condition of Degraded to Good (Keighery 1994) or a Medium-Low to Medium-High RCV (RCC 2014) BUT retains important habitat features.			
Exotic plant species account for more than 50 to 70% of total vegetation cover in the understorey layers (i.e. below the tree canopy).	Mature trees are present with at least 5 trees per 0.5 ha.	5 hectares or more	5 metres or more

[1] Mature trees have a DBH of 30 cm or above. Trunk diameter varies among eucalypt species, for instance gimlet and mallets tend to have slender trunks (Gosper et al. 2013b, as cited in DotEE 2015). The DBH for mature trees aligns with the EPBC referral guidelines for the breeding habitat of threatened black cockatoo species (SEWPaC 2012). These note that, for salmon gum and wandoo trees, suitable nest hollows can develop in trees with a DBH of 30 cm or more. Note that larger trees may be killed by factors such as intense fire or flood, but the patch may still be in reasonable condition if there are immature trees regenerating.

[2] The minimum patch size thresholds apply to native vegetation remnants that do not occur along roadsides.

[3] Minimum patch width applies only to vegetation remnants along roadsides and tend to be long but narrow. This criterion recognises the importance of native vegetation remnants along road verges, e.g their value as wildlife corridors particularly if linking to other non-roadside remnants, habitat for threatened species and other reasons as detailed by Jackson (2002) and RCC (2015), as cited in DotEE (2015). The width here is based on the native understorey component rather than width of the tree canopy. Some allowance must be made for small breaks or variations in native species cover along linear patches. Given the generally open nature of the tree canopy and some understorey structures, a break in the continuity of native vegetation cover of 50 metres or more, is likely to indicate that separate patches are present. An exception is for main, often bitumen-covered, roads that bisect otherwise continuous vegetation; most local government roads in the Wheatbelt have a road reserve of 20 metres. In these cases, native vegetation along either side of the road is considered to be a separate patch.

Appendix I Fauna species list

Species	Common Name	Observation Type
Birds		
Anthochaera carunculata	Red Wattlebird	Observed/heard
Barnardius zonarius	Australian Ringneck	Observed/heard
Cacatua sanguinea	Little Corella	Observed/heard
Calamanthus campestris	Rufous Fieldwren	Observed/heard
Calyptorhynchus latirostris	Carnaby's Cockatoo	Sheared branches
Corvus bennetti	Little Crow	Observed/heard
Corvus coronoides	Australian Raven	Observed/heard
Cracticus nigrogularis	Pied Butcherbird	Observed/heard
Cracticus tibicen	Australian Magpie	Observed/heard
Eolophus roseicapilla	Galah	Observed/heard
Grallina cyanoleuca	Magpie-lark	Observed/heard
Manorina flavigula	Yellow-throated Miner	Observed/heard
Motacilla alba	White Wagtail	Observed/heard
Ocyphaps lophotes	Crested Pigeon	Observed/heard
Rhipidura leucophrys	Willie Wagtail	Observed/heard
Smicrornis brevirostris	Weebill	Observed/heard
Spilopelia senegalensis	Laughing Dove	Observed/heard
Taeniopygia guttata	Zebra Finch	Observed/heard
Zosterops lateralis	Silvereye	Observed/heard
Mammals		
Osphranter robustus	Common wallaroo (Euro)	Scats
**Ovis aries*	Sheep	Observed
**Vulpes vulpes*	Red Fox	Diggings
Reptiles		
Tiliqua rugosa	Blue-tongued Skink	Observed

Appendix J Black cockatoo potentially suitable trees recorded within the survey area

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing
1051	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581993	6421270
1052	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	Potential older feeding on branches	581991	6421200
1054	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581614	6421156
1055	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	Potential older feeding on branches	581535	6421252
1056	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	Potential older feeding on branches	581532	6421253
1057	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581514	6421259
1058	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581497	6421267
1059	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581496	6421264
1060	*Eucalyptus wandoo* (Wandoo) stag	>300	<100mm	Trunk	NA	581512	6421218
1061	*Eucalyptus wandoo* (Wandoo) stag	>300	NA	-	NA	581508	6421177
1062	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581498	6421124
1063	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581496	6421117
1064	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581652	6421022
1065	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581621	6421010
1066	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581598	6420945
1067	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581560	6420954
1068	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581525	6420906
1069	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581564	6420873
1070	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581631	6420890
1071	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581661	6421264

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Attachment C CBH Corrigin: Additional Carnaby's Cockatoo information to support environmental approvals (ELA 2023c)

MEMORANDUM			
TO	CBH Group		
FROM	Eco Logical Australia		
DATE	14 August 2023	PURPOSE	For Information
SUBJECT	CBH Corrigin: Additional Carnaby's Cockatoo information to support environmental approvals		

1. Introduction

1.1. Project background

Eco Logical Australia (ELA) was engaged by CBH Group (CBH) to collect additional information for Carnaby's Cockatoo habitat of the Corrigin Grain Receival Site (the project). This information will support the Preliminary Documentation (EPBC Ref. 2021/9024).

A Reconnaissance level flora and vegetation survey, Basic fauna survey and Targeted black cockatoo habitat assessment was undertaken in October 2020 (ELA 2021), which delineated and mapped the fauna habitat *Eucalyptus salmonophloia*, *E. wandoo* and *E. loxophleba* woodland, assessed as 'Poor' quality foraging habitat for Carnaby's Cockatoo (Figure 1).

2. Methodology

2.1. Desktop assessment

The following databases was searched for existing data and information relating to Carnaby's Cockatoo (Table 1).

Table 1: Database searches

Database	Reference	Search area
Birdlife Australia (Birdlife) black cockatoo roosting and nesting database	Birdlife 2022	Centre point: - 32.34361 117.86778 with a buffer of 12 km
Department of Biodiversity, Conservation and Attractions (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	DBCA 2022	Centre point: - 32.34361 117.86778 with a buffer of 50 km

2.2. Field survey

ELA (2021) undertook a Targeted black cockatoo habitat assessment, so the current survey included a photograph of each potential breeding tree (identified in ELA 2021) and further inspection of any potential nesting hollows with a pole-mounted camera (if practicable). A potential breeding tree was defined as suitable tree species with a Diameter at Breast Height (DBH) greater than 500 mm (or >300 mm for Salmon Gum or Wandoo), as described in DSEWPaC 2012. Potential breeding hollows were considered 'suitable' if the entrance was >100 mm in diameter, >300 mm deep and aligned near vertical.

During the survey, observations of any black cockatoo foraging activity or feeding residue such as chewed Eucalyptus nuts or branches, or direct sightings of birds were recorded during the survey.

The current survey was conducted from 28 June to 1 July by Briana Wingfield (Senior Ecologist) and Jeni Morris (Ecologist). Both personnel have at least three years' experience surveying for black cockatoos, in accordance with the EPBC Act referral guidelines (DSEWPaC 2012).

3. Results

3.1. Desktop assessment

The DBCA search (DBCA 2022) identified nine previous records of Carnaby's Cockatoo individuals within a 50 km buffer (from 1946 to 2012) and a natural hollow 32 km south of the survey area (from 2000).

The Birdlife search (2022) did not identify and nesting or roosting sites within a 12 km buffer. The closest known roosting site is 90 km south-west of the survey area.

3.2. Field survey

No Carnaby's Cockatoo individuals nor foraging evidence was recorded during the field survey.

Photographs were taken of each potential breeding tree (identified in ELA 2021) as shown in Appendix A. Further information included:

- One tree (tree ID 1054) was initially identified *Eucalyptus wandoo* (Wandoo) (ELA 2021), but upon further inspection was identified as *Eucalyptus camaldulensis* (River Gum). This species is still a potential breeding tree for Carnaby's Cockatoo;
- The two Wandoo stags (tree ID 1060 and 1061) are no longer standing therefore no longer potential breeding trees;
- The *Eucalyptus loxophleba* (York Gum) with the potential hollow along Corrigin South Road (located outside the ELA 2021 survey area) was inspected further using a pole-mounted camera, however no evidence of Carnaby's Cockatoo breeding was present (Plate 1); and
- A large number of galahs were observed within the survey area.

Plate 1: Hollow in *Eucalyptus loxophleba* (York Gum) along the road, just outside the survey area

As per the above information, the total potential breeding trees within the ELA 2021 survey area is now 18 (previously reported to be 20; excluding the York Gum located outside the ELA 2021 survey area) with none having hollows present. This equates to 0.17 ha of potential breeding/roosting habitat within the ELA 2021 survey area.

4. Discussion

There are currently just over 1,000 records of Carnaby's Cockatoo from the Avon Wheatbelt subregion of Western Australia (ALA 2022). The majority of Carnaby's Cockatoo records from the vicinity of the survey area are historical (i.e., 1970's; DBCA 2022). The most recent records are from 2000 and 2012 and are over 30 km south/south-west of the survey area.

Several known and potential threats exist for Carnaby's Cockatoo including loss of habitat from clearing or degradation and competition for nest hollows (DPaW 2013). The habitats present within the survey area are highly fragmented and hollow-nesting species, galah, were observed in large numbers in the survey area.

No foraging evidence was observed in the survey area during the field survey. The survey area lacks the species' favoured food sources; particularly the flowers, seeds and nectar of proteaceous plants (e.g. *Banksia*, *Hakea* and *Grevillea* species), Marri (*Corymbia calophylla*) and *Callistemon* spp. (DoEE 2017, DSEWPaC 2012).

Of the two potential hollows observed within and in the vicinity of the survey area in October 2020 (ELA 2021); one was in a tree that is no longer standing and one did not have any evidence of Carnaby's Cockatoo breeding after further inspection using a pole-mounted camera. There are also no known roosts or nests within the vicinity of the survey area (Birdlife 2022, DBCA 2022).

Other considerations for roosting and breeding include proximity to an important water source and ecological linkages. The survey area is not in the vicinity of any natural water sources, only small farm dams which may be unreliable (DWER 2018; DPIRD 2022). Whilst the survey area is linked to Corrigin Nature Reserve in the south/south-west, no further ecological linkages occur in the wider vicinity (DBCA 2021).

5. References

Birdlife Australia (Birdlife). 2022. Black cockatoo roosting and nesting database search. Received on 14/03/2022. Prepared by Birdlife for Eco Logical Australia. Available from: https://www.birdlife.org.au/conservation/science/data-extraction-services.

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Department of Energy and the Environment (DoEE). 2017. *Revised draft referral guideline for three threatened black cockatoo species: Carnaby's Cockatoo (Endangered) Calyptorhynchus latirostris, Baudin's Cockatoo (Vulnerable) Calyptorhynchus baudinii, Forest Red-tailed Black Cockatoo (Vulnerable) Calyptorhynchus banksii naso.* Canberra, ACT.

Department of Parks and Wildlife (DPaW). 2013. Carnaby's Cockatoo *(Calyptorhynchus latirostris)* Recovery Plan. Department of Parks and Wildlife, Perth, Western Australia. Available from: http://www.environment.gov.au/resource/carnaby%E2%80%99s-cockatoo-calyptorhynchus-latirostris-recovery-plan.

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Department of Sustainability, Environment, Water, Populations and Communities (DSEWPaC) 2012. *EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo (Endangered) Calyptorhynchus latirostris, Baudin's Cockatoo (Vulnerable) Calyptorhynchus baudinii, Forest Red-tailed Black cockatoo (Vulnerable) Calyptorhynchus banksii naso.* Australian Government Department of Sustainability, Environment, Water, Populations and Communities, Canberra, ACT.

Eco Logical Australia (ELA). 2021. Corrigin Grain Receival Site Expansion Flora and Fauna Survey. Prepared for CBH Group.

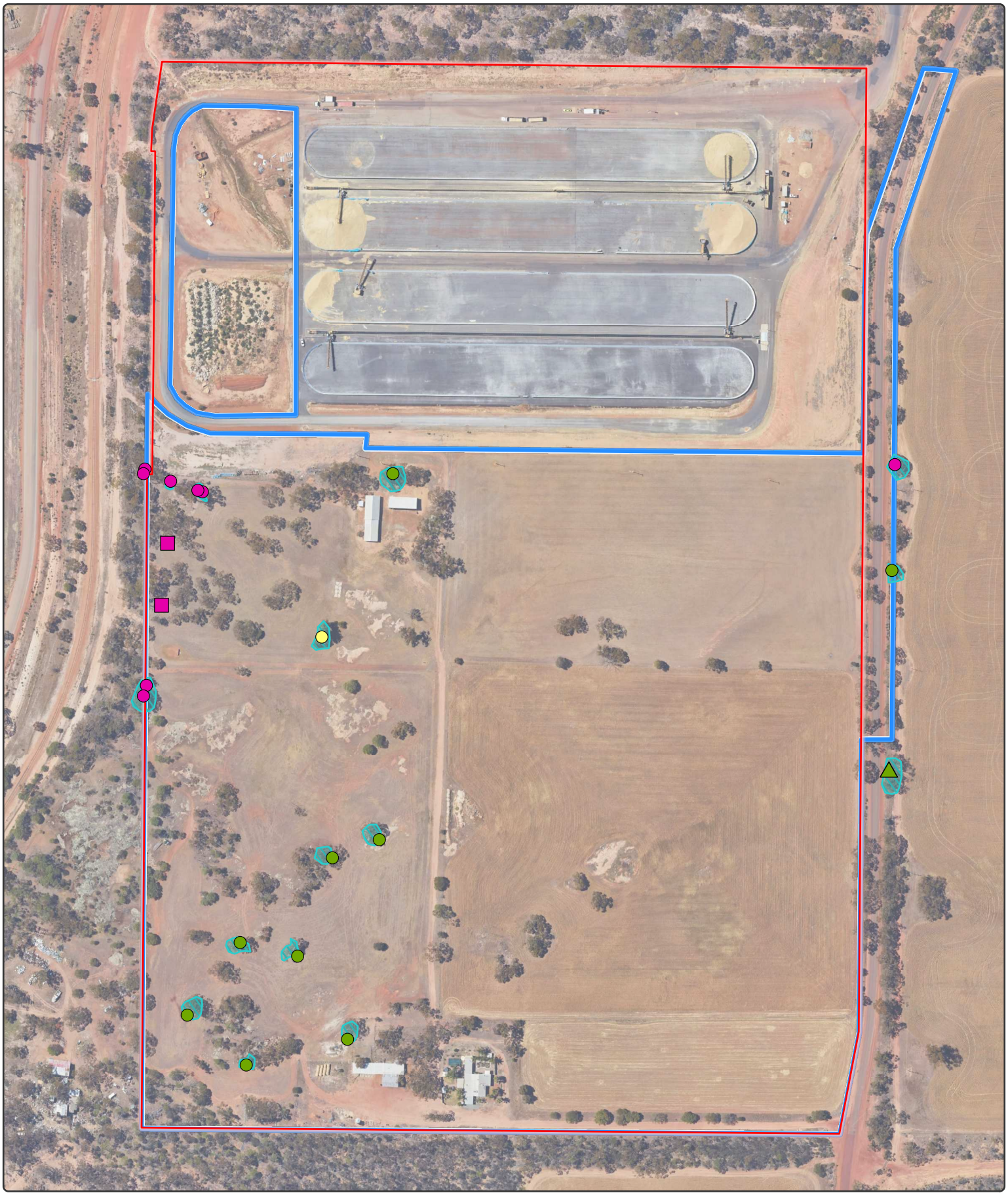

Figure 1: Carnaby's Cockatoo habitat values

Current ELA 2022 survey area

ELA 2021 survey area

Potential Carnaby's Cockatoo habitat trees

- *Eucalyptus loxophleba* (York Gum), DBH>500mm, No hollows
- *Eucalyptus loxophleba* (York Gum), DBH>500mm, Hollows not utilised
- *Eucalyptus wandoo* (Wandoo), DBH>300mm, No hollows
- *Eucalyptus camaldulensis* (River Red Gum), DBH>500mm, No hollows

No longer Potential Carnaby's Cockatoo habitat trees (ELA 2021)

- *Eucalyptus wandoo* (Wandoo), stag – no longer standing

Potential breeding/roosting habitat

0 60 120

Metres

Datum/Projection:
GDA 1994 MGA Zone 50

21PER18524-RD Date: 17/08/2023

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Appendix A Black cockatoo potentially suitable trees recorded within the survey area

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1051	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581993	6421270	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1052	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	Potential older feeding on branches	581991	6421200	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1054	*Eucalyptus camaldulensis* (River Gum)	>300	NA	-	NA	581614	6421156	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1055	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	Potential older feeding on branches	581535	6421252	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1056	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	Potential older feeding on branches	581532	6421253	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1057	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581514	6421259	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1058	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581497	6421267	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1059	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581496	6421264	
1060	*Eucalyptus wandoo* (Wandoo) stag	>300	<100mm	Trunk	NA	581512	6421218	Tree no longer standing therefore no longer potential breeding tree
1061	*Eucalyptus wandoo* (Wandoo) stag	>300	NA	-	NA	581508	6421177	Tree no longer standing therefore no longer potential breeding tree

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1062	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581498	6421124	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1063	*Eucalyptus wandoo* (Wandoo)	>300	NA	-	NA	581496	6421117	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1064	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581652	6421022	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1065	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581621	6421010	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1066	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581598	6420945	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1067	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581560	6420954	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1068	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581525	6420906	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1069	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581564	6420873	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1070	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581631	6420890	

Tree ID	Species	DBH (mm)	Hollow	Hollow type (spout, branch, trunk)	Foraging, roosting, breeding evidence	Easting	Northing	Photo
1071	*Eucalyptus loxophleba* (York Gum)	>500	NA	-	NA	581661	6421264	

Attachment D Corrigin Targeted Red-tailed Phascogale Assessment (ELA 2022)

Corrigin Targeted Red-tailed Phascogale Assessment

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DOCUMENT TRACKING

Project Name	Corrigin Targeted Red-tailed Phascogale Assessment
Project Number	21PER18524
Project Manager	Nicki Thompson
Prepared by	Briana Wingfield
Reviewed by	Nicki Thompson, Jeff Cargill
Approved by	Jeff Cargill
Status	**Final**
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Template 2.8.1

Contents

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Abbreviations

Abbreviation	Description
BC Act	State *Biodiversity Conservation Act 2016*
BoM	Bureau of Meteorology
CBH	CBH Group
DBCA	Department of Biodiversity, Conservation and Attractions
DPIRD	Department of Primary Industries and Regional Development
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
ELA	Eco Logical Australia
EPA	Environmental Protection Authority
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Executive Summary

Eco Logical Australia was engaged by CBH Group to undertake a Targeted Red-tailed Phascogale Assessment of the Corrigin Grain Receival Site (Lot 20 and 21 Corrigin South Road), including a rapid habitat assessment within a 1 km buffer from the survey area. A Reconnaissance level flora and vegetation survey and Basic fauna survey was undertaken in October 2020 (ELA 2021), which delineated and mapped the fauna habitat *Eucalyptus salmonophloia*, *E. wandoo* and *E. loxophleba* woodland, which is potentially suitable for Red-tailed Phascogale.

The field survey was conducted from 28 June to 1 July 2022 and was conducted under a Wildlife Ethics Committee permit, Department of Biodiversity, Conservation and Attractions Fauna taking (biological assessment) licence and Authorisation to take or disturb threatened species authorisation.

The Targeted Red-tailed Phascogale survey was conducted over three consecutive nights utilising 40 Elliot (aluminium box) traps and six motion sensor cameras. The survey was undertaken in accordance with Environmental Protection Authority *Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020), Department of Sustainability, Environment, Water, Population and Communities *Survey Guidelines for Australia's Threatened Mammals* (DSEWPaC 2011) and relevant Department of Biodiversity, Conservation and Attractions Standard Operating Procedures.

No Red-tailed Phascogales were recorded over the duration of the field survey. No potential nest sites or signs of activity were recorded.

A total of 0.24 ha of the *Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* Woodland previously mapped within the survey area by ELA (2021) was assessed to comprise potentially suitable habitat for Red-tailed Phascogale. This assessment was based on the habitat patch containing denser vegetation, hollow logs and linkage to the Corrigin Nature Reserve. The remaining *Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* Woodland habitat mapped within the survey area was assessed to comprise unsuitable habitat as it does not contain a continuous canopy cover, is in a degraded condition (i.e., lack of understorey except for dominance of weeds) and no hollows were observed.

A total of 197.52 ha of native vegetation within a 1 km buffer from the survey area was assessed and mapped, via a rapid habitat assessment, for its ability to provide suitable habitat for Red-tailed Phascogales. Of this total area, 82.31 ha was considered as providing potentially suitable habitat, with these areas broadly comprising intact Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland. The remaining 112.52 ha was considered less suitable and included Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland in degraded condition (i.e., weeds dominating the understorey) or Allocasuarina Shrubland.

1. Introduction

1.1. Project background

Eco Logical Australia (ELA) was engaged by CBH Group (CBH) to undertake a Targeted Red-tailed Phascogale Assessment of the Corrigin Grain Receival Site (the project). The survey area includes Lot 20 and 21 Corrigin South Road (Figure 1). A rapid habitat assessment of vegetation was also undertaken within a 1 km buffer from the survey area.

A Reconnaissance level flora and vegetation survey and Basic fauna survey was undertaken in October 2020 (ELA 2021, Figure 1), which delineated and mapped the fauna habitat *Eucalyptus salmonophloia*, *E. wandoo* and *E. loxophleba* woodland, which is potentially suitable for Red-tailed Phascogale.

1.2. Species overview

The Red-tailed Phascogale (*Phascogale calura*) is currently listed as Vulnerable under the Commonwealth Environment Protection and Biodiversity Act 1999 (EPBC Act) and Schedule 6 - 'Fauna that is of special conservation need as conservation dependent fauna' under the State Biodiversity Act 2016 (BC Act).

The Red-tailed Phascogale has a distinctive tail up to 14.5 cm long, the upper-half coloured reddish-brown and the lower- half comprising a brush of long black hairs (Foster et al. 2006; Van Dyck et al. 2013). Adults are sexually dimorphic, with females weighing up to 48 g and males up to 68 g at maturity (Van Dyck et al. 2013).

The Red-tailed Phascogale has a semelparous breeding system, where males die each year at the end of the breeding season (end of July; Bradley 1997). The species is therefore particularly vulnerable to population decline during unfavourable conditions, as obligate male semelparity prevents them from delaying reproduction until conditions improve (Parrott et al. 2007). A single unsuccessful reproductive year can have a great adverse effect on the ability of a population to persist (Rhind 2004). While wild females can live up to three years, a substantial number die after weaning their first litter (Bradley et al. 2008), due to high maternal investment in their offspring while suffering from seasonal constraints in nutrition (Rhind and Bradley 2002).

The Red-tailed Phascogale occurs in pockets of remnant vegetation throughout the southern wheatbelt, where annual mean rainfall ranges from 400 – 500 mm (Short and Hide 2012; Van Dyck et al. 2013). Most species' records are concentrated in an area of about 150 km in a north-south direction from Brookton to Katanning, and about 80 km wide from Williams to Dumbleyung. The survey area occurs on the edge of the species' core range, being approximately 80 km east of Brookton. Home ranges vary from 1.5 ha to 8 ha, depending upon the breeding season.

The species is largely confined to woodlands with old-growth hollow-producing eucalypts, particularly Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*), often with associated rock sheoak (*Allocasuarina huegeliana*), but is also known to occur in shrublands and various mosaics of woodland, shrubland and scrub-heath (Bradley et al. 2008; Short and Hide 2012). The species prefers long unburnt (more than 50 years) patches (Friend and Friend 1993). The species nests in hollows, hollow logs and Xanthorrhoea skirts and stumps, generally avoiding relatively open areas and rocky ridges which are devoid of vegetation, and prefers long unburnt patches of vegetation (TSSC 2016). The optimal habitat

for the species has numerous tree hollows for shelter and a semi-continuous canopy which is likely to provide protection from predation by feral predators.

The Red-tailed Phascogale is mainly nocturnal and largely arboreal, and can leap across gaps of up to 2 m in the canopy, but also feeds extensively on the ground. The species is an opportunistic feeder, taking a wide range of insects and spiders as well as small birds and mammals (Bradley et al. 2008).

Their range has contracted since European settlement due to habitat clearing, fragmentation, changing fire regimes and feral predators (Short and Hide 2012; Short et al. 2011; Menkhorst and Knight 2001; Bradley et al. 2008). It now occupies less than 1% of its former range (Short and Hide 2012).

Figure 1: Site Overview

- Survey area
- 1 km buffer
- ELA 2021 survey area
- Distributor Road
- Access Road

0 125 250 500
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

21PER18524-RD Date: 11/07/2022

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2. Methodology

2.1. Desktop assessment

The following databases were searched for existing data and information relating to the Red-tailed Phascogale in order to inform the field survey (Table 1).

Table 1: Database searches

Database	Reference	Search area
Atlas of Living Australia (ALA) database	ALA 2022	All of WA
Department of Biodiversity, Conservation and Attractions (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	DBCA 2022	Centre point: - 32.34361 117.86778 with a buffer of 50 km

2.2. Survey team and timing

The field survey was conducted from 28 June to 1 July 2022 by Briana Wingfield (Senior Ecologist) and Jeni Morris (Ecologist). The survey timing was chosen with consideration to the relevant biology of the species to avoid the period of breeding (end of July) and subsequent lactation period when dependant young are in the nest (Short et al. 2011; Bradley 1997).

The survey team's relevant qualifications, experience and licences are provided in Table 2.

Table 2: Survey team

Staff	Qualification	Experience	Licence
Briana Wingfield	BSc Environmental Science and Conservation and Wildlife Biology (Hons)	Briana has over nine years' experience undertaking fauna surveys in Western Australia. Specifically, she undertook Northern Quoll monitoring from 2012 to 2016.	Wildlife Ethics Committee (WAEC) permit number: WAEC 22-02-18 DBCA Fauna taking (biological assessment) licence number: BA27000658 DBCA Authorisation to take or disturb threatened species authorisation number: TFA 2022-0077
Jeni Morris	BSc Conservation and Wildlife Biology	Jeni has over six years' experience undertaking fauna surveys in Western Australia. Specifically, she undertook a Targeted Red-tailed Phascogale survey with ELA in June 2018.	

The Avon Wheatbelt bioregion experiences a semi-arid (dry) and warm Mediterranean climate (Beecham 2001a, b). Based on the Bureau of Meteorology (BoM) Corrigin weather station (station number 10536, climate data 1910-present), the area receives, on average, a total of 372.3 mm of rainfall per year, with most rainfall occurring during the winter months of June and July (58.8 mm and 59.8 mm respectively; BoM 2022). In the three months prior to the field survey, the area received 145 mm (March-May), which is above the average for the same period (72.9 mm). No rainfall was recorded during the field survey.

Maximum mean monthly temperatures range from 32.6°C (January) to 15.4°C (July). Minimum mean monthly temperatures range from 16.0°C (February) to 4.8°C (August). The temperature during the survey was cool, no temperature records are available on BoM for the field survey.

2.3. Targeted Red-tailed Phascogale assessment

The Targeted Red-tailed Phascogale Assessment was undertaken in accordance with the following State and Commonwealth guidelines:

- Environmental Protection Authority (EPA) *Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment* (EPA 2020);
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) *Survey Guidelines for Australia's Threatened Mammals* (DSEWPaC 2011);
- DBCA Standard Operating Procedure (SOP): *Aluminium Box Traps for Capture of Terrestrial Vertebrates* (DBCA 2018);
- DBCA SOP: *Animal Handling and Restraint Using Soft Containment* (DBCA 2017a);
- DBCA SOP: *Hand Restraint of Wildlife* (DBCA 2017b); and
- DBCA SOP: *Temporary Marking of Mammals, Reptiles and Birds* (DBCA 2017c).

The field survey was conducted over three consecutive nights, utilising Elliot (aluminium box) traps (type A) and motion cameras (Reconyx). DSEWPaC (2011) recommends a survey effort of a minimum of two sampling sites (or 'trap lines') consisting of 20 Elliott traps each per 5 ha area to survey small-sized ground-dwelling mammals. ELA (2021) mapped 3.3 ha of the suitable fauna habitat *Eucalyptus salmonophloia*, *E. wandoo* and *E. loxophleba* woodland, therefore two trap lines (40 Elliot traps) were deployed along the western section of the survey area (Figure 2; Appendix A), totalling 120 trap nights. Two motion-sensor cameras were deployed along each trap line and two additional motion-sensor cameras were deployed along the eastern section of the survey area (Figure 2; Appendix A), totalling 18 camera trap nights.

As per DBCA's SOP (2018), Elliot traps were set a few hours prior to dusk (closed during the day), baited with universal bait (rolled oats, peanut butter and sardines) and cleared within three hours of first light.

Other survey techniques recommended by DSEWPaC (2011) were also undertaken:

- Daytime searches for potential nest sites in hollow-bearing trees or hollow logs; and
- Daytime searches for signs of activity, such as scratches on tree trunks or scats on the ground in the vicinity of potential nesting sites.

2.3.1. Habitat assessment

2.3.1.1. Within the survey area

A detailed habitat assessment within the survey area was undertaken to determine the suitability of vegetation to potentially support Red-tailed Phascogale. This included assessing structure and composition of tree species, continuity of canopy, dense vegetation and hollow logs. Habitat was then scored as 'potentially suitable' or 'unsuitable'.

2.3.1.2. Outside the survey area

An assessment of the native vegetation up to 1 km from the survey area was undertaken to determine the presence of suitable Red-tailed Phascogale habitat and to provide context for the value of the habitat

in the survey area to Red-tailed Phascogales locally. This included a review of aerial photography, publicly available broad-scale vegetation datasets (Beard 1975 and Shepherd et al. 2002) and undertaking ground-truthing of habitat.

Ground-truthing was undertaken via a broad-scale, rapid habitat assessment method. As the availability of suitable nesting hollows is a key factor limiting Red-tailed Phascogale persistence (Short and Hide 2012), this factor was the major determinant in the suitability of nearby vegetation to support a Red-tailed Phascogale population. Vegetation with hollow-producing eucalypts was scored as 'potentially suitable', with vegetation containing few hollow producing trees (e.g. heath, mallee) was considered 'less suitable'. Areas without vegetation, or extremely degraded sites were not considered habitat. The rapid habitat assessment was undertaken from a vehicle utilising public roads/tracks only, and thus should be considered broad-scale.

2.4. Limitations

The EPA Technical Guidance document (EPA 2020) recommend including a discussion of the constraints and limitations of the survey methods used. An assessment of potential constraints and limitations of this survey are summarised in Table 3 below. No survey limitations were identified.

Table 3: Survey limitations

Potential survey limitation	Impact on survey
Sources of information	**Not a limitation**. Broad-scale vegetation mapping (DPIRD 2019) was available at a scale of 1:250,000. Soil and landform mapping was also available. Available information was sufficient to provide context at varying scales and therefore was not considered a limitation.
Scope of works	**Not a limitation**. The survey requirement of a Targeted Red-tailed Phascogale survey in accordance with relevant State and Commonwealth legislation and EPA and DBCA guidance documentation was adequately met.
Completeness and intensity of survey	**Not a limitation**. The survey area was fully covered to meet requirements outlined in the scope of works and a Targeted Red-tailed Phascogale survey as per the relevant survey guidelines (DSEWPaC 2012, DBCA SOPs). The survey effort was satisfactory and the trap lines sufficiently covered areas identified as potentially comprising suitable habitat the survey area. The habitat assessment of the native vegetation up to 1 km of the survey area was undertaken via a rapid assessment method, focusing on the presence of hollow-producing trees. It was a broad-scale, low intensity approach, yet still provided a context to determine the value of the habitat in the survey area to Red-tailed Phascogale locally.
Timing, weather, season, cycle	**Not a limitation.** The weather during the field survey was appropriate (mild) for considerations of animal welfare. The timing of the field survey was appropriate for the biology of the species, i.e. undertaken prior to breeding season.
Disturbances	**Not a limitation**. Disturbances within the survey area included clearing of vegetation, presence of introduced (feral) fauna species and dumping of rubbish. These disturbances did not negatively impact the ability to meet objectives outlined in the scope of works.
Resources	**Not a limitation**. Field staff were suitably qualified and experienced to identify target and non-target species in the field.
Accessibility	**Not a limitation**. Relevant areas within the survey area were able to be accessed and surveyed.

Potential survey limitation	Impact on survey
	The rapid habitat assessment relied on the presence of public roads/tracks. For the broad-scale dataset it generated, it was considered appropriate, used in conjunction with aerial photography and regional vegetation datasets.

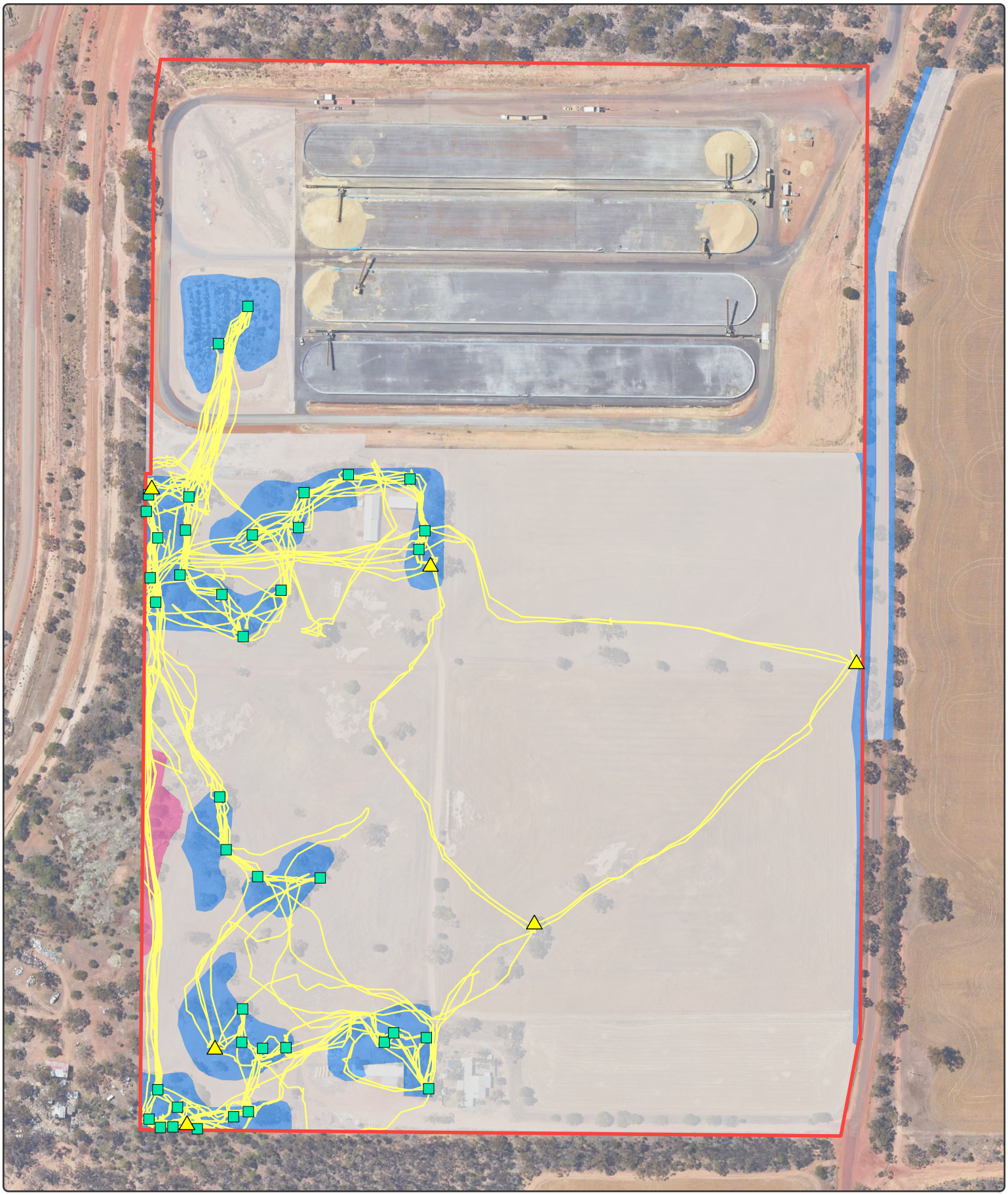

Figure 2: Survey Effort

Survey area

GPS transect

Fauna trapping sample sites

Camera trap

Aluminium box trap

Potential Red-tailed Phascogale habitat mapping (ELA, 2021)

Acacia acuminata Tall Open Shrubland

Eucalyptus salmonophloia, E. wandoo and *E. loxophleba* Woodland

Cleared

0 30 60 120

Metres

Datum/Projection:
GDA 1994 MGA Zone 50

21PER18524-RD Date: 11/07/2022

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3. Results

3.1. Desktop assessment

The ALA search (ALA 2022) identified 145 previous records of Red-tailed Phascogale in WA. Only one historical record occurs within 30 km of the survey area, a preserved specimen from 1963.

The DBCA search (DBCA 2022) identified six previous records of Red-tailed Phascogale within a 50 km buffer (Figure 3). The closest record is the ALA (2022) record mentioned above and occurs 750 m north of the survey area. The closest recent records are 12 km south-east (from 2007) and 35 km south-east (from 2010). These regional records occurred in two Beard vegetation associations; 960 and 1023 (Table 4, Figure 3).

Table 4: Regional records of Red-tailed Phascogale and Beard (1975) / Shepherd et al. (2002) vegetation association

Vegetation association	Description	Structural formation	No. of Red-tailed Phascogale records
960	Eucalypt shrubland *Eucalyptus eremophila*, *E. redunca*, E. spp.	Mallee	1
1023	Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba, E. salmonophloia*	Woodland	5

3.2. Targeted Red-tailed Phascogale Assessment

3.2.1. Elliot trapping

No Red-tailed Phascogales were trapped over the duration of the field survey. No potential nest sites or signs of activity were recorded.

One non-target species was captured during the field survey, House Mouse (**Mus musculus*) was captured nine times in Elliot traps. This species is an introduced (feral) species, and all individuals were released at the point of capture.

3.2.2. Motion-sensor cameras

Three non-target species were captured on motion-sensor camera during the field survey; Australian Magpie (*Gymnorhina tibicen*), Western Grey Kangaroo (*Macropus fuliginosus melanops*) and Red Fox (**Vulpes vulpes*). The Red Fox is an introduced (feral) species.

3.2.3. Habitat assessment

3.2.3.1. Within the survey area

Vegetation communities and fauna habitats within the survey area have been previously described by ELA (2021). Vegetated areas of the survey area comprise of three eucalypt woodland communities (considered one fauna habitat) and one *Acacia* shrubland community. The fauna habitat *Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* Woodland was considered potentially suitable Red-tailed Phascogale habitat. All vegetated areas of the survey area were classed as being in Degraded condition (ELA 2021).

Table 5: Vegetation communities and fauna habitats of the survey area (ELA 2021)

Vegetation community code	Vegetation community description	Associated fauna habitat	Area and proportion of the survey area
AcTS	*Acacia acuminata* tall open shrubland, over **Arctotheca calendula, Mesembryanthemum nodiflorum* and *Ptilotus polystachyus* sparse low forbland with scattered *Austrostipa variabilis* grasses and annual weedy forbs and grasses.	*Acacia acuminata* Tall Open Shrubland	0.2 ha (0.8%)
ElW	*Eucalyptus loxophleba* woodland, over *Acacia acuminata* tall sparse shrubland, over a mixed low sparse forbland/grassland including **Arctotheca calendula, Atriplex semibaccata, *Brassica tournefortii, *Hordeum leporinum, *Lolium rigidum* and *Maireana brevifolia*.	*Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* Woodland	2.3 ha (9.2%)
EsElW	*Eucalyptus salmonophloia* and *E. loxophleba* Woodland over *Maireana brevifolia* low sparse shrubland over annual weedy grasses and forbs, including **Brassica tournefortii, Crassula colorata, Enchylaena tomentosa, *Hordeum leporinum, *Lolium rigidum* and **Mesembryanthemum nodiflorum*.	*Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* Woodland	0.5 ha (2.0%)
EwW	*Eucalyptus wandoo* and *E. loxophleba* Woodland over a variable mid sparse shrubland of *Gastrolobium spinosum, Acacia lasiocarpa, Hibbertia rupicola* and *Dianella revoluta* over *Austrostipa elegantissima* and *A. variabilis* sparse grassland (1-2%, 0.5-1m). Other commonly occurring species include *Allocasuarina campestris, Enchylaena tomentosa, Glischrocaryon angustifolium, Lepidosperma resinosum, Opercularia vaginata* and *Rytidosperma caespitosum*.	*Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* Woodland	0.5 ha (2.0%)
		Cleared (roads, tracks, pasture)	20.5 ha (86.1%)
		Total	**24 ha (100%)**

Post field survey, 0.24 ha of the *Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* Woodland within the survey area was assessed to be potentially suitable habitat (Figure 4). This assessment was based on the habitat patch containing denser vegetation, hollow logs and connecting to the Corrigin Nature Reserve (DBCA 2021; Plate 1 and 2 in Appendix B; Figure 4). The remaining *Eucalyptus salmonophloia, E. wandoo* and *E. loxophleba* Woodland habitat within the survey area was assessed to be unsuitable as it does not have a continuous canopy cover, is in a degraded condition (i.e., lack of understorey except for dominance of weeds) and no hollows were observed during the field survey (Plate 3 to 8 in Appendix B; Figure 4).

3.2.3.2. Outside the survey area

Vegetation type and extent have been mapped at a regional scale by Beard (1975) who categorised vegetation into broad vegetation associations. Based on this mapping at a scale of 1:250,000, the DPIRD has compiled a list of vegetation extent and types across Western Australia (Shepherd et al. 2002).

A total of 27 of these vegetation associations were found to occur within a 50 km buffer from the survey area, comprising f shrublands, scrub-heath, thickets, woodlands. The survey area is predominately mapped as vegetation association 1023 (Wheatbelt; York gum, salmon gum etc. *Eucalyptus loxophleba*, *E. salmonophloia*) with the south-west corner being vegetation association 1147 (Mixed heath with scattered tall shrubs Acacia spp., Proteaceae and Myrtaceae).

A total of 197.52 ha of native vegetation with a 1 km buffer from the survey area was assessed and mapped for its ability to provide habitat for Red-tailed Phascogales. Of this, 82.31 ha was considered potentially suitable habitat, including Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland (Plate 1 to 3 in Appendix C; Figure 4). This assessment was based on the presence of large Eucalypt trees with the potential to form hollows. The remaining 112.52 ha was considered less suitable and included Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland in degraded condition (i.e., weeds dominating the understorey) or Allocasuarina Shrubland (Plate 4 and 5 in Appendix C; Figure 4). This habitat had a lack of hollow bearing trees. This assessment was based on few hollow producing trees (e.g. heath, mallee).

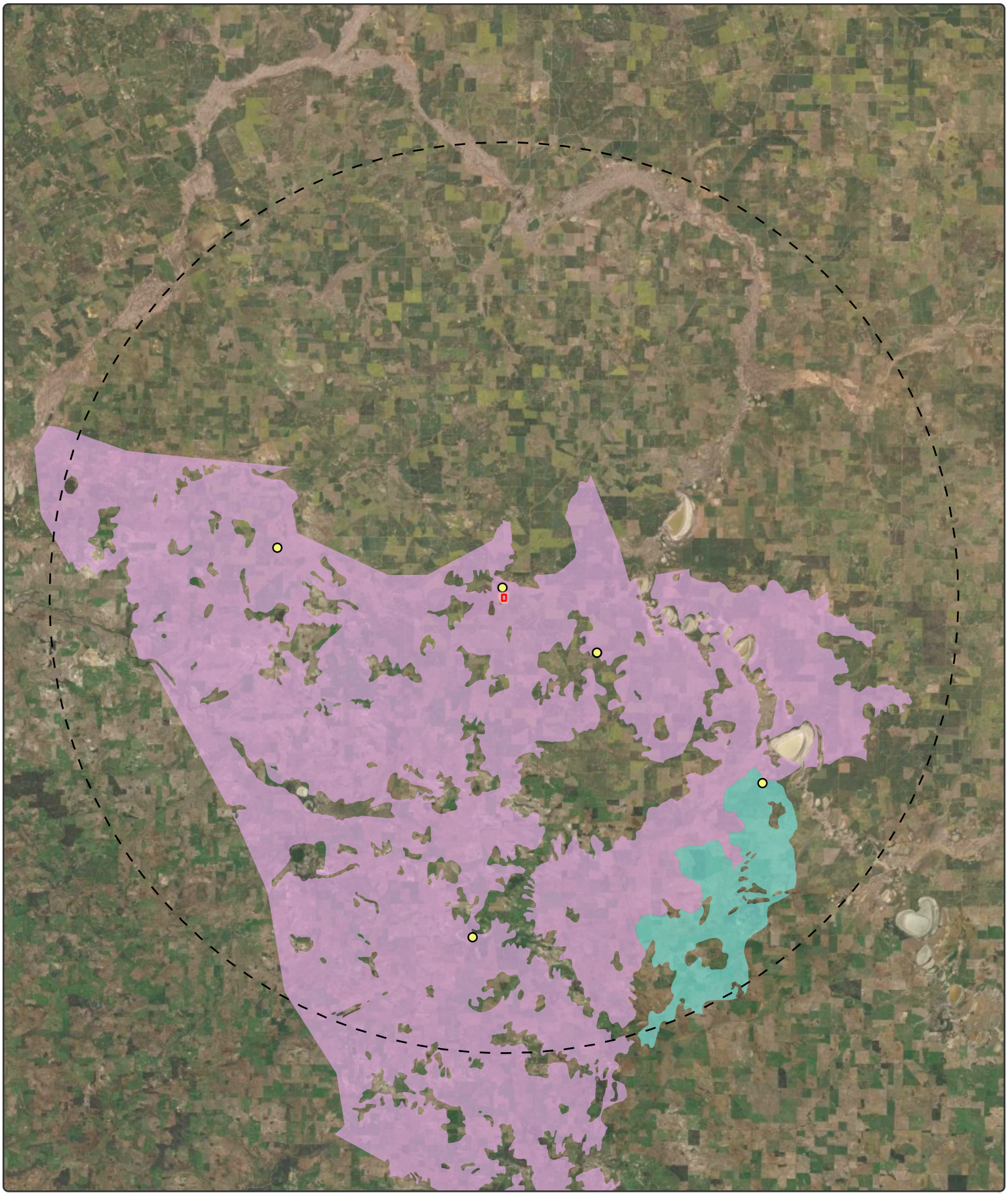

Figure 3: Previous records of Red-tailed Phascogale within 50km of the survey area and broad scale vegetation mapping

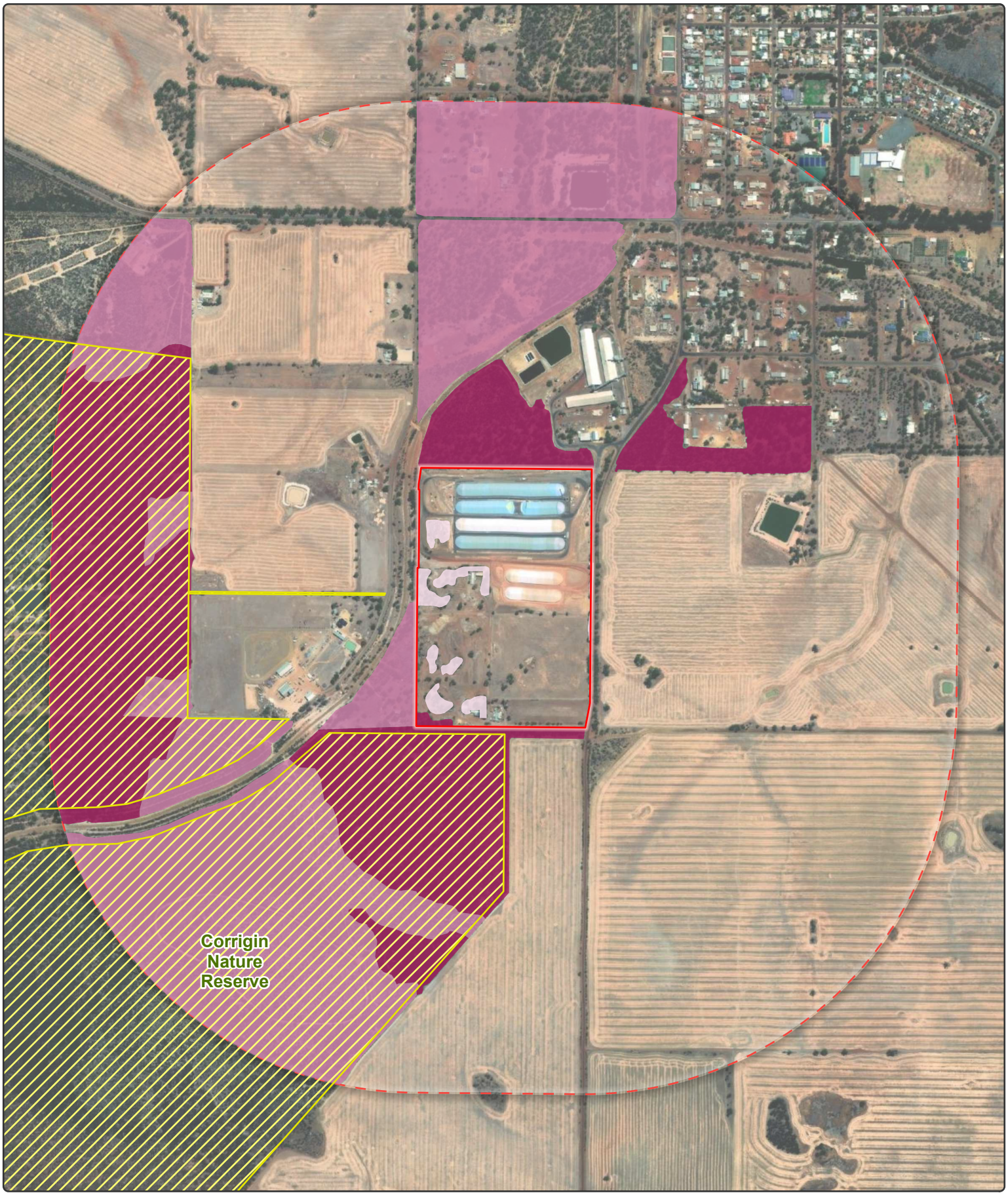

Figure 4: Potential Red-tailed Phascogale habitat within and in the vicinity of the survey area

Survey area
1 km buffer
DBCA Legislated Lands and Waters (DBCA-011)

Red-tailed Phascogale habitat
Potentially suitable
Less suitable
Unsuitable

0 250 500
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

21PER18524-RD Date: 20/07/2022

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4. Discussion

There are over 200 records of the Red-tailed Phascogale in Western Australia (ALA 2022). Previous records of Red-tailed Phascogales suggests that the species historically occurred within the vicinity of Corrigin (ALA 2022, DBCA 2022). The closest record to the survey area is from the 1960's. The species range is known to have contracted due to habitat clearing, fragmentation, changing fire regimes and feral predators (Short and Hide 2012; Short et al. 2011; Menkhorst and Knight 2001; Bradley et al. 2008).

During the October 2020 survey, fauna habitat *Eucalyptus salmonophloia*, *E. wandoo* and *E. loxophleba* Woodland was considered potentially suitable Red-tailed Phascogale habitat (ELA 2021). However, given the lack of fallen logs, Xanthorrhoea skirts and stumps, tree hollows and understorey to provide cover, this habitat was considered unsuitable for breeding and marginal for foraging and dispersal.

No Red-tailed Phascogales were trapped or captured on motion camera during the current field survey. The introduced Red Fox (**Vulpes vulpes*) was recorded within the survey area on motion camera; this species is a known threat to Red-tailed Phascogales (TSSC 2016, Short et al. 2011). Majority of the Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland in the survey area was assessed to be unsuitable habitat for Red-tailed Phascogales, as the Wandoo and York Gums is highly fragmented with a lack of connectivity between patches and is degraded with weedy understorey. The interconnection of canopy is an important factor in Red-tailed Phascogale persistence (Short and Hide 2012) and was generally lacking within the habitats present within the survey area.

A patch of Wandoo and York Gum Open Woodland habitat in the south-west of the survey area was assessed to be potentially suitable habitat as it contained denser vegetation, hollow logs and connects to the Corrigin Nature Reserve.

The Corrigin Nature Reserve is considered likely to provide suitable habitat for the Red-tailed Phascogale (Mills and McPhee 2009) and the Wandoo and York Gum Open Woodland habitat within it was assessed to be potentially suitable due to the presence of large Eucalypt trees with the potential to form hollows. The Allocasuarina Shrubland habitat within the Corrigin Nature Reserve was assessed as less suitable habitat due to the lack of hollow bearing trees. It is unknown if the Red-tailed Phascogale occurs within the reserve, as no trapping surveys have been undertaken (Mills and McPhee 2009).

The Wandoo and York Gum Open Woodland patches of habitat directly north and north-east of the survey area were assessed to be potentially suitable habitat, due to the presence of large Eucalypt trees with the potential to form hollows. The eastern and western boundaries of the survey area did not have contiguous vegetation therefore the north and north-east of the survey area does not form a clear linkage to Corrigin Nature Reserve.

Majority of the vegetated areas in the vicinity of the survey area was assessed to be less suitable habitat for Red-tailed Phascogale. The habitat had a lack of hollow bearing trees and was considered to not represent high value habitat. The presence of tree hollows for nesting is a key factor limiting Red-tailed Phascogale persistence (Short and Hide 2012).

Based on the degraded and fragmented habitat with a lack of tree hollows, Red-tailed Phascogales are unlikely to occur within the survey area. However this species cannot be discounted as occurring to the north/north-east and south-west (Corrigin Nature Reserve) of the survey area.

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Appendix A Locations of Elliot trap sites motion-sensor cameras in the survey area

Trap type*	Easting	Northing
1E01	581506	6420858
1E02	581519	6420846
1E03	581532	6420832
1E04	581516	6420833
1E05	581508	6420833
1E06	581501	6420839
1E07	581556	6420840
1E08	581566	6420844
1E09	581656	6420889
1E10	581662	6420895
1E11	581683	6420892
1E12	581685	6420859
1E13	581591	6420886
1E14	581575	6420885
1E15	581562	6420889
1E16	581562	6420911
1E17	581613	6420997
1E18	581572	6420998
1E19	581551	6421016
1E20	581547	6421051
2E01	581505	6421179
2E02	581501	6421195
2E03	581506	6421221
2E04	581499	6421239
2E05	581500	6421250
2E06	581546	6421349
2E07	581566	6421374
2E08	581527	6421248
2E09	581525	6421227
2E10	581521	6421197
2E11	581549	6421184
2E12	581563	6421156
2E13	581588	6421187
2E14	581569	6421223

Trap type*	Easting	Northing
2E15	581599	6421228
2E16	581603	6421251
2E17	581632	6421263
2E18	581673	6421260
2E19	581682	6421226
2E20	581678	6421214
Motion camera	581526	6420837
Motion camera	581544	6420887
Motion camera	581686	6421205
Motion camera	581754	6420969
Motion camera	581502	6421256
Motion camera	581967	6421140

*E = Elliot (aluminium box) trap

Appendix B Red-tailed Phascogale habitat inside the survey area

Plate 1: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland, south-west corner of the survey area (potentially suitable habitat).

Plate 2: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland, south-west corner of the survey area (potentially suitable habitat).

Plate 3: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland in degraded condition with weedy understorey, near the property in the south of the survey area (unsuitable habitat).

Plate 4: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland in degraded condition with weedy understorey, a patch of vegetation along the western border of the survey area (unsuitable habitat).

Plate 5: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland in degraded condition with weedy understorey, a patch of vegetation along the western border of the survey area (unsuitable habitat).

Plate 6: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland in degraded condition with weedy understorey, north-west corner of Lot 21 (unsuitable habitat).

Plate 7: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland - young rejuvenating community, south-west corner of Lot 20 (unsuitable habitat).

Plate 8: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland – roadside vegetation, along the eastern border of the survey area (unsuitable habitat).

Appendix C Red-tailed Phascogale habitat outside the survey area

Plate 1: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland, north-east of the survey area (potentially suitable habitat).

Plate 2: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland, directly north of the survey area (potentially suitable habitat).

Plate 3: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland, south-west of the survey area within Corrigin Nature Reserve (potentially suitable habitat).

Plate 4: Wandoo (*Eucalyptus wandoo*) and York Gum (*E. loxophleba*) Open Woodland in degraded condition with weedy understorey, north of the survey area along Kunjin St (less suitable habitat).

Plate 5: Allocasuarina Shrubland, with no hollow-bearing trees, south-west of the survey area within Corrigin Nature Reserve (less suitable habitat).

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Attachment E Construction Environmental Management Plan (CBH 2023)

Corrigin Grain Storage Expansion Project

Construction Environmental Management Plan

DOCUMENT CONTROL

Document Information			
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A	First Draft	24/07/2023	Trevor Tucker	Diane Dowdell	
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0	Final	15/03/2024	Trevor Tucker	Diane Dowdell	James Roberts
Approval Signature					

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EXECUTIVE SUMMARY

Co-operative Bulk Handling Limited (**CBH**) is planning an upgrade to its Grain Receival Site at Corrigin (the **Project**) as part of ongoing upgrades to its grain storage facilities throughout the Wheatbelt region of Western Australia (WA). The Project is located less than 2 km southwest of the Corrigin townsite, approximately 225 km southeast of Perth, and is primarily located on Lot 21 and parts of the western and eastern extent of Lot 20 on Deposited Plan 41206 in Corrigin, WA.

The Project is an expansion to the existing Corrigin Grain Receival Site to provide additional grain receival and storage facilities. The project proposes to build four new permanent Open Bulk Heads (OBHs) to increase the site's permanent storage capacity with an additional 180kt. The new OBHs will be serviced by a fixed grid and conveyor loading system with four stackers, capable of in-loading at a rate of more than 500 tonnes per hour (tph).

The objective of this CEMP is to minimise construction impacts on environmental Matters of National Significance, identified as Carnaby's Cockatoo, Red-Tailed Phascogale and *Eucalyptus Woodlands of the Western Australian Wheatbelt* Threatened Ecological Community. The Project has the potential to impact these Matters of National Significance through approved and unapproved damage to native vegetation both within and adjacent to the development envelope; introduction or spread of weeds or plant pathogens; injury or death to native fauna; disturbance to nesting Black Cockatoos; and dust emissions. Each of these risks have been assessed and management control measures to mitigate these risks have been detailed in this plan. Monitoring requirements with project performance targets have been specified and corrective actions stipulated for when targets are not met. Also detailed within this CEMP are roles and responsibilities, reporting requirements, environmental training, and emergency preparedness procedures.

CBH will undertake a CEMP site audit during construction to assess the level of compliance of construction activities to this CEMP and identify any non-conformances, observations and improvement opportunities. The CEMP will be subjected to ongoing reviews during construction or in response to a major incident investigation which identifies a root cause or contributing factor to be the content, or lack thereof, within this Management Plan.

This CEMP has been developed prior to the EPBC Referral Approval (the Approval) being granted to support the submission process. Upon receipt of the approval, the CEMP will be revised, and all Approval conditions and requirements will be incorporated into the revised CEMP. The final CEMP (including Approval conditions) will be supplied to the construction contractor to inform the development of the contractor CEMP which must meet or exceed all the requirements of this CEMP and be reviewed by CBH.

1. INTRODUCTION

Established in 1933, Cooperative Bulk Handling Limited (CBH) is Australia's largest co-operative and a leader in the Australian grain industry with operations extending along the value chain from fertiliser to grain storage, handling, transport, marketing, and processing. Owned and controlled by approximately 3,700 WA grain growing businesses, CBH's purpose is to sustainably create and return value to WA grain growers through core businesses activities: operations, marketing and trading, and fertiliser. The CBH storage and handling system is world class, receiving and exporting around 90% of WA's grain harvest through a network of more than 130 grain receival sites and four export terminals.

CBH has total assets of around $2 billion and employs approximately 1,100 permanent employees and up to 1,800 casual employees during the harvest period from October through to January. The Corrigin Grain Receival Site has been identified in the CBH network strategy as a primary (important) site and is also the location of a permanent CBH regional office (Figure 1).

1.1 PURPOSE AND SCOPE

Co-operative Bulk Handling Limited (**CBH**) is planning an upgrade to its Grain Receival Site at Corrigin (the **Project**) as part of ongoing upgrades to its grain storage facilities throughout the Wheatbelt region of Western Australia (WA). The Project is located less than 2 km southwest of the Corrigin townsite, approximately 225 km southeast of Perth (Figure 1) and is primarily located on Lot 21 and parts of the western and eastern extent of Lot 20 on Deposited Plan 41206 in Corrigin, WA.

The purpose of this Construction Environmental Management Plan (**CEMP**) is to identify the environmental risks associated with the project and to manage those risks accordingly through the implementation of controls, monitoring, reporting, emergency response procedures, objectives, and performance targets to minimise the potential impact to Matters of National Environmental Significance from construction activities.

1.2 PROJECT OVERVIEW

The Project is an expansion to the existing Corrigin Grain Receival Site to provide additional grain receival and storage facilities. The project proposes to build four new permanent Open Bulk Heads (**OBHs**) to increase the site's permanent storage capacity with an additional 180kt. The new OBHs will be serviced by a fixed grid and conveyor loading system with four stackers, capable of in-loading at a rate of more than 500 tonnes per hour (tph).

1.3 APPROVAL PROCESS AND CONTEXT

CBH referred the project to the Federal Department of Climate Change, Energy, the Environment and Water (**DCCEEW**) under s68 of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) in August 2021. The Department determined that the action was to be controlled and an assessment was conducted through the Preliminary Documentation process.

This CEMP has been developed prior to the Approval being granted. Upon receipt of the Approval, the CEMP will be revised, and all relevant Approval conditions and requirements will be incorporated into the revised CEMP. The final CEMP (including relevant Approval conditions) will be supplied to the construction contractor for compliance.

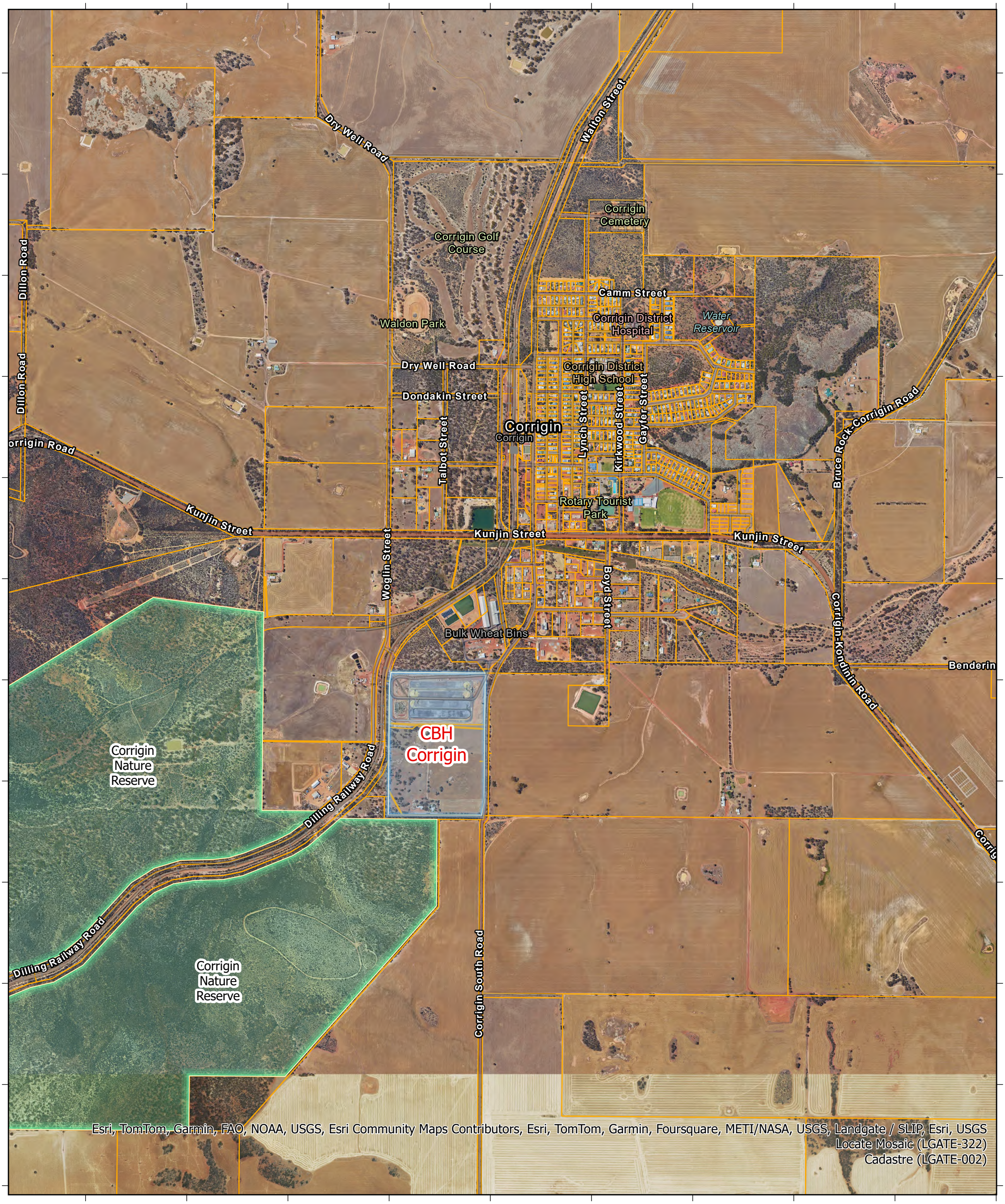

FIGURE 01 - CORRIGIN SITE LOCATION

Legend

Boundaries

- Corrigin Site Boundary (33.30 ha)
- DBCA Legislated Lands and Waters - Nature Reserves (DBCA-011)
- Cadastre (LGATE-002)

0 200 400 600 800

Metres

N

Map Scale: 1:17,500 (when printed at A3)
Reference System: GDA2020 MGA Zone 50
Datum: GDA2020
Map Units: Metres

CBH Group
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Project Name: L:\Environment & Sustainability\GIS_DATA\Project _work\Corrigin\Corrigin_PL.aprx
Layout Name: F01 Site Location v2

Document STORE ID	Page
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581500

582000

6421500

6421000

Dilling Railway Rd

Corrigin South Rd

Corrigin Nature Reserve

Esri, TomTom, Garmin, FAO, NOAA, USGS, Landgate / SLIP, Esri, USGS
Locate Mosaic (LGATE-322)
Cadastre (LGATE-002)

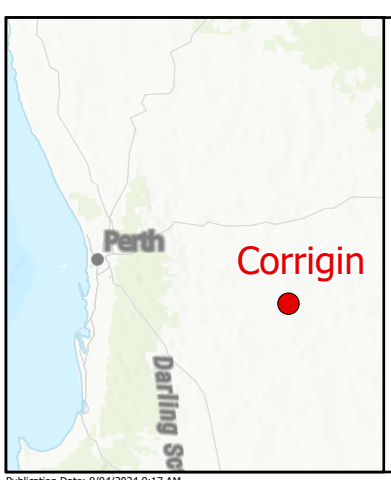

FIGURE 02 - DISTURBANCE FOOTPRINT

Legend

Boundaries

- Disturbance Footprint (16.69 ha)
- Corrigin Site Boundary (33.30 ha)
- DBCA Legislated Lands and Waters - Nature Reserves (DBCA-011)
- Cadastre (LGATE-002)

N

0 40 80 120 160

Metres

Map Scale: 1:3,500 (when printed at A3)
Reference System: GDA2020 MGA Zone 50
Datum: GDA2020
Map Units: Metres

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Layout Name: F02 Disturbance Footprint v2

2. DEFINITIONS

Terms, abbreviations, acronyms and definitions used throughout this document have been detailed in Table 1.

Table 1: Terms and definitions used within this document

Term	Definition
Approval	Referral under s68(2) of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**)
BC Act	*Biodiversity Conservation Act*
CBH	Cooperative Bulk Handling Limited
CEMP	Construction Environmental Management Plan
CEO	Chief Executive Officer
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EP Act	*Environmental Protection Act 1986 (WA)*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999 (Cth)*
HSE	Health, Safety and Environment
LGA	Local Government Authority
OBH	Open Bulkhead
RPOIC	Receival Point Operator In Charge
TEC	Threatened Ecological Community
TPZ	Tree Protection Zone implemented as required when undertaking activities within close proximity to trees or vegetation (ie within the "drip line" or canopy area) as per Australian Standard AS 4970-2009
WI	Work Instruction

3. OBJECTIVES

The management measures detailed in this CEMP are intended to meet the following objectives:

- Minimise construction impacts on significant flora.
- Reduce impact to potential habitat trees and other significant trees.
- Prevent impacts to significant native fauna resulting from project activities.
- Prevent the introduction or spread of significant weeds or diseases resulting from construction works.

4. ROLES AND RESPONSIBILITIES

To ensure CBH maintains compliance with this CEMP, the relevant organisational positions accountable for the implementation and ongoing adherence to this Plan have been identified and

their specific responsibilities detailed (Table 2). These responsibilities will be communicated to the Construction Contractor through this CEMP and the Contractor Management Minimum Requirements Standard (Attachment A) to incorporate into their internal documentation and management systems. The CBH Head of Health, Safety and Environment will maintain overall responsibility to ensure that the management actions are implemented by the relevant employees and contractors on behalf of the Chief Executive Officer (CEO) of CBH.

Table 2: Roles and responsibilities

Role	Responsibility
CEO	- Establish appropriate values to ensure the company meets their external obligations and provides a safe working environment.
Head; Health, Safety and Environment	- Lead and review risk assessment activities, assist in incident investigation to ensure environmental and community risks and opportunities are identified and managed. - Liaise with key stakeholders. - Report to the CEO.
CBH Project Manager	- Communicate to the Construction Contractor this CEMP and Contractor Management Minimum Requirements Standard (Attachment V). - Set Construction Contractor performance targets as outlined in this CEMP. - Coordinate review and Approval of revisions to the Construction Contractor CEMP. - Set Construction Contractor monitoring requirements as outlined in this CEMP. - Facilitate CBH audit and review as outlined in this CEMP. - Ensure Contractor Project Manager awareness of their responsibilities relating to the Approval.
Manager; Environment and Sustainability	- Ensure compliance with all legislation, approvals, policies, procedures, conditions and commitments. - Support and provide advice to all personnel in relation to environmental and community matters. - Review effectiveness of the CEMP and other environmental documentation. - Participate in risk assessment activities, assist in incident investigation to ensure environmental and community risks and opportunities are identified and managed.
Senior Specialist; Environment and Sustainability	- Assist the Manager of Environment and Sustainability with reviewing the effectiveness of the CEMP and other environmental documentation. - Collate environmental data for mandatory environmental reporting - Maintain all documentation (hard copy, electronic and emails) for inspection during internal and external audits. - Organise any routine environmental audits and/or inspections as outlined in the CEMP. - Coordinate any routine environmental audits and/or inspections as outlined in the CEMP.

Role	Responsibility
External Contractors	- Complete all relevant training and induction activities prior to commencing work on site. - Comply with the requirements of the CEMP and related procedures. - Ensure all employees are aware of the requirements of this CEMP and relevant reporting requirements of any related environmental incidents. - Ensure all works requiring a Permit to Work have a valid permit and compliance is maintained with the permit.. - Report any environmental incidents or non-conformances to the CBH HSE Representative within the required reporting timeframe.
All Personnel on Site	- Comply with the requirements of this CEMP and related procedures. - Report all environmental incidents as they occur. - Attend environmental inductions or any other training as required. - Assist with environmental incident investigations, if relevant, and implement any identified corrective actions because of the investigation outcomes.

5. INCIDENT AND NON-CONFORMANCE REPORTING

Any Environmental Incident shall be reported to the CBH Project Manager as soon as reasonably practicable and managed by the Contractor as per the Contractor Management Minimum Requirements (Attachment A). An Environmental Incident is defined as an unplanned event that has led to, or could have led to, environmental damage or harm, including near misses. An incident investigation report will be provided to the CBH Project Manager and provide details of the incident, root cause analysis, lessons learnt and corrective/preventative actions at the conclusion of the incident investigation.

Any identified Non-conformances will be entered into the CBH management system as an action for resolution. A Non-conformance is defined as a failure to comply with the requirements or conditions of this CEMP or any regulatory approvals, licences or permits applicable to this project.

Environmental Incidents or Non-conformances to this CEMP that meet the regulatory reportable criteria, or Approval condition Non-conformances, will be escalated to the relevant authority by the CBH Environmental and Sustainability Manager.

6. ENVIRONMENTAL TRAINING

Information and management controls relevant to Approval conditions will be communicated to the construction and site teams by means of Site Inductions and will incorporate the below points:

- Permits to Work.
- Site Speed Limits.
- Tree Protection Zones (TPZs) when operating in close proximity to trees or vegetation.
- Environmental hygiene practices.
- Concrete wash outs.
- Noise and Dust.
- Waste management.

Furthermore, this CEMP, Contractor Management Minimum Requirements Standard (Attachment A) and the CBH Environmental Management Standard (Attachment B) will be supplied to the Construction Contractor to inform the Contractor of the project's environmental compliance requirements.

7. EMERGENCY PLANNING AND RESPONSE

The Contractor Management Minimum Requirements ensures the Contractor has a contractual requirement to prepare the appropriate Emergency Response Plans for critical environmental risks. The attached Emergency Preparedness Plan (Attachment C) provides a generic guidance document to the Contractor for dealing with site emergencies with relevant emergency contacts and wardens displayed in offices and mess rooms on site.

8. POTENTIAL ENVIRONMENTAL IMPACTS AND RISKS

8.1 THREATS TO MATTERS OF NATIONAL SIGNIFICANCE

A flora and fauna field survey was undertaken by Eco Logical (2021) following a desktop assessment of the area that reviewed the EPBC Act Protected Matters Search Tool within 5 kilometres of the area. Of the 12 conservation significant fauna species (eight birds, four mammals) identified from the desktop assessment as possibly occurring within the survey area, two species (Carnaby's Cockatoo and Red-tailed Phascogale) were identified post survey as having the potential to occur based on the availability of suitable habitat and close proximity of recent records. Following the field survey, Carnaby's Cockatoo (*Calyptorhynchus latirostris*; listed as Endangered under the EPBC Act and BC Act) was listed as recorded in the survey area. The Red-tailed Phascogale (*Phascogale calura*) remained as potential to occur, subsequently prompting a Red-Tailed Phascogale Assessment Report to be undertaken from 28 June 2022 to 1 July 2022 (ELA 2022). The assessment report determined that the area was unsuitable Red-Tailed Phascogale habitat.

One threatened ecological community, *Eucalyptus Woodlands of the Western Australian Wheatbelt*, was identified by the database searches as potentially occurring in the survey area. An assessment of the surveyed area was undertaken utilising data obtained from the ELA (2021) field survey which concluded that 0.76 ha of vegetation (parts of vegetation communities EIW, EsEIW and EwEsW) delineated within the survey area is characterised as representing the *Eucalyptus Woodlands of the Western Australian Wheatbelt* threatened ecological community. No Threatened or Priority flora species listed under the Environment Protection and Biodiversity Conservation Act 1999 were recorded within the survey area.

The results of the Eco Logical desktop assessment and field survey has ascertained that the proposed construction project poses threats to only one of the nine Matters of National Significance – "Nationally threatened species and ecological communities" (Table 3). The identified threats are to Carnaby's Cockatoos, Red-Tailed Phascogale and *Eucalyptus Woodlands of the Western Australian Wheatbelt* ecological community.

Table 3: Potential impact to matters of national significance

Matter of National Significance	Aspect
World Heritage Properties	None
National Heritage Places	None
Wetlands of international importance	None
Nationally threatened species and ecological communities	Carnaby's Cockatoo Red-Tailed Phascogale *Eucalyptus Woodlands of the Western Australian Wheatbelt*
Migratory species	None
Commonwealth marine area	None
Great Barrier Reef Marine Park	None
Nuclear actions	None
Water resource in relation to coal seam gas development and large coal mining development	None

8.2 POTENTIAL IMPACTS

To facilitate the construction of the OBHs and associated infrastructure, 1.60ha native vegetation will be cleared. Additional impactful construction activities include earth works, vehicle and mobile plant movements, hot works (grinding, welding, etc), asphalting, concreting works and the erection of structures.

These works may result in the following potential impacts:

- Weed invasion.
- Plant diseases (Phytophthora).
- Damage, disturbance or illegal removal of native vegetation.
- Damage, disturbance or illegal removal of nesting habitat.
- Native fauna vehicle or plant equipment strike.
- Injury or death of native fauna from vegetation clearing.

The resultant potential impacts are detailed below and will be mitigated through the implementation of management controls during the construction process to meet the objectives outlined in section 3 of this CEMP.

8.3 RISK ASSESSMENT

The potential impacts identified in section 8.2 have been assessed and appropriate controls have been identified to mitigate the risk to an acceptable level (Table 4). Risks ratings have been calculated utilising the CBH risk matrix (Attachment D).

Table 4: Environmental risk assessment

Aspect	Impacts	Inherent Risk			Controls	Mitigated Risk		
		Consequence	Likelihood	Rating		Consequence	Likelihood	Rating
Flora	Unapproved destruction or damage of vegetation	Moderate	Possible	Medium	Permits to Work for clearing activities Areas to be cleared to be marked out by surveyor Site inductions Areas of significant value (breeding trees, vegetation) will be fenced or appropriately barricaded No equipment storage or stockpiling within Tree Protection Zones. Apply dust control to exposed areas Construction area fencing Sediment fencing Apply water, and soil stabilisation to control dust	Moderate	Unlikely	Medium-Low
	Destruction or damage of vegetation resulting from fire	Catastrophic	Possible	Medium-High	Fire extinguishers on mobile plant and site buildings Firefighting equipment on site Permits to Work for hot works No fires on site and adherence to fire danger ratings 3m boundary fire breaks Smoking in designated areas only	Catastrophic	Unlikely	Medium

Aspect	Impacts	Inherent Risk			Controls	Mitigated Risk		
		Consequence	Likelihood	Rating		Consequence	Likelihood	Rating
Flora	Introduction of weeds/pathogens	Moderate	Likely	Medium	Inspections of all plant mobilised to site during construction. Hygiene management in inductions	Moderate	Unlikely	Medium-Low
Fauna	Injury/death to native fauna	Likely	Minor	Medium	Site speed limits Undertake progressive clearing to allow fauna to move away from clearing activities Site inductions to address nationally significant fauna values and interactions Fauna to be handled by qualified handlers Permits to Work for clearing activities Fauna spotter present during clearing of native vegetation if required. Fauna egress ramps for excavations left open overnight Daily excavation fauna inspections Photos of nationally significant fauna in site offices and mess.	Unlikely	Minor	Low

9. ENVIRONMENTAL MANAGEMENT

9.1 PERFORMANCE TARGETS

Based on the scope of works and the respective risks to the environment, the below objectives have been determined (Table 5). Deviation from these targets will immediately trigger an investigation and corrective action process by CBH and/or the construction contractor.

Table 5: Construction environmental performance targets

Metric/Measure	Objective	Timeframe	Corrective Action
Native vegetation destroyed or damaged outside of approved area.	0 ha	At all times	Immediately cease works, notify the Project Manager who will seek advice through the Environmental Team to advise on how to undertake remediation
Introduction or spread of declared and WONS weed species into surrounding native vegetation during and attributable to construction.	Zero	At all times	Undertake weed control
Disturbance of active black cockatoo hollows (if found)	Zero	At all times	Immediately cease works, notify the Project Manager who will seek advice through the Environmental Team
Number of Black Cockatoo or Red Tailed Phascogales injuries/deaths	Zero	At all times	Take injured wildlife to appropriate care facility

9.2 MONITORING

The below monitoring measures (Table 6) are required to identify if the performance targets specified in section 9.1 are being met. Deviation from the performance target (eg introduction of declared weed species) will be considered a Non-Conformance and dealt with in accordance with Section 5.

Table 6: Construction environmental monitoring requirements

Metric/Measure	Frequency	Timeframe	Reporting Form	Responsible Role
Survey cleared areas	Twice	Pre and Post of clearing	Clearing Log Form[1]	Surveyor

Pre-Clearing Inspections	Prior to clearing activities	Duration of project	Environmental Inspection Form[2]	Contractor
Environmental inspections	Monthly	Duration of project	Environmental Inspection Form[2]	Contractor
Plant mobilisation inspection checklists	When plant is mobilised to site	Duration of project	Mobilisation Inspection Checklist	Contractor
Vegetation condition and weed survey	Twice	Pre and Post Construction	Vegetation and Weed Survey Report	Environmental Consultant
Fauna injury/death incidents entered into incident management system	When fauna injury or death is identified	Duration of project	SHARE Incident Management System	CBH Environmental Representative

1 – Attachment E

2 – Attachment F

9.3 MANAGEMENT CONTROLS

Controls that are adequate to manage environmental risks, meet the CEMP performance targets and reduce the inherent risk to the lowest practicable rating, as identified in the risk assessment (section 8.3), are to be implemented during construction activities (Table 7). Controls have been preferentially determined in accordance with the Hierarchy of Controls approach which prioritises controls in the order of elimination, substitution, isolation, engineering, administrative and protective equipment.

Table 7: Construction environmental management controls

Item	Control	Responsibility
	Flora	
9.3.1	No clearing to be undertaken without an approved Permit to Work	Contractor Project Manager
9.3.2	Only clear vegetation necessary for construction and retain as much vegetation as possible	Contractor
9.3.3	Areas to be cleared must be surveyed and clearly delineated immediately prior to clearing activities commencing	Contractor
9.3.4	Prior to clearing the area to be cleared will be inspected for Carnaby's cockatoo activity including inspection of any suitable nesting hollows	Contractor
9.3.5	No equipment or stockpiles to be stored within the tree protection zones (areas immediately beneath foliage)	Contractor
9.3.6	Fire extinguishers to be fitted to all mobile plant and site buildings	Contractor

Item	Control	Responsibility
9.3.7	No hot works to be undertaken without an approved Permit to Work	Contractor
9.3.8	Clearing will be undertaken progressively towards remnant vegetation to allow fauna to move away from clearing activities	Contractor
9.3.9	Fires within the Proposal Area will be prohibited, and all fire danger rating advice will be adhered to	Contractor
9.3.10	All vehicles, plant and equipment will be parked on existing cleared areas only	Contractor
9.3.11	Fire service access routes will be established to provide access within and around the edge of the Proposal Area	Contractor
9.3.12	Boundary firebreaks of 3 m will be provided, separating the proposed action from surrounding areas of Wheatbelt Woodlands TEC	Contractor
9.3.13	The Proposal Area will be designated as a no smoking zone OR designated smoking areas will be placed strategically in cleared areas and at least 50 m away from environmental values including Wheatbelt Woodland TEC	Contractor
9.3.14	Water will be accessed from stormwater sumps for fire-fighting purposes in accordance with the site Bushfire Management Plan	Contractor
9.3.15	The construction area will be fenced where possible to prevent unauthorised access.	Contractor
Fauna		
9.3.16	Only licenced fauna handlers to handle fauna unless there is an immediate threat to fauna and safe to do so.	Contractor
9.3.17	No clearing of vegetation during black cockatoo breeding season (July to February) where possible. If clearing during black cockatoo breeding season, potential breeding hollows will be assessed within 1 week prior to clearing for the presence of black cockatoo	Contractor
9.3.18	No clearing permitted within a 10m buffer zone of trees containing an active nesting hollow. Clearing only permitted within buffer zone once verified to be not in use by a suitably qualified ecologist	Contractor
9.3.19	All fauna injuries/deaths to be recorded as an environmental incident	Contractor Project Manager
9.3.20	Lighting will only be installed at key equipment locations and all internally focused to provide a safe working environment and to reduce light emissions to the nearby areas of vegetation	Contractor
Weed and Disease		
9.3.21	All plant mobilised to site to be inspected for weeds/pathogens	Contractor

Item	Control	Responsibility
9.3.22	Contractor inductions will include familiarisation with and discussion of TEC vegetation and hygiene management	Contractor
9.3.23	Controlled access into and out of the Proposal Area	Contractor
9.3.24	Construction vehicles will remain on designated roads outside the Proposal Area	Contractor
9.3.25	Identification and targeted control of any outbreaks of declared weeds	Contractor
Soil and Water		
9.3.26	Undertake construction over the dry summer/autumn period where possible to mitigate erosion	Contractor
9.3.27	Revegetate disturbed areas as soon as possible	Contractor
9.3.28	Contain runoff from bulk earthworks in storage ponds and dams where possible	Contractor
9.3.29	Re-use stormwater runoff on site, where applicable, as dust suppression and road watering	Contractor
9.3.30	No stockpiles to be located within 50m of wetlands or waterways	Contractor
9.3.31	Install sediment fencing in areas where there is the potential for sediment to run off site or impact vegetation	Contractor
Dust		
9.3.32	Apply water to unsealed tracks, exposed areas and stockpiles for short term dust suppression.	Contractor
9.3.33	Mobile plant to adhere to site speed limits at all times	Contractor
9.3.34	Avoid dust generating activities during unfavourable weather conditions or direction (e.g. high wind speed) where possible	Contractor
Hazardous Materials		
9.3.35	Hazardous materials, including hydrocarbons and chemical materials will be stored appropriately and in accordance with relevant legislation and standards	Contractor
9.3.36	Equipment servicing will be undertaken in designated areas in a manner than ensures containment of all hydrocarbons and chemicals	Contractor
Waste		
9.3.37	Ensure clearly labelled waste disposal facilities are located around the Proposal Area for waste disposal	Contractor
9.3.38	Ensure waste collected within the Proposal Area is disposed of appropriately	Contractor

10. AUDIT AND REVIEW

CBH will undertake audits of this CEMP during construction to assess the level of compliance of construction activities to this document and identify any non-conformances, observations and improvement opportunities (Table 8).

Table 8: Audit finding definitions

Classification	Description
Major Non-Conformity	A major non-conformance is a requirement that has not been addressed or a system or process that is generally not effective. These could lead to a significant health safety, environment or quality impact or jeopardise certification. A major non-conformity must be addressed within three months and validated by external auditor.
Minor Non-Conformity	A minor non-conformance is an isolated finding, if not addressed in a timely manner has potential to become a major non- compliance or can be an item that been addressed but the implementation in practice or the system is not consistent in all areas of the business / operation.
Observation	This is an isolated issue which, if not addressed, could lead to a future non-conformity. For example, while a site may be compliant, an auditor may observe some deterioration in the level of attention team members at that site are applying in specific areas
Improvement Opportunity	This can be a suggestion to the business to enhance a process or task.
Positive Finding	Is considered best practice has been achieved within the CBH Group
Compliant	Meets minimum requirements.

This CEMP will be reviewed and updated as required during construction, or in response to a major incident investigation which identifies a root cause or contributing factor to be the content or lack thereof within this CEMP.

11. REFERENCES

Eco Logical Australia (ELA) 2021. *Corrigin Grain Receival Site Expansion Flora and Fauna Survey*. Prepared for CBH Group

Eco Logical Australia (ELA) 2022. *Corrigin Targeted Red-tailed Phascogale Assessment*. Prepared for CBH Group

CEMP ATTACHMENT A

Environmental Management Standard

OVERVIEW

This document provides the mandatory requirements to support conformance with Environmental Management as part of the CBH Integrated Management System (IMS).

Contents

1. INTRODUCTION

The Environmental Management Standard is a set of mandatory minimum environmental management requirements that apply to all CBH Group activities.

The Standard defines the critical environmental controls required to manage key environmental risks. It has been designed to emphasise the most important requirements to manage risks that have the potential to cause environmental harm.

The Environmental Management Standard is a practical reference to assist you with implementing the required controls into every element of planning and execution of work that involves environmental risks.

1.1. Scope

This standard applies to all CBH sites, operations, project sites and associated tasks.

1.2. Exemption

Where a part of the business deems it is not reasonably practicable to meet one or more of the requirements defined within this Group Procedure, they can apply for a dispensation for a specific period which requires endorsement by the relevant General Manager, Head or Principal.

The dispensation must be documented by completing a High-Level Risk Assessment, which outlines:

- The reason for the request
- The part of the business that the dispensation applies to
- The specific duration of the dispensation
- An assessment of the risk of not complying with a requirement defined in the Environmental Management Standard, and
- Other controls that will be put in place as an alternative.

1.3. Definitions

Acronym / Term	Definition
Bunded	Infrastructure or equipment to contain substances in the event of a spill or leak. A bund might normally be a walled structure around a holding tank
Carbon Dioxide	Carbon dioxide (CO_2) is gas formed by combustion of carbon and in the respiration of living organisms and is considered a greenhouse gas
Competent persons	Having the skills, knowledge and attitudes required to perform the task as required in the workplace
Emission	A substance – usually a dust or gas – which is created as a by-product of a physical process and released to the atmosphere
Fauna	The animals of a region, habitat or geological period

Acronym / Term	Definition
Flora	The plants of a region, habitat or geological period
Greenhouse Gas	A gas that contributes to the greenhouse effect by absorbing infrared radiation. Carbon dioxide and chlorofluorocarbons are examples of greenhouse gases
Hazardous Waste	Component of the waste stream which by its characteristics poses a threat or risk to public health, safety of the environment (includes substances such as asbestos, lead, chemicals). Hazardous wastes are generally unsuitable for landfill disposal and should only be transported by and to suitably licensed providers.
Hydrocarbons	Hydrocarbons are substances that contain hydrogen (H) and carbon (C) such as lubricating oils, petrol and diesel fuels, monocyclic aromatic hydrocarbons and polycyclic aromatic hydrocarbons (PAHs), and are considered a hazard to environment when released in an uncontrolled manner
Incandescent Lighting	Source of electrical light generated by the heating of a filament
Licensed Waste Carrier	An organisation licensed by the regulating authority to collect, transport and/or receive waste/s
Native Vegetation	Plants that are indigenous to the region including trees, shrubs herbs and grasses. Native vegetation provides habitat for plants and animals and delivers ecosystem and biodiversity benefits
Potable Water	Water fit for human consumption

2. PERFORMANCE REQUIREMENTS

We meet performance requirements by:

- Placing value on sustainability and continually striving for outcomes that benefit the environment.
- Determining key environmental risks through our experience and analysing these to identify where our greatest risk exposures to potentially causing environmental harm are.
- Eliminating risks through use of the “Hierarchy of Controls”, and where this is not possible implement other controls.
- Ensuring all CBH personnel understand our environmental risks and how they are managed.
- Having an environmental and sustainable vision that manages our environmental risks effectively, so we deliver value to all our stakeholders by protecting, sustaining and enhancing the natural resources needed for the future.

References

Title	STORE ID
Health, Safety and Environment Policy	STORE-1473931053-383

3. AIR QUALITY

3.1. Application

Adverse impacts on local or regional air quality from CBH generated air emissions (such as dust, odour or combustion emissions) are to be minimised.

3.2. Critical Controls

- All air quality related emission impacts (such as dust, odour and combustion emissions) must be assessed (including the influence of weather conditions) and mitigation measures put in place where the potential exists for adverse community impacts or legislative non-compliances
- All activities involving excavation or disturbance of soils and vegetation must explore preventive controls (e.g. timing of development) and then implement physical controls (e.g. covering of stockpiles, water spraying, containment fencing) to prevent and/or minimise the generation of dust
- All new or refurbished infrastructure (including plant and equipment) must comply with appropriate legislative requirements with respect to Air Quality
- All heavy trafficked areas such as roadways shall be sealed or treated where practicable to reduce dust lift and dust emissions
- All Abrasive Blasting activities are to be undertaken to the requirements of Worksafe Code of Practice for Abrasive Blasting and the Environmental Protection (Abrasive Blasting) Regulations 1998
- All complaints shall be reported as per CBH's Incident Management Procedure.

4. NOISE EMISSIONS

4.1. Application

The impact on communities, people and fauna from CBH related noise emissions is to be minimised.

4.2. Critical Controls

- Prior to purchasing or hiring plant and equipment, noise emission data is to be obtained from the supplier or manufacturer. Maximum noise emission limits to ensure the workplace can remain below excessive noise levels are to be stated in specifications for the purchase or hire of plant or equipment. As far as practicable, preference shall be given to plant and equipment with low noise emissions (levels lower than 80 dB(A)). Any exceptions must be referred to the Environment and Sustainability Manager or their delegate for assessment.
- Where possible, noise levels in areas where new plant or equipment is installed is not to exceed 85 dB(A)
- Where the purchase of equipment involves installing more than one item in the same location, the combined noise level is not to exceed 85 dB(A) (where practicable)
- Inspect, maintain and repair all plant, equipment and vehicles regularly to minimise noise levels during operation

- Following any complaint, the source of any excessive noise or vibration will be investigated to reduce or eliminate the risk of future events
- All new or refurbished infrastructure (including plant and equipment) must comply with appropriate legislative requirements with respect to Noise Emissions
- All complaints related to noise shall be reported as per CBH's Incident Management Procedure.
- No noise or vibration activities to be undertaken within a proximity that may impact fauna.

5. FLORA AND FAUNA

5.1. Application

Any impact on flora and/or fauna from CBH related activities is to be avoided or minimised.

5.2. Critical Controls

- Unauthorised clearing of native vegetation is not permitted. If clearing of native vegetation is necessary for any purpose or sized area (e.g. maintenance, new developments, fire breaks etc.) the project must be referred to the Environment and Sustainability Manager or their delegate for assessment and no clearing activities may commence until approval has been provided.
- Only suitably trained, qualified and authorised personnel are to intervene where snakes and other fauna are identified on site
- Any death, injury or damage to native fauna on a CBH site is to be reported as an incident as per CBH's Incident Management Procedure
- Any unauthorised damage to flora to be reported as an incident as per CBH's Incident Management Procedure.
- Environmental hygiene practices to be employed where there is the potential to spread dieback to uninfected areas.

6. WATER QUALITY AND CONSUMPTION

6.1. Application

Water contamination and pollution causing events are to be prevented and water use efficiencies maximised on all CBH sites, projects and controlled activities.

6.2. Critical Controls

6.2.1. Water Quality

- No discharge of materials into the marine environment is permitted, including grain and liquid or solid wastes.
- Incidents of an unauthorised discharge into the environment (including marine and wetland environments) are to be reported as an incident as per CBH's Incident Management Procedure.
- All equipment servicing is to be undertaken in designated areas and in a manner that ensures containment of all hydrocarbons and chemicals.

- Equipment and vehicle wash-down facilities must comply with the requirements of the *Water Quality Protection Note 68 Mechanical Equipment Wash-down* (Department of Water 2006).

6.2.2. Water Consumption

- All mains drinking water should be metered to allow site mains and potable water use to be monitored and logged
- Any project requiring large water use requirements (i.e. 5000 kilolitres or above) should be referred to the Environment and Sustainability Manager for assessment.

7. CARBON EMISSIONS

7.1. Application

CBH is committed to reducing greenhouse gas emissions and the carbon intensity of our business and operational activities.

7.2. Critical Controls

- All mains electricity used should be metered to allow site energy consumption to be monitored and logged
- All incandescent lighting is to be phased out and replaced with an energy efficient lighting alternative
- Unnecessary running of plant or equipment is to be avoided to reduce energy or fuel use and minimise greenhouse gas emissions
- Unnecessary idling of vehicles and mobile plant or equipment is to be avoided to reduce fuel usage and minimise greenhouse gas emissions
- Energy efficiency shall be considered as a key factor when sourcing new plant and equipment
- Supplementary energy generation via permanent/stationary/fixed generators requires pre site installation inspection, formal asset tracking via logging in SAP, and sign off by CBH Engineering. Where practicable the most efficient/lowest emission option should be sourced.

8. LAND CONTAMINATION

8.1. Application

Ground contamination events are to be prevented from all CBH sites, projects or activities.

8.2. Critical Controls

8.2.1. Refuelling

- All chemical and hydrocarbon storage tanks or containers are to be double skinned or must be contained within impervious bunding that contains as a minimum 110% loss of the largest container in the bunded area in the event of a spill
- Bund walls must be at least 1 metre from the edge of fixed tanks

- Separation distances between hydrocarbons and other storage facilities (including grain stacks) are to be maintained
- Refuelling of mobile plant and equipment is to be undertaken on designated hardstand areas or provided with temporary bunding to contain spillages. Provision of spill kits must be available when refuelling
- Emergency fuel flow shut off capability are required for all bulk fuel supplies
- No new underground bulk fuel storage tanks are to be installed on CBH owned or leased sites
- Fuel dispenser nozzles must have the ability to be secured and have a means of drip containment
- All chemical and hydrocarbon storage tanks require signage including labelled contents, safe fill levels, and HAZCHEM signage as needed
- Any permanent tank vehicle filling facility is to be protected against damage from vehicles and forklifts by a guard rail, bollard or physical barrier.

8.2.2. Mechanical Equipment Wash Down and Servicing

- Mechanical equipment wash-down facilities must comply with the requirements of the *Water Quality Protection Note 68 Mechanical Equipment Wash-down* (Department of Water 2006)
- Mechanical equipment servicing is to be undertaken in designated areas and in a manner that ensures containment of all hydrocarbons and chemicals
- All hydrocarbon waste from servicing including rags and filters must be disposed of appropriately.

8.2.3. Spills

- Spill kit/s must be provided and maintained in all workplaces with contents consistent with the type, nature and scale of the potential spills that could occur, and key personnel should be instructed on the spill response process (refer to the Spill Response Work Instruction STORE-1473931053-244028)
- All vehicles transporting fuel must have a documented spill response plan and spill response kit capable of containing and absorbing fuel spills
- All hydrocarbon spills must be reported in SHARE, with any hydrocarbon spill of 25 litres or above to be reported as an incident to the relevant responsible line management (RLM) or Contracts Manager as soon as possible after the incident but no later than the end of the shift.

8.2.4. Earth Works and Ground Disturbance

- Any site activities that involve soil or groundwater disturbance where the contamination levels of the soil and groundwater are either unknown, or where evidence of possible contamination is presented, must cease until competent persons are able to determine the contamination status or risk
- All excavation, movement, treatment, processing or remediation of contaminated soils or groundwater must be planned and conducted in accordance with the requirements of a permit that identifies the hazards and controls as per CBH's Critical Risk Control Standard.

9. WASTE

9.1. Application

The generation of waste shall be minimised where practical, and sustainable opportunities to maximise resource recovery and recycling in preference to landfill disposal are to be implemented on all CBH sites and projects.

9.2. Critical Controls

- A suitably licensed waste contractor must be used for the collection and transport of all non-domestic or industrial wastes for either offsite processing and/or disposal to an appropriately licensed facility
- All solid waste and liquid wastes generated onsite must be stored to prevent unauthorised access and uncontrolled release. All wastes removed and disposed from these structures must be done so via a suitably licensed contractor
- All excavated natural, non-contaminated soil, aggregate or rock should be separately stockpiled and re used on site where possible or offsite. Landfill disposal of clean excavated natural materials should be avoided
- No waste is to be burnt or buried on site
- All hazardous waste storage and removal must be undertaken by a suitably licensed contractor. Confirmation of licences, and waste acceptability criteria at disposal site must be confirmed prior to any removal from site. Traceability of hazardous waste via waste removal and/or disposal certificates is required.

10. DOCUMENT CONTROL

Authorities

Approved By	Head - Safety & Environment	**Approval Date**	12/04/2023
Review Frequency	Biennial	**Next Review Date**	27/04/2025
Owner(s)	Head - Safety & Environment	**Custodian**	Environment & Sustainability Manager
Division	Operations	**Department**	Safety & Environment

Review History

Version	Date	Author	Description of Revision
1.0	13/11/2018	Manager - Environment & Sustainability	Approved, published
1.1	06/04/2020	Manager - Environment & Sustainability	Scheduled review, updated to new IMS template
1.2	29/01/2021	Manager - Environment & Sustainability	Scheduled review, sign off by Document Owner
2.0	18/02/2021	Manager - Environment & Sustainability	Issued for Use.
2.1	11/04/2023	Manager - Environment & Sustainability	Removed Cultural Heritage section. Added Improvement Ideas 327 and 131

CEMP ATTACHMENT B

Contractor Management Minimum Requirements Standard

STANDARD
Contractor Management Minimum Requirements

BACKGROUND

This is the CBH Group (Principal) Standard for Health, Safety and Environment Standards for all Contractors.

The Principal expects the Contractor to develop its Health, Safety and Environment Management Plan (HSEMP) to clearly demonstrate how compliance with these requirements will be achieved.

Where a requirement or section is not applicable, the Contractor shall document justification to reflect this. This may include where the nature of a Contractor's scope of work excludes a requirement, or where the Contractor works under CBH Group supervision and therefore may be required to operate in accordance with specific CBH Group processes.

The Contractor's HSEMP will then become a roadmap to show whose systems are to be used to achieve compliance i.e. the Contractor's systems or the systems of the Principal, The Contractor's HSE Management Plan shall be specific to the scope of works.

The Contractor acknowledges that these requirements are supplemental to, and do not limit or deviate from, the Contract Terms and Conditions. Upon request, the Contractor shall provide the Principal with documented evidence to support compliance to all minimum HSE standard requirements.

CONTENTS

1. INTRODUCTION

This Procedure sets the minimum Health Safety and Environment (HSE) Standards for Contractors working on CBH Group operated sites. These requirements along with the relevant legislation and the Contractors HSE Management Plan form the Contractor's Safe System of Work for working on CBH operated sites.

Notes:

- This document is not an exhaustive list of the Contractors' HSE obligations.
- Compliance with these requirements in no way relieves the Contractor of any of its obligations under the contract.

1.1. Scope

These requirements apply to all Contractors working on a CBH operational site.

If compliance with a requirement is not practicable, alternative risk controls must be developed for approval by the relevant CBH representative, in the form of a risk assessment performed in accordance with Risk Management principles.

1.2. Definitions

The following terms are used in this document and within supporting resources:

Term	Definition
ACM	Asbestos Containing Materials
ALARP	As Low As Reasonably Practicable
Contract Manager	CBH representative for the Contract
Confined Space	An enclosed or partially enclosed space that: ▪ Is not designed or intended primarily to be occupied by a person; and ▪ Is, or is designed or intended to be, at normal atmospheric pressure while any person is in the space; and ▪ Is, or is likely to be, a risk to health and safety from: - An atmosphere that does not have a safe oxygen level; or - Contaminants, including airborne gases, vapours and dusts, that may cause injury from fire or explosion; or - Harmful concentrations of any airborne contaminants; or - Engulfment.
CoR	Chain of Responsibility
CRAW	Construction Risk Assessment Workshop
EWP	Elevated Work Platform
HSE	Health, Safety and Environment
HSEMP	Health, Safety and Environment Management Plan
PTW	Permit to Work
Serious Incident	An event where there has been an uncontrolled release of energy that has or had potential to permanently disable or result in fatality to personnel or cause significant damage to infrastructure (consequence Major 4 or above).
Serious Potential Incident	An event that exposed a person/infrastructure to a situation that had the potential to permanently disable or result in fatality to personnel or cause significant damage to infrastructure where there was no release of energy (consequence potential Major 4 or above).

Term	Definition
Critical Lift	A lifting operation which involves one or more of the following: ▪ The load, including rope, block, rigging etc. are greater than 80% of the crane's capacity ▪ Complex tilt up and pre-cast concrete lifts ▪ Lifts involving personnel cages ▪ Lifts over and around powerlines ▪ Lifts at maximum load rates ▪ Single lifts of multiple loads at different heights (staggered lift) ▪ Any lifting of hazardous materials ▪ Lifts over facilities whereby personnel may be endangered ▪ There are multiple cranes involved in the lift, and ▪ Loads being lifted through tight or restricted spaces.
Principal	Co-operative Group Handling (CBH Group)
Working at Height	Risks to health and safety associated with a fall by a person from one level to another reasonably likely to cause injury to any person. Includes the risk of a fall: ▪ In or on an elevated workplace from which a person could fall ▪ Near an opening through which a person could fall ▪ Near an edge over which a person could fall ▪ On a surface through which a person could fall, or ▪ In any other place from which a person could fall. *Note: Fall risk of 2m or more shall be treated as work at height.*
Work Instruction	A statement that: ▪ Identifies a work activity assessed as having a safety risk or risks ▪ States the safety risk or risks ▪ Describes the control measures that will be applied to the work activity ▪ Describes how safety measures will be implemented to do the work safely, and ▪ Includes a description of the equipment used, qualifications of personnel and training required to do the work safely.

1.3. References

The following references are referred to in this document and in supporting resources.

Table 1: CBH References

Title	Source (Internal)	Source (External)
Critical Risk Control Standard	STORE-1473931053-249	Access via CBH Contractor Webpage
Alcohol and Drug Procedure	STORE-1473931053-124	
Environmental Management Standard	STORE-1473931053-261	
Health, Safety and Environment Policy	STORE-1473931053-383	
Integrated Management System Standard	STORE-1473931053-243997	
CBH Values	STORE-1473931053-176	
Life Saving Rules	CBH Intranet	

1.4. Communication

Amendments to this document shall be communicated to the CBH Group under the direction of the Document Owner**,** who shall determine the appropriate means of communication and target group.

1.5. Compliance Management

Contractor Management is subject to auditing (internal and external) to ensure compliance with applicable Legislation / Standards.

1.6. Change Management

Changes to this document shall be managed, reviewed, and updated as described in the Document Control Content and Records Management Group Procedure.

2. OVERVIEW

The Principal requires that the Contractor to operate in accordance with the HSE considerations of all persons and property for the associated Scope of Work, and on or about the Principal site/s.

Contractors must have HSE management systems consistent with the Principal's values, Policies and Standards including:

- HSE Policy
- CBH Values
- CBH Life Saving Rules
- CBH Group Critical Risk Control Standard, and
- Environmental Management Standard.

Copies of CBH's HSE Policy, Values and HSE Contractor Management Minimum Requirements are available for your information.

Contractors shall report HSE KPI's monthly to the Principal: refer to Appendix Documents.

The subsequent minimum requirements are defined to identify criteria applicable to the relevant Contractor class (Table 2). The class applied to each contractor is dependent on scope of works including but not limited to contract length, number of personnel and risk exposures.

Table 2: Contractor Class

Classification	Definition
A	▪ Embedded contractors working under CBH HSE Management system ▪ CBH supervision ▪ Be fully CBH inducted ▪ Scope of work is less than 3 weeks
B	▪ Contractors working under their own management system ▪ Supervise own works ▪ Scope of work is longer than 3 weeks ▪ No critical risks
C	▪ Contractors working under their own management system. ▪ Supervise own works ▪ Scope of work contains 2 or less critical risks ▪ No sub-contracting
D	▪ Contractors working under their own management system. Typically, large scopes of work. ▪ Supervise own works ▪ Scope of work contains more than 2 critical risk ▪ Utilise sub-contractors

3. STANDARDS

3.1. Leadership and Accountability

Requirement	Contractor Class
▪ The Contractor shall have a current HSE policy relevant to its operations.	B, C, D
▪ The Contractor shall have a structure in place with sufficient HSE support and resources appropriate to works under contract.	B, C, D
▪ The Contractor shall specify the minimum amount of timeline management shall spend in the field, monitoring, supervising and influencing work activities. ▪ A documented risk-based assessment shall determine supervisory requirements, considering crew size, the remoteness of work locations.	B, C, D
▪ The Contractor shall document and communicate HSE responsibilities and accountabilities for all personnel and relevant stakeholders: ▪ Management of Statutory controlled activities (controlled waste, abrasive blasting) including associated licensing and registration requirements ▪ Application of HSE Commitments.	B, C, D
▪ The Contractor shall have a documented approach to consequence management.	B, C, D
▪ The Contractor shall communicate to its employees that they have the right and ability to stop work or refuse to work in situations where they believe that the work would expose them, other people, or the environment to a risk of harm.	B, C, D

3.2. Health and Wellbeing

Requirement	Contractor Class
▪ The Contractor must define, implement and maintain a risk-based hygiene monitoring program for site activities and potential personnel health exposures.	B, C, D
▪ The Contractor shall establish and maintain a pre-employment and health surveillance program for all employees consistent with regulatory requirements and operational health risks. All personnel shall be deemed fit for work prior to commencing work on a CBH site.	B, C, D
▪ The Contractor shall ensure risk-based screening of personnel for substance abuse will be undertaken to minimise the risk of incidents and injuries related to the use of alcohol and drugs. The Contractor shall participate in the Principals Drug & Alcohol screening programs.	B, C, D
▪ Fitness for work is confirmed for all personnel conducting contracted works for zero alcohol, drugs and fatigue management.	B, C, D
The Contractor shall have an injury management process in place including: ▪ Offsite medical referral and support ▪ Injury management and return to work co-ordination. ▪ Confidential records management ▪ Workers compensation management ▪ Onsite medical response and support	A, B, C, D

3.2.1. Fatigue Management

Requirement	Contractor Class
Documented and established procedures for managing fatigue requirements that are in line with the Working Hours Code of Practice (WA) including: ▪ Records of all fatigue incidents and fatigue related injuries are recorded and maintained within an established database ▪ Establishment of appropriate sources of assistance for employees with fatigue problems ▪ Provision of appropriate education and training programs for all their employees on the site ▪ Established and appropriate fitness for work management procedures for fatigued employees.	B, C, D

3.3. Sustainability and Environmental Management

Requirement	Contractor Class
▪ The Contractor shall comply with the CBH Group Environmental Management Standard and ensure plans, processes and practices are in place to manage environmental risks and hazards.	B, C, D

3.4. Asset Management

Requirement	Contractor Class
▪ Where applicable, the Contractor shall have a design manual with supporting procedures and specifications to ensure designs comply with Australian and industry accepted standards for safe equipment and structure.	B, C, D
▪ The Contractor shall ensure designs incorporate the Principal's minimum standards for constructability and are approved by the principal prior to the commencement of works.	B, C, D
▪ A risk-based Commissioning Plan shall be completed by the Contractor and approved by the Principal prior to commissioning activities being carried out.	B, C, D

3.5. Hazard, Risk and Change Management

Requirement	Contractor Class
The Contractor shall implement a risk management process which incorporates at a minimum: ▪ A personal risk assessment process (e.g. Take 5), ▪ A team-based risk assessment process (e.g. Job Hazard Analysis) ▪ A higher business level risk process.	B, C, D
▪ The Contractor shall have an up-to-date Risk Assessment that reflects the scope of work, identified risks and relevant controls. The Risk Assessment shall be reviewed by the Principal prior to work commencing and shall be maintained as current throughout the duration of works.	A, B, C, D
▪ All routine tasks shall be carried out under the Contractors risk management documentation (e.g. Work Instruction). This shall detail how the task will be completed, the people involved in the task, the equipment to be used for the task, the management of change during completion of the task and measures to manage risks associated with activities.	B, C, D
▪ The Contractor shall comply with the CBH Group Critical Risk Standard.	C, D

Requirement	Contractor Class
▪ The hierarchy of control for risk management shall be used to reduce all HSE risks to as low as reasonably practicable.	B, C, D
▪ The Contractor shall establish a system for identification and reporting hazards and managing corrective actions.	B, C, D
▪ The Contractor shall have a documented change management process in place. Changes shall be approved by authorised employees, communicated, managed and checked for effectiveness to ensure HSE risks are controlled.	B, C, D
▪ The contractor shall ensure safe work activities are verified in the field through regular onsite inspections.	B, C, D

3.6. Legal and Other Requirements

Requirement	Contractor Class
▪ HSE compliance and commitments register detailing legal and other requirements shall be maintained, communicated, accessible and complied with by the Contractor.	B, C, D

3.7. Crisis and Emergency Management

Requirement	Contractor Class
▪ The Contractor shall have an Emergency Response Plan detailing how they respond to plausible emergency scenarios and interface with the principles existing site processes where applicable.	B, C, D
▪ The Contractor shall develop and implement a Crisis Management Plan aligned to the principals requirements.	B, C, D
▪ The Contractor shall have Emergency Rescue Plans for all high-risk activities.	B, C, D
▪ The Contractor shall ensure that it has a sufficient number of suitably trained emergency response personnel who shall be trained in handling emergencies consistent with the Contract.	B, C, D
▪ The Contractor shall ensure periodic emergency scenarios are practiced as part of emergency exercise training and evidence of emergency exercise training is available to the Principal on request.	B, C, D
▪ The Contractor shall have a hydrocarbon spill response and reporting procedure.	B, C, D
▪ The Contractor will ensure Emergency Response Equipment consistent with the Contract shall be compliant with statutory and risk-based requirements, fit for purpose, available in sufficient quantities, inspected, tested, maintained in a serviceable condition and calibrated where necessary.	B, C, D

3.8. Communication, Consultation and Participation

Requirement	Contractor Class
As a minimum, the Contractor shall conduct the following: ▪ Daily pre-start meetings ▪ Toolbox talks ▪ HSE committee meetings with minutes circulated to all employees, and ▪ Shift handover communication process.	B, C, D
The Contractor shall have processes in place to effectively communicate the following to all employees on a regular basis: ▪ HSE performance ▪ Incidents, hazards, compliance obligations and breaches;	B, C, D

▪ The Contractor shall have a process for the tracking and resolution of health and safety issues and communicate this process to all personnel.	B, C, D
▪ The Contractor's HSE Representative must liaise with the Principals Representative regarding material HSE issues.	B, C, D

3.9. Training, Awareness and Competency

Requirement	Contractor Class
▪ The Contractor shall comply with all the principles induction requirements.	B, C, D
▪ The Contractor shall ensure that a visitor or short-term worker induction is available for any Contractor or Principal personnel entering a designated contractor work site.	B, C, D
▪ The Contractor shall ensure competency profiles incorporating HSE related training (inductions), competencies, formal qualifications, prescribed licences shall be identified and documented for all positions and be periodically reviewed.	B, C, D
▪ The Contractor shall ensure pre-mobilisation verification of competency for all employees (including trade competencies, certificates, and licenses to perform regulated activities and plant operation); and will ensure that all personnel are competent to conduct tasks assigned to them under the Contract.	B, C, D
The Contractor shall ensure the following:	B, C, D
▪ A process to track expiry dates on staff training and certification is implemented (access to sites may be withdrawn if these dates are exceeded).	B, C, D
▪ A process for mentoring new/inexperienced employees is implemented.	B, C, D
▪ Positions equivalent to supervisor or above shall be deemed competent in supervisory competencies.	B, C, D
▪ A behavioural-based safety program is implemented, as a minimum; this program shall contain in-field interactions or equivalent.	B, C, D

3.10. Contractors and Supplier Management

Requirement	Contractor Class
▪ The Contractor shall have a process in place to ensure any sub-contractors and/or suppliers meet the requirements of the Contractors HSE system and CBH Contractor minimum requirements.	B, C, D
▪ The Contractor shall seek approval from the Contract Manager prior to engaging and mobilising any sub-contractor to a CBH site.	B, C, D

3.11. Operational Control

Requirement	Contractor Class
▪ The Contractor shall develop operating procedures for equipment in accordance with OEM specifications and ensure HSE risks are mitigated to ALARP.	B, C, D
▪ The Contractor shall ensure maintenance, testing, calibration and certification of plant and equipment is carried out to manufacturer recommendations and regulatory requirements and records of such are maintained.	B, C, D
▪ The Contractor shall ensure that registers for workplace inspections, plant, tools, rigging, hazardous substances and electrical items are available.	B, C, D
▪ The Contractor shall ensure statutory registration and certification requirements for personnel, plant and equipment are identified, maintained and recorded.	B, C, D
▪ The Contractor shall have a dust mitigation procedure where it is identified as a risk.	B, C, D
▪ The Contractor shall define, implement, and communicate site HSE rules (e.g. prohibited tools, PPE, training standards, environmental standards and mandatory procedures) for the operation	B, C, D

▪ The Contractor shall ensure all mobile equipment is free of soil or vegetative material before entering or departing all CBH sites	B, C, D
▪ Demobilisation: ensure all wastes and materials are removed from site and disposed of in accordance with any relevant legislation, management plan and procedure.	B, C, D

3.12. Incident Management

Requirement	Contractor Class
▪ The Contractor shall ensure that a formal and standardised process is in place for recording, investigating, and reporting incidents and non-conformances and for managing corrective and preventive actions.	B, C, D
▪ The Contractor shall report in accordance with the CBH Incident Management Procedure. It is the responsibility of the Contractor to ensure they have the latest version of the document and train all relevant personnel in the procedure.	B, C, D
▪ The Contractor shall report all incidents to the Principal as soon as reasonably practicable.	B, C, D
▪ The Principal shall report any statutory reportable incident to the regulator.	B, C, D
▪ The Contractor shall ensure all Serious Incidents and Serious Potential Incidents are investigated using the ICAM or equivalent process and is completed by appropriately trained personnel. Lessons learnt shall be shared with the Principal.	B, C, D
▪ The Principal reserves the right to conduct investigations for any incident. The Contractor shall commit to assist in this regard as required in a timely fashion.	B, C, D
▪ A documented process is required that mandates all work is to be discontinued following any Serious Incident as soon as it is safe to do so. Work shall not resume until all temporary actions have been implemented and approval provided by the Principal.	B, C, D
▪ The Principal will undertake all environmental statutory reporting.	B, C, D

3.13. Document, Records and Data Management

Requirement	Contractor Class
▪ The Contractor shall develop, implement and maintain a document control and records management system.	B, C, D
▪ The Contractor shall ensure that the process by which Personnel and Visitors access HSE procedures and other documents is described and communicated to personnel.	B, C, D
▪ Where applicable, the Principal will make available all reasonable Geographical Information System data required to operate and maintain HSE requirements.	B, C, D

3.14. Planning, Objectives and Targets

Requirement	Contractor Class
HSE KPI's (both lead and lag indicators) are to be established in conjunction with the Principal and communicated to all levels of the Contractor's organisation. A system to record and report progress toward KPI's shall be maintained, these HSE KPI's should at least contain: ▪ All Injury Frequency Rate	B, C, D
▪ Contract HSE KPIs defined by the Contract Manager as Per Appendix 1	B, C, D
▪ Contractor HSE Performance Indicators required by the Principal's Contractor Management System; and	B, C, D
▪ A system to record and report progress toward KPIs shall be maintained.	B, C, D

3.15. Monitoring, Measuring, Reporting and Evaluation

Requirement	Contractor Class
▪ The Contractor shall implement and maintain the supervisory monitoring programs defined by the Contractors HSE Management Plan and/or identified in the CRAW/Risk Assessment	B, C, D
▪ The Contractor shall ensure monitoring and evaluation is carried out for all Critical Risks and for activities that could cause adverse environmental and / or health impacts; and where required by legislation.	B, C, D
▪ The Contractor shall ensure that HSE performance information captured identifies trends, measures progress, assesses compliance and drives continuous improvement.	B, C, D
▪ The Contractor will formally report against Contractor HSE Performance Indicators on a monthly basis.	B, C, D

3.16. Auditing and Verification

Requirement	Contractor Class
▪ The Contractor shall develop and implement an audit program at a frequency appropriate to the level of HSE risk and to ensure statutory compliance.	B, C, D
▪ The Contractor shall ensure that audit findings will be actioned through established corrective action systems.	B, C, D
▪ The Contractor shall regularly report on the status of close out actions resulting from audits, to the Principal in its KPI data.	B, C, D
▪ The Principal reserves the right to audit The Contractor at its discretion.	B, C, D

3.17. Management Review

Requirement	Contractor Class
▪ The Contractor shall have a process in place to conduct regular management reviews of its HSE management system.	B, C, D
The Contractor shall complete a formal annual review of HSE performance which as a minimum includes: ▪ Review of operational risk profile ▪ Lessons learned review ▪ Review of stakeholder feedback ▪ HSE incident performance ▪ Compliance to HSE commitments ▪ HSE Audit findings and ▪ KPI performance and trends.	B, C, D
▪ The Contractor must develop, implement and communicate a HSE improvement plan. The HSE improvement plan must be based on the output of the annual performance review and include Environmental Management System objectives and targets.	B, C, D
▪ The Contractor's HSE Management Plan is appropriate for the scope of works and provides clear direction as to whose systems are to be used in relation to all aspects of the HSE management process.	B, C, D

4. HSE MINIMUM STANDARDS

4.1. Critical Risk Control

Requirement	Contractor Class
▪ Contractor shall ensure that all work that identifies a CBH critical risk during risk assessment will be controlled in accordance with the CBH Critical Risk Control Standard	C, D

4.2. Housekeeping

Requirement	Contractor Class
A systematic housekeeping program shall be implemented to eliminate hazards and potential incidents occurring from substandard housekeeping practices including: ▪ Waste Management (identification of all waste streams and suitable controls including controlled waste management and document retention where applicable), ▪ Storage and handling of hazardous materials and dangerous goods including disposal of wastes, ▪ Storage and handling of hydrocarbons including recycling / disposal of wastes, ▪ General materials and equipment storage and controls while in use, ▪ Walkways and stairways, emergency exits, and equipment shall be identified and clear of any blockages. Design and mark areas that must always be kept clear, including but not limited to the following: electrical distribution boards, fire extinguishers and safety equipment. An area at least 1 metre in depth shall be left below electrical distribution boards and fire extinguishers, ▪ Cables and hoses shall be run at a height suitable for ensuring they do not become a hazard to personnel. Suspended cables shall be suspended from insulated hooks. ▪ Storage racks with a height more than four times the rack depth must be suitably attached to supporting structure or bolted to the floor. Where appropriate, storage racks shall be marked with maximum loadings, ▪ All unnecessary items shall be removed from the workplace. Useable items shall be repaired as required and stored correctly. Unusable material shall be discarded, ▪ Cylindrical items such as pipes or drums shall be stored in suitably designed racks, or adequately chocked.	A, B, C, D

4.3. Road Transport / Chain of Responsibility (CoR)

4.3.1. Road Transport

Requirement	Contractor Class
▪ The Contractor shall ensure drivers are licensed, trained, assessed as competent and authorised to operate in accordance with the vehicle and route safety requirements. ▪ The Contractor shall ensure systems are developed (engineering solutions preferred) and implemented at site to ensure maximum mass allowances are monitored and not breached. ▪ The Contractor shall ensure or be working towards implementing that heavy vehicle(s) are speed limited, with vehicle speeds and transit times monitored by on-board GPS technology.	Scope of work specific
▪ The Contractor shall ensure fatigue management plans are developed and adhered to.	
▪ The Contractor shall ensure that minimum vehicle safety specifications are defined, pre-start checks are recorded, and maintenance undertaken to ensure vehicles are fit for task and road worthy.	
▪ The Contractor shall ensure a drug and alcohol screening program is in place that includes pre-employment, random and post incident testing.	
▪ The Contractor shall ensure controls are in place for preventing falls from height if having to access prime-movers and vehicle trailers for loading and unloading activities. This includes	

Requirement	Contractor Class
that access ladders on trucks and trailers are in a serviceable condition enabling three points of contact at all times and have a non-slip surface on the rungs of ladders.	
▪ The Contractor shall ensure that heavy vehicles are procured in compliance with specifications and ensure they are maintained to remain compliant.	
▪ The Contractor shall ensure that all road trips are assessed for route hazards with trip plans established.	
▪ The Contractor shall ensure a health assessment program is in place for all heavy vehicle drivers that includes both pre-employment and age based periodic health assessments.	
▪ The Contactor shall ensure Supervisors, Managers, Allocators and Schedulers involved in scheduling and dispatch of heavy vehicles undertake CoR awareness training.	

4.3.2. Chain of Responsibility

Requirement	Contractor Class
▪ The Contractor shall have a documented risk assessment of requirements and obligations relating to contractual chain of responsibility requirements.	Scope of work specific
▪ The Contractor shall ensure that personnel in the transport chain have been trained and made aware of their obligation under CoR legislation.	
▪ The Contractor shall have a system in place for ensuring: - Vehicles are suitable for the task - Loads are positioned correctly - Appropriate restraint equipment is used - Adequate load restraint is applied, and - Managing driver hours and fatigue.	

4.4. Waste Management

Requirement	Contractor Class
▪ The Contractor is responsible for managing all solid and liquid wastes in their area.	B, C, D
▪ Greenhouse Emissions data collection, reporting and reduction management	B, C, D
▪ The discharge of any wastes or other materials shall only be done in accordance with relevant Local, State or Federal legislation or in accordance with a license or permit held by CBH or the Contractor.	B, C, D
▪ Hazardous wastes will be directed to a licensed facility located offsite.	B, C, D
▪ The Contractor shall avoid petroleum-based solvents where possible and use bio-degradable cleaning products instead.	B, C, D
▪ Wastes generated within machinery maintenance area will be contained, segregated and removed to a licensed facility. ▪ Lubricating oils will be recycled off site at a licensed waste disposal facility. Oil will be recovered from runoff and bund catchments.	B, C, D
▪ Contractors will recycle batteries off-site. ▪ Engine coolant will be containerised, recycled, or taken off site for disposal at a licensed waste disposal facility.	B, C, D

4.5. Hazardous Material and Dangerous Goods

Requirement	Contractor Class
▪ For each classified hazardous material or dangerous good, the Contractor shall complete a Hazardous Materials / Dangerous Goods Risk Assessment and ensure approval by CBH before any hazardous material is brought to site.	B, C, D (scope of work specific)

▪ A register of Hazardous Materials and Dangerous Goods (including quantities and storage locations) shall be maintained and provided to CBH if required.	B, C, D (scope of work specific)
▪ Personnel shall be trained in the use, storage and handling of Hazardous Materials/ Dangerous Goods, and Safety Data Sheets for all classified substances/materials shall be readily available.	B, C, D (scope of work specific)
▪ The purchase, transportation, storage, handling, use, disposal, and spill response of Hazardous substances, including hydrocarbons is in accordance with statutory requirements and environmental obligations applicable to CBH.	B, C, D (scope of work specific)

4.5.1. Asbestos Management

Requirement	Contractor Class
▪ Asbestos Containing Materials (ACM) has been identified at various CBH sites including buildings (wall sheeting, roofing, ducting) and network assets (gaskets, pillars, electrical boards). - Where the Contractor undertakes work that may disturb ACM, asbestos registers must be consulted, and an ACM permit approved by the relevant Contract Manager.	A, B, C, D

4.5.2. Gas Cylinders

Requirement	Contractor Class
▪ Gas cylinders shall be stored in an upright position and be secured to a fixed structure. Empty and full cylinders shall be segregated, and each storage area shall be labelled accordingly. Gas cylinders shall not be stored where they will be at risk from vehicular traffic.	B, C, D (scope of work specific)
▪ Cylinders shall only be transported in approved cradles. Trolleys specifically designed for the handling of cylinders shall be used at all times.	B, C, D (scope of work specific)
▪ All gas hoses and cylinders used for hot work shall be fitted with flashback arrestors at the cylinder and hand piece. All hoses shall be easily distinguished and not interchangeable.	B, C, D (scope of work specific)
▪ All equipment shall be inspected prior to use for defects, where defects are identified the cylinder is to be tagged out of service and removed to an area designated for out of service equipment for inspection, repair or disposal by a licensed service provider.	B, C, D (scope of work specific)

4.6. Permit to Work / Work Approval

Requirement	Contractor Class
A permit to work / work approval process shall be in place for the following high-risk activities: ▪ Work at height ▪ Confined space entry ▪ Excavation and penetration ▪ Hot works ▪ Critical Lifts ▪ Critical Safety System Out of Service ▪ Permit Isolation ▪ High Voltage Access ▪ Asbestos Management	B, C, D (scope of work specific)
Each permit/work approval issued shall: ▪ Have a risk assessment completed and attached ▪ Be displayed at a visible place at the worksite until the job is complete ▪ Be valid only for the time of work ▪ Include defined responsibilities for handover of plant and equipment between shifts and contractors where applicable. ▪ Be closed or suspended prior to start-up of equipment.	B, C, D (scope of work specific)

4.6.1. Hot Work

Requirement	Contractor Class
A Hot Work Permit shall be required for all hot work conducted in hazardous areas and where there is the presence (actual or potential) of flammable liquids, gases or flammable solids. Nominated hazardous areas include: ▪ Sub-stations ▪ Office & accommodation buildings ▪ Conveyor drives ▪ Transfer Houses ▪ Fuel / combustible materials storage areas once flammable materials are introduced to the location ▪ Above conveyors, chutes, cable trays once hazardous materials are placed within ▪ Material storage areas including warehouse and lay down areas ▪ Grain storage areas, and ▪ Other areas as posted.	B, C, D (scope of work specific)
▪ A Hot Work Permit shall be issued by a CBH authorised person after a review of the appropriate risk management documentation and all safeguards associated with the proposed hot work have been implemented and deemed satisfactory.	B, C, D (scope of work specific)
▪ Appropriate firefighting equipment and personnel trained in the use of the equipment are available at the scene.	B, C, D (scope of work specific)

4.6.2. Welding

Requirement	Contractor Class
▪ Welding shall only be undertaken by qualified and experienced personnel and a hot work permit shall be obtained prior to commencement of work.	B, C, D (scope of work specific)
▪ Welding gloves shall be sound, dry and used on both hands while welding and changing electrodes. Welders should wear appropriate dry fireproof clothing that covers the legs and arms, and footwear should be rubber soled and not have bare steel toecaps.	B, C, D (scope of work specific)
▪ Leads and equipment shall be inspected for damage. Damaged equipment and leads shall be removed from service for repair or discard.	B, C, D (scope of work specific)
▪ Any transformer or inverter type welding machine will be fitted with a Voltage Reduction Device (VRD).	B, C, D (scope of work specific)
▪ All other types of welding machines will be fitted with an in-line isolator or a “dead man” type switch.	B, C, D (scope of work specific)

4.6.3. High Voltage Switching

Requirement	Contractor Class
▪ No person shall make personal contact, either directly or through any conducting object, with any high voltage conductor believed to be dead, unless the conductor has been effectively earthed and short circuited.	C, D (scope of work specific)
▪ High voltage switching shall be carried out only by an approved High Voltage Operator and where the appropriate permit has been issued.	C, D (scope of work specific)
▪ Approved protective clothing and equipment shall be used to carry out switching and when proving cables and equipment are dead.	C, D (scope of work specific)

4.6.4. Electrical

Requirement	Contractor Class
▪ The Contractor shall conduct all works to Electricity (Licensing) Regulations 1991	A, B, C, D
▪ The Contractor shall develop operating procedures for the use of equipment in accordance with OEM specifications and ensure HSE risks are mitigated to ALARP. Portable electrical equipment shall be inspected prior to use to identify defects.	B, C, D
▪ The Contractor shall ensure maintenance, testing, calibration and certification of plant and electrical equipment is carried out to manufacturer recommendations and regulatory requirements and records of such are maintained.	B, C, D
▪ Portable electrical equipment shall only be used if it has a current test tag on the equipment. ▪ A system should be in place to verify that electrical equipment that is unfit or is unsafe for use is removed from the workplace.	B, C, D
▪ The Contractor shall ensure that registers for workplace inspections, plant, tools, rigging, hazardous substances and electrical items are available.	B, C, D
▪ The Contractor shall ensure statutory registration and certification requirements for personnel, plant and equipment are identified, maintained and recorded.	B, C, D
▪ The Contractor shall have a dust mitigation procedure where it is identified as a risk.	B, C, D
▪ The Contractor shall define, implement and communicate site HSE rules (e.g. prohibited tools, PPE, training standards, environmental standards and mandatory procedures) for the operation	B, C, D
▪ The Contractor shall verify that all electrical work will only be carried out by personnel authorised to carry out that work by a licence issued in accordance with the Western Australian Electricity (Licensing) Regulations.	A, B, C, D
▪ Electrical PPE: The Contractor shall provide designated electrical PPE for electrical workers. PPE shall include indication of the level of voltage exposure rating, prevent conduction of electricity, clothing shall be 100% cotton or wool, insulated gloves, helmets, non-metallic glasses and footwear. ▪ Electrical PPE shall be inspected prior to use to ensure fit for purpose and completely free of moisture; PPE not fit for use shall be discarded and marked out of service.	A, B, C, D
▪ The Contractor shall ensure all mobile equipment is free of soil or vegetative material before entering or departing all CBH sites	B, C, D
▪ Demobilisation: ensure all wastes and materials are removed from site and disposed of in accordance with any relevant legislation, management plan and procedure.	B, C, D

4.6.5. Cranes and Lifting

Requirement	Contractor Class
▪ The Contractor shall have a documented risk assessment of requirements and obligations relating to contractual chain of responsibility requirements.	Scope of work specific
▪ Rated and Certified Cranes. The Contractor shall have a system in place to verify: - All Cranes shall include audible and visual alarms. - All Cranes manufactured with an anti-two block device or limit switch shall be inspected to ensure the device is operational and not overridden prior to use. - With exception of pick and carry operations, no lifting shall be carried out without outriggers deployed, locked, and only used in line with the OEM standards. - Statutory inspections and preventative maintenance and repairs to cranes, cables and lifting components shall comply with the manufacturer's specifications and regulatory requirements as a minimum and records shall be kept on site. - All cranes shall be subject to a documented pre-operation inspection and annual inspections to ensure safety devices and load indicators are functioning.	

- Any modification to cranes and lifting components shall be subject to original equipment manufacturer's approval, conducted in accordance with AS 1418.1 Cranes, hoists and winches - General requirements.	
▪ Rated and Certified Lifting Components. The Contractor shall have a system in place to verify: - The manufacturers rated capacity (MRC), safe working load (SWL) or working load limit (WLL) shall be clearly identified and marked on all relevant lifting equipment and shall not be exceeded. - All lifting equipment shall be identifiable with a unique identity code or number (excluding shackles) and inspected at a documented, specified frequency. - All lifting hooks (except for grab and chain shortening hooks) will be fitted with a safety latch to prevent the load from accidentally detaching. - All rigging connections and lifting equipment shall be in a safe condition for use. Lifting equipment shall not be operated with an inoperable or defective safety device. - Lifting points shall have a SWL/WLL rating aligned to a site register. Lifting points without a rating must have a risk assessment outlining how the load is to be lifted and this risk assessment is approved by the lift Supervisor. - Management of mobile crane operator operation hours and fatigue.	
▪ Load Cells and Tilt/Level indicators. The Contractor shall have a system in place to verify: - All cranes shall be fitted with a slew and height limiter device(s) that measure and monitor the load and indicates to the operator if the crane is within the safe load and rated capacity; preference would be that the installed device cuts out to prevent overloading and overreaching of the crane. - All cranes shall be fitted with a load cell with the weight of the load displayed in the visual range of the operator. - All mobile cranes shall have a tilt (pick and carry) or level (slewing) indicator displayed in the visual range of the crane operator. - A system exists that ensures load (tilt/level) indicators and load cells are maintained, correctly calibrated and operates within OEM requirements.	Scope of work Specific
▪ Lift Plan. The Contractor shall have a system in place to verify: - A lift plan is in place for all crane activities. This is inclusive of critical lifts, non-standard lifts if not supported by JHA or a SWI, multiple crane lifts and lifts within or have the potential to impede the 10-metre power line or high voltage apparatus exclusion zone. - That there is a documented process for lift plans that specifies the minimum competencies of persons who develop and approve lift plans. - The lift plan includes – load data, equipment data, rigging data, lift computation and proximity to hazards. - A check shall be conducted prior to the lift to ensure that the load being lifted is within the rated capacity of the crane and lifting attachments/rigging equipment and is also within limits set out in the lift plan. - The operator shall not leave the crane controls while a load is suspended.	Scope of work Specific
▪ Trained and Competent Personnel. The Contractor shall have a system in place to verify: - All personnel involved in lifting activities shall be competent to do so; dogman and riggers shall hold a current nationally recognised High-Risk Work Licence. - All personnel involved in operation of a crane shall be competent to do so; crane operators shall hold a current nationally recognised High-Risk Work Licence and undertake a VOC for the specific crane being operated.	Scope of work Specific
▪ Crane Exclusion Zones. The Contractor shall have a system in place to verify: - That Barricades or an exclusion zone shall be established around the crane that covers the entire working (including machine radius) area (tail swing and drop zone) to prevent entry of unauthorised personnel. - Loads shall not swing over people or occupied buildings and no person shall be under a suspended load or in a position where they could be struck by a falling load, be placed between the load and the crane or between the crane and a structure. Where	Scope of work Specific

there is a risk of a load falling and striking a person, barricading or similar controls to prevent access shall be in place. - Trial lifts shall be conducted for every non-standard and critical lift (e.g. check/taking load and checking clearances).	

4.7. Hazardous, Restricted and Prohibited Equipment

4.7.1. Explosive Power Tools

Requirement	Contractor Class
▪ Written permission is required from the Contract Manager prior to bringing explosive-power tools onto any CBH site. ▪ No persons will use an explosive-powered tool until they have been trained to use and maintain the tool and are deemed to be competent to operate the tool. ▪ Explosive-powered tools must not be used near other persons unless adequate safety precautions are taken. ▪ Warning notices must be posted when an explosive-powered tool is being used. ▪ An explosive-powered tool is not to be used in situations where flammable or explosive gas, liquid or dust is present. ▪ Explosive-powered tools will be stored unloaded in a safe place inaccessible to unauthorised persons. ▪ Only cartridges suited to both the explosive-powered tool and the work to be performed are to be used. Cartridges must be stored in locked metal containers.	A, B, C, D

4.7.2. Compressed Air Tools

Requirement	Contractor Class
▪ Compressed air supplies shall be checked to ensure correct pressure and air quality for the tools being used. ▪ Permanent supply systems shall be labelled and fitted with suitable fittings to minimise the risk of inadvertent connection of Compressed Air Tools to incompatible services.	A, B, C, D

4.8. Construction Work

Requirement	Contractor Class
▪ The Contractor shall ensure that the appropriate demolition licenses have been obtained and provided to the principle prior to work commencing.	A, B, C, D (scope of work specific)
▪ The Contractor shall have a system in place to verify that where a person undertakes construction work, they must have successfully completed general construction induction training. (White Card)	A, B, C, D (scope of work specific)
The Contractor shall ensure all high-risk construction work included but not limited to the below shall have a SWMS in place: ▪ Where there is a risk of a person falling two metres or more ▪ On telecommunications towers ▪ Involving demolition ▪ Involving the disturbance or removal of asbestos ▪ Involving structural alterations that require temporary support to prevent collapse ▪ Involving a confined space ▪ Involving excavation to a depth greater than 1.5 metres ▪ Construction of tunnels ▪ Involving use of explosives ▪ On or near pressurised gas distribution mains and consumer piping ▪ On or near chemical, fuel or refrigerant lines ▪ On or near energised electrical installations and services	A, B, C, D (scope of work specific)

Requirement	Contractor Class
▪ In an area that may have a contaminated or flammable atmosphere ▪ Tilt-up and precast concrete construction work ▪ On or adjacent to roadways or railways used by road or rail traffic ▪ On construction sites where there is any movement of powered mobile plant ▪ In an area where there are artificial extremes of temperature ▪ In, over or adjacent to water or other liquids where there is a risk of drowning, and ▪ Involving diving.	

4.8.1. Scaffolding

Requirement	Contractor Class
▪ The Contractor shall have a documented risk assessment of scaffolding requirements. This may incorporate the implementation of scaffold management plan.	A, B, C, D
▪ The Contractor shall ensure that the aspects of design, installation, construction, commissioning and dismantling of scaffolds are carried out to manufacturer recommendations and regulatory requirements and records of such are maintained.	A, B, C, D
▪ The Contractor shall have a system in place to verify that scaffolding activities are to be supervised by experienced and trained personnel.	A, B, C, D
▪ The Contractor will have a system in place to verify that scaffolding activities are conducted by personnel that hold a current nationally recognised competency. The competency will define the scaffolding high risk work licence class of either: - Basic - Intermediate - Advanced. This includes standby personnel and spotters.	A, B, C, D
▪ The Contractor shall have a system in place to verify where overhead work is being conducted, barricades shall be erected around the work area below to ensure other people do not walk into an area at risk from falling objects. Barricades must be positioned to accommodate the height of the work area and the potential for deflection of falling objects. Where it's not practical to put barricades in place a spotter shall be used.	A, B, C, D
▪ There shall be drop protection systems in place to prevent tools and equipment from falling from height (e.g. tool lanyards, buckets, grommets, drop mats). Determine effective controls to eliminate or reduce the potential for dropped objects introduced from maintenance and operational activities when working above ground level.	A, B, C, D
▪ All scaffolds shall have a Scaff tag attached, completed by the builder of the scaffold	A, B, C, D
▪ Scaffold shall be inspected by a competent person within the last 30 days prior to use. If the Scaff tag is not current (inspected in the last 30 days) then the scaffolding is not to be used.	A, B, C, D

4.9. Grain Quality

Requirement	Contractor Class
The Contractor shall recognise that CBH Group is storing and handling Food and Feed Grade Products and ensure that: ▪ Any items that could potentially contaminate grain i.e. bolts are picked up immediately ▪ Work areas are cleanly maintained, and ▪ All equipment mobilized to site is weed and pest free.	A, B, C, D

4.10. Tarping

Requirement	Contractor Class
▪ The Contractor shall have a documented risk assessment of the requirements and obligations relating to contractual chain of responsibility requirements.	A, B, C, D

Specifically, this documented risk assessment shall consider: Wind speed, the number of personnel on site to safely undertake tarping activities, means of edge protection when operating on open bulkheads and use of equipment to control tarp movements.	
▪ Contractor Tarping companies shall verify they have tarping systems and practices in place that are approved by the Grain Covers & Portable Infrastructure Manager prior to commencing tarping activities.	A, B, C, D
▪ The Contractor shall have a system in place to verify that tarping activities are to be supervised by experienced and trained personnel.	A, B, C, D
▪ The Contractor shall provide a work instruction to their workers that advises - No person shall walk on an unsecured tarpaulin on a stack.	A, B, C, D
▪ Where plant is used for handling and pulling tarpaulins, exclusion zones shall be in place and access to the work areas controlled.	A, B, C, D
▪ The Contractor shall provide a work instruction that advises once tarps are removed, they shall be folded, rolled and stored as soon as it is safe to do so.	A, B, C, D
▪ The Contractor shall provide a work instruction that advises that personnel shall minimise time spent on tarpaulins laying loose on the ground in an uncontrolled state prior to folding. After folding each section personnel are to walk back down the side of the tarpaulin to minimise time spent on the unsecured tarpaulin on the ground.	A, B, C, D

4.11. Delivery Drivers

Requirement	Contractor Class
▪ The Contractor shall ensure drivers are licensed, trained, assessed as competent and authorised to operate in accordance with the vehicle and route safety requirements.	A, B, C, D
▪ The Contractor shall ensure all mobile equipment is free of soil or vegetative material before entering or departing all CBH sites.	A, B, C, D
▪ Approved protective clothing and equipment shall be used to carry out delivery driver duties.	A, B, C, D
▪ Light deliveries are typified by couriers, mail and small amounts of supplies that are generally able to be handled by one person without using power equipment or trolley jacks.	A, B, C, D
▪ Heavy deliveries are different from light deliveries as they often involve cranes, forklifts or other equipment to load or unload trucks.	A, B, C, D

APPENDIX DOCUMENTS

1. KPI reporting

CONTRACTOR PERFORMANCE REPORT		
THIS REPORT MUST BE FILLED BY THE CONTRACTOR AND SENT TO THE CONTRACT MANAGER BY EMAIL NO LATER THAN THE THIRD WORKING DAY INTO THE NEW MONTH IMPORTANT: CONTRACTOR TO FILL ALL BLUE FIELDS		
***A. GENERAL INFORMATION**		
This Report is for works carried out for the Month of:	Month:	
CBH Zone (Circle Applicable)	Geraldton	Kwinana
	Albany	Sustaining
	Esperance	
	PDG Other (please specify):	
Contractor Supervisor: *Person filling report	Name:	
Project Name:		
Contractor Company Name:		
Sub-contractor Companies engaged:	1	
	2	
	3	
B. STATISTICS (*For work period)		**Comments**
No. Contractor/Sub-contractor personnel on site:		
Total Contractor hours worked:		
***C. Incident & Hazard Reporting (*SHARE)**		
Safety Interactions (behavioural observations)		
Site Inspections		
Hazards		
Near Misses		
Property Damages		
Environmental Events		
First Aid Injury		
Medical Treatment Injury		
Lost Time Injury		
Security Breaches		
D&A Breaches		
Any other injuries recorded?		
Events Summary and agreed actions to prevent re-occurrence:		
***D. Comments/Feedback for CBH (*includes Opportunities for improvement; Pros and Cons; Highlights)**		
Report Submitted into SHARE		
CBH Contract Manager/Delegate Name:		
Title:		
Date:		
Monthly HSE Report TEMPLATE	CBH-HSE-HS-RPT-TEM-0001 Rev.0	Page | 1

5. DOCUMENT CONTROL

Authorities

Approved By	Head of Health, Safety and Environment	**Approval Date**	04/03/2023
Review Frequency	Annual	**Next Review Date**	03/03/2024
Owner	Head of Health, Safety and Environment	**Custodian**	Specialist - HSEQ Systems
Division	Operations	**Department**	Safety and Environment

Review History

Version	Date	Author	Description of Revision
0.1	05 Jul 2018	Claire Hand	Formerly STORE Ref 16177943 / CBH-HSE-HS-PRO-0001 (PDG)
1.0	03 Jul 2019	Kerri Blakeman	Re-issue for signatory of new GM for PDG Pieter Vermeulen
1.1	11/09/2020	HSE Advisor - Systems	Annual review, no changes
2.0	18/09/2020	HSE Advisor - Systems	Final, issued for use, published
3.0	03/03/2022	Specialist - HSEQ Systems	Addition of Sections 4.6.4 Electrical, 4.6.5 Cranes and Lifting, 4.8.1 Scaffolding, 4.10 Tarping and 4.11 Delivery Drivers. Updated grammar in Section 4.3.1 Road Transporters/Chain of Responsibility.
3.1	03/03/2023	Specialist - HSEQ Systems	No changes

CEMP ATTACHMENT C

Corrigin Emergency Preparedness Plan

EMERGENCY PREPAREDNESS & RESPONSE PLAN
CORRIGIN

Lot 500 Walton St, Corrigin, WA 6375
Phone: 0438 470 501

Latitude: -32.33831
Longitude: 117.87130

In an Emergency Dial "000"

Section 1 - General Information

1. Purpose

To provide quick response actions to control and/or minimise the effects of an emergency on people, environment and property on CBH sites and nearby community and facilities.

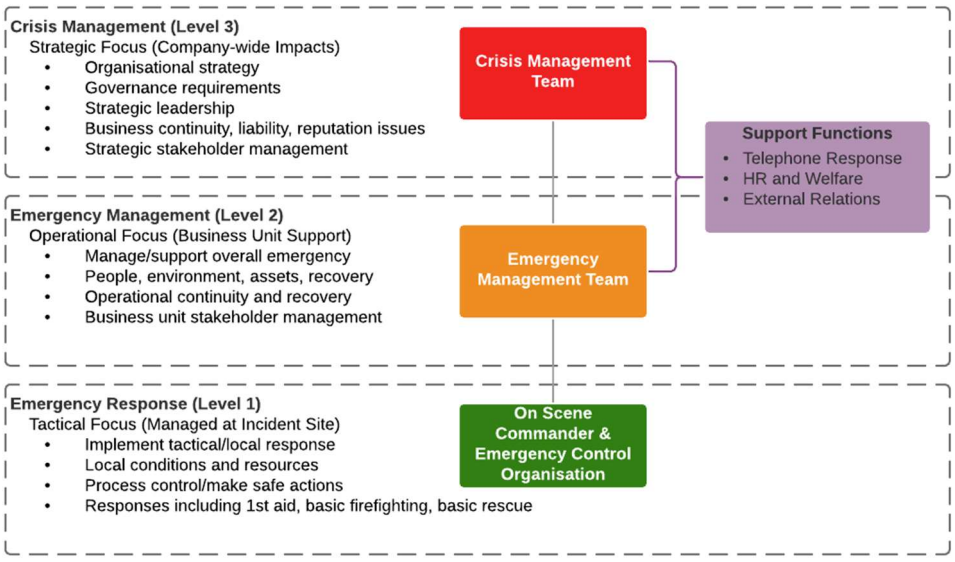
A copy of this Emergency Plan and any related maps and instructions shall be available at each site and communicated to all site personnel.

The On Scene Commander shall be re-established daily if there is an IC change to ensure role clarity and rapid response.

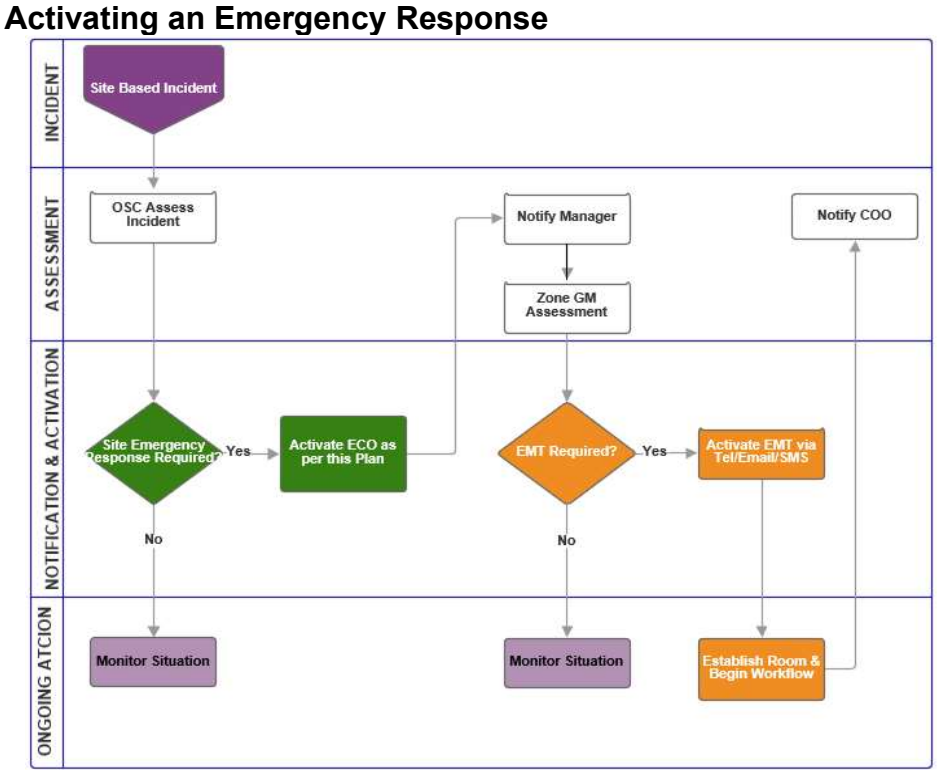
2. Planning, Preparation and Training

- Risk assessment has identified potential emergencies in Section 2.
- First Response guides are outlined in Appendix C.
- Facilities and emergency equipment have been established as per Appendix B.
- ECO appointments and duty cards are described at Appendix A.
- Mandated training and exercising requirements are set out in the Emergency Management Group Procedure

3. CBH Crisis & Emergency Management Organisation



4. Activating an Emergency Response



5. Termination of Emergency and Debrief

The termination of any emergency is the sole responsibility of the On Scene Commander and may also be advised by external authorities. A debrief shall be held within 7 days of any emergency.

6. Incident Analysis

Incident Analysis shall be commenced by the Zone Safety Advisor/Operations Safety Manager/Area/Zone General Manager within 24 hours of an emergency occurring. All cooperation shall be given to investigating agencies as per statutory requirements.

7. Critical Incident Recovery

Critical Incident planning will enable rapid recovery after an emergency and provide assistance for employees to cope with trauma. CBH Emergency Management Team can be activated by the Zone General Manager.

Section 2 - Site Specific Information

Equipment on Site			
Minimum of 2 harnesses	Constant flow escape breathing apparatus (Grain Protection)	Fire Extinguishers	Fall arrest units/strops/fall restraint over boot pits
Gotcha 4000 Recovery Kit Rope Grabba	Mobiles and land lines	Ventolin kept in weighbridge	Two way radios
Trauma First Aid Kit	Twin Tail Lanyard	Minimum 1 trained person	Spill Kits

Dangerous Goods on Site and capacity	*Closest Defibrillator*
UN No. 1397 4.3 Aluminium Phosphide 2.00 tonne UN No. 2199 2.3 Vapourph3os - Phosphine Fumigant1.6 Kl	At the main entrance signs
Closest Emergency Medical Centre	
Corrigin District Hospital - 08 9063 0333	

Description of Potential Emergencies

Potential Emergencies			
Fuels fires & spills	Grain dust Explosion / Fire/ canola	Crushing	Structural Fires
Flammable Gas Leaks	Engulfment	Fall from Height	Bush Fires
Fumigants	Extreme Weather	Asphyxiation / Respiratory	Entanglement
Rail Incidents	People plant interaction	Confined space incident	
Motor Vehicle Crash	Snake bite	Electrocution	

Services

Service	*Number*	*Service*	*Number*	*Service*	*Number*	*Service*	*Number*
Police / Fire / Ambulance	000	Main Roads	1800 800 009	Department of Environment	1300 784 782	Brookfield Emergency Control	1300 987 246
Telstra	132 200	Water Corp	131 375	Western Power / Synergy	13 13 51 / 13 13 53		
Aurizon Deployment Centre	1800 068 033	Cleanaway	1800 774 557	Alinta Energy	131 358		

CBH Contact Numbers

Position	*Name*	*Number*	*Position*	*Name*	*Number*
Zone Manager	Irving Carey	0428 218 936			
Zone Safety Advisor	Mark Whyte	0429 088 261			
Area Manager	Sam Caley	0419 232 951	Grain Protection Co-ordinator	Stephen Sloan	0428 920 604

Other Contacts – (E.g. Neighbour) (**Notified for significant fire or escape** of toxic/flammable substance)

Name	*Number*	*Name*	*Number*
Shire of Corrigin	9063 2203	Windmill Flour	9063 2557

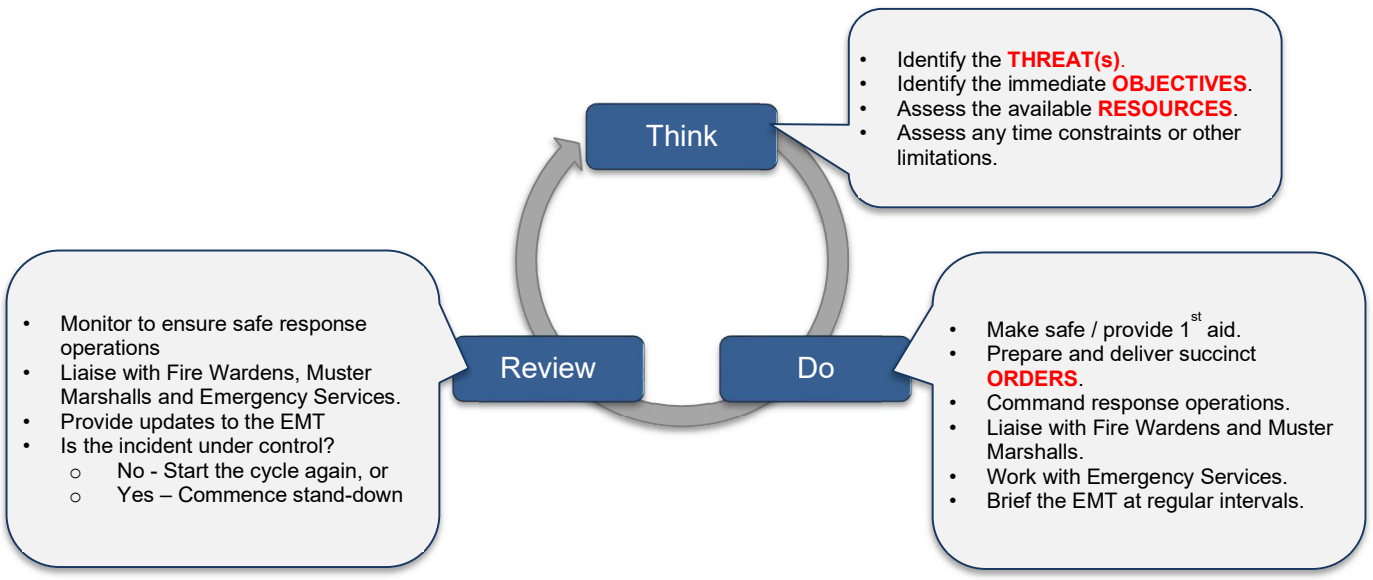
Document Control

Store #	*Version*	*Owner*	*Author / Reviewer*	*Approver*	*Date For Review*
	1		Zone Safety Advisor	Area Manager	10/10/2023

Appendix A – Emergency Control Organisation

C1 - On Scene Commander

The Receival Point IC (RPOIC) is the designated On Scene Commander (OSC). In the absence of the OSC the next most senior CBH person at site shall assume the OSC Role. For fumigation related events Grain Protection Officer if on site assumes immediate incident control and works with RPOIC. The RLM is to be informed as soon as practicable of the status of the site.



The duties of the OSC include, but are not limited to:

Assess the situation using the assessment table set out below and activate additional Emergency Response as required.

- Ensure that the CBH First Responders have been activated. (Emergency Coordinator and/or Sentries)
- Apply the immediate actions from the Emergency Procedures (Appendix A) of this document.
- **Identify the threat to life, environment and property- in that order**
- Identify the immediate **objectives** required to save life and make the area safe.
- Assess the available **resources** to combat the incident or problem at hand. Mobilise additional resources (operators and crews) as required.

Threat	Objectives	Resources
Work across the table to align Objectives to deal with the Threats and allocate resources to achieve the Objectives		
Fire	1. Isolate source 2. Extinguish	1. Shift crew 2. Fixed fire hydrants & extinguishers 2. Government fire trucks
Safety to personnel	1. Evacuation 2. Muster	1. Alarm & public address 2. Muster Point Marshals

- Assess any time constraints or other limitations.

Prepare and deliver succinct orders to the workforce and First Responders on their arrival at the incident site using the format at the rear of this duty card.

Liaise with Emergency Services

- Ensure Emergency Services are provided a Situation Report and have safe access and staging areas.
- Emergency Services may assume the OSC role in many circumstances particularly a major incident. The CBH OSC continues to coordinate CBH support for Emergency Services' management of the incident.

Liaise with Emergency Coordinator/Sentries to assign muster marshal

- Provide muster count details to the Emergency Management Team (via RLM).
- Protect the privacy of personnel by not using names of any injured persons over the radio. If possible, report the identity of injured persons to the Emergency Management Team (via Zone General Manager) if using a telephone.
- Assess the ongoing safety of Muster Points and arrange further evacuation of personnel from Muster Points if required.

Ensure the preservation of evidence for Health & Safety and/or any government authority investigations.

Ensure that the actions taken to make the site safe and secure.
Work with the RLM to determine when the site is safe and emergency response efforts can cease.
Concluding
Stand down First Responders and supporting resources when safe to do so.
Facilitate post-incident debrief for CBH responders and report key outcomes to the RLM/Zone General Manager.
Log Incident into SHARE.

ORDERS FORMAT		
Component	**Areas to Consider**	**Notes**
Situation	The current and predicted situation including: ☐ An overview of Incident. ☐ Current and expected weather. ☐ Life, environment and property risks/threats. ☐ A summary of resources deployed so far (area work crews etc.)	
Mission	Statement of intent (what you need to achieve) and specific objectives set for the response.	
Execution	How the mission will be accomplished including: ☐ Strategies and tactics ☐ Constraints (boundaries, Inner Cordon, Outer Cordon) ☐ Task and resource allocation ☐ Access to the incident ☐ Times constraints – (process safety, equipment duration, shift duty) ☐ Immediate tasks after briefing ☐ Contingency plans (what if something goes wrong?)	
Administration	Logistics for the operation including: ☐ Key support locations and roles ☐ Incident staging area ☐ Supply / emergency resources ☐ Ground/medical staff (location and patient transfer etc.)	
Command and Communications	Incident Management Structure including: ☐ Who reports to who and at what times ☐ Contact mobile numbers, radio channels	
Safety	Identification of known or likely hazards including: ☐ Hot, energised and pressurized equipment ☐ 'Watch out' situations (reminder personal safety/assessment) ☐ Safety equipment required and protective clothing standards ☐ Welfare – hydration, first aid.	

C2 – Emergency Coordinator

The Emergency Coordinator will be nominated by the On Scene Commander (OSC). The duties of the Emergency Coordinator include, but are not limited to:

Action/Consideration
Initial
Commence log of events about the incident using a note pad.
Seek a briefing from the OSC to ensure your understanding of the situation. Play role of muster marshal if designated and account for personnel.
Secure area, organise and brief sentries if required (confirm with OSC).
Ongoing
Maintain communications with the OSC and implement directions as instructed.
Notify Emergency Services as directed by the OSC.
Do not allow access to the site unless authorised by the OSC.
Direct arriving emergency services as required.
Assist the OSC as required/directed.
Be prepared to assume the role of OSC if they are called away/incapacitated.
Concluding
Coordinate the return to work of sentries as directed by the OSC.
Participate in the post-incident debrief for CBH responders.

C3 – Sentries

Sentries will be nominated by the Emergency Coordinator. The duties of the Sentries include, but are not limited to:

Action/Consideration
Initial
Commence recording of information about the incident using a note pad.
Seek a briefing from the Emergency Coordinator to ensure your understanding of the situation.
Ongoing
Maintain communications with the Emergency Coordinator and implement directions as instructed.
Do not allow access to the site unless authorised by the Emergency Coordinator.
Direct arriving emergency services as required.
If directed by the Emergency Coordinator (and appropriately trained) assist with first aid response.
Assist the Emergency Coordinator as required/directed.
Be prepared to assume the role of Emergency Coordinator if they are called away/incapacitated.
Concluding
Participate in the post-incident debrief for CBH responders.

CEMP ATTACHMENT D

Risk Assessment Matrix

APPENDIX D. RISK ASSESSMENT MATRIX

RISK ASSESSMENT TOOLS – apply likelihood and impact scales to determine level of exposure if a risk event occurs.

Likelihood Scale	
5 - Almost Certain	This event will occur on an annual basis (at least once a year)
4 – Likely	This event has occurred several times in your career (at least once every 3 years)
3 – Possible	This event might occur or you have heard of it happening before (at least once every 5 years)
2 – Unlikely	Heard of something like this event occurring elsewhere but not commonly (at least once every 10 years)
1 – Rare	Have not heard of this event happening in your career (>every 10 years)

RISK IMPACT/CONSEQUENCE RATINGS

Impact Area	1- Insignificant	2 - Minor	3 – Moderate	4 - Major	5- Catastrophic
Safety	No medical treatment required	Minor injuries / occupational illnesses requiring First Aid or medical treatment	Serious injury /occupational illnesses causing possible hospitalisation or permanent loss / significant effects	Life threatening injury or multiple serious injuries causing hospitalisation	Death or multiple life threatening injuries
Environment	Minor effects on local environment	Medium - term effects to localised area	Moderate environmental effects to wide area	Serious short term effect to wide area	Serious long term effect to wide area
Reputation	Minor local community / shire attention	Adverse attention from local media	Significant adverse local public or media attention	Significant adverse national public or media attention	Significant loss of grower or customer support
Legal	Minor internal non-compliance	Minor legal issues and non-compliances	Internally detected breaches, reported to regulators	Serious breach of legislation with remediation notice	Suspension of licenses, prosecution and litigation
Financial	Under $1m	$1m - $10m	$10m-$50m	$50m-$150m	Over $150m
Continuity	1 hour	1 day	2-5 days	1-4 weeks	>4 weeks

RISK RATING MATRIX – Use for inherent and residual risk rating

	Impact on the business if risk event does occur.				
	1- Insignificant	2 - Minor	3 – Moderate	4 - Major	5- Catastrophic
5 – Almost certain	Low 5	Medium 10	Medium High 15	High 20	High 25
4 – Likely	Low 4	Medium 8	Medium 12	Medium High 16	High 20
3 – Possible	Low 3	Medium Low 6	Medium 9	Medium 12	Medium High 15
2 – Unlikely	Low 2	Low 4	Medium Low 6	Medium 8	Medium 10
1 - Rare	Low 1	Low 2	Low 3	Medium Low 4	Medium Low 5

CEMP ATTACHMENT E

Clearing Log

ATTACHMENT E: CLEARING LOG FORM

Project:	Corrigin Grain Storage Expansion				
Dates Clearing Undertaken					
Approved Clearing Area (ha)		**Area Cleared (ha)**		**Retained Vegetation (ha)**	
Shape File Attached in GDA2020 format	Y / N	**Survey Contractor**			
Clearing aerial images attached?	Y / N	**Ground level images attached?**	Y / N		
Any clearing or damage to vegetation outside approved clearing areas?	Y / N	**If yes, has the breach been reported to CBH?**	Y / N	**If yes, is report attached?**	Y / N
Weed and disease hygiene practices followed?	Y / N	**Evidence attached?**	Y / N		

CEMP ATTACHMENT F

Inspection Form

ATTACHMENT F: ENVIRONMENTAL INSPECTION CHECKLIST

Environmental Inspection Checklist						
Inspection Date:		Inspector:			Area Inspected:	
No.	**Inspection Item**	**CO**	**OI**	**NC**	**N/A**	**Notes**
1.	**Air Quality**					
1.1	Dust suppression controls in place for exposed surfaces (water carts, hydro mulch, etc)					
1.2	Dust suppression controls effective (no visible dust impacting vegetation or off-site receptors)					
1.3	Site speed limits in place and being observed					
2.	**Fauna**					
2.1	No active black cockatoo breeding hollows within 10m of construction or clearing activities.					
2.2	No evidence of fauna injury or death attributable to construction					
2.3	No fauna in excavations or trenches					
3.	**Flora**					
3.1	No unapproved clearing or damage to vegetation					
3.2	No declared weeds or Weeds of National Significance					
3.3	Fire suppression controls in place					
3.5	Tree protection areas signed and barricaded					
3.4	No equipment or stockpiles stored within tree protection zones					

CO = Compliant; OI = Opportunity for Improvement; NC = Not Compliant; N/A = Not Applicable

Actions				
Action	Assigned To	Completed (Y/N)	If Incomplete	
			Due Date	Entered Into IMS

Inspection Attendees			
Attendee	Signature	Attendee	Signature

Attachment F Corrigin Grain Receival Site Expansion Offset Proposal (ELA 2024a)

Corrigin Grain Receival Site Expansion Offset Proposal (EPBC 2021/9024)

Co-operative Bulk Handling Group

ecological AUSTRALIA
A TETRA TECH COMPANY

1300 646 131
www.ecoaus.com.au

DOCUMENT TRACKING

Project Name	**Corrigin Grain Receival Site Expansion Offset Proposal (EPBC 2021/9024)**
Project Number	600-22PER2768
Project Manager	Rebecca Hide
Prepared by	Nicki Thompson and Rebecca Hide
Reviewed by	Jeremy Mitchell
Approved by	Jeremy Mitchell
Status	**Final**
Version Number	**V10**
Last saved on	**12 April 2024**

This report should be cited as 'Eco Logical Australia 2024. *Corrigin Grain Receival Site Expansion Offset Proposal (EPBC 2021/9024)*. Prepared for CBH Group.'

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from CBH Group.

Template 2.8.1

Contents

List of Figures

List of Tables

Abbreviations and definitions

Abbreviation	Description
BC Act	*Biodiversity Conservation Act 2016*
BAM Act	*Biosecurity and Agriculture Management Act 2007*
CBH	Co-operative Bulk Handling Group (trading name of Co-operative Bulk Handling Limited)
DAWE	Department of Agriculture, Water and Environment (now DCCEEW)
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DoE	Department of the Environment (now DCCEEW)
DP	Deposited Plan
DWER	Department of Water and Environmental Regulation
ELA	Eco Logical Australia
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
CEMP	Construction Environmental Management Plan
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Ha	Hectare
Km	Kilometre
MNES	Matters of National Environmental Significance
OMP	Offset Management Plan
PD	Preliminary Documentation
SEWPaC	Department of Sustainability, Environment, Water, Populations and Communities (now DCCEEW)
SLC Act	*Soil and Land Conservation Act 1945*
Rehabilitation	Additional plantings, as well as weed and pest management, and fencing, to improve low quality habitat, so that it becomes higher quality habitat (DAWE 2022b).
Revegetation	Re-planting habitat in an area where no or limited habitat currently exists. In the Wheatbelt, this is known as restoration (DAWE 2022b). Planting in areas of existing *Eucalyptus loxophleba* woodland for the purposes of creating Wheatbelt Woodlands TEC is considered revegetation as the TEC is currently absent from this area.
RFI	Request for Information
TEC	Threatened Ecological Community
WA	Western Australia
WABSI	Western Australian Biodiversity Science Institute
WoNS	Weeds of National Significance

1. Introduction

The Co-operative Bulk Handling Ltd (herein 'CBH') proposes to expand its facilities at the existing Corrigin Grain Receival Site (the proposed action), located adjacent to the Corrigin townsite, approximately 225 km east of Perth in the Avon-Wheatbelt bioregion of Western Australia (WA; Figure 1-1). The proposed action includes clearing of approximately 1.60 ha of native vegetation which contains Matters of National Environmental Significance (MNES), including ecological communities and fauna (or fauna habitat) listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

After the application of avoidance and mitigation measures, the proposed action is expected to result in residual significant impacts to:

- Eucalypt Woodlands of the Western Australia Wheatbelt Threatened Ecological Community (Wheatbelt Woodlands TEC) – listed as Critically Endangered under the EPBC Act
- Carnaby's Cockatoo (*Zanda latirostris*) – listed as Endangered under the EPBC Act.

As a result, offsets are proposed to compensate for these significant residual impacts.

This document describes the Offset Proposal to compensate for significant residual impacts from the proposed action on the Wheatbelt Woodlands TEC and Carnaby's Cockatoo after the mitigation hierarchy has been applied. The Offset Proposal will be undertaken in accordance with the Offset Management Plan (OMP; ELA 2024b).

A detailed description of the proposed action, the MNES affected, the mitigation measures and significant residual impacts to MNES is provided within the 'Corrigin Grain Receival Site Expansion – Preliminary Documentation (EPBC Ref. 2021/9024)' (PD report) (ELA 2024a).

1.1. Project description

The proposed action is an expansion to the existing Corrigin Grain Receival Site to provide additional grain receival and storage facilities. The Proposal Area (also referred to as the Disturbance Footprint) is primarily located on Lot 21 and parts of the western and eastern extent of Lot 20 on Deposited Plan 41206 on Corrigin South Road in Corrigin, WA (Figure 1-1). The Proposal Area is located less than 2 km southwest of the Corrigin townsite and approximately 225 km southeast of Perth (Figure 1-1).

Development of the proposed action will progress in two stages, described below.

Stage 1 will install two new permanent specification 350 m long Open Bulk Heads (OBHs) to increase the site's permanent storage capacity by a further 91,700 t. The new OBHs will be serviced by a fixed grid and conveyor loading system with two stackers/trippers, capable of in-loading at a rate of more than 500 tph. In addition, each OBH will be serviced by 'drive over grid' stackers, to provide additional in-loading capacity and segregations. A new electrical point of supply will be provided through Western Power off existing powerlines.

The on-site marshal, sample and weigh infrastructure and internal roads will be upgraded and rearranged to improve trafficking and congestion and address off-site truck queuing. A new site exit is also included as part of the expansion upgrade.

Stage 2 will provide additional grain storage, with the installation of three additional OBHs and supporting facilities.

The proposed action will:

- Allow the consolidation of existing grain receival sites, resulting in the closure of the CBH Ainsworth, Jubuk and Bullaring sites
- Cater for forecast harvest growth; the existing Corrigin Grain Receival Site currently has a permanent storage utilisation of 108% and has a forecast permanent storage utilisation of 133% by 2025
- Reduce grower turnaround times
- Cater for the reduction in storage facilities due to the decommissioning of facilities at end of life.

The proposed action is required to cater for the growing quantities of grain receivals around the Corrigin region and surrounding catchments, which is driven by improved cropping and farming techniques, and higher yielding seed varieties being planted by regional (and WA) growers. The reliance on rail reduces trucking movements on both Local and State government roads and reduces the reliance on trucking capacity and operating costs for CBH. In addition, the financial burden on Local and State governments to maintain road access and improve road user safety is reduced.

The proposed action includes an approximate 16.69 ha Disturbance Footprint, within which approximately 1.60 ha of native vegetation is proposed to be cleared. The remainder of the Disturbance Footprint is devoid of native vegetation and comprises agricultural land or areas previously cleared for the existing development (a total of 15.10 ha, or 90%; Figure 1-1).

1.2. Approvals process and context

The proposed action was referred to the then Department of Agriculture, Water and the Environment (DAWE; now known as the Department of Climate Change, Energy, the Environment and Water [DCCEEW]) in August 2021 (EPBC 2021/9024). On 21 September 2021, a delegate of the Minister for the Environment decided that the proposed action is a controlled action and on 6 October 2021 the delegate decided the project would be assessed by Preliminary Documentation.

A request for information (RFI) from DAWE was received on 10 June 2022 (RFI #2) for further detail relating to the nature of the proposed offsets for the proposed action, including the provision of an Offset Proposal/Strategy and Offset Management Plan (DAWE 2022a). The request included information to determine the adequacy of any proposed offset to compensate for all significant residual impacts as well as demonstration of how the proposed offset meets the principles of the EPBC Act Environmental Offsets Policy (SEWPaC 2012a; DAWE 2022a). This Offset Proposal and the associated OMP (ELA 2024b) provide the requested information.

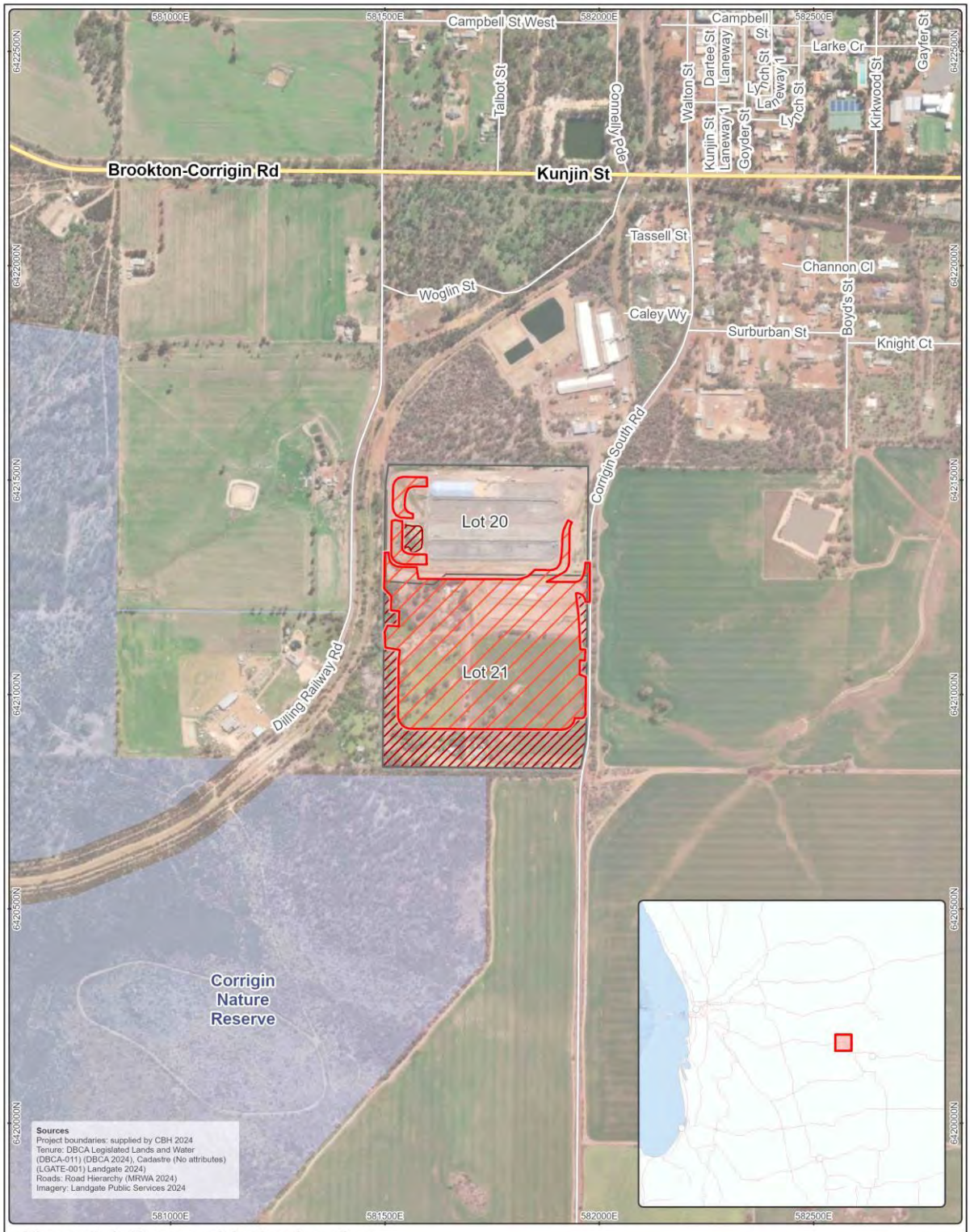


Figure 1-1: Proposed Action location

2. Requirement for offsets

This section provides an overview of the proposed clearing, the MNES values to be impacted, a description of the mitigation hierarchy and how the MNES values for the offset have been determined.

2.1. Proposed clearing

The proposed action includes clearing of approximately 1.60 ha of native vegetation within a 16.69 ha Disturbance Footprint. This includes habitat for Carnaby's Cockatoo and Wheatbelt Woodlands TEC (Table 2-1).

2.2. Avoidance and mitigation

Project designers and engineers have undertaken extensive redesign and options analyses of the Disturbance Footprint. As a result, the Disturbance Footprint has been reduced to avoid impacts to MNES as far as practical (Figure 2-1). A range of mitigation strategies are also proposed to further minimise impacts to MNES. These are discussed in detail in the PD report (ELA 2024a). In summary, key environmental values that have been avoided include:

- Avoidance of 1.60 ha of native vegetation located within Lot 21, Lot 20 and road reserve
- Avoidance of 0.45 ha of Wheatbelt Woodlands TEC located along the western and eastern boundary of Lot 21, Lot 20 and road reserve
- Avoidance of 1.76 ha of Carnaby's Cockatoo foraging habitat and 0.08 ha of potential breeding and roosting habitat (including nine potential breeding trees) located within Lot 21, Lot 20 and the road reserve.

Further avoidance measures will be undertaken where practicable including:

- Retention of potential breeding trees/fauna habitat trees where possible through final design and installation of drainage and surface contour levels
- Avoiding interfering with groundwater that may be supporting Wheatbelt Woodlands TEC patches by not proposing any abstraction or use of groundwater underlying the subject land.

In addition, a range of mitigation strategies are proposed to further minimise impacts to native vegetation and MNES values during the construction phase of the project. These are described in detail in the Construction Environmental Management Plan (CEMP). Management and monitoring actions to minimise potential impacts on surrounding vegetation and habitat are included in the CEMP and include strategies related to water flows and waterways, erosion and sediment control, access control, dust suppression, weed and disease hygiene management, fire management and fauna management (CBH 2023).

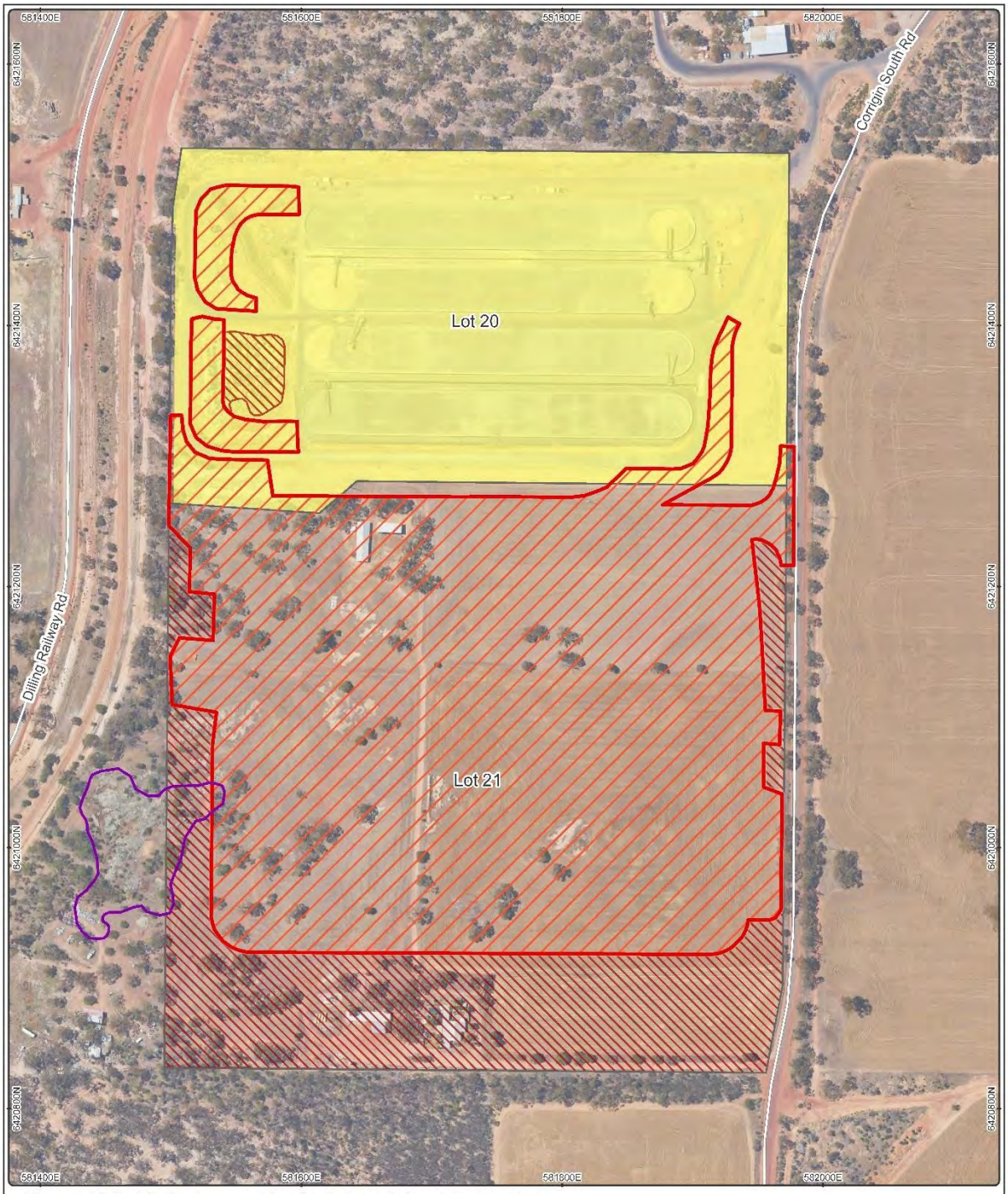


Figure 2-1: Disturbance Footprint and Avoidance Area

2.3. Significant residual impacts to MNES

Following application of the above-mentioned mitigation hierarchy, the proposed action is likely to result in a significant residual impact to two MNES, with these being Wheatbelt Woodlands TEC and Carnaby's Cockatoo (Table 2-1).

The significant residual impacts requiring offsets arise from the direct loss of vegetation and habitat due to clearing and will be permanent.

Table 2-1: Significant residual impact to MNES from the proposed action

MNES	Significant residual impact	
	Quality	**Area (ha)**
Wheatbelt Woodlands TEC	Degraded (Category D)	0.29 ha
	Good (Category C)	0.02 ha
	Total Wheatbelt Woodlands TEC	**0.31 ha**
Carnaby's Cockatoo	Poor quality foraging habitat	1.56 ha
	Potential breeding/roosting habitat	0.09 ha*
		9 individual trees*
	Total Carnaby's Cockatoo habitat	**1.56 ha***

* THE POTENTIAL BREEDING/ROOSTING HABITAT OCCURS WITHIN THE 1.56 HA OF WOODLAND OR ISOLATED PATCHES DEFINED AS FORAGING HABITAT; THUS THE TOTAL IMPACT IS TO 1.56 HA OF FORAGING AND BREEDING HABITAT.

3. Proposed offset site

A potential onsite offset site (herein referred to as the Offset Site) for the proposed action has been identified by CBH within a portion of Lot 21 on DP 41206, Corrigin South Road in Corrigin, WA (Figure 3-1). The Offset Site is located directly adjacent to the Proposal Area (Figure 3-1).

A summary of the Offset Site values is provided in Table 3-1 below and described in further detail throughout this section.

Table 3-1: Summary of Offset Site values (Lot 21 on DP 41206, Corrigin South Road, Corrigin)

Values	Offset Site description
Subregion	Avon Wheatbelt subregion (AVW02)
Distance from proposed action	Directly adjacent to the proposed action (south, west)
Land Tenure	Owned by CBH
Land size	2.60 ha
Wheatbelt Woodlands TEC values	0.19 ha of vegetation in Degraded condition with weed cover not exceeding 70% (Category D).
Carnaby's Cockatoo values	1.06 ha of Poor quality foraging habitat. 0.05 ha of potential breeding habitat including five potential breeding trees, none with hollows.
Impacts and threatening processes	Spray drift from nearby agricultural practices, grazing, fire, edge effects, rubbish dumping, weeds and clearing.
Proposed offset	Remove and reduce threatening processes within the Offset Site Increase native vegetation cover within the Offset Site from 1.36 ha to 2.50 ha Increase Wheatbelt Woodlands TEC present within the site from 0.19 ha to 1.43 ha Increase condition of existing Wheatbelt Woodlands TEC present within the site from Degraded (Category D) to Good (Category B) or higher Increase value of existing Carnaby's Cockatoo foraging habitat from Poor to Moderate Increase area of Carnaby's Cockatoo habitat from 1.06 ha to 2.40 ha.

3.1. Size, location and zoning

The Offset Site is approximately 2.60 ha in size and contains areas of native vegetation as well as cleared pasture. The Offset Site is located directly adjacent to the Proposal Area, within the Shire of Corrigin, in the Wheatbelt subregion of WA (Figure 3-1). The entire Lot is freehold property owned by CBH and occurs on land zoned as 'rural' under the Shire of Corrigin Local Planning Scheme No. 2 (Government of Western Australia 2022). Rural use zoning permits the land to be developed any time in the foreseeable future. As such, biological values within the Offset Site are vulnerable to future development.

The Corrigin Nature Reserve occurs directly to the south of the Offset Site, which contains vegetated linkages to the nature reserve (Figure 3-1).

3.2. Biological values

A reconnaissance level flora and vegetation survey, basic fauna survey and black cockatoo habitat assessment was undertaken at the site of the proposed expansion in October 2020 and included a 24 ha survey area, encompassing the Offset Site (ELA 2021). A follow-up, targeted survey for Red-tailed Phascogale (*Phascogale calura*) was undertaken across the original survey area and adjacent parts in July 2022 (ELA 2022a). The targeted survey also included updating Carnaby's Cockatoo habitat values present within the site (ELA 2022b).

All surveys were undertaken in accordance with the relevant guidance including:

- Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA 2016)
- Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020)
- Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black- cockatoo (DAWE 2022b)
- Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed as threatened under the EPBC Act (SEWPaC 2011).

The results from these combined surveys are summarised below. Data is presented for the survey area where it is unable to be differentiated from the Offset Site.

3.2.1. Flora

A total of 67 flora taxa (45 native and 22 introduced taxa) from 60 genera and 31 families were recorded within the survey area (ELA 2021). Families with the highest number of species recorded were Poaceae (16 species), Chenopodiaceae (5 species) and Asteraceae (5 species). *Eucalyptus* was the most represented genus with three species recorded, while the genera *Acacia*, *Austrostipa*, *Bromus*, *Hibbertia* and *Ptilotus* each had two species recorded.

A total of 22 introduced (weed) species were recorded during the survey (ELA 2021). None of the weed species are listed as Weeds of National Significance (WoNS). One species, *Echium plantagineum* (Paterson's Curse), is listed as a Declared Pest species in Western Australia pursuant to s 22(2) of the State *Biosecurity and Agriculture Management Act 2007* (BAM Act). This species was recorded at one location within the Offset Site.

No Threatened flora species listed under the EPBC Act or the State *Biodiversity Conservation Act 2016* (BC Act) or listed by Department of Biodiversity, Conservation and Attractions (DBCA) as Priority species were recorded within the Offset Site or survey area (ELA 2021).

3.2.2. Vegetation

Three vegetation communities were delineated and mapped within the Offset Site, comprising two eucalypt woodland communities (ElW and EsElW) and one *Acacia* shrubland (AcTS) community (Table 3-2; Figure 3-2; ELA 2021). The most widespread community within the Offset Site is *Eucalyptus loxophleba* woodland (ElW; 0.87 ha; 33.4%). Half of the Offset Site consists of cleared areas including paddocks and tracks (1.36 ha; 52.3%).

The vegetation communities present within the Offset Site are all in Degraded condition (ELA 2021; Table 3-2; Figure 3-3).

One of the vegetation communities (EsElW) represent the Wheatbelt Woodlands TEC; described in further detail in Section 3.2.4.1.

Table 3-2: Vegetation communities and condition within the Offset Site

Vegetation community	Condition	Area (ha)	Area (%)
AcTS *Acacia acuminata* tall open shrubland, over **Arctotheca calendula*, **Mesembryanthemum nodiflorum* and *Ptilotus polystachyus* sparse low forbland with scattered *Austrostipa variabilis* grasses and annual weedy forbs and grasses.	Degraded	0.18	6.92
ElW *Eucalyptus loxophleba* woodland, over *Acacia acuminata* tall sparse shrubland, over a mixed low sparse forbland/grassland including **Arctotheca calendula*, *Atriplex semibaccata*, **Brassica tournefortii*, **Hordeum leporinum*, **Lolium rigidum* and *Maireana brevifolia*	Degraded	0.87	33.41
EsElW *Eucalyptus salmonophloia* and *E. loxophleba* Woodland over *Maireana brevifolia* low sparse shrubland over annual weedy grasses and forbs, including **Brassica tournefortii*, Crassula *colorata*, *Enchylaena tomentosa*, **Hordeum leporinum*, **Lolium rigidum* and **Mesembryanthemum nodiflorum*.	Degraded	0.19	7.42
Total vegetation communities	Degraded	1.24	47.75
Cleared areas	-	1.36	52.25
Total area	-	2.60	100.00

3.2.3. Fauna

Two fauna habitats occur within the Offset Site, *Eucalyptus* woodland and *Acacia acuminata* tall shrubland (ELA 2021), covering approximately 1.24 ha (47.7% of the total Offset Site). The remaining 1.36 ha (52.3%) is cleared pasture and/or tracks (Figure 3-5).

A total of 23 vertebrate fauna species were recorded within the survey area, comprising 19 birds, three mammals and one reptile (ELA 2021). Potential secondary evidence of one Threatened fauna species listed under the EPBC Act and BC Act, Carnaby's Cockatoo, was recorded in the Disturbance Footprint; however, this could not be confirmed (Section 3.2.4.2). No other Threatened or Priority listed fauna species listed were recorded.

The Red-tailed Phascogale was assessed as having the potential to occur during the initial survey (ELA 2021); however, following a targeted survey, the likelihood of occurrence was downgraded to 'unlikely' due to the lack of suitable habitat and lack of records, despite extensive trapping effort (ELA 2022b).

Two introduced (feral) fauna species were recorded within the Offsite Site including the Red Fox (*Vulpes vulpes*) and Sheep (*Ovis aries*) (ELA 2021).

3.2.4. MNES values

Two MNES were either recorded or considered to have the potential to occur; the Wheatbelt Woodlands TEC and Carnaby's Cockatoo (ELA 2021). They are described in further detail below.

3.2.4.1. Wheatbelt Woodlands TEC

The ELA (2021) survey assessed the vegetation present within the Offset Site against the key diagnostic criteria and vegetation condition thresholds listed within the approved Conservation Advice for the Wheatbelt Woodlands TEC (DoE 2015).

Approximately 0.19 ha of Wheatbelt Woodlands TEC in Degraded condition (Category D) occurs within the Offset Site (Figure 3-4). This patch of woodland is connected to woodland outside the Offset Site, which provides connectivity in a north to south direction and linking to the Corrigin Nature Reserve in the south.

An additional 0.84 ha of *Eucalyptus loxophleba* woodland (ElW) occurs in the south of the Offset Site (this area excludes the small patch of ElW located in/adjacent to the Aboriginal Heritage Area; see Section 3.3), which does not currently meet the criteria for Wheatbelt Woodlands TEC due to the Degraded condition of the vegetation, high weed cover and the small patch size (ELA 2021). These areas (Figure 3-2 and Figure 5-1) have been included here as revegetation and weed control (together with suitable vegetation present to the south of the Offset Site) will allow this woodland to meet the criteria for Wheatbelt Woodlands TEC as part of the OMP (ELA 2024b). This vegetation currently meets the key diagnostic criteria for the TEC for 10% minimum crown cover of the tree canopy in a mature woodland and five mature trees per 0.5 ha threshold (ELA 2021).

3.2.4.2. Carnaby's Cockatoo

The Offset Site occurs within the modelled distribution (including the modelled breeding range) of Carnaby's Cockatoo (DAWE 2022b).

A total of 1.06 ha of foraging habitat for Carnaby's Cockatoo has been recorded in the Offset Site (Figure 3-6). The foraging habitat was assessed as being 'Poor' quality due to consisting of four known foraging species present at a low density (i.e. secondary food sources present at 10-20% projected foliage cover with vegetation in Degraded condition; ELA 2021). Foraging species recorded include York Gum, Salmon Gum, Wandoo and *Allocasuarina campestris* (Table 3-3). Whilst Salmon Gum is considered a primary foraging resource for Carnaby's Cockatoo, York Gum, Wandoo and *Allocasuarina campestris* are all secondary foraging species (Groom 2011).

In addition to foraging habitat, there is approximately 0.05 ha of potential breeding habitat including five individual potential breeding trees (Figure 3-6; ELA 2021, 2022b). These trees comprise two Wandoo trees with a Diameter at Breast Height (DBH) over 300 mm and three York Gum trees with a DBH over 500 mm (ELA 2021, 2022b). None of these trees contain hollows suitable for nesting (i.e. with a minimum opening diameter of 10 cm and vertical or near vertical), however given their DBH, all have the potential to form hollows in the future. The Wandoo trees also provide potential roosting habitat for Carnaby's Cockatoo (DAWE 2022b). Previously, two additional potential breeding/roosting trees (Wandoo stags) were located within the Offset Site; however, a recent inspection observed that these trees were no longer standing (Figure 3-6; ELA 2022b).

During the 2020 survey, some potential evidence of Carnaby's Cockatoo foraging was observed in the form of clipped branches; however, this could not be confirmed (ELA 2021). Subsequent surveys have

not recorded any evidence of the species occurring (ELA 2022b). There are nine historical records of Carnaby's Cockatoo individuals within a 50 km buffer (from 1946 to 2012) and a nesting hollow 32 km south of the Offset Site (ELA 2022b). There are no known breeding or roosting sites in proximity to the Offset Site; however, a known breeding buffer occurs approximately 21 km to the south of the Offset Site (Birdlife 2021; DBCA 2022). The closest known roost site is approximately 90 km south-west of the Offset Site (Birdlife 2021).

Table 3-3: Carnaby's Cockatoo foraging species present within the Offset Site

Foraging species	Value	Component	Description and occurrence in the Offset Site
York Gum	Secondary	Seeds	Generally present at 10-15% cover, or as isolated trees in an otherwise cleared paddock.
Salmon Gum	Primary	Seed	Present at less than 5% cover and occurs at the western section of the Offset Site (as well as outside).
Wandoo	Primary	Flowers	Present at 5% cover, with two isolated Wandoo trees occurring at western boundary of the Offset Site, and Wandoo woodland occurring just outside the Offset Site along the eastern boundary.
Allocasuarina campestris	Secondary	Seed	Present at <5% cover.

3.3. Aboriginal heritage

An archaeological and ethnographic Aboriginal heritage survey was undertaken within the Offset Site and Proposal Area on 19 January 2023 with a group of Ballardong representatives (Archae-aus 2023). One Aboriginal archaeological site AS23-001 was identified and recorded to Site Identification Level in accordance with the *Aboriginal Heritage Act 1972*. It was described as an artefact scatter, reduction area, camping ground, water source and natural feature and is located on and adjacent to the large granite dome situated in the middle of the Offset Site. Site AS23-001 (also referred to as the 'Aboriginal Heritage Area' herein) continues east of the Offset Site and extends into the Proposal Area (Figure 3-1). Site AS23-001 covers 0.16 ha of the Offset Site and contains 0.12 ha of vegetation mapped as AcTS (including 0.03 ha of granite), 0.01 ha of vegetation mapped as EIW and 0.03 ha of cleared land. The Ballardong representatives were 'supportive of the potential vegetation corridor that would act as a natural buffer to AS23-001' (i.e. the Offset Site) and recommended that endemic species should be used in any revegetation/rehabilitation works (Archae-aus 2023). While a portion of Site AS23-001 intersects with the Offset Site, management activities (such as weeding and rehabilitation/revegetation actions) are currently not proposed within this area. However, environmental management actions will be potentially undertaken in the future following further consultation with Ballardong representatives.

3.4. Historical impacts and threatening processes

The Offset Site has historically been used for livestock grazing, with 1.36 ha (52.3%) comprising cleared pasture. Aside from grazing, a number of other threatening processes are present within the Offset Site including:

- Tracks and cleared areas
- Rubbish dumping

- Weeds including the Declared Pest *Echium plantagineum*
- Presence of feral fauna including predators such as the European Red Fox
- Access by general public (including firewood collection).

Without an offset, these threatening processes would be likely to contribute to the continued degradation of the native vegetation – and therefore the MNES values – present.

Figure 3-1: Proposed Offset Site

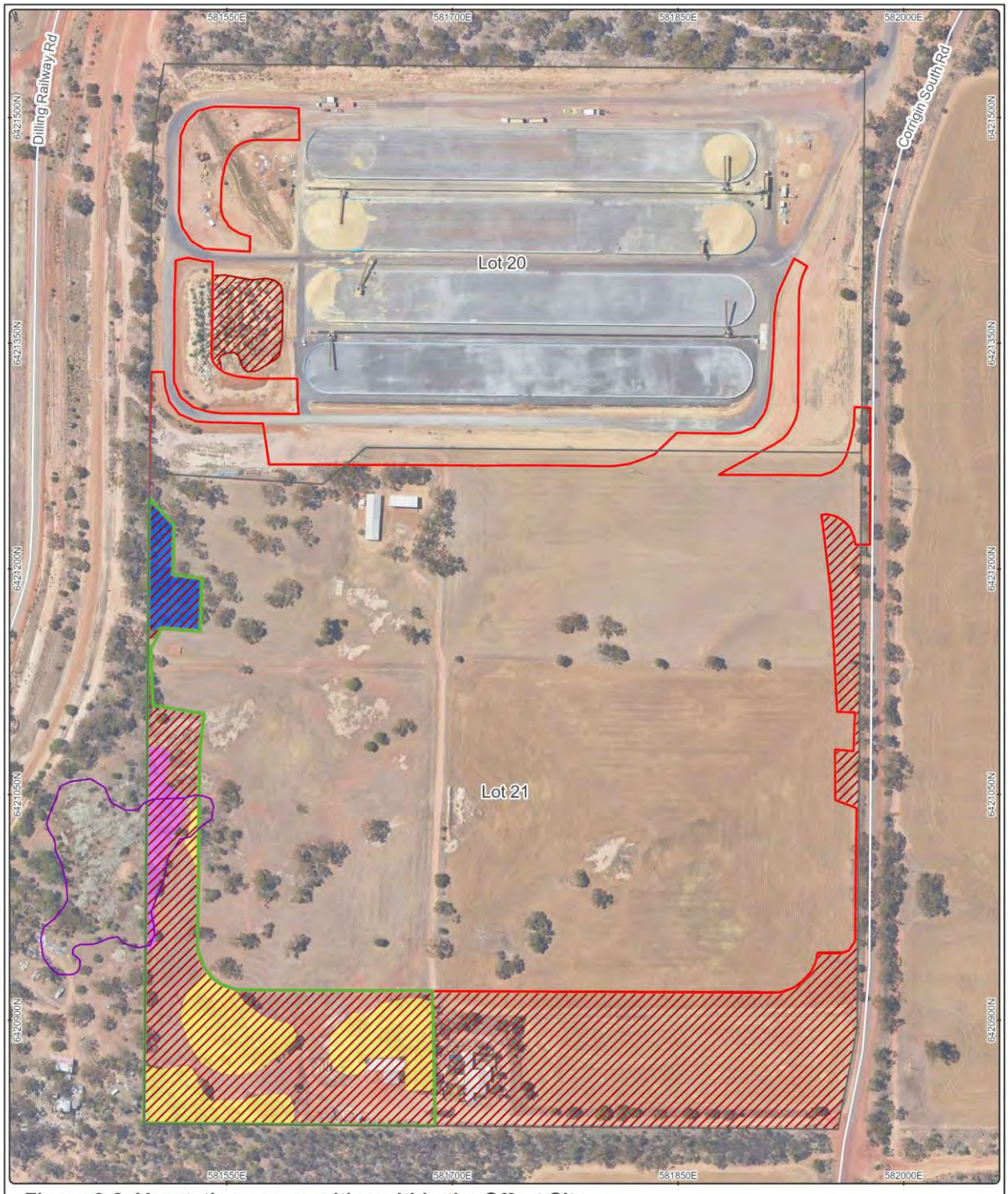


Figure 3-2: Vegetation communities within the Offset Site

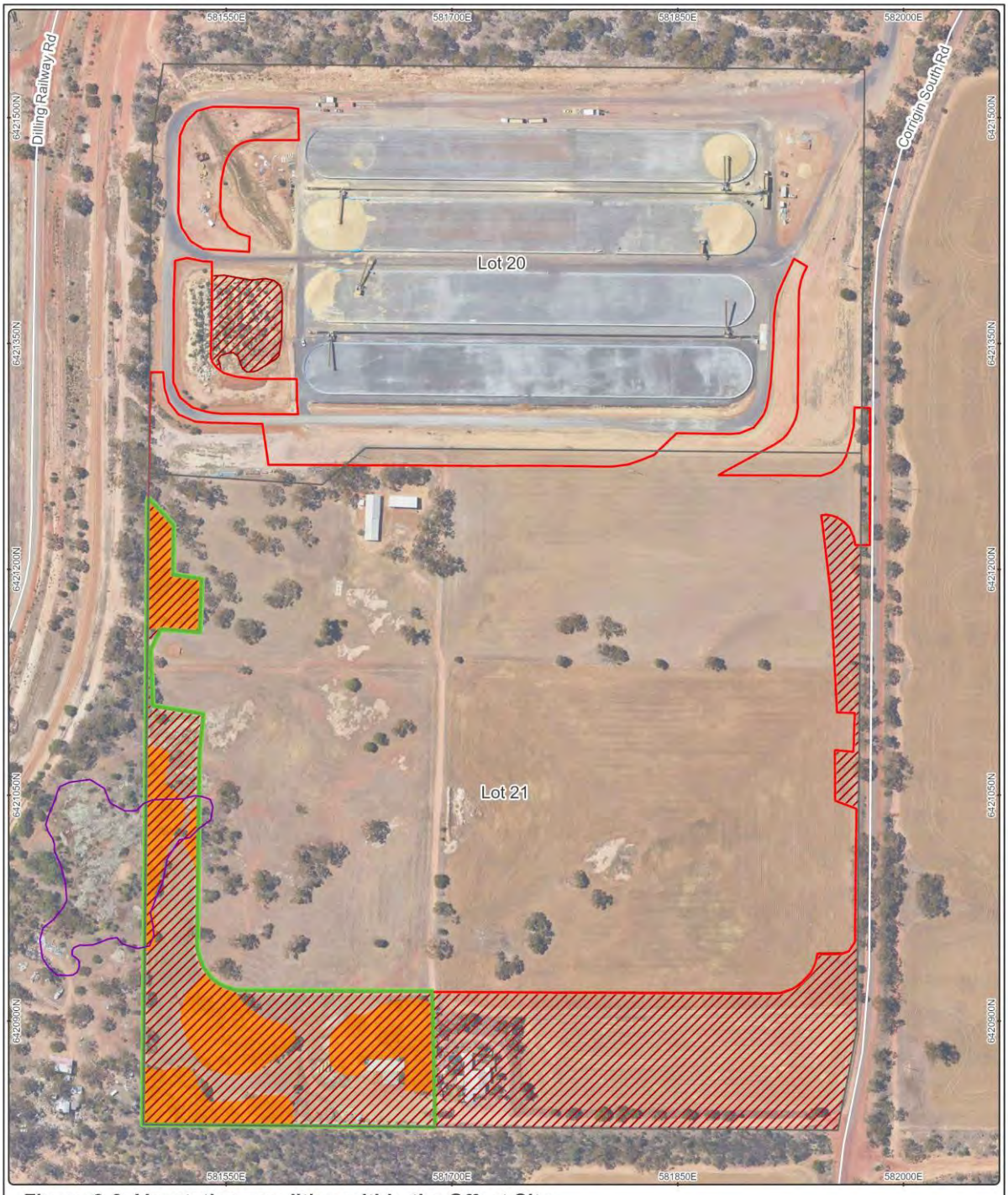


Figure 3-3: Vegetation condition within the Offset Site

- Offset Site (2.60 ha)
- Proposal Area (16.69 ha)
- Avoidance Area (5.77 ha)
- Aboriginal Heritage Area
- Cadastral Lot

Vegetation Condition

- Degraded (1.24 ha)

Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Vegetation mapping: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

0 30 60 120
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2768-RD/OK Date: 27/03/2024

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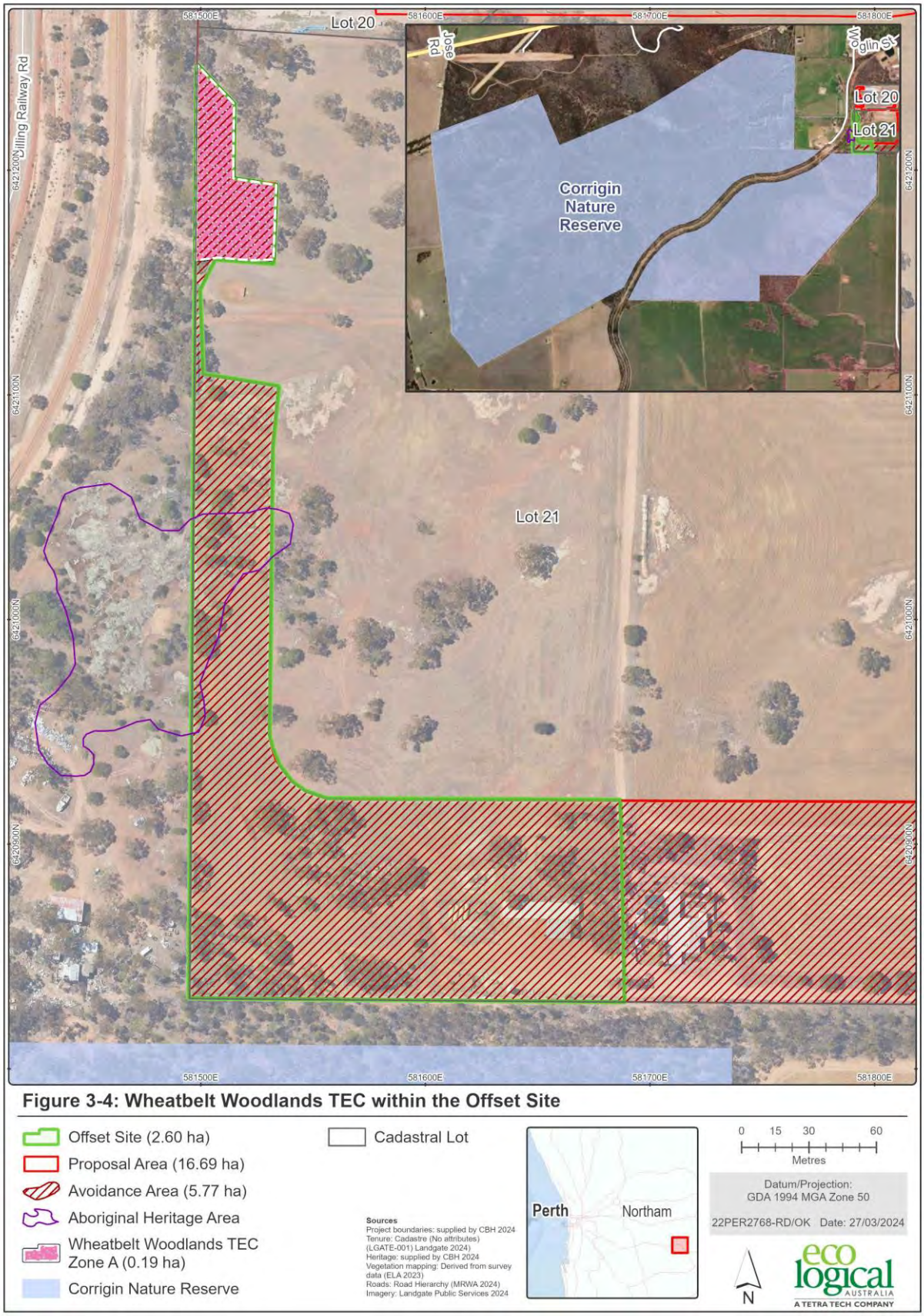

Figure 3-4: Wheatbelt Woodlands TEC within the Offset Site

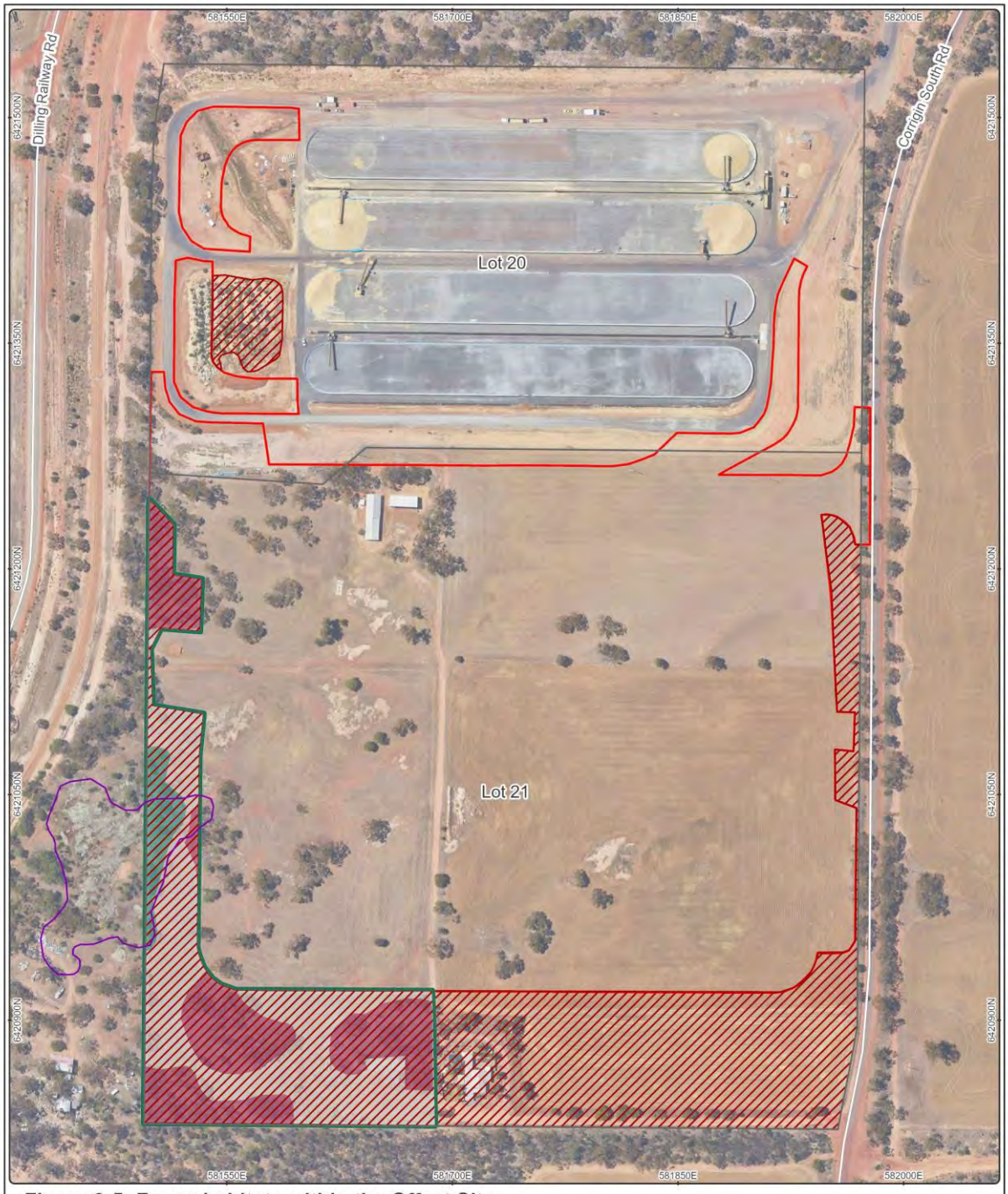

Figure 3-5: Fauna habitats within the Offset Site

Offset Site (2.60 ha)
Proposal Area (16.69 ha)
Avoidance Area (5.77 ha)
Aboriginal Heritage Area
Cadastral Lot

Fauna Habitat

Acacia acuminata Tall Open Shrubland (0.18 ha)
Eucalyptus salmonophloia, E. wandoo and *E. loxophleba* Woodland (1.06 ha)
Cleared (1.36 ha)

Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Fauna habitat mapping: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

0 30 60 120
Metres

Datum/Projection:
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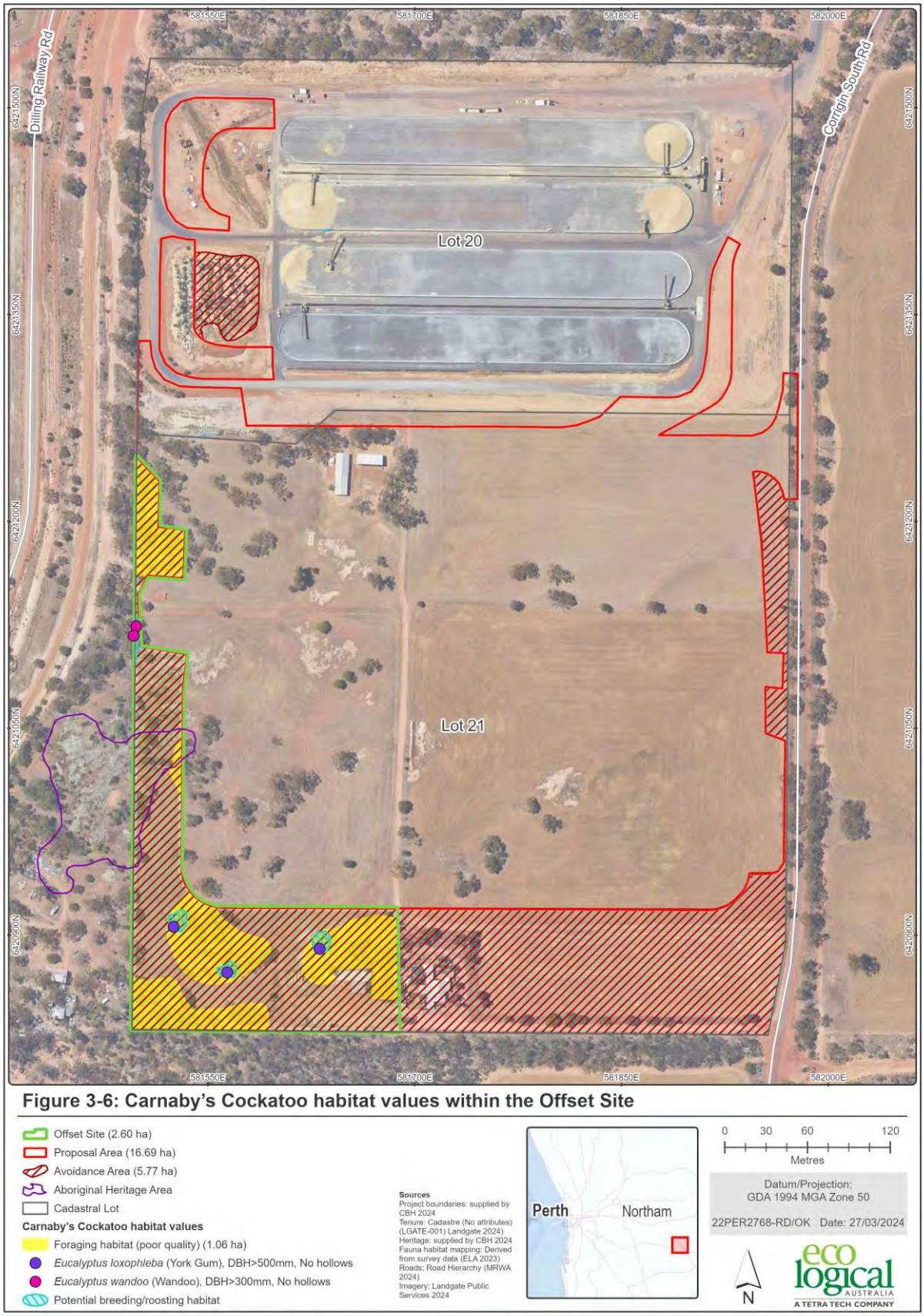
581550E
581700E
581850E
582000E
Dilling Railway Rd
Corrigin South Rd
6421500N
6421350N
6421200N
6421050N
6420900N
Lot 20
Lot 21
Figure 3-6: Carnaby's Cockatoo habitat values within the Offset Site
Offset Site (2.60 ha)
Proposal Area (16.69 ha)
Avoidance Area (5.77 ha)
Aboriginal Heritage Area
Cadastral Lot
Carnaby's Cockatoo habitat values
Foraging habitat (poor quality) (1.06 ha)
Eucalyptus loxophleba (York Gum), DBH>500mm, No hollows
Eucalyptus wandoo (Wandoo), DBH>300mm, No hollows
Potential breeding/roosting habitat
Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Fauna habitat mapping: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024
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4. Habitat quality score methodology

A proposed offset (and metric inputs) should be consistent with the EPBC Act offset policy, guidelines and assessment guide. Metric inputs (i.e. habitat quality scores) for both the impact area (Proposal Area) and Offset Site have been determined in accordance with the EPBC Act Environmental Offsets Policy (SEWPaC 2012a) and Offsets Assessment Guide (i.e. EPBC 'offset calculator'; SEWPaC 2012b, SEWPaC 2012c) with consideration of the WA draft Procedure for Environmental Offsets Metric Inputs (DWER 2022), where this has been useful to guide context and inputs.

The three components of the habitat quality scores are site condition, site context and species stocking rate (including habitat attributes) for each MNES (SEWPaC 2012b). Site condition is broadly an understanding of the condition of a site in relation to the ecological requirements of the specific ecological community or habitat. This includes considerations such as vegetation composition, health and structure, and the diversity of habitat species present. Site context is the relative importance of a site in terms of its position in the landscape. This includes connectivity to other areas of native vegetation, the boundary edge to area ratio, and the location of the site within the species or ecological community's range.

Species stocking rate has been excluded from of the habitat quality scoring methodology for the Wheatbelt Woodlands TEC and Carnaby's Cockatoo upon receiving advice from DCCEEW (EPBC 2021/9024 Information Request dated 1 May 2023 [RFI #3]; DCCEEW 2023a). The habitat quality scoring methodology (utilising site condition and site context only) is discussed for both MNES values below.

4.1. Wheatbelt Woodlands TEC

Where native vegetation meets the description and the key diagnostic criteria listed within the approved Conservation Advice for the Wheatbelt Woodlands TEC, vegetation condition thresholds (and other considerations such as patch size and the presence of mature trees) are utilised to assign a condition category for the TEC (DoE 2015). Patches that are larger, more species rich and less disturbed are likely to provide greater biodiversity value and have a greater site condition (DoE 2015). These condition categories (Categories A to D, as discussed in Table 3 in DoE 2015) have been used to create a habitat quality scoring tool specific to the Wheatbelt Woodlands TEC, with a quality score between 0-7 allocated (Table A1-1 in Appendix A). The assigned TEC condition category for the Proposal Area and Offset Site was based on the original Wheatbelt Woodlands TEC assessment undertaken by ELA (2021). For Wheatbelt Woodlands TEC, site context considerations include the proximity and connectivity to other patches of Wheatbelt Woodlands TEC and/or amount remaining in the general area (SEWPaC 2012b). Considerations for site context are also discussed within the Wheatbelt Woodlands TEC approved Conservation Advice (DoE 2015) and include (but are not limited to) flora and fauna species richness and area to boundary ratio. As well as informing the habitat quality score, site context has also been considered as part of the key diagnostic criteria utilised in the original Wheatbelt Woodlands TEC assessment (see Appendix H in ELA 2021). The habitat quality scoring tool developed for the Wheatbelt Woodlands TEC has scored site context between 0-3.

The Wheatbelt Woodlands TEC habitat quality scoring tool is provided in Appendix A (Table A1-1). Site condition and site context have been given an inherent weighting of 70% and 30% respectively, based

on DCCEEW (2023a) advice. This methodology has been used to estimate quality consistently between the Proposal Area (impact site) and Offset Site.

4.2. Carnaby's Cockatoo

The Carnaby's Cockatoo habitat quality scoring tool was developed by ELA by adapting the DWER (2022) habitat quality score table and utilising an ELA internal scoring methodology for assessing black cockatoo foraging habitat, where foraging habitat is assigned a category ranging from Nil to High (see Table A1-2 in Appendix A). The foraging habitat was then allocated a quality score ranging from 0-10; the interaction between foraging quality and vegetation condition (Keighery 1994) is demonstrated in Table A1-2 in Appendix A.

Site context features to consider in relation to the Carnaby's Cockatoo include the proximity to known breeding or roosting sites, or nearby foraging habitat for Carnaby's Cockatoo, and the role of the site in relation to the overall population (SEWPaC 2012b; DCCEEW 2022). For the Carnaby's Cockatoo foraging habitat scoring tool, site context was also assigned a score ranging from 0-10.

It should be noted that the use of the DCCEEW habitat quality scoring tool for Black Cockatoos (*Habitat Scoring System for WA black cockatoo foraging habitat*, undated, provided on 2 May 2023 by email) was considered; however, the tool developed in Appendix A was deemed more appropriate for the specific values associated with the proposed action; mainly, the dominant presence of secondary food sources (i.e. York Gum) at low density.

In contrast to foraging habitat, a habitat quality category (or score) for cockatoo breeding and roosting is not usually considered as part of ecological surveys as it is not typically required. Instead, breeding and roosting habitat is either assessed as present or absent, with 'higher quality' habitat containing trees with a larger DBH, hollows suitable for breeding and/or confirmed usage at the site or in close proximity.

The potential breeding and roosting habitat located within the Proposal Area is considered to be low quality (i.e. site condition and site context both low), due to the following factors:

- All potential breeding trees have a small DBH
- No suitable hollows have been observed in any potential breeding trees
- These trees are scattered around the site at a low density, with some being isolated within farm paddocks
- The closest nearby record is over 56 km away and the closest known breeding buffer is 20.5 km away
- There is evidence the species may be locally extinct, with a range contraction experienced in parts of the central and eastern Wheatbelt (see EPA 2019)
- While potential poor quality foraging habitat is present within the Proposal Area, and additional potential foraging habitat present in proximity (including within the Corrigin Nature Reserve), no confirmed evidence of foraging has been observed.

A separate breeding and roosting score (i.e. value assigned between 0-10) is not considered to be meaningful for the Proposal given the scale of impact (the removal of <0.1 ha of potential breeding

and roosting habitat). The impacts to potential breeding and roosting habitat are incorporated into the offset as part of foraging habitat, which occurs concurrently.

The habitat quality scoring tool methodology (Table A1-2 in Appendix A) has been used to estimate quality consistently between the Proposal Area and Offset Site. A mean foraging habitat quality score that represents a best fit for the combination of site condition (foraging quality) and site context has been assigned for both areas. Site condition and site context have been given a weighting of 70% and 30% respectively, based on DCCEEW (2023a) advice. Evidence (e.g. survey information, habitat, or remaining extent in the local area) to support the selected quality score is provided in the ecological survey reports (ELA 2021; 2022b).

Different scoring systems were used for the Carnaby's Cockatoo and Wheatbelt Woodlands TEC (see Tables A1-1 and A1-2 in Appendix A); the Carnaby's Cockatoo site condition score (0-10) and site context score (0-10) were scaled according to weighting, whilst the Wheatbelt Woodlands TEC quality score was calculated by combining the site condition (0-7; weighting inherent) and site context score (0-3; weighting inherent).

5. Offset Proposal

This section describes the proposed offset package and how the Offset Site will be managed and maintained to achieve conservation gains (or at least no net loss) for the relevant MNES. The offset will involve rehabilitation, revegetation, transfer and protection of land within the Offset Site. This is a direct offset, as per allowable offset types in the Environmental Offsets Policy (SEWPaC 2012a).

The following should be considered when examining the proposed offset package:

- Not all Carnaby's Cockatoo habitat is classified as Wheatbelt Woodlands TEC. However, all Wheatbelt Woodlands TEC is analogous to Carnaby's Cockatoo habitat
- Not all existing native vegetation communities (i.e. AcTS) within the Offset Site are currently classified as Carnaby's Cockatoo habitat or Wheatbelt Woodlands TEC. Therefore, direct seeding/seedling planting will not be undertaken within the 0.18 ha AcTS area. However, other management activities will be undertaken.
- Approximately 0.10 ha of the cleared area (paddock) within the Offset Site contains granite outcrops. This area cannot be revegetated.

5.1. Offset Proposal overview

5.1.1. Wheatbelt Woodlands TEC

CBH proposes to use the 2.60 ha Offset Site to offset significant residual impacts to Wheatbelt Woodlands TEC. Based on a combination of land protection, habitat creation and on-ground management, **the proposed offset package will directly offset over 100% of the residual impact to Wheatbelt Woodlands TEC.**

The offset package for Wheatbelt Woodlands TEC includes:

- Protection of the 2.60 ha Offset Site (including areas of Wheatbelt Woodlands TEC) through placement of land to a conservation covenant. Through this action, land and Wheatbelt Woodlands TEC will be protected in perpetuity
- Reducing threatening processes within the Offset Site
- Increasing native vegetation cover within the Offset Site from 1.36 ha to approximately 2.50 ha (the remaining 0.10 ha consists of granite outcrops)
- Creating new areas of Wheatbelt Woodlands TEC thereby increasing the area of Wheatbelt Woodlands TEC within the Offset Site from 0.19 ha to 1.43 ha through:

  - revegetation[1] of approximately 0.84 ha of existing *Eucalyptus loxophleba* woodland in Degraded condition through planting of suitable TEC species and activities such as weed control
  - revegetation of approximately 0.40 ha of cleared paddock through planting of suitable TEC species and activities such as weed control
- Increasing the quality of existing 0.19 ha of Wheatbelt Woodlands TEC from Degraded to Good or higher through rehabilitation[2] activities such as ongoing weed control, supplementary planting, access control and fire management.

The rehabilitation and revegetation strategies are described in further detail in the OMP (ELA 2024b), with the specific Wheatbelt Woodlands TEC rehabilitation and revegetation areas shown in Figure 5-1.

Rehabilitation is intended to improve the condition of existing habitat through additional plantings of Wheatbelt Woodlands TEC species, as well as weed control, fencing to restrict access and grazers, and fire management so that the condition (and category) improve over time (DoE 2015). The intention is to increase the Category of the Wheatbelt Woodlands TEC within the Offset Site from a Category D to Category B (or higher; DoE 2015).

Revegetation is intended to create additional habitat in areas that are currently devoid of any habitat or vegetation (i.e. cleared pasture; DAWE 2022b). Under the OMP, two revegetation offsets are proposed for the Wheatbelt Woodlands TEC:

1. Firstly, the creation of additional TEC in areas of existing *E. loxophleba* (ElW) woodland through weed control and planting of a mixture of Wheatbelt Woodlands TEC canopy and understorey species (estimated to create 0.84 ha of Wheatbelt Woodlands TEC). This vegetation does not currently meet TEC condition thresholds due to the Degraded condition of the vegetation, high weed cover and the small patch size (ELA 2021), so therefore the activities in this area have been termed 'revegetation' rather than 'rehabilitation'. Utilising the woodland structures (mature *E. loxophleba* trees) already present in these areas will likely assist in ensuring the success of revegetation.
2. The second revegetation offset is the creation of additional Wheatbelt Woodlands TEC in areas of cleared paddock (0.40 ha) by planting of a mixture of TEC canopy and understorey species. These areas of Wheatbelt Woodlands TEC revegetation will link the three patches of existing *E.*

[1] Revegetation is intended to create additional habitat in areas that are currently devoid of any habitat (i.e. cleared pasture; DAWE 2022b). Planting in areas of existing *Eucalyptus loxophleba* woodland for the purposes of creating Wheatbelt Woodlands TEC is considered revegetation as the TEC is currently absent from this area.

[2] Rehabilitation is intended to improve the quality or condition of habitat through supplementary infill planting, as well as weed and pest management and fencing, to improve low quality habitat so that it becomes higher quality habitat (DAWE 2022b).

loxophleba woodland, and together with suitable vegetation located adjacent to the Offset Site, provide a patch of Wheatbelt Woodlands TEC greater than 2 ha in size.

Site preparation will need to be undertaken prior to rehabilitation and revegetation activities, particularly given the history of grazing and agricultural activities across the site and the very high weed cover. Further details of management activities are provided in the OMP (ELA 2024b).

The Aboriginal Heritage Area (Site AS23-001) intersects with the Offset Site (covering an area of 0.16 ha). Management activities are currently not proposed within this area (see Section 3.3); the Aboriginal Heritage Area has therefore not been included as part of the land to be revegetated/rehabilitated.

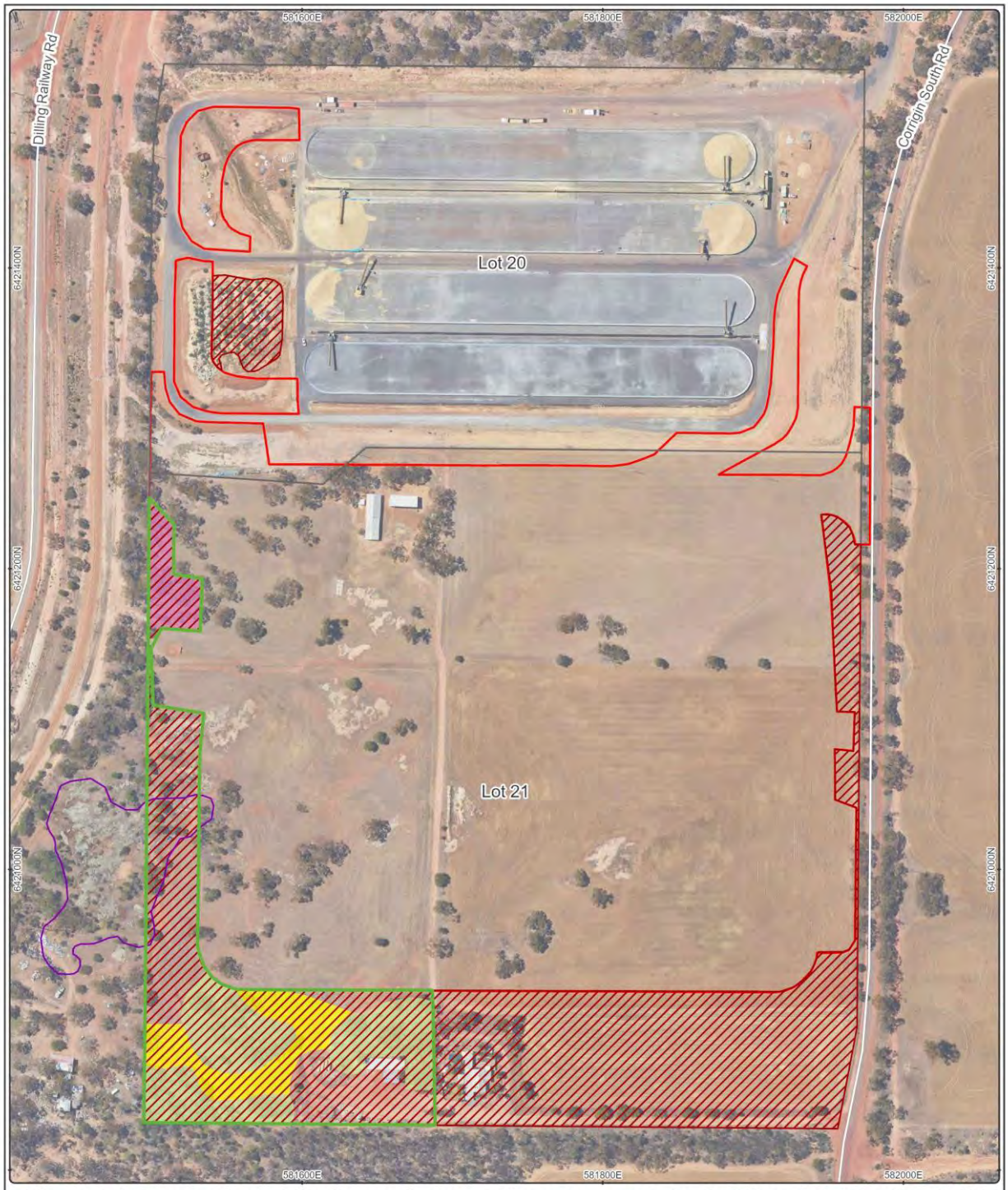

Figure 5-1: Proposed rehabilitation and revegetation offset areas for the Wheatbelt Woodlands TEC

5.1.2. Carnaby's Cockatoo

CBH propose to use the 2.60 ha Offset Site to offset significant residual impacts to Carnaby's Cockatoo. Based on a combination of land protection, habitat creation and on-ground management, **the proposed offset package will directly offset over 100% of the residual impact to Carnaby's Cockatoo**.

The offset package for Carnaby's Cockatoo includes:

- Reducing all threatening processes within the Offset Site
- Protection of the 2.60 ha Offset Site (including Carnaby's Cockatoo foraging, breeding and roosting habitat) through placement of land to a conservation covenant. Through this action, land and habitat for Carnaby's Cockatoo will be protected in perpetuity
- Increasing the area of Carnaby's Cockatoo habitat within the Offset Site from 1.06 ha to 2.40 ha through revegetation[3] of 1.34 ha of cleared paddock through planting of foraging, breeding and roosting species for Carnaby's Cockatoo to create additional habitat
- Increasing the quality of the existing 1.06 ha of Carnaby's Cockatoo foraging habitat from Poor to Moderate quality through rehabilitation[4] activities such as ongoing weed control, supplementary planting, access control and fire management.

The rehabilitation and revegetation strategies are described in further detail in the OMP (ELA 2024b), with the specific Carnaby's Cockatoo rehabilitation and revegetation areas shown in Figure 5-2. Following the offset, the habitat values of the proposed Offset Site will be higher than the habitat quality of the impact site, with these values to be protected in perpetuity through the placement of the land to a conservation covenant.

Granite outcrops are present within the Offset Site. Where they are located within cleared areas (0.10 ha), they have not been included as part of the land to be revegetated. There is also 0.18 ha of *Acacia acuminata* tall shrubland (AcTS) within the Offset Site. This vegetation does not provide foraging, breeding or roosting habitat for Carnaby's Cockatoo, and is not classified as Wheatbelt Woodlands TEC. Direct seeding/seedling planting will not be undertaken within this area as it is not suitable for the MNES values. However, other management activities (i.e. weed control) will be undertaken within this vegetation community.

The Aboriginal Heritage Area (Site AS23-001) intersects with the Offset Site (covering an area of 0.16 ha). Management activities are currently not proposed within this area (see Section 3.3); the

[3] Revegetation is intended to create additional habitat in areas that are currently devoid of any habitat (i.e. cleared pasture; DAWE 2022b).

[4] Rehabilitation is intended to improve the quality of habitat through additional plantings of Carnaby's Cockatoo foraging and breeding species, as well as weed and pest management and fencing, to improve low quality habitat so that it becomes higher quality habitat (DAWE 2022b). As not all Carnaby's Cockatoo habitat is classified as Wheatbelt Woodlands TEC, some areas of existing vegetation that will be rehabilitated for Carnaby's Cockatoo correspond with areas of Wheatbelt Woodlands revegetation.

Aboriginal Heritage Area has therefore not been included as part of the land to be revegetated/ rehabilitated.

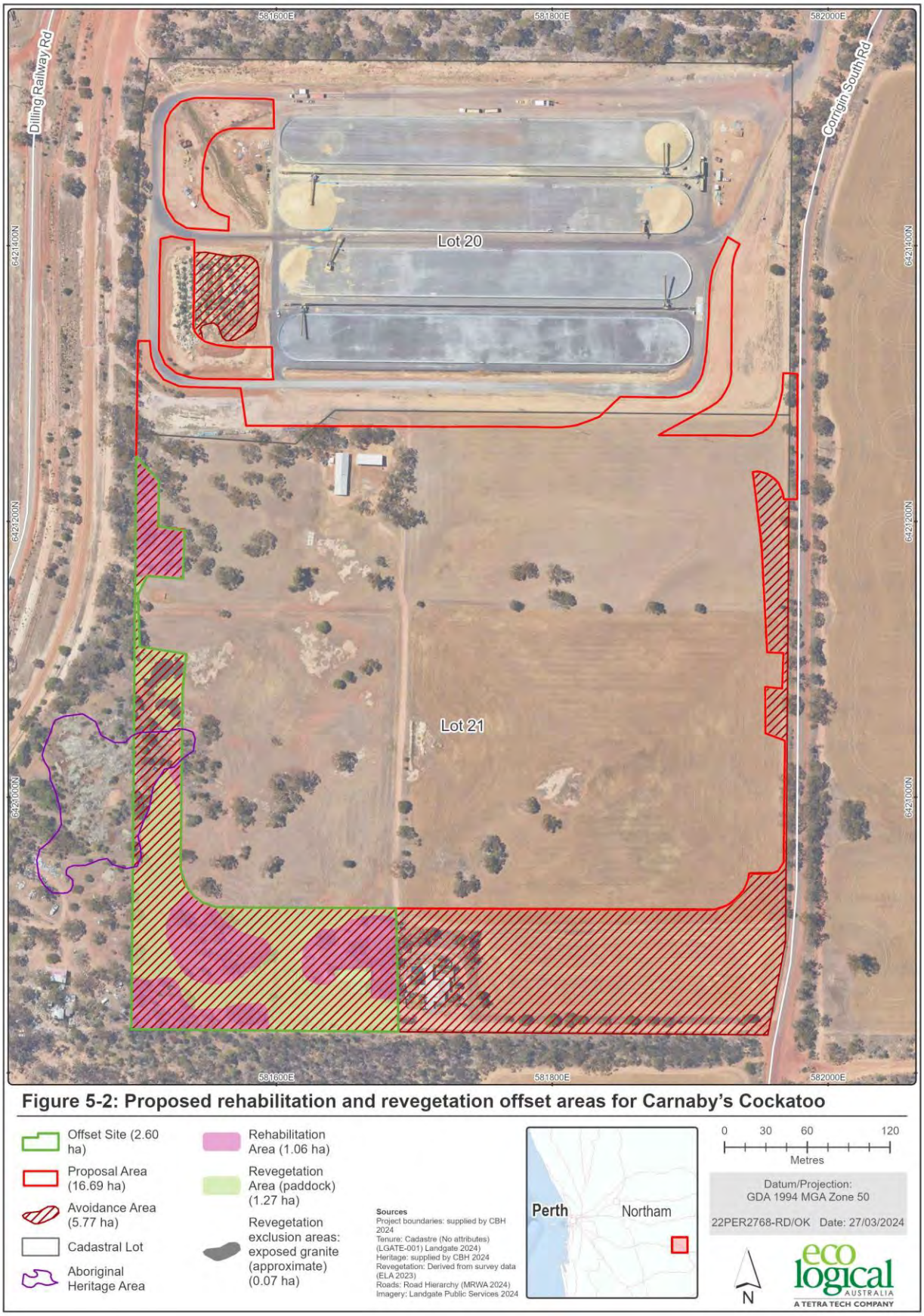

Figure 5-2: Proposed rehabilitation and revegetation offset areas for Carnaby's Cockatoo

5.2. Securing tenure

The Offset Site is located on Lot 21 on Deposited Plan 41206 (Title: 2574/594) and is freehold property already owned by CBH. The Offset Site will be placed under a conservation covenant for protection in perpetuity under the Western Australian *Soil and Land Conservation Act 1945* (SLC Act).

The protection of the Offset Site will adhere to mechanisms for offsets on private lands under the EPBC Act as the site will be (SEWPaC 2012a):

- Legally secured for conservation purposes for at least the duration of the impact
- Actively monitored for compliance, with covenant requirements enforced.

CBH intend to engage with the Department of Primary Industries and Rural Development (DPIRD) who administer the SLC Act regarding the process. It is anticipated that the following steps will be required to secure the site under conservation covenant:

- CBH to engage a licensed surveyor to draw up an Interests Only Deposited Plan (IODP) that identifies the area to be protected by a covenant. The draft IODP will be sent to DPIRD for review. The surveyor will then lodge the IODP with Landgate
- Once lodged at Landgate, a copy of the IODP will be forwarded to DPIRD which will complete the paperwork for the covenant
- Signed covenants are lodged with Landgate for registration of the memorial on the Certificate of Title.

This process will be commenced within the first year of the management of the Offset Site. It is proposed in the long term that the Offset Site will be managed by CBH in accordance with the OMP (ELA 2024b) , or until such a time that the land can be transferred to a government organisation or other private conservation entity.

5.3. Management objectives and activities

The broad management objectives for the Offset Site are to:

- Physically protect the site from manageable threats including stock, grazing by feral and native animals, fertiliser and chemical drift, weed invasion, firewood collection and inappropriate access
- Improve the condition and cover of 0.19 ha existing Wheatbelt Woodlands TEC (EsElW) through weed control, restricted access and infill planting
- Create 1.24 ha of Wheatbelt Woodlands TEC, within areas mapped as ElW (0.84 ha) that do not meet TEC criteria, and link these areas with the creation of new areas of Wheatbelt Woodlands TEC from cleared paddock (0.40 ha)
- Improve the quality of 1.06 ha of existing foraging habitat for Carnaby's Cockatoo (EsElW and ElW) through weed control, restricted access and infill planting
- Create 1.34 ha suitable foraging and potential breeding and roosting habitat for Carnaby's Cockatoo habitat in cleared areas
- Revegetate at higher densities than may be expected within mature vegetation to imitate natural regeneration at disturbed sites

- Existing weed infestations are reduced, weed spread is minimised and the introduction of new weeds is prevented.

Two revegetation zones (Zone A and Zone B) have been identified based on ecological survey work undertaken to date and the presence of existing MNES habitat including areas containing Wheatbelt Woodlands TEC and Carnaby's Cockatoo habitat (Figure 5-3). The specific management and monitoring actions, targets, competition criteria and contingency triggers are described in the OMP (ELA 2024b).

On-ground management activities will be undertaken at the Offset Site and will include targeted revegetation and supplementary planting, as well as rehabilitation activities such as clearing rubbish, installing/upgrading fencing and restricting access, and weed control. On-ground management activities are intended to prevent further degradation and maintain the quality and condition of existing environmental values, improve the quality and condition of degraded areas, and create additional habitat in areas devoid of any habitat values.

A brief overview of the proposed on-ground management and monitoring activities is provided below. These are described in further detail in the OMP (ELA 2024b).

5.3.1. Weed and pest management

Prior to undertaking weed control, baseline weed mapping will need to be undertaken across the site to obtain a full inventory of weed species and percentage cover. This survey will inform the weed control program. The weed control program will be undertaken by a suitably qualified contractor. Weed control will commence up to two years prior to planting and will continue after planting as required, as informed by monitoring and the advice of the qualified contractor.

Follow up weed management will be informed by visual inspections by maintenance contractors and results of annual monitoring conducted as part of the annual vegetation condition monitoring.

Insect pest control will be undertaken prior to planting and will include using either a systemic insecticide tablet placed under the seedling or a systemic insecticide injected into the soil around the root bowl before planting (usually in the nursery).

5.3.2. Fencing and access management

Permanent fencing that excludes vehicles (except for management vehicles), people and grazers (sheep and macropods) from entering the site will be established around the periphery of the Offset Site. Access for management vehicles (including fire trucks) will be provided at location(s) where existing tracks occur. Fencing will be regularly inspected to check for any maintenance issues.

5.3.3. Direct seeding and seedling planting

Revegetation/rehabilitation will include planting a mixture of ground cover and canopy Wheatbelt Woodlands TEC and/or Carnaby's Cockatoo species that are endemic to the area and known to be reliable in propagation. A diverse mix of species will be used to create different strata to provide a more complex and robust habitat than if only one or two canopy species were planted. This will also ensure that habitat quality (for Carnaby's Cockatoo) or vegetation condition (for Wheatbelt Woodlands TEC) is improved by increasing the number of foraging species present and/or percentage foliage cover.

Planting and direct seeding will be undertaken at the optimal time for the Wheatbelt, typically late May (subject to autumn rainfall) to late July. Tubestock planting will be undertaken at rates approximately 20% higher than completion criteria to allow for plant deaths. Planting will occur either via manual hand planting (seedlings) using a tree planting tool or tractor-mounted planting machine, or a combination of both, depending on site conditions on the advice of the revegetation contractor. Direct seeding is aimed at supplementing the seedlings and will be undertaken via a tractor-mounted machine.

5.3.4. Hygiene management

Contractors or CBH staff entering the offset sites will be required to adhere to strict hygiene measures to minimise the potential for weeds or pathogens to be introduced or spread. Seedlings will also be sourced from nurseries with a Nursery Industry Accreditation Scheme accreditation.

5.3.5. Fire management

The objective of fire management will be to negate or reduce risk of accidental fire to Wheatbelt Woodlands TEC and Carnaby's Cockatoo habitat. CBH will develop an on-site fire management plan or incorporate the Offset Site into its existing receival site bushfire risk management plan. A firebreak will be installed around the periphery of the offset site, utilising existing tracks. Installation of the firebreak will not involve clearing any native vegetation including areas of Wheatbelt Woodlands TEC or Carnaby's Cockatoo habitat. Perimeter fencing will include at least one access point for maintenance and fire vehicles.

5.3.6. Monitoring and continency measures

CBH will engage a suitability qualified expert to undertake a twenty-year monitoring program (until completion criteria have been met or otherwise as agreed with DCCEEW) to ensure the success of revegetation and rehabilitation activities. Ongoing monitoring will add significant value to the outcomes of on-ground management.

Annual monitoring will be conducted to assess the need for extra planting and/or seeding to ensure the species composition and structure is similar to the proposed reference sites located within Corrigin Nature Reserve, and to ensure the completion criteria are met. The OMP (ELA 2024b) provides further information regarding the proposed monitoring program. If monitoring indicates that objectives and management targets (and, ultimately, completion criteria) for the Offset Site are not being achieved, or are unlikely to be achieved within the allocated timeframe, contingencies and corrective actions will be enacted as per the OMP.

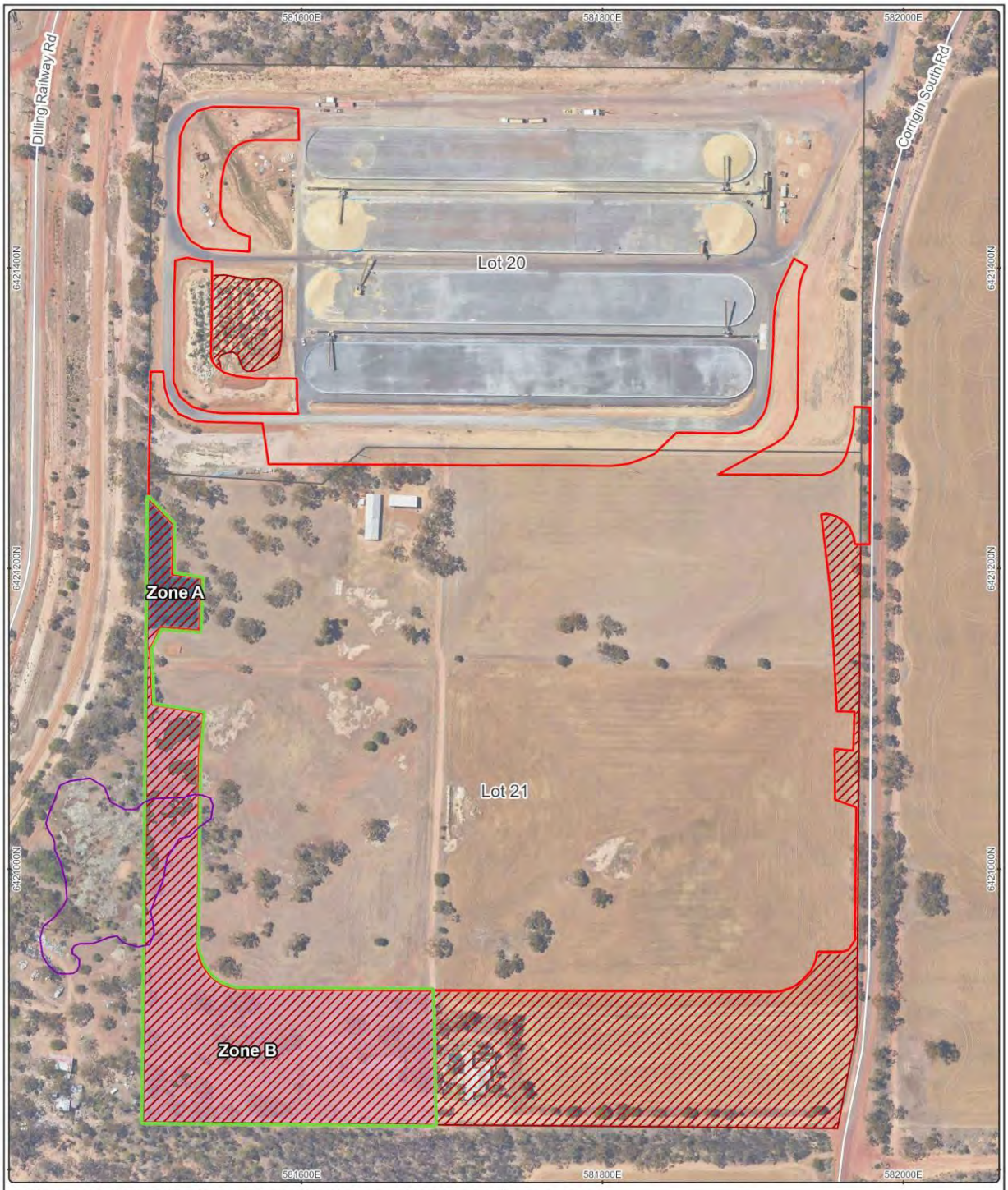

Figure 5-3: Indicative rehabilitation and revegetation zones

5.4. Conservation gains and timeframes

The main conservation gain (or at least no net loss) will be the creation, enhancement and protection of habitat values for MNES. This will assist in averting the future loss, degradation or damage to Wheatbelt Woodlands TEC and habitat for Carnaby's Cockatoo.

Conservation gains will be achieved over both the short term and long term, with initial conservation gains being made within 12 months of implementation from lodgement of conservation covenant, the installation of fencing and the removal of rubbish. On-ground management, such as removing threatening processes, will result in significant gains within the first 1-3 years of the management actions being implemented. The ecological benefits of management are expected to continue throughout the life of the offset implementation until full ecological benefit is realised. The revegetation and rehabilitation completion criteria are proposed to be met after five years of commencement of revegetation and rehabilitation activities, with the exception of the creation of new areas of Wheatbelt Woodlands TEC from areas of cleared land, which is conservatively anticipated to take ten years for tree species to mature. Monitoring will occur biannually in spring and autumn after completion of revegetation until all completion criteria have been met. The actual time to achieve conservation gain is summarised in Table 5-1.

Table 5-1: Time until conservation gain

Timing	Management actions	Conservation gain
Short-term (3-5 years)	Grazing managed / removed where needed Fencing and signage (if required) erected Rubbish removal Eradication of the Declared Pest *Echium plantagineum* (Paterson's Curse) Weed control of primary target weeds Plant substrate improvement (e.g. deep ripping) where needed Revegetation planting (seedlings and/or direct seed Buffer planting to protect areas of Wheatbelt Woodlands TEC/Carnaby's Cockatoo habitat in proximity to grain facilities	Protection of habitat in perpetuity Decrease in weeds and competition Decreased risk of loss of MNES values Increase in species of relevance for Wheatbelt Woodlands ecological community Increase in foraging species for Carnaby's Cockatoo Increased community awareness of the significance of conservation
Long term (> 5 years)	Ongoing weed control where required Maintenance of fencing where required Maintenance of fire breaks where required Plant replacement where required	Protection of habitat in perpetuity Long term habitat availability for Wheatbelt Woodlands TEC and Carnaby's Cockatoo Increased species diversity, biomass and resources Potential for increase in total vegetation cover and habitat condition or quality through regrowth and assisted regeneration

5.5. Certainty of success

The Offset Proposal will be undertaken in accordance with the OMP (ELA 2024b). The OMP will include provisions for revegetation, rehabilitation, access management, fire management, weed

control and hygiene measures, with an overarching objective to create and/or improve the overall quality and condition of native vegetation and the relevant protected matters present within the Offset Site. The OMP will articulate management objectives, targets, completion criteria, management actions, monitoring parameters and timing to measure performance, contingency/corrective and adaptive management processes and compliance, review, and reporting requirements. This will include an assessment of potential risks associated with the Offset Proposal and contingency strategies that will be applied if management actions fail to achieve and/or maintain the overarching environmental objectives.

A review of similar projects that have succeeded in providing adequate offsets for MNES is provided below in Table 5-2. These studies provide evidence of demonstrated success (i.e. that the environmental values can be recreated) for ecological communities and Carnaby's Cockatoo habitat. The benefits of rehabilitation programs to address common threatening processes such as soil degradation and weeds are well known as evidenced by the relevant programs and numerous small projects supported by DCCEEW under the National Landcare Program (DCCEEW 2023b). These programs are run across the country, including within the wheatbelt region of Western Australia. Similarly, the Commonwealth Department of Agriculture, Fisheries and Forestry runs a program called the Agriculture Biodiversity Stewardship Package which provides a set of guidelines for enhancing remnant vegetation (DAWE 2021). This program encourages landholders to maintain and protect patches of native vegetation through 'management activities which are reasonably required to protect and enhance the condition of remnant vegetation for biodiversity' (DAWE 2021). These management activities include controlling grazing, undertaking weed control, controlling pests, and undertaking in-fill planting and revegetation.

Within Western Australia, there are a number of programs in place to improve biodiversity on agricultural land and/or protect patches of native vegetation including the Wheatbelt Woodlands TEC and black cockatoo habitat. Wheatbelt Natural Resource Management (NRM) is a community-based organisation under the National Landcare Program that run an ongoing program called 'Where the Wild Things Are' (Wheatbelt NRM 2023a). This program aims to protect the Wheatbelt Woodlands TEC through supporting community organisations and individuals to manage and undertake on-ground activities to protect remnant bushland and conserve biodiversity values. The program provides support for a range of activities including fencing, revegetation, bushland weed and feral animal control. Whilst the specific outcomes or conservation gains of this program are not yet documented, it is considered likely that these on-ground activities will result in protection and enhancement of patches of Wheatbelt Woodlands TEC (Wheatbelt NRM 2023a).

There are few readily available case studies in the public domain that provide scientific evidence of successful rehabilitation of Wheatbelt Woodlands TEC, due to the community only having been recently listed in 2015. Most publicly available case studies occur in Eucalypt woodlands in South Australia.

One case study of York Gum and Jam woodland in southwestern Australia, demonstrates that fencing provides some benefits to the targeted eucalypt woodlands including increased native richness and cover, reduced exotic abundance and enhanced tree recruitment, and prevention of further degradation from livestock grazing. The study also showed strong evidence that vegetation condition

was better in fenced plots when compared to grazed plots; however, also noted that additional interventions would likely be required to achieve conservation gains (Proberac et al. 2011).

Another study on the effect of reducing browsing and grazing impacts also showed preliminary improvements in tree population dynamics but noted that further active revegetation and management would likely be required to achieve long-term sustainability (DELWP 2021).

Anecdotal evidence of improvements in vegetation condition and extent has also been observed by Wheatbelt NRM landholders participating in active land management activities such as fencing, removing grazing, in-fill planting, revegetation and feral fauna control. For example, one landholder east of Newdegate has successfully protected 36 ha of Wheatbelt Woodlands TEC through fencing and removing grazing pressures, and has increased the TEC extent and condition by approximately 7 ha through revegetation in areas affected by flooding (Wheatbelt NRM 2023c). Another landholder in Nembudding (WA) has successfully undertaken 40 ha of infill and bare land revegetation, as well as weed control, feral fauna control and nest box installation, which has resulted in increased flora and fauna biodiversity on the property, as well as ongoing protection and viability of areas of Wheatbelt Woodlands TEC that also occur within the property (Wheatbelt NRM 2023c).

The likely success of any proposed offset resulting in an increase in Wheatbelt Woodlands TEC cover and condition is further enhanced by the soil types in which the offset site occur. Jam or York Gum woodlands generally occur on loamy soils, often stony with high productivity and well drained which make a good medium for revegetation, whereas Salmon Gum soils are the most reliable and productive soils in the Wheatbelt (Wheatbelt NRM 2023b). The offset site occurs on a mixture of Jam or York Gum soils and Salmon Gum soils, and comprises laterite, sandy and loamy gravels, duplexes, loamy earths and clays over mixed mafic rock (ELA 2021). Jam soils support a large variety of species and naturally has a huge diversity of annuals and understory species, whilst York Gum is one of the most versatile species there is. Revegetation management targets included in the OMP include site preparation, as well as planting 300 stems/ha of at least two dominant tree species (York Gum, Salmon Gum or Wandoo) and 400 stems/ha of a variety of understorey species. Given the favourable soil conditions and York Gum being one of the most versatile species there is, it is anticipated that revegetation will be successful, and if not, contingency actions are provided for to ensure that the objectives can be met (ELA 2024b).

Although there are limited case studies on successful revegetation specifically of Wheatbelt Woodlands TEC, revegetation programs have been conducted over many years in the Western Australian wheatbelt (including vegetation likely to be consistent with TEC criteria). Based on these programs, it is considered likely that the combination of management activities (i.e. fencing, weed and pest control, in-fill planting and revegetation) will result in an increase in vegetation extent and condition over time. CBH propose to monitor changes in vegetation condition over time through implementation of a monitoring program at the Offset Site. Gathering information about the condition of vegetation is an integral part of managing natural resources in order to maintain, or improve, the current condition of vegetation (DEC 2008). In addition, CBH will adopt an adaptive management approach which will allow for early warning indicators to be applied in the event that a management target is not being met. This will assist in ensuring that the overall environmental objectives are met and that CBH can apply any learnings throughout the rehabilitation process.

To address the current gap regarding restoration standards for Wheatbelt vegetation and the lack of case studies on successful revegetation for Wheatbelt Woodlands TEC, CBH has recently engaged with the Western Australian Biodiversity Science Institute (WABSI) to provide an independent, science-based restoration standard for Wheatbelt Woodlands TEC. While CBH will fund this process, it requires WABSI to undertake an independent, science-based approach to develop a restoration standard that can be used to assess and guide restoration activities focused on the WA wheatbelt region by CBH and other stakeholders. WABSI has been engaged in this process given its independence and track record for the development of science-based restoration standards for Western Australian terrestrial flora.

Based on the success of similar projects and the implementation of the OMP, it is anticipated that the Offset Proposal will be successful in achieving the conservation gains for Wheatbelt Woodlands TEC and Carnaby's Cockatoo.

Table 5-2: Evidence of success in achieving conservation gains through offsets

Project and client	Location	MNES	Description of offset	Outcome
A Decade of Rehabilitation Offsets Tranen Revegetation Systems (2022)	Yellagonga National Park	Banksia Woodland TEC Carnaby's Cockatoo	Banksia Woodland TEC (and Carnaby's Cockatoo habitat) rehabilitation over two stages (stage 1 commenced 2014, stage 2 2022). Targets: 1.6 plants/m^2 100% trees, 80% large shrubs, 60% understorey species established from list of 58 local species 10% weed cover.	0.7 plants/m^2 (below target) High native cover (approx. >70%) 43 of 58 species established (on target) Weeds above target but suppressed by canopy Site ready to be handed over to DBCA
Revegetation on WBR0016 Main Roads WA	Shire of Chittering	N/A	Revegetation of the Great Northern Highway between SLK 53.0 and SLK 53.8. Spraying, ripping, and planting all occurred in June 2013.	Successful revegetation of approximately 1.5 ha of road reserve. Not specifically aimed at MNES, but revegetation included species suitable for use by Carnaby's Cockatoo.
Wheatbelt Revegetation Bank Main Roads WA	Wheatbelt	Wheatbelt Woodlands TEC Carnaby's Cockatoo	Involves widening and revegetating road reserves in the Wheatbelt Designed to provide offsets for lower quality roadside vegetation in the Wheatbelt	Project is ongoing but aims to achieve: • Revegetation bank will provide a pool of environmental offsets available for use by future projects • Projects that utilise the bank will pay into the bank to fund more revegetation for future projects • Offset cost to projects will be predictable
Abercorn Rd, The Lakes WaterCorp and Greening Australia	Jarrah Forrest Subregion	Carnaby's Cockatoo	Previously pastoral land, started in 2010 with the objective of '…achieving self-sustaining foraging habitat for the endangered Black Cockatoo species'	Established 30 species of endemic understory species, all identified as critical Cockatoo habitat species to land that was previously cleared pastoral land Reduced threats from invasive weed species and improve vegetation by direct seeding approximately 54 kg of seed and planting 119,258 seedlings.
Monjebup Reserve Bush Heritage	Fitz-Stirling landscape	Carnaby's Cockatoo	Revegetation of 400 ha of Carnaby's Cockatoo habitat Planting of 10,000 seedlings over two years on Monjebup Reserve. Seedlings, predominantly Banksia (including Dryandra species), Hakea and Grevillea	6,000 seedlings successfully planted and regenerated. Foraging evidence noted on trees planted 4-5 years ago. A further 4,000 seedlings to be planted this year.

6. Offset policy and guidance

6.1. EPBC Act Offsets Policy

The EPBC Act Offsets Policy outlines the offsetting framework for residual significant impacts to MNES (SEWPaC 2012a). Offsets are required when the avoidance and mitigation strategies have not removed the need for offsets. Offsets are defined as measures that compensate for the residual adverse impacts of an action on an MNES. The aim of the policy is to ensure that an overall conservation outcome is achieved that improves or maintains the affected MNES.

Offsets can be provided through direct or indirect offsetting. Direct offsets provide for a measurable conservation gain for the affected MNES and must reach a minimum of 90% when applying the EPBC offsets calculator (SEWPaC 2012a). A direct offset must:

- Be additional to what is already required
- Include transparent governance arrangements such that it can be measured, monitored, audited and enforced
- Be informed by scientifically robust information
- Be equal in quality to that of the impact site
- Provide some form of legal security over the offset for at least the duration of the impact
- Be proportionate to the level of statutory protection that applies to the protected matter
- Be suitable in size and scale proportionate to the impacts to the MNES
- Account for the risk of the offset not succeeding
- Improve habitat for the affected MNES
- Avert some level of loss for the affected MNES.

6.2. EPBC Act Offsets Policy Principles

The offset for the proposed action is consistent with and proposed in accordance with Australian Government Offset Policy Principles (SEWPaC 2012a) as summarised in Table 6-1.

Table 6-1: Consideration of offset principles with respect to the proposed offset

Principle	Response
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matter.	Offsets proposed are in accordance with information and guidance provided in the referral guidelines for Black Cockatoos, Carnaby's Cockatoo Recovery Plan and Approved Conservation Advice for Wheatbelt Woodlands TEC to ensure overall conservation outcomes (i.e. improve the viability of Carnaby's Cockatoo habitat and Wheatbelt Woodlands TEC).
Suitable offsets must be built around direct offsets but may include other compensatory measures.	The offset package has been developed around direct offsets which are required to account for 90% of the offset package under the EPBC Act. The direct offsets proposed in this package account for over 100% of the offsets required for MNES and therefore other compensatory measures are not proposed.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter.	Offsets have been developed in accordance with the EPBC offsets calculator for each significant residual impact. The calculator accounts for the conservation status of each matter.

Principle	Response
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter.	Offsets have been developed in accordance with the EPBC offsets calculator for each significant residual impact.
Suitable offsets must effectively account for and manage the risks of the offset not succeeding.	The uncertainty of offset success is included in the calculation of a suitable offset extent in accordance with the EPBC offsets calculator. The OMP (ELA 2024b) includes objectives and appropriate targets/performance indicators to measure success of achieving the outcomes indicated in this Proposal. It will also provide for appropriate monitoring and setting of triggers for implementation of remedial actions should monitoring indicate issues related to success.
Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other schemes or programs.	Only protection or habitat improvement additional to the base case of existing requirements is considered part of the offset.
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable.	The proposed offset has been based on biological survey data completed by qualified ecologists that determined the offset land contains values and is suitable for re-establishing values in rehabilitation and revegetation areas.
Suitable offsets must have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.	Any condition regarding this Offset Proposal is expected to include governance arrangement requirements, involving consultation with and endorsement by DCCEEW and other decision-making authorities. The OMP (ELA 2024b) includes appropriate monitoring to measure and respond to success. CBH will be responsible for undertaking conservation actions.

6.3. Adequacy of offset

Under the EPBC Act Offset Assessment Guide, suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed action (SEWPaC 2012b).

The proposed offset aims to improve the size and viability of Wheatbelt Woodlands TEC and Carnaby's Cockatoo habitat through land protection, rehabilitation to remove threatening processes and improve habitat condition, and revegetation to create additional areas of habitat, and therefore achieves this objective.

The proposed offset is proportionate to the level of impact and significance of the environmental values being impacted and aligns with the EPBC Act Principles, described in Table 6-1. Through implementation of an adaptive management framework, the Proponent has factored in risks of failure and provided contingency measures that can be implemented to ensure certainty of success.

Given all the above, the offset proposed is considered more than adequate with over 100% direct offset achieved for each MNES.

7. References

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Appendix A Methodology for assigning habitat scores

Table A1-1: Wheatbelt Woodlands TEC Habitat Quality Scoring Tool

Quality score[1]	Site condition	
	TEC Category[2]	Description[2]
7	Category A	Keighery (1994) vegetation condition Pristine; understorey weed cover ≤30%; patch size ≥2 ha (non-roadside patches) or patch width ≥5m (roadside only), mature trees may be present or absent.
6	Category A	Keighery (1994) vegetation condition Excellent; understorey weed cover ≤30%; patch size ≥2 ha (non-roadside patches) or patch width ≥5m (roadside only), mature trees may be present or absent.
5	Category A	Keighery (1994) vegetation condition Very Good; understorey weed cover ≤30%; patch size ≥2 ha (non-roadside patches) or patch width ≥5m (roadside only), mature trees may be present or absent.
4	Category B	Keighery (1994) vegetation condition Good; understorey weed cover 30-50%; patch size ≥2 ha (non-roadside patches) or patch width ≥5m (roadside only), mature trees are present with ≥5 trees/0.5 ha.
3	Category C	Keighery (1994) vegetation condition Good; understorey weed cover 30-50%; patch size ≥5 ha (non-roadside patches) or patch width ≥5m (roadside only), mature trees either absent or <5 trees/0.5 ha are present.
2	Category D	Keighery (1994) vegetation condition Good; understorey weed cover 50-70%; patch size ≥5 ha (non-roadside patches) or patch width ≥5m (roadside only), mature trees are present with ≥5 trees/0.5 ha.
1	Category D	Keighery (1994) vegetation condition Degraded; understorey weed cover 50-70%; patch size ≥5 ha (non-roadside patches) or patch width ≥5m (roadside only), mature trees are present with ≥5 trees/0.5 ha.
0	None	Does not qualify as Wheatbelt Woodlands TEC as the key diagnostic characteristics or minimum condition thresholds (see above criteria) are not met.
Quality score[1]	**Site context**	
	Category	**Description**
3	High	High site context means (any or all): • The site is well connected to areas of native vegetation. • Generally has a low edge to area ratio. • Provides landscape-level connectivity. • High flora and fauna species richness. • Site is within the significant and/or highly impacted part of the species or ecological community's range. • Adjoins or within proximity of a conservation or nature reserve.
2	Moderate	Moderate site context means (any or all): • The site provides some connection to areas of native vegetation.

		• Adjoins or within proximity of an ecological linkage. • Vegetation at the site may be fragmented, but forms part of a network/movement corridor. • Provides landscape-level connectivity. • Moderate flora and fauna species richness. • Site is within the significant and/or highly impacted part of the species or ecological community's range.
1	Low	Low site context means (any or all): • Site is not connected to areas of native vegetation. • Site is not within an ecological corridor. • Generally fragmented vegetation (high edge to area ratio). • Low flora and fauna species richness. • Site is within the ecological community's range.
0	None	Site is not within the ecological community's range. The impact is not required to be offset (i.e. ecological community is not present) OR the site is not suitable as an offset site.

1. FINAL QUALITY SCORE IS THE SUM OF THE SITE CONDITION AND SITE CONTEXT. SITE CONDITION AND SITE CONTEXT MUST BOTH BE ≥1 FOR THE ECOLOGICAL COMMUNITY TO BE PRESENT.

2. AS PER TABLE 3 IN THE WHEATBELT WOODLANDS TEC CONSERVATION ADVICE (DOE 2015).

Table A1-2: Carnaby's Cockatoo Habitat Quality Scoring Tool

Quality score	Site condition (weighting 70%)		Site context (weighting 30%)
	Keighery (1994) vegetation condition scale (intensive land-use zone)	Foraging habitat quality[1] (Carnaby's Cockatoo)	
10	Pristine: Pristine or nearly so, no obvious signs of disturbance; 0% weed cover.	High: • Primary food sources present at > 60% projected foliage cover • Vegetation may be in Good or higher condition with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium to long term).	High site context means (any or all): • The site is well connected to areas of native vegetation. • Generally has a low edge to area ratio. • Provides landscape-level connectivity. • Site is within the significant and/or highly impacted part of the species or ecological community's range. • Adjoins or within proximity of a conservation or nature reserve.
9	Excellent: Vegetation structure intact; disturbance affecting individual species; weeds are non-aggressive species; 1–5% weed cover. For example, damage caused by fire, the presence of non-aggressive weeds and occasional vehicle tracks.		
8	Very good to Excellent	Moderate to High: • Primary food sources with 40-60% projected foliage cover • Primary food sources with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths • Secondary food sources with >60% projected foliage cover • Pine plantations with trees more than 10 years old • Vegetation may be in Good or higher condition.	
7	Very good: Vegetation structure altered; obvious signs of disturbance; 5–25% weed cover. For example, disturbance to vegetation structure caused by repeated fires; the presence of some more aggressive weeds; dieback; logging; and grazing		Moderate site context means (any or all): • The site provides some connection to areas of native vegetation. • Adjoins or within proximity of an ecological linkage. • Vegetation at the site may be fragmented, but forms part of a network/movement corridor. • Provides landscape-level connectivity. • Site is within the significant and/or highly impacted part of the species or ecological community's range.
6	Good to Very good	Moderate: • Primary food sources present at 20-40% projected foliage cover • Secondary food sources (i.e. Woodlands with primarily secondary food items such as Peppermint, Tuart, York gum, Wattles, etc.) present at 40-60% projected foliage cover • Vegetation may be in Degraded to Very Good condition.	
5	Good: Vegetation structure significantly altered by obvious signs of multiple disturbances; retains basic vegetation structure or ability to regenerate it; 25–50% weed cover. 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 grazing.	Poor to Moderate foraging value including: • Primary food sources present at 5-20% projected foliage cover • Secondary food sources present at 20-40% projected foliage • Vegetation may be in Degraded or Good condition.	

4	Good to degraded	Poor foraging value including: • Primary food sources present at 2-5% • Secondary food sources present at 10-20% projected foliage cover • Vegetation in Degraded condition • Short-term and/or seasonal food sources such as paddocks with melons or other known food-source weeds (e.g. Erodium spp.).	Low site context means (any or all): • Site is not connected to areas of native vegetation. • Site is not within an ecological corridor. • Generally fragmented vegetation (high edge to area ratio). • Site is within the species or ecological community's range.
3			
2	Degraded: Basic vegetation structure severely impacted by disturbance; scope for regeneration but not to a state approaching good condition without intensive management; 50–75% weed cover. For example, disturbance to vegetation structure caused by very frequent fires; the presence of very aggressive weeds; partial clearing; dieback; and grazing	Negligible: • Primary food sources at <2% % foliage cover, or secondary food sources at <10% PFC. This could include urban areas or cleared paddocks with scattered foraging trees • Vegetation in Degraded or lower condition • Short-term and/or seasonal food sources such as paddocks partly vegetated with melons or weeds (e.g. Erodium spp.).	
1	Degraded to Completely degraded		
0	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.	Nil No foraging species present.	

TABLE ADAPTED FROM DWER (2022).

1. IT SHOULD BE NOTED THAT VEGETATION CONDITION DOES NOT NECESSARILY EQUATE TO FORAGING HABITAT QUALITY FOR CARNABY'S COCKATOO WHICH MAY UTILISE AREAS IN DEGRADED CONDITION IF SUITABLE FORAIGNG RESOURCES ARE PRESENT. AS SUCH, CARNABY'S COCKATOO FORAGING HABITAT QUALITY SCORES HAVE BEEN INCORPORATED INTO THIS TABLE BASED ON ELA'S INTERNAL SCORING METHODOLOGY FOR ASSESSING BLACK COCKATOO FORAGING HABITAT.

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Attachment G Corrigin Grain Receival Site Expansion Offset Management Plan (ELA 2024b)

Corrigin Grain Receival Site Expansion Offset Management Plan (EPBC 2021/9024)

Co-operative Bulk Handling Group

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DOCUMENT TRACKING

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Template 2.8.1

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Abbreviations and definitions

Abbreviation	Description
Area Manager	Manager in charge of sites that includes the Corrigin Grain Handling Terminal
BC Act	*Biodiversity Conservation Act 2016*
BAM Act	*Biosecurity and Agriculture Management Act 2007*
CBH	Co-operative Bulk Handling Group (trading name of Co-operative Bulk Handling Limited)
DAWE	Department of Agriculture, Water and Environment (now DCCEEW)
DBCA	Department of Biodiversity, Conservation and Attractions
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DER	Department of Environment Regulation (now DWER)
DoE	Department of the Environment (now DCCEEW)
DP	Deposited Plan
DWER	Department of Water and Environmental Regulation
ELA	Eco Logical Australia
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ha	Hectare
km	Kilometre
MNES	Matters of National Environmental Significance
OMP	Offset Management Plan
PD	Preliminary Documentation
SLC Act	*Soil and Land Conservation Act 1945*
SEWPaC	Department of Sustainability, Environment, Water, Populations and Communities (now DCCEEW)
SHARE	The internal CBH event management system used to record incidents, hazards, and corrective and/or preventative actions.
Rehabilitation	Additional plantings, as well as weed and pest management, and fencing, to improve low quality habitat, so that it becomes higher quality habitat (DAWE 2022b).
Revegetation	Re-planting habitat in an area where no or limited habitat currently exists. In the Wheatbelt, this is known as restoration (DAWE 2022b). Planting in areas of existing *Eucalyptus loxophleba* woodland for the purposes of creating Wheatbelt Woodlands TEC is considered revegetation as the TEC is currently absent from this area.
RFI	Request for further Information
RPIOC	Receival Point Officer in Charge
TEC	Threatened Ecological Community
WA	Western Australia
WoNS	Weeds of National Significance
WWTEC	Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community

1. Introduction

The Cooperative Bulk Handling Ltd (herein 'CBH') proposes to expand its facilities at the existing Corrigin Grain Receival Site (the proposed action), located adjacent to the Corrigin townsite, approximately 225 km east of Perth in the Avon Wheatbelt bioregion of Western Australia (WA; Figure 1-1). The proposed action includes clearing of approximately 1.60 ha of native vegetation which contains Matters of National Environmental Significance (MNES), including ecological communities and fauna (or fauna habitat) listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

After the application of avoidance and mitigation measures, the proposed action is expected to result in residual significant impacts to:

- Eucalypt Woodlands of the Western Australia Wheatbelt Threatened Ecological Community (Wheatbelt Woodlands TEC) – listed as Critically Endangered under the EPBC Act
- Carnaby's Cockatoo (*Zanda latirostris*) – listed as Endangered under the EPBC Act.

As a result, offsets are proposed to compensate for these significant residual impacts.

This Offset Management Plan (OMP) has been prepared to outline the land transfer, protection, rehabilitation and revegetation works that will be undertaken to achieve a successful offset for the proposed action. This document is prepared in conjunction with the proposed action Offset Proposal (Eco Logical Australia [ELA] 2023a).

A detailed description of the proposed action, the MNES affected, the mitigation measures and significant residual impacts to MNES is provided within the 'Corrigin Grain Receival Site Expansion – Preliminary Documentation (EPBC Ref. 2021/9024)' (ELA 2023b).

1.1. Project description

The proposed action includes an approximate 16.69 ha Proposal Area (the disturbance footprint). As part of the expansion, approximately 1.60 ha of native vegetation is proposed to be cleared within the Proposal Area. The remainder of the Proposal Area is devoid of vegetation and comprises agricultural lands or areas previously cleared for the existing development (a total of 15.10 ha, or 90%; Figure 1-1).

The proposed action is an expansion to the existing Corrigin Grain Receival Site to provide additional grain receival and storage facilities. The Proposal Area is primarily located on Lot 21 and parts of the western and eastern extent of Lot 20 on Deposited Plan 41206 on Corrigin South Road in Corrigin, WA (Figure 1-1). The Proposal Area is located less than 2 km southwest of the Corrigin townsite and approximately 225 km southeast of Perth (Figure 1-1).

Development of the proposed action will progress in two stages, described below.

Stage 1 will install two new permanent specification 350 m long Open Bulk Heads (OBHs) to increase the site's permanent storage capacity by a further 91,700 t. The new OBHs will be serviced by a fixed grid and conveyor loading system with two stackers/trippers, capable of in-loading at a rate of more than 500 tph. In addition, each OBH will be serviced by 'drive over grid' stackers, to provide additional

in-loading capacity and segregations. A new electrical point of supply will be provided through Western Power off existing powerlines.

The on-site marshal, sample and weigh infrastructure and internal roads will be upgraded and rearranged to improve trafficking and congestion and address off-site truck queuing. A new site exit is also included as part of the expansion upgrade.

Stage 2 will provide additional grain storage, with the installation of three additional OBHs and supporting facilities.

The proposed action will:

- Allow the consolidation of existing grain receival sites, resulting in the closure of the CBH Ainsworth, Jubuk and Bullaring sites
- Cater for forecast harvest growth; the existing Corrigin Grain Receival Site currently has a permanent storage utilisation of 108% and has a forecast permanent storage utilisation of 133% by 2025
- Reduce Grower turnaround times
- Cater for the reduction in storage facilities due to the decommissioning of facilities at end of life.

1.2. Approvals process and context

The proposed action was referred to the then Department of Agriculture, Water and the Environment (DAWE; now known as the Department of Climate Change, Energy, the Environment and Water [DCCEEW]) in August 2021 (EPBC Ref: 2021/9024). On 21 September 2021, a delegate of the Minister for the Environment decided that the proposed action is a controlled action and on 6 October 2021 the delegate decided the project would be assessed by Preliminary Documentation. A request for additional information from DCCEEW was received on 10 June 2022 requesting that further information relating to the nature of the proposed offsets be provided, including the provision of an Offset Proposal/Strategy and Offset Management Plan (DAWE 2022a). The Offset Proposal (ELA 2023a) and this OMP provide the requested information.

1.3. Purpose and objective

This overarching objective of this OMP is to compensate for the residual significant impacts to:

- Wheatbelt Woodlands TEC; the clearing of 0.31 ha primarily in Degraded condition (0.29 ha Category D, 0.02 ha Category C [Table 4-2})
- Carnaby's Cockatoo; the clearing of 1.60 ha of Poor quality foraging habitat and 0.09 ha of potential breeding/roosting habitat, including nine potential breeding trees.

These significant residual impacts arise from the direct effects of vegetation and habitat clearing. To achieve this objective, this management plan:

- Identifies offset site boundaries to offset at least 100% of the impact to Wheatbelt Woodlands TEC and Carnaby's Cockatoo.

- Details the management required to create additional habitat and improve habitat quality of existing values for Carnaby's Cockatoo and Wheatbelt Woodlands TEC within the offset site.
- Facilitates adaptive management of the Offset Site including the nomination of milestone targets and a monitoring program.
- Details requirements for reporting on the implementation of management measures and achievement towards, and maintenance of, performance and completion criteria.

On-ground works are proposed to be implemented on the basis of two revegetation zones (Zone A and Zone B), that reflect the differences in existing vegetation within each zone (Section 4).

The OMP aims to seeks to return a self-sustaining native plant community that is as close to the original as possible or otherwise provides improved habitat and ecosystem function.

The management plan has been prepared consistent with the Department of Environment (now DCCEEW) *Environmental Management Plan Guidelines* (DoE 2014), and the Department of Environmental Regulation (now DWER) *A guide to preparing revegetation plans for clearing permits under Part V of the Environmental Protection Act 1986* (DER 2013) so far as these are applicable to the Offset Management Plan.

1.4. Key terms

The following terms and definitions apply to this management plan (DAWE 2022; EPA 2006):

- **Offset**: Compensation for any residual significant impact on protected matters
- **Protection**: Establishing an enduring legal mechanism to prevent clearing of habitat
- **Quality**: A measure of how functional and useful habitat is in providing what is needed to enable black cockatoos to recover and persist into the future, including proximity and availability of foraging, breeding, night roosting and water resources
- **Rehabilitation**: Additional plantings, as well as weed and pest management, and fencing, to improve low quality habitat, so that it becomes higher quality habitat
- **Revegetation:** Re-planting habitat in an area where no or limited habitat currently exists (in the wheatbelt this is known as restoration). Planting in areas of existing *Eucalyptus loxophleba* woodland for the purposes of creating Wheatbelt Woodlands TEC is considered revegetation as the TEC is currently absent from this area.

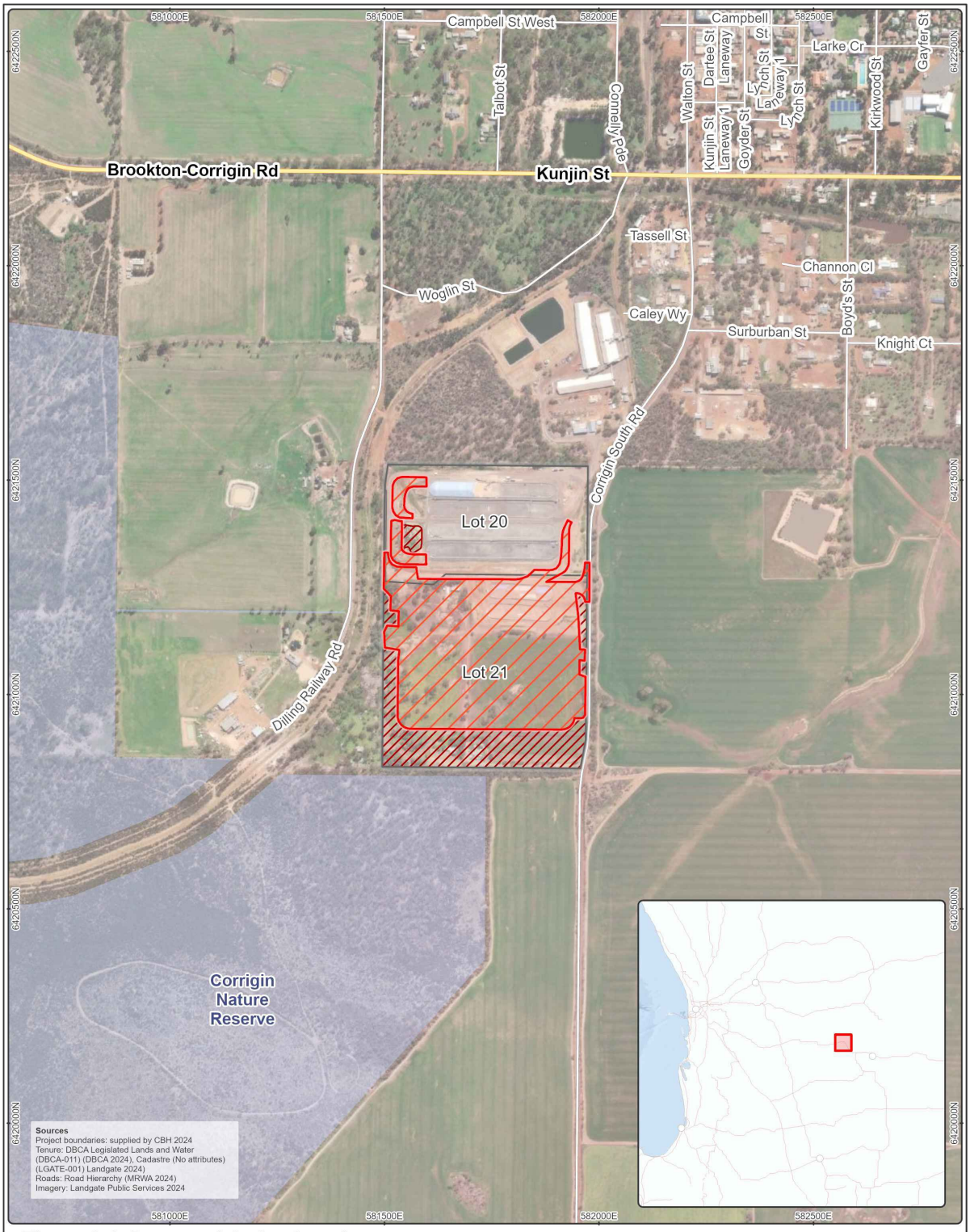

Figure 1-1: Proposed Action location

2. Summary of Offset Proposal

Offsets are proposed to compensate for significant residual impacts to two MNES: Wheatbelt Woodlands TEC and Carnaby's Cockatoo. The offset will involve the rehabilitation and revegetation of MNES habitat and protection of land in perpetuity within the Offset Site. This is a direct offset, as per allowable offset types in the Environmental Offsets Policy (SEWPaC 2012a).

CBH have identified an onsite Offset Site, located directly adjacent to the Proposal Area, on Lot 21 (refer to Section 3). CBH owns the land parcel and proposes to place the Offset Site under a conservation covenant for protection in perpetuity under the Western Australian *Soil and Land Conservation Act 1945* (SLC Act).

Prior to transferring the land, CBH propose to undertake rehabilitation and revegetation works across the Offset Site to either increase the vegetation condition and/or habitat quality of existing values or to create new habitat in areas that are cleared and currently devoid of any habitat values.

It is proposed in the long term that the Offset Site will be managed by CBH in accordance with this Offset Management Plan, until such a time that the land can be transferred to a government organisation, non-government organisation or private entity.

A summary of the Offset Proposal is provided in Table 2-1.

Table 2-1: Summary of the Offset Proposal for the Corrigin Site Expansion Project

Detail requested	Wheatbelt Woodlands TEC	Carnaby's Cockatoo
The type of offset(s) proposed	Environmental offsets proposed for Wheatbelt Woodlands TEC are as follows: • **Habitat retention and protection** of 0.19 ha of Wheatbelt Woodlands TEC in Degraded condition onsite (Zone A) • **Rehabilitation** of 0.19 ha of Wheatbelt Woodlands TEC in Degraded condition (Category D) with the aim of increasing quality (i.e. Vegetation condition/TEC category) from Degraded to Good (Category B) or higher (Zone A). • **Revegetation** of approximately 0.84 ha of *Eucalyptus loxophleba* Woodland areas to create Category B TEC (Good condition) or higher (Zone B). • **Revegetation** of approximately 0.40 ha of cleared paddock to create Category B TEC (Good condition) or higher (Zone B).	Environmental offsets proposed for Carnaby's Cockatoos are as follows: • **Habitat retention and protection** of 1.06 ha of comparable Poor quality foraging habitat for Carnaby's Cockatoo onsite (Zone A and B). • **Rehabilitation** of existing 1.06 ha of Poor quality Carnaby's Cockatoo foraging habitat within the Offset Site, with the aim of increasing habitat quality to Moderate (Zone A and B). • **Revegetation** of approximately 1.34 ha of cleared paddock from nil quality to Moderate quality or higher habitat for Carnaby's Cockatoo (Zone B).
Extent to which the proposed offset actions correlate to, and adequately compensate for, EPBC Act listed	The proposed offset directly offsets the impact on Wheatbelt Woodlands TEC	The proposed offset directly offsets the impact on Carnaby's Cockatoo

Detail requested	Wheatbelt Woodlands TEC	Carnaby's Cockatoo
species and communities		
Suitability of the location of any proposed offset site for EPBC Act listed species and communities, including evidence of the presence of, or usage by, relevant protected matter(s)	The proposed onsite offset site is located directly adjacent to the Proposal Area (disturbance footprint) and is directly comparable with the habitat being lost as part of the proposed action. Rehabilitation will be undertaken in patches of existing TEC within the Offset Site and creation of habitat (revegetation) will be undertaken in either woodland habitats (EIW) or cleared paddocks deemed suitable under the Offset Management Plan. Wheatbelt Woodlands TEC occurs within the Offset Site, with the site also occurring within the known distribution of the community (DoE 2015; ELA 2021).	The proposed onsite offset site is located directly adjacent to the Proposal Area (disturbance footprint) and is directly comparable with the habitat being lost as part of the proposed action, with many areas being directly connected. Rehabilitation and revegetation activities will also be undertaken within the Offset Site in areas deemed suitable under the Offset Management Plan. Carnaby's Cockatoo is considered to potentially occur, and the Offset Site occurs within the modelled distribution of the species (DAWE 2022b).
Conservation gain to be achieved by the offset i.e. positive management strategies that improve the site or averting the future loss, degradation, or damage of the protected matter	The proposed offset actions aim to prevent further degradation and improve the condition of the existing Wheatbelt Woodlands TEC. While the proposed action will result in clearing of up to 0.31 ha of Wheatbelt Woodlands TEC, approximately 1.24 ha of TEC will be created and 0.19 ha will be rehabilitated. All Wheatbelt Woodlands TEC will be protected within the Offset Site under a conservation covenant.	The proposed offset actions aim to prevent further degradation of existing habitat and create additional foraging and potential breeding/ roosting habitat for Carnaby's Cockatoo. While the proposed action will result in clearing of up to 1.60 ha of Poor quality foraging habitat, approximately 1.34 ha will be created and a further 1.06 ha rehabilitated. All habitat will be protected within the Offset Site under a conservation covenant.

3. Proposed Offset Site

3.1. Size, location and zoning

A potential onsite offset site (herein referred to as the Offset Site) has been identified by CBH within a portion of Lot 21 on DP 41206, Corrigin South Road in Corrigin, WA (Figure 3-1). The Offset Site is approximately 2.60 ha in size and contains areas of native vegetation as well as cleared pasture. The Offset Site is located directly adjacent to the Proposal Area, within the Shire of Corrigin, in the Wheatbelt subregion of WA. The entire lot is freehold property owned by CBH and occurs on 'rural' zoned land under the Shire of Corrigin Local Planning Scheme No. 2 (Government of Western Australia 2022). Rural use zoning permits the land to be developed any time in the foreseeable future. As such, biological values within the Offset Site are vulnerable to future development.

The Corrigin Nature Reserve occurs directly to the south of the Offset Site, with vegetated linkages between the two areas, including eucalypt woodlands (Figure 1-1; Figure 3-1).

3.2. Biological environment

A reconnaissance level flora and vegetation survey, basic fauna survey and black cockatoo habitat assessment was undertaken at the Corrigin Expansion Site in October 2020 and included surveying a 24 ha survey area, which included the Offset Site (ELA 2021). A follow-up, targeted survey for the Red-tailed Phascogale (*Phascogale calura*) was undertaken across the survey area in July 2022 (ELA 2022a). The targeted survey also included updating habitat values present within the site for Carnaby's Cockatoo (ELA 2022b).

All surveys were undertaken in accordance with the relevant guidance including:

- Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (Environmental Protection Authority [EPA] 2016)
- Technical Guidance: Terrestrial vertebrate fauna surveys for environmental impact assessment (EPA 2020)
- Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black- cockatoo (Department of Agriculture, Water and the Environment [DAWE] 2022b)
- Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed as threatened under the EPBC Act (SEWPaC 2011).

The results from these combined surveys are summarised below. Data is presented for the survey area where it is unable to be differentiated from the Offset Site.

3.2.1. Flora

A total of 67 flora taxa (45 native and 22 introduced taxa) from 60 genera and 31 families were recorded within the survey area (ELA 2021). Families with the highest number of species recorded were Poaceae (16 species), Chenopodiaceae (5 species) and Asteraceae (5 species). Eucalyptus was the best represented genus with three species recorded, while the genera *Acacia*, *Austrostipa*, *Bromus*, *Hibbertia* and *Ptilotus* each had two species recorded.

A total of 22 introduced (weed) species were recorded during the survey (ELA 2021). None of the weed species are listed as Weeds or National Significance (WoNS). One species, *Echium plantagineum* (Paterson's curse), is listed as a Declared Pest species in Western Australia pursuant to Section 22(2) of the State *Biosecurity and Agriculture Management Act 2007* (BAM Act). This species was recorded at one location within the Offset Site (ELA 2021).

No Threatened flora species listed under the EPBC Act or the BC Act or listed by DBCA as Priority species were recorded within the Offset Site or within the survey area (ELA 2021).

3.2.2. Vegetation

Two vegetation associations were mapped within the original survey area, Pikaring 1023 and Pikaring 1147 (ELA 2021). Most of the Offset Site coincides with Pikaring 1023 (Medium woodland; York gum, wandoo and Salmon gum) with Pikaring 1147 (Shrublands; scrub-heath in the south-east Avon-Wheatbelt Region) mapped in the southwest corner.

A total of three vegetation communities were delineated and mapped within the Offset Site, comprising two eucalypt woodland communities (EsElW and ElW) and one Acacia shrubland (AcTS) community (Table 3-1; Figure 3-2; ELA 2021). The most widespread community within the Offset Site is *Eucalyptus loxophleba* woodland (ElW; 0.87 ha; 33.4%). Half of the Offset Site consists of cleared areas including paddocks and tracks (1.36 ha; 52.3%). It should be noted that a portion (0.03 ha) of the Acacia shrubland (AcTS) area and 0.10 ha of nearby cleared land is underlain by shallow or exposed granite (Figure 1-1, Figure 5-1) and has therefore been excluded from planting activities (Section 4).

The vegetation communities present within the Offset Site are all in Degraded condition (ELA 2021; Table 3-1; Figure 3-3). The EsElW vegetation community represents the Wheatbelt Woodlands TEC; described in further detail in Section 3.2.4.1.

Table 3-1: Vegetation communities and condition within the Offset Site

Vegetation community	Photo	Condition	Area (ha)	Area (%)
EsElW (Wheatbelt Woodlands TEC) *Eucalyptus salmonophloia* and *E. loxophleba* Woodland over *Maireana brevifolia* low sparse shrubland over annual weedy grasses and forbs, including **Brassica tournefortii*, *Crassula colorata*, *Enchylaena tomentosa*, **Hordeum leporinum*, **Lolium rigidum* and **Mesembryanthemum nodiflorum*.		Degraded	0.19	7.4
AcTS *Acacia acuminata* tall open shrubland, over **Arctotheca calendula*, **Mesembryanthemum nodiflorum* and *Ptilotus polystachyus* sparse low forbland with scattered *Austrostipa variabilis* grasses and annual weedy forbs and grasses.		Degraded	0.18	6.9
ElW *Eucalyptus loxophleba* woodland, over *Acacia acuminata* tall sparse shrubland, over a mixed low sparse forbland/grassland including **Arctotheca calendula*, *Atriplex semibaccata*, **Brassica tournefortii*, **Hordeum leporinum*, **Lolium rigidum* and *Maireana brevifolia*		Degraded	0.87	33.4
Total vegetation communities		Degraded	1.24	47.7
Cleared areas		-	1.36	52.3
Total area		-	2.60	100.0

3.2.3. Fauna

Two fauna habitats were recorded within the Offset Site including *Eucalyptus* woodland and *Acacia acuminata* tall shrubland (ELA 2021). The fauna habitats cover approximately 1.24 ha (47.7%) of the Offset Site, with the remaining 1.36 ha (52.3%) comprising of cleared pasture and/or tracks (Figure 3-5).

During the survey, a total of 23 vertebrate fauna species were recorded within the survey area, comprising 19 birds, three mammals and one reptile (ELA 2021). Potential secondary evidence of one Threatened fauna species listed under the EPBC Act and BC Act, Carnaby's Cockatoo, was recorded in the Proposal Area; however, this could not be confirmed (described in further detail in Section 3.2.4.2). No other Threatened or Priority listed fauna species listed were recorded.

The Red-tailed Phascogale was assessed as having the potential to occur during the initial survey (ELA 2021); however, following a targeted survey for the species, the likelihood of occurrence was downgraded to unlikely due to the lack of suitable habitat and lack of records, despite extensive trapping effort (ELA 2022a).

Two introduced (feral) fauna species were recorded within the survey area including the Red Fox (*Vulpes vulpes*) and Sheep (*Ovis aries*) (ELA 2021).

3.2.4. MNES values

During the surveys, two MNES were either recorded or considered to have the potential to occur including Wheatbelt Woodlands TEC and Carnaby's Cockatoo (ELA 2021). The MNES within the Offset Site are described in further detail below.

3.2.4.1. Wheatbelt TEC

The ELA (2021) survey assessed the vegetation present within the Offset Site against the key diagnostic criteria and vegetation condition thresholds listed within the approved Conservation Advice for the Wheatbelt Woodlands TEC (DoE 2015).

Approximately 0.19 ha of Wheatbelt Woodlands TEC in Degraded condition occurs within the Offset Site (Patch A [Zone A]; Table 3-2; Figure 3-4). It should be noted that this patch of woodland is connected to woodland outside the Offset Site, which provides connectivity in a north to south direction and links to the Corrigin Nature Reserve in the south. Patch A was assessed as meeting the condition threshold in Category D (for Degraded condition [Table 4-2]), with the patch size >5 ha, due to its connection with continuous patch of eucalypt woodlands. Although part of Patch A is proposed to be cleared by the proposed action, this plan assumes Patch A will continue to meet Wheatbelt Woodlands TEC criteria due to this connectivity (i.e. that it forms an area of >5 ha).

An additional 0.84 ha of *Eucalyptus loxophleba* woodland (ElW) occurs in the south of the Offset Site (this area excludes the small patch of ElW located in/adjacent to the Aboriginal Heritage Area; see Section 3.3), which does not currently meet the criteria for Wheatbelt Woodlands TEC due to the Degraded condition of the vegetation, high weed cover and the small patch size (ELA 2021). However, this vegetation currently meets the key diagnostic criteria for the TEC for 10% minimum crown cover of the tree canopy in a mature woodland and the five mature trees per 0.5 ha threshold (ELA 2021). These areas (Table 3-2; Figure 3-4) have been included here as revegetation and weed control will allow this woodland to meet the criteria for Category B Wheatbelt Woodlands TEC (Table 4-2). Patch size TEC criteria for these areas are assumed to be met through connectivity between the rehabilitated

Eucalyptus loxophleba woodland, the revegetated paddock (0.40 ha; will be revegetated to Category B Wheatbelt Woodlands TEC) providing connectivity between the three areas of EIW woodland (see **Error! Reference source not found.**) and the inferred Wheatbelt Woodlands TEC that occurs south of the Offsite Site.

Table 3-2: Wheatbelt Woodlands TEC areas and calculations

Patch area	Condition	Offset Site (ha)
Patch A (Zone A)	Degraded	0. 19
	Total TEC	**0.19**
***Eucalyptus loxophleba* Woodland (potential TEC) (Zone B)**	Degraded	0.84
Cleared paddock (Potential TEC) (Zone B)	Cleared	0.40
	Total TEC and potential TEC	**1.43**

3.2.4.2. Carnaby's Cockatoo

The Offset Site occurs within the modelled distribution of Carnaby's Cockatoo and specifically within the modelled breeding range of the species (DAWE 2022b).

A total of 1.06 ha of foraging habitat for Carnaby's Cockatoo has been recorded in the Offset Site (Figure 3-6). The foraging habitat was assessed as being 'Poor' quality due to consisting of four known foraging species present at a low density (i.e. secondary food sources present at 10-20% projected foliage cover with vegetation in Degraded condition; ELA 2021). Foraging species recorded include York Gum, Salmon Gum, Wandoo and, *Allocasuarina campestris* (Table 3-3). Whilst Salmon Gum is considered a primary foraging resource, York Gum, Wandoo and *Allocasuarina campestris* are all secondary foraging species (Groom 2011).

In addition to foraging habitat, there is approximately 0.05 ha of potential breeding habitat including five individual potential breeding trees within the Offset Site (Figure 3-6; ELA 2021, 2022b). These trees comprise two Wandoo trees with a Diameter at Breast Height (DBH) over 300 mm and three York Gum trees with a DBH over 500 mm (ELA 2021, 2022a). None of these trees contain hollows suitable for nesting (i.e. with a minimum opening diameter of 10 cm and vertical or near vertical), however given the DBH size, all have the potential to form hollows in the future. The Wandoo trees also provide potential roosting habitat for Carnaby's Cockatoo (DAWE 2022). Two Wandoo stags were identified as potential breeding trees in the original survey (ELA 2021); however, these have since fallen and no longer provide that potential habitat.

During the 2020 survey, some potential evidence of Carnaby's Cockatoo foraging was observed in the form of clipped branches; however, this could not be confirmed (ELA 2021). Subsequent surveys have not recorded any evidence of the species occurring (ELA 2022b). There are nine historical records of Carnaby's Cockatoo individuals within a 50 km buffer (from 1946 to 2012) and a nesting hollow 32 km south of the Offset Site (ELA 2022b). There are no known breeding or roosting sites in proximity to the Offset Site; however, a known breeding buffer occurs approximately 20.5 km to the south of the Offset Site (Birdlife 2021; DBCA 2022). The closest known roost site being approximately 90 km south-west of the Offset Site (Birdlife 2021).

Table 3-3: Carnaby's Cockatoo foraging species present within the Offset Site

Foraging species	Value	Component	Description and occurrence in the Offset Site
York Gum	Secondary	Seeds	Generally present at 10-15% cover, or as isolated trees in an otherwise cleared paddock.
Salmon Gum	Primary	Seed	Present at less than 5% cover and only occurs at the western section of the Offset Site (as well as outside).
Wandoo	Primary	Flowers	Present between 5% cover and only occurs at the western boundary of the Offset Site (as well as outside).
Allocasuarina campestris	Secondary	Seed	Present at <5% cover.

3.3. Aboriginal heritage

An archaeological and ethnographic Aboriginal heritage survey was undertaken within the Offset Site and Proposal Area on 19 January 2023 with a group of Ballardong representatives (Archae-aus 2023). One Aboriginal archaeological site AS23-001 was identified and recorded to Site Identification Level in accordance with the *Aboriginal Heritage Act 1972*. It was described as an artefact scatter, reduction area, camping ground, water source and natural feature and is located on and adjacent to the large granite dome situated in the middle of the Offset Site. Site AS23-001 (also referred to as the 'Aboriginal Heritage Area' herein) continues east of the Offset Site and extends into the Proposal Area (Figure 3-1). Site AS23-001 covers 0.16 ha of the Offset Site and contains 0.12 ha of vegetation mapped as AcTS (including 0.03 ha of granite), 0.01 ha of vegetation mapped as ElW and 0.03 ha of cleared land. The Ballardong representatives were 'supportive of the potential vegetation corridor that would act as a natural buffer to AS23-001' (i.e. the Offset Site) and recommended that endemic species should be used in any revegetation/rehabilitation works (Archae-aus 2023). While a portion of Site AS23-001 intersects with the Offset Site, management activities (such as weeding and rehabilitation/revegetation actions) are currently not proposed within this area. However, environmental management actions will be potentially undertaken in the future following further consultation with Ballardong representatives.

3.4. Historical impacts and threatening processes

The Department of Sustainability Environment Water Protection and Communities (DSEWPaC) (2012) and the Department of Parks and Wildlife (now Department of Biodiversity, Conservation and Attractions) (2013) identify the key threats to Carnaby's Cockatoo as:

- Habitat loss and habitat degradation - loss of foraging habitat, nesting hollows, habitat connectivity and habitat quality
- Interactions with humans - vehicle strikes, agriculture protection measures, disturbance from noise/light, unauthorised taking (poaching)
- Invasive species - competition for nest hollows with European honey bees and invasive birds, injury/death from European honey bees.

The potential threats to Wheatbelt Woodland TEC (DoE 2015), include:

- Clearing of vegetation and fragmentation of vegetation into smaller, disconnected patches
- Weed invasion
- Chemical spray drift
- Grazing
- Salinity
- Fire
- Dieback.

The Offset Site has historically been used for livestock grazing, with 1.36 ha (52.3%) comprising cleared pasture. After reviewing the potential threats, the following are those deemed the relevant threatening processes present within the Offset Site including:

- Tracks and cleared areas
- Rubbish dumping
- Weeds including the Declared Pest *Echium plantagineum*
- Presence of feral fauna including predators such as the European Red Fox
- Access by general public (including firewood collection).

Without an offset, these threatening processes would be likely to contribute to the continued degradation of the native vegetation present.

Figure 3-1: Proposed Offset Site

- Offset Site (2.60 ha)
- Proposal Area (16.69 ha)
- Avoidance Area (5.77 ha)
- Disturbance Footprint (16.69 ha)
- Existing grain receival site
- Aboriginal Heritage Area
- Cadastral Lot

Sources
Project boundaries: supplied by CBH 2024
Tenure: DBCA Legislated Lands and Water (DBCA-011) (DBCA 2024), Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

0 50 100 200
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2768-RD/OK Date: 27/03/2024

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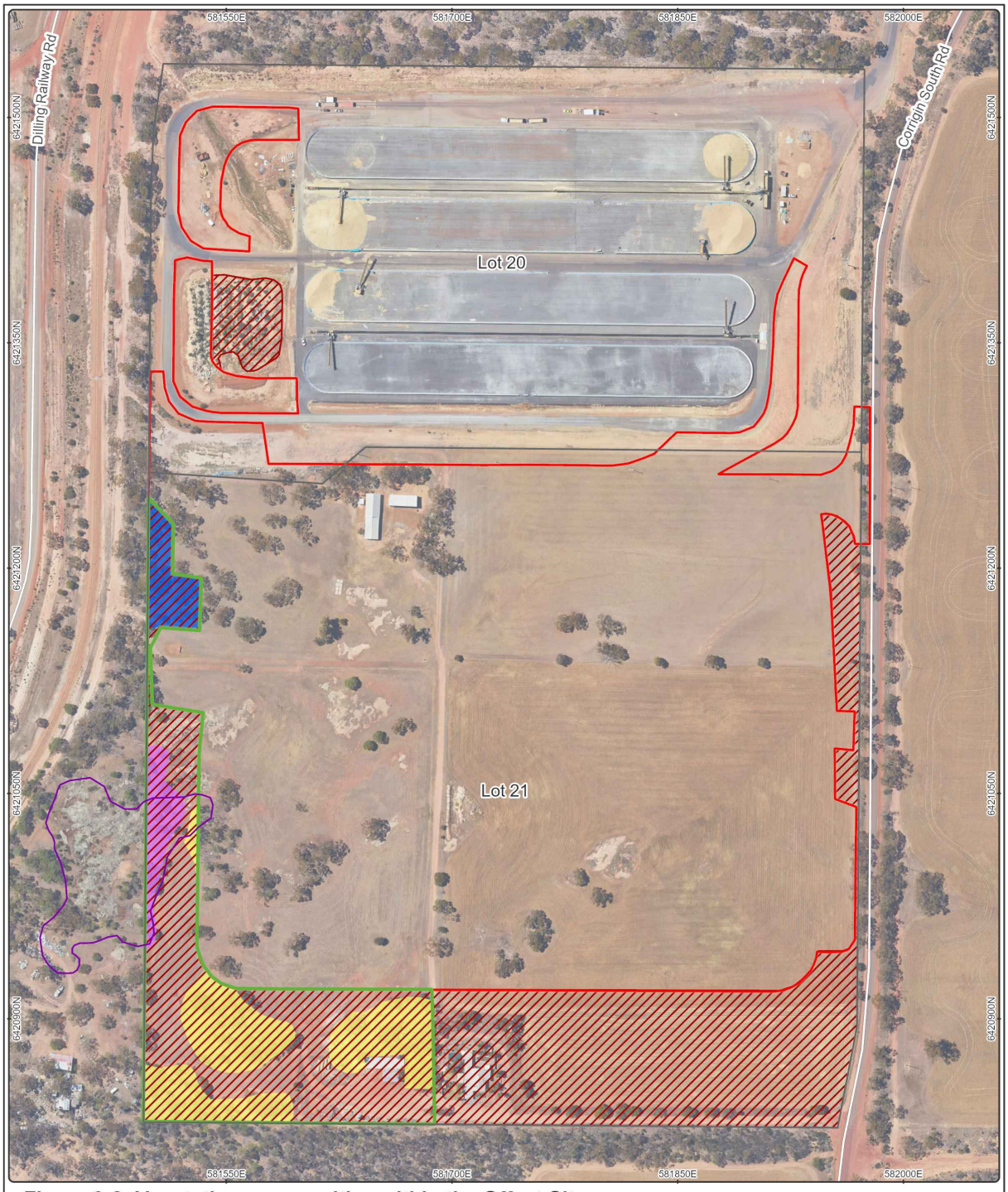

Figure 3-2: Vegetation communities within the Offset Site

- Offset Site (2.60 ha)
- Proposal Area (16.69 ha)
- Avoidance Area (5.77 ha)
- Aboriginal Heritage Area
- Cadastral Lot

Vegetation communities

- AcTS - *Acacia acuminata* Tall Open Shrubland (0.18 ha)
- EIW - *Eucalyptus loxophleba* Woodland (0.87 ha)
- EsEIW - *Eucalyptus salmonophloia* and *Eucalyptus loxophleba* Woodland (0.19 ha)

Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Vegetation mapping: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

0 30 60 120
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2768-RD/OK Date: 27/03/2024

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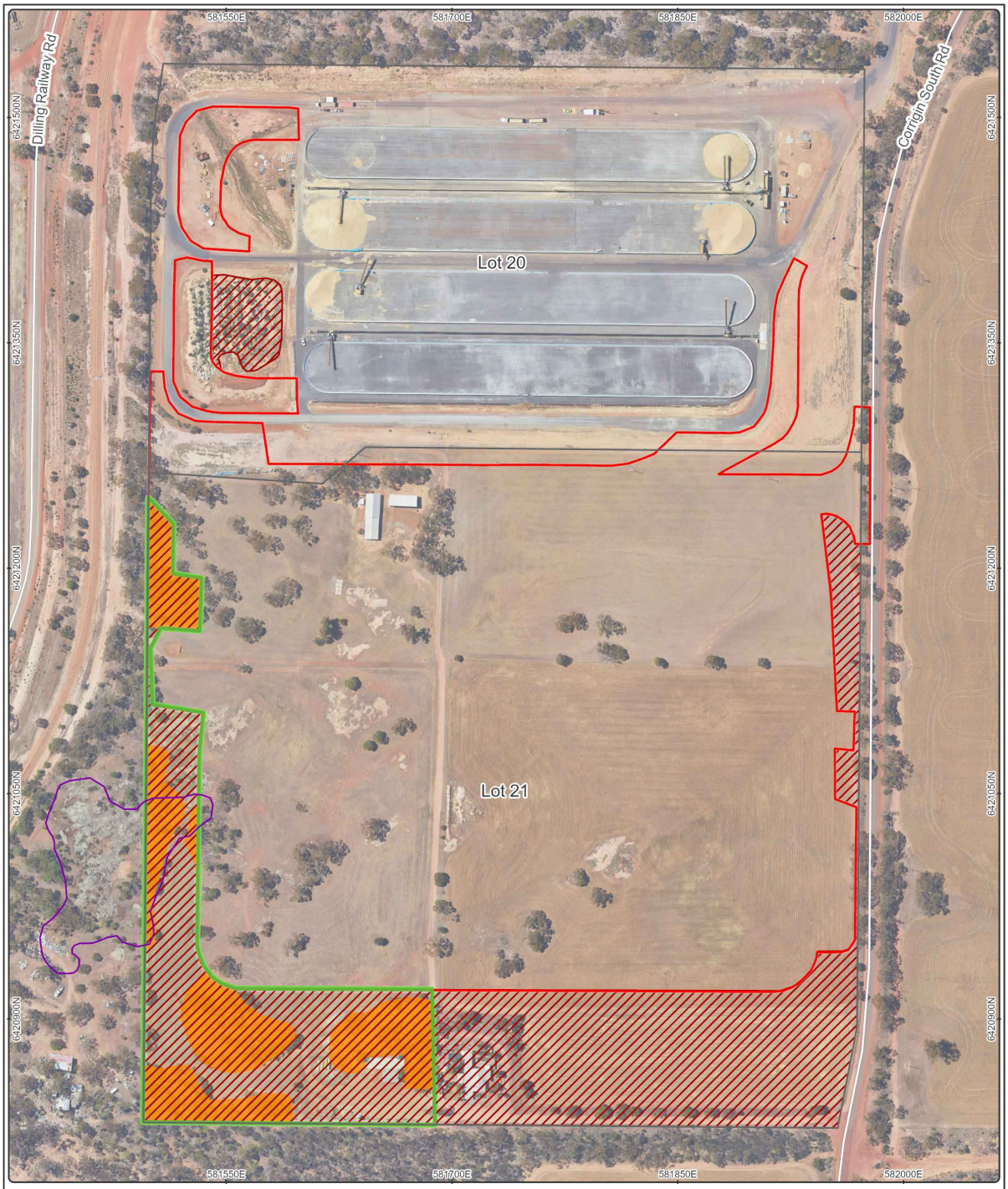

Figure 3-3: Vegetation condition within the Offset Site

- Offset Site (2.60 ha)
- Proposal Area (16.69 ha)
- Avoidance Area (5.77 ha)
- Aboriginal Heritage Area
- Cadastral Lot

Vegetation Condition

- Degraded (1.24 ha)

Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Vegetation mapping: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

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Datum/Projection:
GDA 1994 MGA Zone 50

22PER2768-RD/OK Date: 27/03/2024

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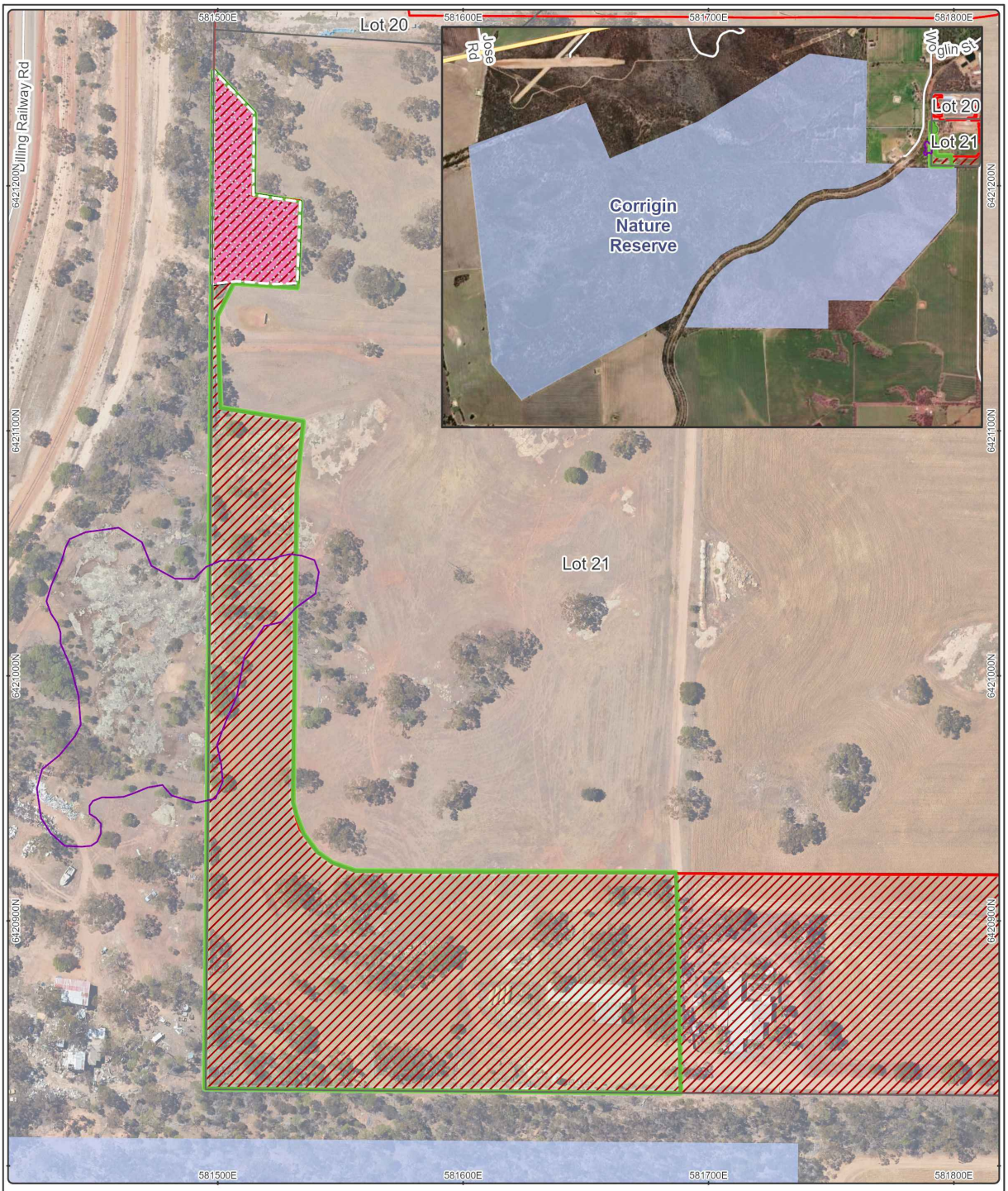

Figure 3-4: Wheatbelt Woodlands TEC within the Offset Site

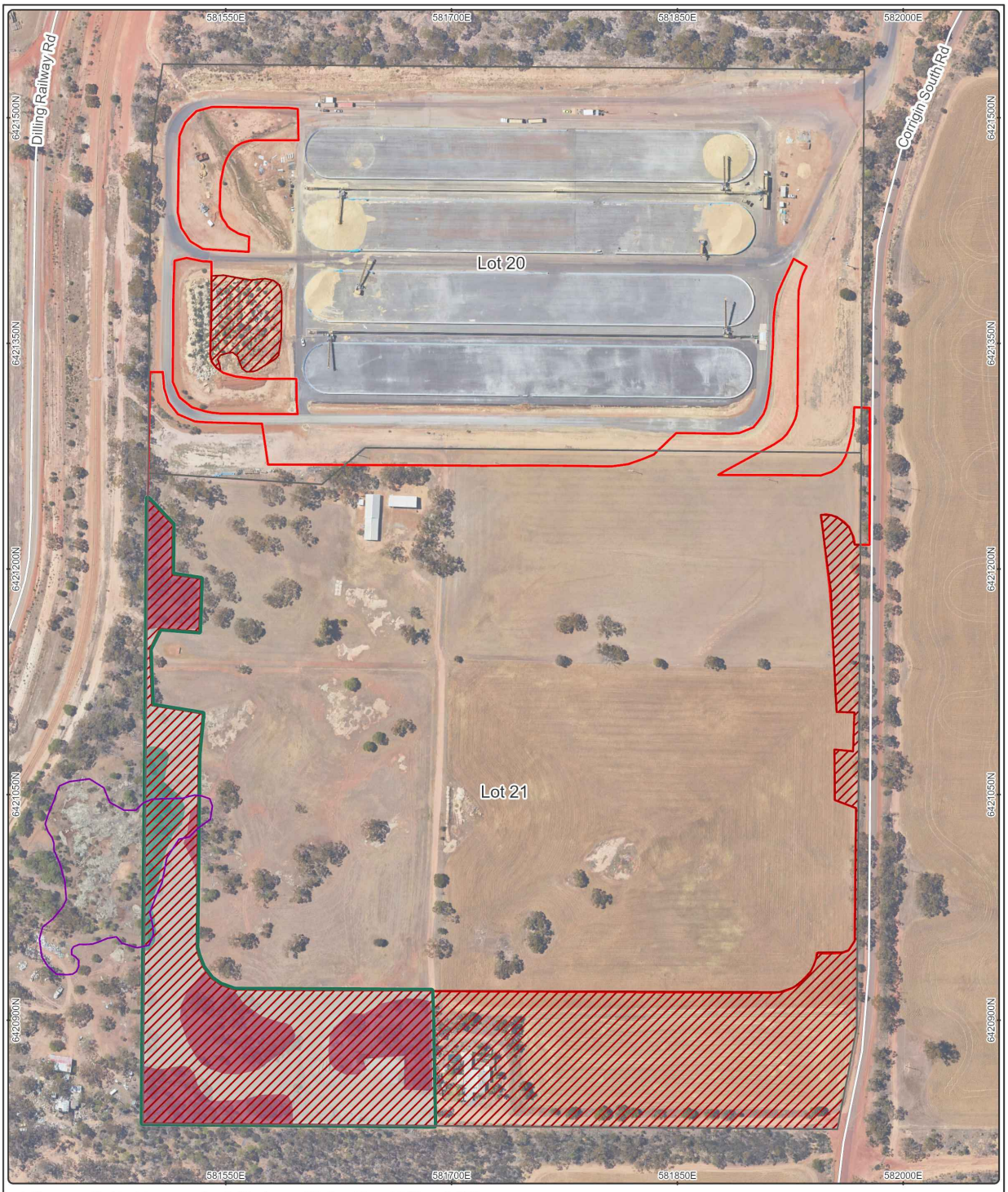

Figure 3-5: Fauna habitats within the Offset Site

Offset Site (2.60 ha)
Proposal Area (16.69 ha)
Avoidance Area (5.77 ha)
Aboriginal Heritage Area
Cadastral Lot

Fauna Habitat

Acacia acuminata Tall Open Shrubland (0.18 ha)
Eucalyptus salmonophloia, E. wandoo and *E. loxophleba* Woodland (1.06 ha)
Cleared (1.36 ha)

Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Fauna habitat mapping: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

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Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2768-RD/OK Date: 27/03/2024

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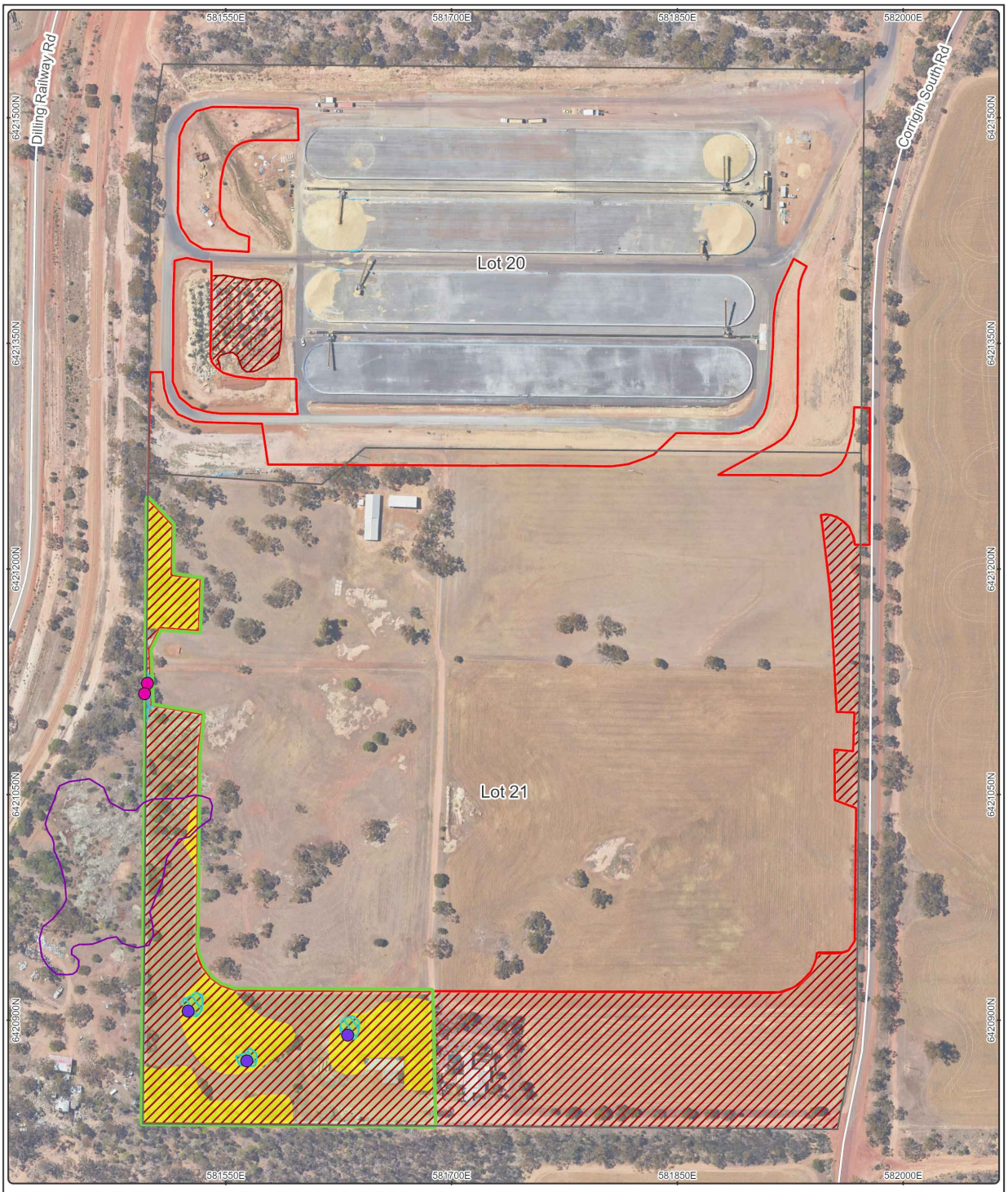

Figure 3-6: Carnaby's Cockatoo habitat values within the Offset Site

- Offset Site (2.60 ha)
- Proposal Area (16.69 ha)
- Avoidance Area (5.77 ha)
- Aboriginal Heritage Area
- Cadastral Lot

Carnaby's Cockatoo habitat values

- Foraging habitat (poor quality) (1.06 ha)
- *Eucalyptus loxophleba* (York Gum), DBH>500mm, No hollows
- *Eucalyptus wandoo* (Wandoo), DBH>300mm, No hollows
- Potential breeding/roosting habitat

Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Fauna habitat mapping: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

0 30 60 120
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2768-RD/OK Date: 27/03/2024

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4. Offset management measures

4.1. Offset plan objectives

The following are the key OMP objectives that have been identified:

- Improve and then maintain the condition of the Wheatbelt Woodland TEC in Zone A
- Rehabilitate degraded eucalyptus communities in Zone B to achieve Wheatbelt Woodland TEC status
- Revegetate cleared paddock in Zone B to achieve Wheatbelt Woodland TEC status
- Improve and then maintain the quality of existing Carnaby's cockatoo foraging habitat in Zone A and B
- Create and then maintain new areas of Carnaby's cockatoo foraging habitat in Zone B
- Legally protect the 2.60 ha offset site through the placement of a conservation covenant under the *Soil and Land Conservation Act 1945* (WA)

4.2. Offset plan performance criteria and targets

Performance criteria and targets have been established as auditable criteria linked to the OMP objectives. The intent of these criteria and targets is to allow monitoring of the effectiveness of this plan in meeting the objectives of the offset proposal. The offset management plan performance targets are documented in Table 4-1.

Table 4-1: Offset management plan performance criteria and targets

Objectives	Criteria	Target	Completion criteria	Timeframe
Improve and maintain Wheatbelt Woodland TEC (and Carnaby's cockatoo foraging habitat)	Successful rehabilitation and revegetation program	To meet the completion criteria within 5 years	Described in Table 5-1	20 years
Create and maintain Wheatbelt Woodland TEC (and Carnaby's cockatoo foraging habitat)	Successful rehabilitation and revegetation program	To meet the completion criteria within 10 years	Described in Table 5-1	20 years
Provide protection in perpetuity	Legal protection	Protection under the *Soil and Land Conservation Act 1945* (SLC Act)	Conservation covenant established and notification placed on land titles	Within 1 year from date of approval

Table 4-2: Category Conditions for Wheatbelt Woodlands TEC*

Category	Cover of exotic plants (weeds)	Mature tress (DBH >30 cm)	Minimum patch size (non-roadside)
A: Patches likely to correspond to a condition of Pristine / Excellent / Very Good (Keighery 1994)	0 to 30% of total vegetation cover in the understorey layers (i.e. below the tree canopy)	May be present or absent	2 ha or more
B: Patches likely to correspond to a condition of Good (Keighery 1994)	More than 30, to 50% of total vegetation cover in the understorey layers	Present with at least 5 trees per 0.5 ha	2 ha or more
C: Patches likely to correspond to a condition of Good (Keighery 1994)	More than 30, to 50% of total vegetation cover in the understorey layers	Either absent or less than 5 trees per 0.5 ha are present.	5 ha or more
D: Patches likely to correspond to a condition of Degraded to Good (Keighery 1994)	More than 50 to 70% of total vegetation cover in the understorey layers	Present with at least 5 trees per 0.5 ha.	5 ha or more

*Does not include roadside remnant patch criteria

Species listed in Appendix A were reviewed against the FloraBase (WAH 1998-) dataset for occurrence within the vicinity of Corrigin and Avon-Wheatbelt bioregion to ensure suitability for planting in the offset site.

5. Rehabilitation and revegetation strategy

5.1. Revegetation and rehabilitation zones and objectives

Two revegetation and rehabilitation zones (Zone A and Zone B) have been identified based on ecological survey work undertaken and the presence of existing MNES habitat including areas containing Wheatbelt Woodlands TEC and Carnaby's Cockatoo habitat (Figure 5-1; Figure 5-2; Figure 5-3). The existing values within each revegetation zone are described below, and revegetation and monitoring activities for the zones are described in Table 5-2.

Revegetation will be based on the planting of tubestock seedlings sourced from accredited native vegetation nurseries, with supplementary direct seeding where suitable seed quantities and species can be sourced from reputable native seed suppliers.

Due to competition from established trees on juvenile plants, seedling planting and direct seeding is proposed to occur in open areas, defined as ground located outside the dripline of the mature Eucalypt canopy species within the Offset Site. This will also avoid root damage to established trees from ripping as part of site preparation. Outlined in Table 5-1 are the completion criteria that have been developed to determine when the revegetation and rehabilitation activities have achieved the OMP objectives.

Zone A (0.20 ha):

Comprises Wheatbelt Woodlands TEC (Category D [Table 4-2]):

- Vegetation Communities: EsElW *Eucalyptus salmonophloia* and ElW *Eucalyptus loxophleba* woodlands in Degraded condition
- Poor foraging quality for Carnaby's cockatoo.

Zone B (2.41 ha):

Comprises native vegetation:

- Vegetation Communities: ElW *Eucalyptus loxophleba* woodland in Degraded condition and AcTS *Acacia acuminata* tall open shrubland in Degraded condition
- Poor foraging quality for Carnaby's cockatoo.

Reference quadrats:

- Minimum 3 quadrats from the Corrigin Nature Reserve (Figure 5-6) in WWTEC Cat B (Good or better) with moderate foraging quality for Carnaby's Cockatoo.

Monitoring quadrats:

- Minimum 2 quadrats from each vegetation unit targeted for revegetation/rehabilitation, as depicted in Figure 5-7.

Table 5-1: Revegetation and rehabilitation completion criteria for each zone

Item	Criterion	Objective /target	Completion criteria for each zone and target area		Monitoring Timeframe
			Zone	Criterion	
1	**Seedling survival**	Planted seedlings survive	All zones	A minimum of 70% percent survival of planted seedlings in the monitoring quadrats.	Twice a year in spring and autumn in the first three years and annually in the spring by an environmental specialist until completion criterion has been met and maintained for two years.
2	**Species richness**	A minimum of 10 species from the reference site	All zones	Assessment shows WWTEC during vegetation monitoring.	Annually in spring by an environmental specialist until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
3	**Cover and density – minimum crown cover of the tree canopy**	Create crown cover in canopy that aligns with that identified in the Conservation Advice	Zone A Zone B - ElW community	Minimum crown cover in a mature woodland of 10%; or 5 mature trees per 0.5 ha. Minimum crown cover in a mature woodland of 10%; or 5 mature trees per 0.5 ha.	Annually in spring by an environmental specialist until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
4	**Carnaby foraging species**	For each management area Carnaby cockatoo foraging habitat is to be planted	All zones	A minimum of 5 species from the reference site .	Annually in spring by an environmental specialist until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
5	**Composition of the understorey**	The understorey comprises a mixture of shrubs from several genera and species consistent with the reference site The understorey comprises a mixture of shrubs from several	Zone A Zone B - ElW community	Minimum 30 % of the average number of species in the understorey from the reference quadrats. Minimum 30 % of the average number of species in the	Annually in spring by an environmental specialist until completion. criterion has been met and maintained for two years (i.e. three successive monitoring events).

Item	Criterion	Objective /target	Completion criteria for each zone and target area		Monitoring Timeframe
			Zone	Criterion	
		genera and species consistent with the reference site		understorey from the reference quadrats.	
6	**Weeds**	Weed cover is no greater than the baseline at reference sites	All zones	For each target rehabilitation type and zone, weed cover shall be no greater than the baseline recorded at the reference sites.	Annually in spring by an environmental specialist until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
7	**Weeds**	No priority, high impact or highly invasive weeds present	All zones	No weeds present that are listed as Priority Alert, High Impact or Rapid invasiveness on the DBCA Wheatbelt Region Impact and Invasiveness Ratings list as updated from time to time.	Annually in spring by an environmental specialist until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
8	**Bare ground**	No more than 5 per cent greater than the baseline at the reference sites	All zones	For each target rehabilitation type and zone, the rehabilitated area must not have bare ground more than 5 per cent greater than the baseline recorded at the reference sites.	Annually in summer by an environmental specialist until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
9	**Gates and boundary fence**	Gates and boundary fence to be in good condition with no obvious damage that will enable access by the general public and fauna, including livestock and kangaroos.	All zones	Gates and boundary fence in good condition.	Annually until completion criteria 1 – 5 has been met.

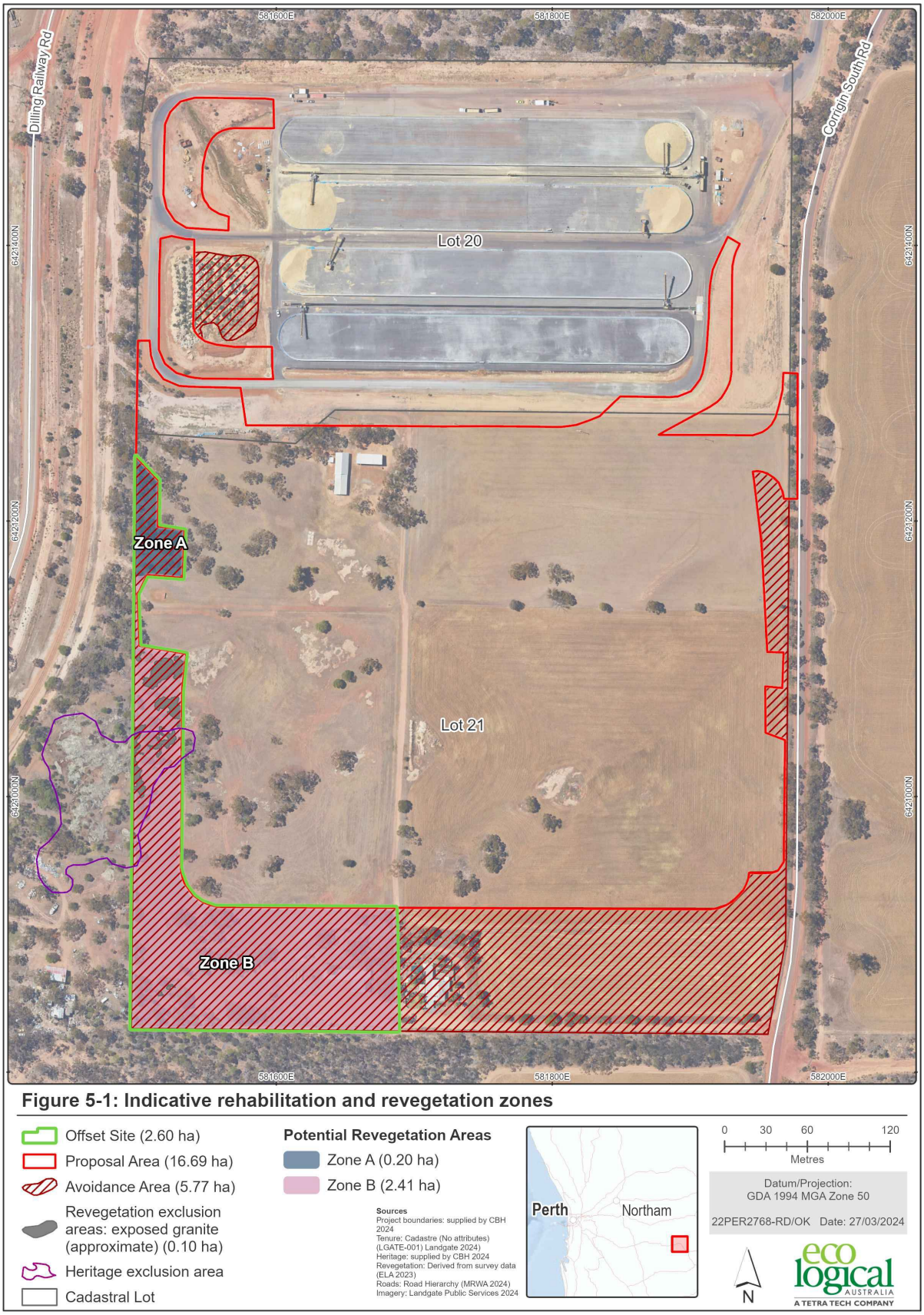

Figure 5-1: Indicative rehabilitation and revegetation zones

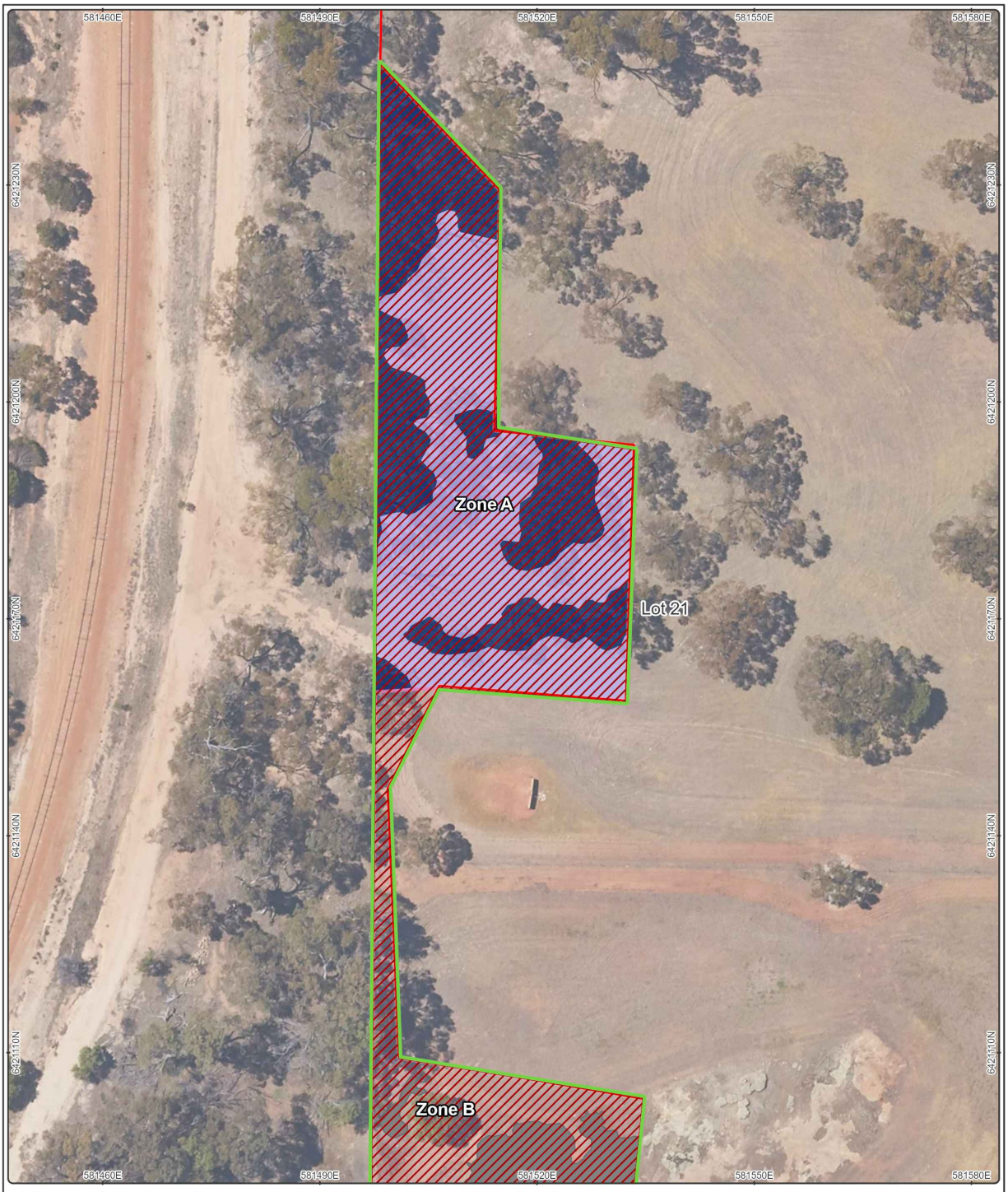

Figure 5-2: Zone A – approximate open areas for planting

Cadastral Lot
Proposal Area (16.69 ha)
Offset Site (2.60 ha)
Avoidance Area (5.77 ha)

Planting

Existing
Open
Revegetation exclusion areas: exposed granite (approximate)

Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Planting and revegetation: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

0 5 10 20
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2768-RD/OK Date: 27/03/2024

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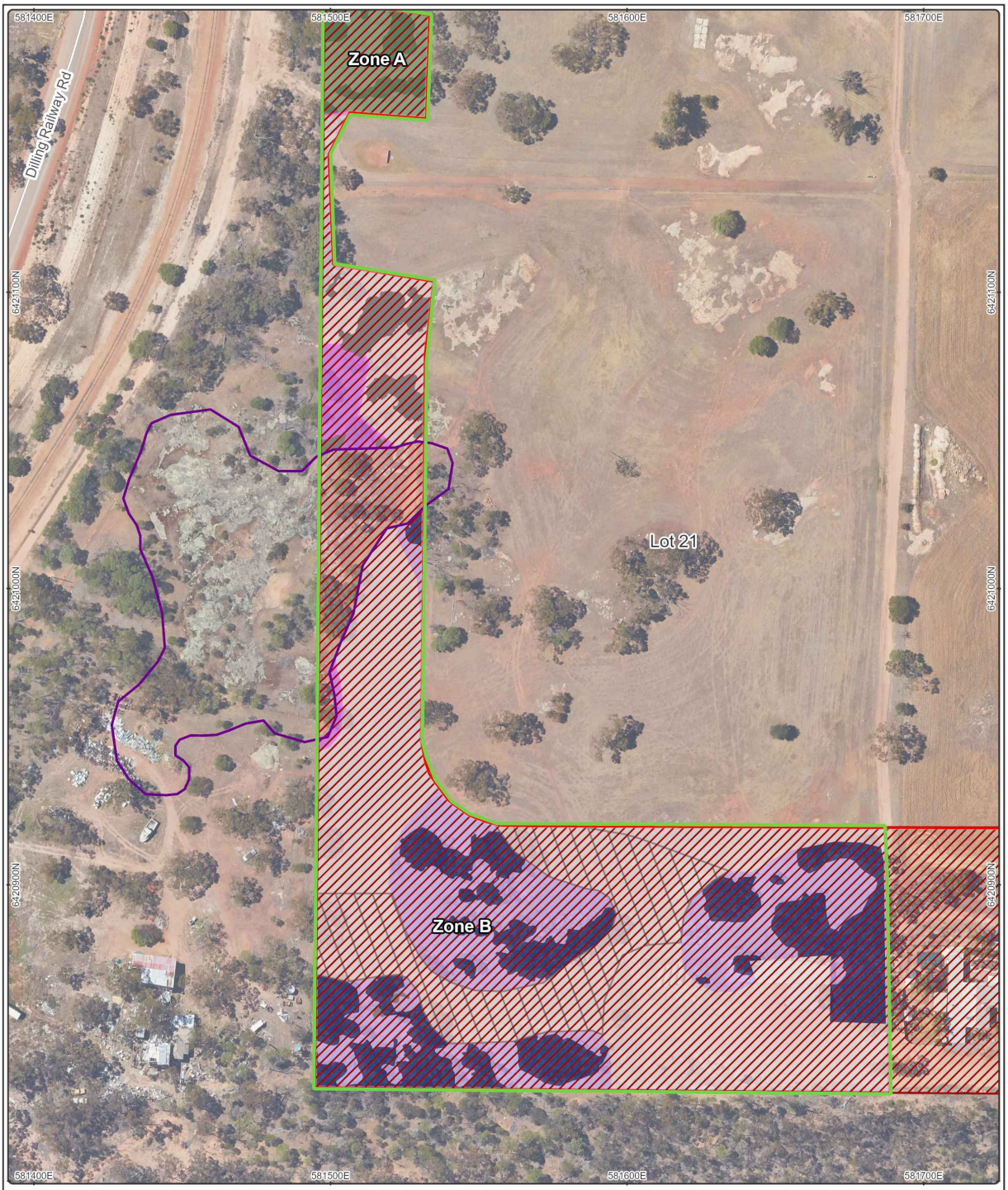

Figure 5-3: Zone B – approximate open areas for planting

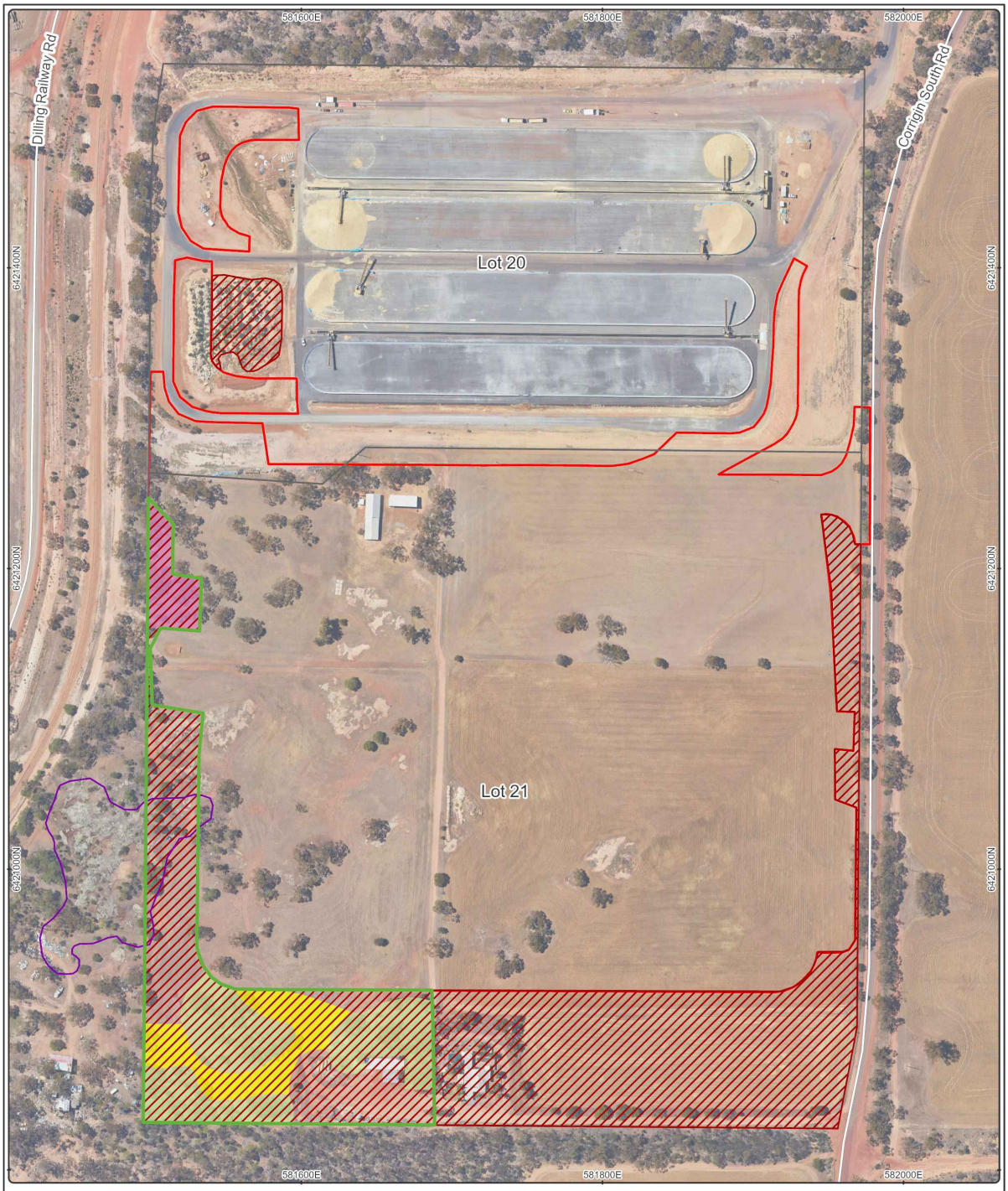

Figure 5-4: Proposed rehabilitation and revegetation offset areas for the Wheatbelt Woodlands TEC

- Offset Site (2.60 ha)
- Proposal Area (16.69 ha)
- Avoidance Area (5.77 ha)
- Aboriginal Heritage Area
- Rehabilitation Area (0.19 ha)
- Revegetation Area (existing woodland) (0.84 ha)
- Revegetation area (paddock) (0.40 ha)
- Cadastral Lot

Sources
Project boundaries: supplied by CBH 2024
Tenure: Cadastre (No attributes) (LGATE-001) Landgate 2024)
Heritage: supplied by CBH 2024
Revegetation/Rehabilitation: Derived from survey data (ELA 2023)
Roads: Road Hierarchy (MRWA 2024)
Imagery: Landgate Public Services 2024

0 30 60 120
Metres

Datum/Projection:
GDA 1994 MGA Zone 50

22PER2768-RD/OK Date: 27/03/2024

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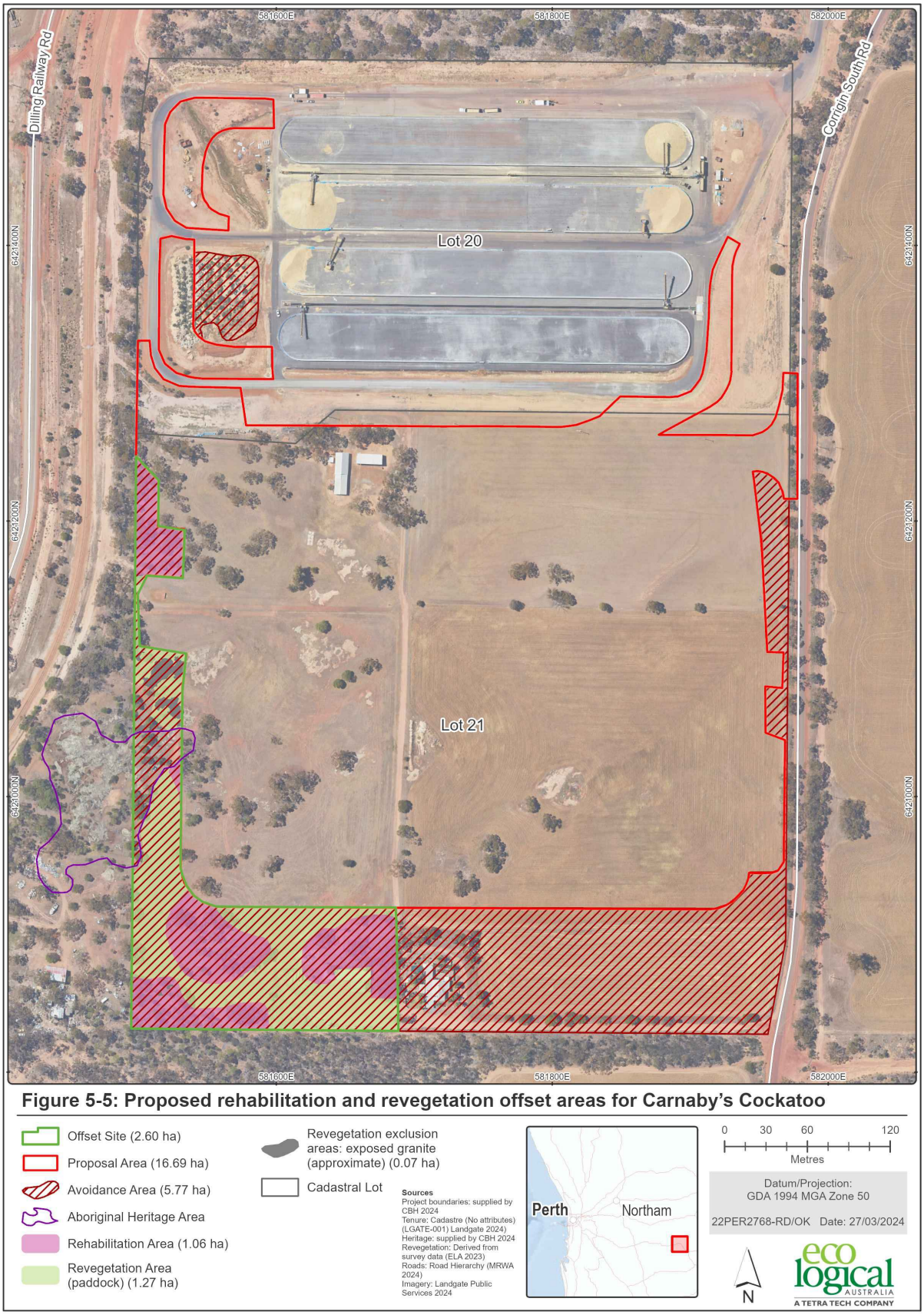

Figure 5-5: Proposed rehabilitation and revegetation offset areas for Carnaby's Cockatoo

5.2. Rehabilitation and revegetation methodology

Revegetation and rehabilitation works, including site preparation, will be undertaken by a suitably qualified contractor. These activities will be monitored and amended based upon feedback from qualified revegetation specialists and emerging scientific data on wheatbelt restoration activities.

5.2.1. Site preparation

5.2.1.1. Removal of infrastructure

Farm infrastructure, such as sheds and other ex-farm buildings, and farming equipment will be removed from the Offset Site prior to revegetation commencing. This will include the removal of rubbish and other discarded farming materials.

5.2.1.2. Weed control

Good, early (i.e. prior to planting) weed control is critical to successful revegetation, with three stages influencing seedling survival and growth (White and Mullan 2006):

1. A weed free area prior to planting allows more soil moisture to be stored for the seedling and can assist with site preparation.
2. All weeds present at the time of planting will use moisture and may even smother seedlings.
3. Control of late germinating weeds is necessary to prevent competition with the seedling in a crucial stage of development.

Weed control works will be undertaken by a suitably qualified contractor. Prior to undertaking weed control, baseline weed mapping will need to be undertaken across the site to obtain a full inventory of weed species and % cover. Initial surveys indicate that there are 22 weed species present within the 2020 survey area; however, this includes areas outside of the Offset Site (ELA 2021). A baseline weed mapping survey should be undertaken for the Offset Site, which will inform the weed control program.

The weed control program will be consistent with suitable guidance (e.g. DER 2013; White and Mullan 2006) and as advised by the revegetation specialist and informed by the revegetation and rehabilitation monitoring program.

A combination of knockdown (e.g. glyphosate) and residual (e.g. simazine) herbicides will be used as advised by the weed control contractor. Selective herbicides may also be required for problem/persistent weeds.

Weed monitoring will be undertaken as part of the annual vegetation condition monitoring described in Section 5.3.3.

5.2.1.3. Fencing and access management

Permanent fencing that excludes vehicles (except for management vehicles), people and grazers (sheep and macropods) from entering the site will be established around the periphery of the Offset Site. Access for management vehicles (including fire trucks) will be provided at location(s) where existing tracks occur. Fencing will be regularly inspected to check for any maintenance issues.

5.2.1.4. Ripping

Prior to either direct seeding or seedling planting, the replanting areas within the Offset Site are expected to require preparation of a suitable seedbed, aid rainfall infiltration, increase root area, aerate soil and remedy soil compaction, commonly caused by livestock (Greening Australia 2017; White and Mullan 2006). Depending on site conditions and the technique used, this may be at the point of planting or several weeks in advance. Ripping with single or multiple tynes is a common approach, but specific site requirements may need more consideration (i.e. very tight subsoils may require deeper ripping with heavy machinery).

5.2.2. Seed and seedling sources

Seed used for seedlings and direct seeding will be of local provenance (e.g. within 50 km of the Offset Site) where possible; however, given the extent of clearing in the region seed sources are expected to be extremely limited and will likely need to extend to collections from further away in the Avon-Wheatbelt bioregion or beyond.

Early seed collection is vital to ensure the required species are available for planting and direct seeding. Most nurseries (and seed suppliers) require at least six months' notice to supply trees and shrubs, longer for difficult to propagate species. Revegetation sites also need sufficient time to 'bank' moisture prior to planting (Greening Australia 2017).

Nursery seedlings (tubestock) and seed will need to be sourced in advance of planned revegetation activities to ensure required species are available for planting and direct seeding. A mixture of the species shown in Appendix A at rates aimed to meet completion criteria (Table 5-1)- i.e. planted at high rates to allow for mortality - will be used for revegetation; however, quantities may vary depending on factors such as seed stock supplies, germination issues and demand from other customers and will be determined by the subcontractor undertaking the revegetation works.

5.2.3. Revegetation and rehabilitation

5.2.3.1. Direct seeding and seedling planting

Planting and direct seeding will be undertaken at the optimal time for the Wheatbelt, typically late May (subject to autumn rainfall) to late July. Planting during weather that is detrimental to vegetation establishment such as strong winds, heavy rain, very dry conditions or temperature extremes, will be avoided. Planting will occur either via manual hand planting (seedlings) using a tree planting tool or tractor-mounted planting machine, or a combination of both, depending on site conditions on the advice of the revegetation contractor. Direct seeding will be via a tractor-mounted machine (usually in combination with tubestock planting).

Tubestock planting will be undertaken at rates approximately 20% higher than completion criteria to allow for plant deaths. Direct seeding is aimed at supplementing the seedlings and will be undertaken at rates subject to seed availability.

Whilst the entire offset site will be fenced to restrict unauthorised access, individual tree guards may be required around planted seedlings to deter kangaroos and rabbits from grazing establishing plants.

After planting, the new seedlings will be vulnerable to weeds, browsing, drought and insect pests. Regular monitoring will be undertaken to ensure high survival and good growth. Inspections will include checking for browsing or damage from fauna and weeds.

5.2.3.2. Pest control

Insect pest control will be undertaken prior to planting and will include using either a systemic insecticide tablet placed under the seedling or a systemic insecticide injected into the soil around the root bowl before planting (usually in the nursery). Once fencing is installed, herbivore vertebrate pest species will be removed through an appropriate control relevant to the vertebrate species present.

5.2.3.3. Hygiene control

Contractors or CBH staff entering the offset sites will be required to adhere to strict hygiene measures to minimise the potential for weeds or pathogens to be introduced or spread. Specific actions to be undertaken to minimise introduction and/or spread of weeds or pathogens will include:

- Ensuring that vehicles, tools, equipment and machinery brought onto the site are free of mud and soil
- Limiting vehicle access to the site to existing tracks
- Avoiding bringing soil, gravel or sand into the site
- If material must be bought onto site, it will be purchased from a soil supplier with Nursery Industry Accreditation Scheme (NIAS) accreditation
- Seedlings will also be sourced from nurseries with NIAS accreditation
- Observing susceptible plants and noting any deaths as part of annual reporting.

5.2.3.4. Fire management

A firebreak will be installed around the periphery of the offset site utilising existing tracks. CBH will also develop an on-site fire management plan or incorporate the Offset Site into its existing receival site bushfire risk management plan. The objective of fire management will be to negate or reduce risk of accidental fire to Wheatbelt Woodlands TEC and Carnaby's Cockatoo habitat. Installation of the firebreak will not involve clearing any native vegetation including areas of Wheatbelt Woodlands TEC or Carnaby's Cockatoo habitat.

5.3. Monitoring

5.3.1. Reference sites

The final reference sites will be established within 12 months of the clearing permit being approved. Baseline data will be collected from each site against which the completion criteria can be developed. Baseline data collected will include species richness, species density, vegetation structure, bare ground cover, weed cover and vegetation condition. Reference sites will be established within the Corrigin Nature Reserve providing a total of three reference sites across the different vegetation units in the two offset zones. DBCA has provided CBH in-principle agreement to establish reference monitoring sites within the Corrigin Nature Reserve, subject to the necessary permits being applied for.

The indicative reference sites, and estimated eucalypt woodland areas in Corrigin Nature Reserve, (Figure 5-6) were selected by an experienced Wheatbelt botanist who had been involved in the baseline vegetation assessments of the Corrigin Grain Expansion ecological studies, based on publicly available

aerial photography – final points and areas will be confirmed through field survey. Botanical specialist advice has recommended reference sites be established within different vegetation communities across within the Corrigin Nature Reserve. The reference sites will be established during baseline data collection, identified with markers and georeferenced. Regular monitoring of the reference sites will occur and be documented along with other reporting requirements.

5.3.2. Monitoring sites

Monitoring sites will be established within the areas where rehabilitation activities will occur (Figure 5-7). Final locations will be subject to subject to field assessment after commencement, and by the first spring, of revegetation activities. Within Zone A, two monitoring sites within vegetation unit EsEIW. The monitoring sites will target areas that the baseline survey has identified as requiring improvement to achieve the Keighery (1994) scale of Good. The site will be established during initial baseline data collection, identified with markers and geo-referenced.

Monitoring sites within Zone B will follow a similar approach to Zone A. Two monitoring sites will be established within vegetation community ElW). Monitoring of these communities will be to focus on structural components to ensure that management actions are creating and improving the complexity and density and continue to monitor for structural components of WWTEC where this vegetation community is targeted to be created.

5.3.3. Monitoring program

CBH will engage a suitability qualified specialist to undertake the monitoring program. An indicative monitoring program is provided in Table 5-2 however, it should be recognised that some elements may need to be deviated from to account for variations in site conditions, climate etc (i.e. on ground sites [quadrats] may need to be moved, monitoring frequency or timing may need to change to adapt to circumstances).

Formal monitoring will take place and consider the following:

- Completion criteria (Table 5-1)
- Seedling survival rates
- Species diversity
- Noticeable growth rates (percentage cover over a set area)
- Weed coverage and weed species composition.

Informal monitoring (visual inspections) of the site will be undertaken regularly to ensure that any issue arising such as plant death, weed outbreaks/poor herbicide results, or impacts from grazing or insect pests can be seen to in a timely manner.

The monitoring program has been designed to ensure that revegetation objectives and management targets are achieved. Monitoring focuses on the success of revegetation of cleared and open areas to ensure that Wheatbelt Woodlands TEC and habitats capable of supporting Carnaby's Cockatoo (and other flora and fauna species), are re-established.

Within each monitoring quadrat/transect, the following monitoring data will be recorded:

- Site number
- Native flora species density (plants per m^2) - noting primary canopy, secondary canopy, understorey and Carnaby's Cockatoo foraging species
- Native flora species richness (per quadrat/transect) - noting primary canopy, secondary canopy, understorey and Carnaby's Cockatoo foraging species
- Native species and foliage cover (%)
- Vegetation condition under the Keighery Scale (Keighery 1994)
- Weed species and foliage cover (%)
- Number of mature trees (DBH ≥30 cm) in areas of Wheatbelt Woodlands TEC
- Indicators of the presence of fauna (e.g. scats, burrows, tracks)
- General observations (i.e. pest insects, feral animal disturbance, fire occurrence).

Photo monitoring points will be established at representative locations within each monitoring site and recorded with a GPS. At each point, two photographs will be taken along each direction of the transect or one photograph from a quadrat corner. All photos will be date stamped and photo number recorded with appropriate details (monitoring site number and direction of photo).

Fauna observations within, and usage of, the rehabilitated area will be monitored in tandem with vegetation monitoring.

Data collection will be comparable and repeatable between monitoring sites and across monitoring years. After each monitoring event, data collected from each rehabilitation zone will be compared with its corresponding reference site. Each year of monitoring will compare results to the previous monitoring results, including an assessment against completion criteria (Table 5-1) and performance indicators (Table 5-2). Where deficiencies are encountered such as the presence of weeds or a low diversity or coverage of native vegetation, corrective actions (Table 5-2) may be required to ensure completion criteria are met by the end of the monitoring period (or up to 20 years). In this circumstance the time to subsequent monitoring may be reduced as directed by the environment specialist to ensure any corrective actions are successful.

Table 5-2: Schedule of Revegetation and Monitoring Activities

Phase	Action	Performance indicator	Responsibility	Evidence / output	Frequency / timing	Corrective action
Year 1	Seed collection	Supply of seeds to meet annual revegetation rates	Revegetation specialist/contractor	Invoice/seed stock	Annual	Source additional supply from revegetation / accredited nurseries
	Weed control	Eradication of any declared weed species and reduction of number of weed species and cover	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE* Determine appropriate remedy (e.g. additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Rubbish and litter removal	Site inspection shows all litter and rubbish removed from offset site	Revegetation specialist/contractor	Inspection report	Within 12 months of permit grant	Assign Action in SHARE to appoint contractor to remove rubbish and litter
	Offset sites are protected	Conservation covenant established with placement of a notification on title	CBH	Memorial on title/correspondence under SLC Act	Within 12 months of permit grant	Investigate cause and rectify by lodging application with agency responsible for conservation covenant under SLC Act
	Planting	Seedlings planted and installation of tree guards	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE
	Installation of fencing	Site inspection shows fencing installed	Contractor	Photographic evidence/inspection report	Within 12 months of permit grant	Investigate cause and assign action in SHARE
	Reference & Monitoring sites	Confirm location of all reference and monitoring sites and establish baseline data	Revegetation specialist/contractor	Monitoring report	Within 12 months of permit grant	Investigate cause and assign action in SHARE
Year 2	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (e.g. weed control, pest control and infill planting)	Environmental specialist	Monitoring report	2 per year	Investigate cause and assign action in SHARE

Phase	Action	Performance indicator	Responsibility	Evidence / output	Frequency / timing	Corrective action
	Seed and plant supply	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries
	Seeding and replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Investigate cause and assign action in SHARE
	Weed control	Eradication of any declared weed species and reduction of number of weed species and cover	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Pest control	Implement pest management and control as required from monitoring report	Contractor	Inspection report	Biennial	Investigate cause and assign action in SHARE Determine appropriate remedy (eg adjusted method, alternative pesticides, changed timing) Implement remedy
	Rubbish and litter removal	Site inspection shows all litter and rubbish removed from offset site	Revegetation specialist/contractor	Inspection report	Annual	Assign Action in SHARE to appoint contractor to remove rubbish and litter
	Installation of signage	Site inspection shows signage installed	Contractor	Photographic evidence/inspection report	Within 2 years of permit grant	Investigate cause and assign action in SHARE
Year 3	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (eg weed control, pest control and infill planting)	Environmental specialist	Monitoring report	2 per year	Investigate cause and assign action in SHARE
	Seed and plant supply	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries

Phase	Action	Performance indicator	Responsibility	Evidence / output	Frequency / timing	Corrective action
	Seeding and replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Investigate cause and assign action in SHARE
	Weed control	Eradication of any declared weed species and reduction of number of weed species and cover	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Rubbish and litter removal	Site inspection shows all litter and rubbish removed from offset site	Revegetation specialist/contractor	Inspection report	Within 12 months of permit grant	Assign Action in SHARE to appoint contractor to remove rubbish and litter
Year 4	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (e.g. weed control, pest control and infill planting)	Environmental specialist	Monitoring report	2 per year	Investigate cause and assign action in SHARE
	Seed and plant supply	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries
	Seeding and replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Investigate cause and assign action in SHARE
	Weed control	Eradication of any declared weed species and reduction of number of weed species and cover	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (e.g. additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Pest control	Implement pest management and control as required from monitoring report	Contractor	Inspection report	Biennial	Investigate cause and assign action in SHARE

Phase	Action	Performance indicator	Responsibility	Evidence / output	Frequency / timing	Corrective action
						Determine appropriate remedy (e.g. adjusted method, alternative pesticides, changed timing) Implement remedy
	Rubbish and litter removal	Site inspection shows all litter and rubbish removed from offset site	Revegetation specialist/contractor	Inspection report	Within 12 months of permit grant	Assign Action in SHARE to appoint contractor to remove rubbish and litter
Year 5	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (e.g. weed control, pest control and infill planting)	Environmental specialist	Monitoring report	2 per year	Investigate cause and assign action in SHARE
	Seed and plant supply	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries
	Seeding and replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Investigate cause and assign action in SHARE
	Weed control	Eradication of any declared weed species and reduction of number of weed species and cover	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (e.g. additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Rubbish and litter removal	Site inspection shows all litter and rubbish removed from offset site	Revegetation specialist/contractor	Inspection report	Within 12 months of permit grant	Assign Action in SHARE to appoint contractor to remove rubbish and litter
Year 6 - 10	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (e.g. weed control, pest control and infill planting)	Environmental specialist	Monitoring report	Biennial	Investigate cause and assign action in SHARE
	Seed and plant supply	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries

Phase	Action	Performance indicator	Responsibility	Evidence / output	Frequency / timing	Corrective action
	Seeding and replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Investigate cause and assign action in SHARE
	Weed control	Eradication of any declared weed species and reduction of number of weed species and cover	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (e.g. additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Pest control	Implement pest management and control as required from monitoring report	Contractor	Inspection report	Biennial	Investigate cause and assign action in SHARE Determine appropriate remedy (e.g. adjusted method, alternative pesticides, changed timing) Implement remedy
Year 15 or two years after completion criteria has been met	Monitoring and reporting	Completion survey and closure report	Environmental specialist	Monitoring report	Annual	Investigate cause and assign action in SHARE

*SHARE: The internal CBH event management system used to record incidents, hazards, and corrective and/or preventative actions.

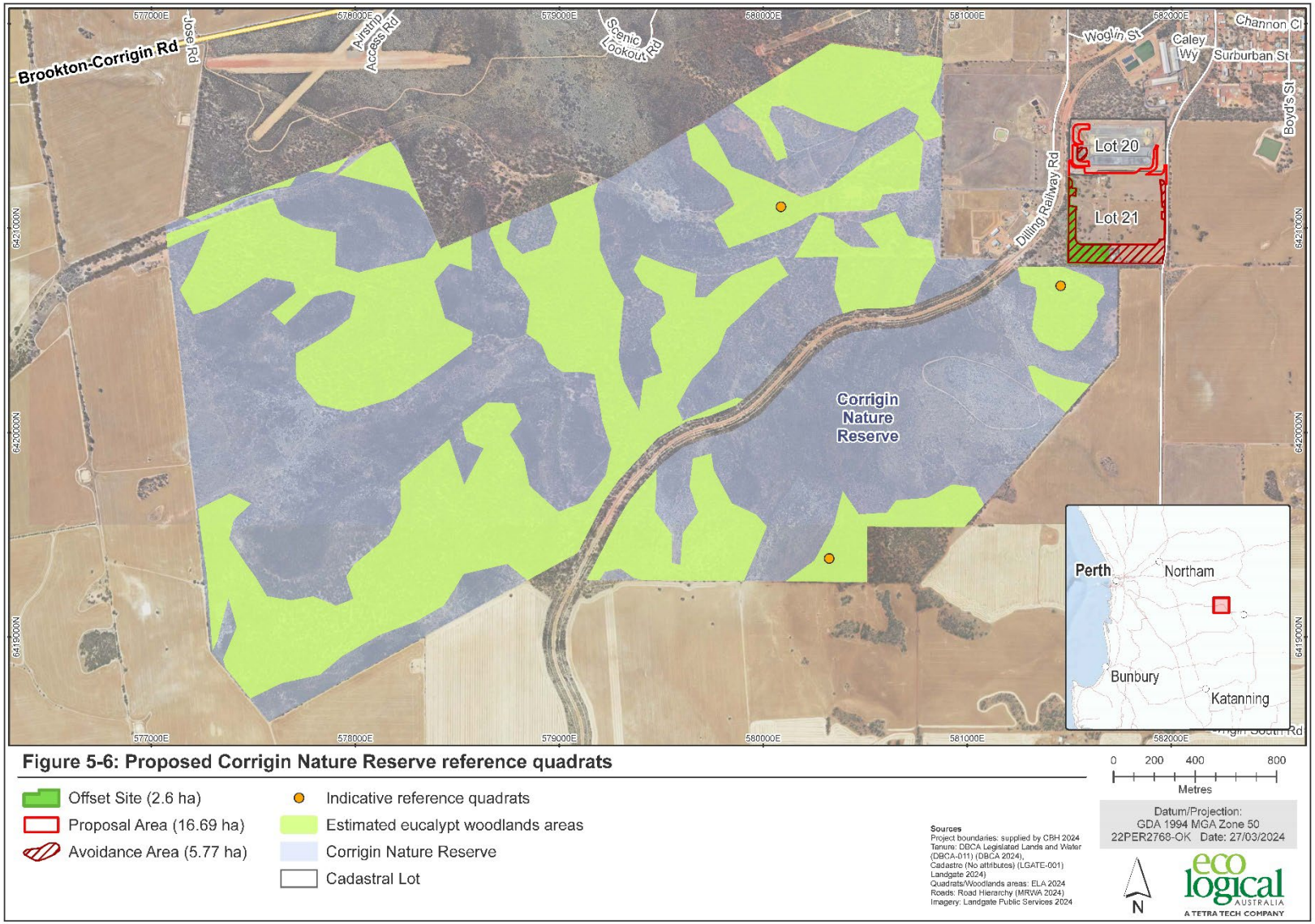

Figure 5-6: Proposed Corrigin Nature Reserve reference quadrats

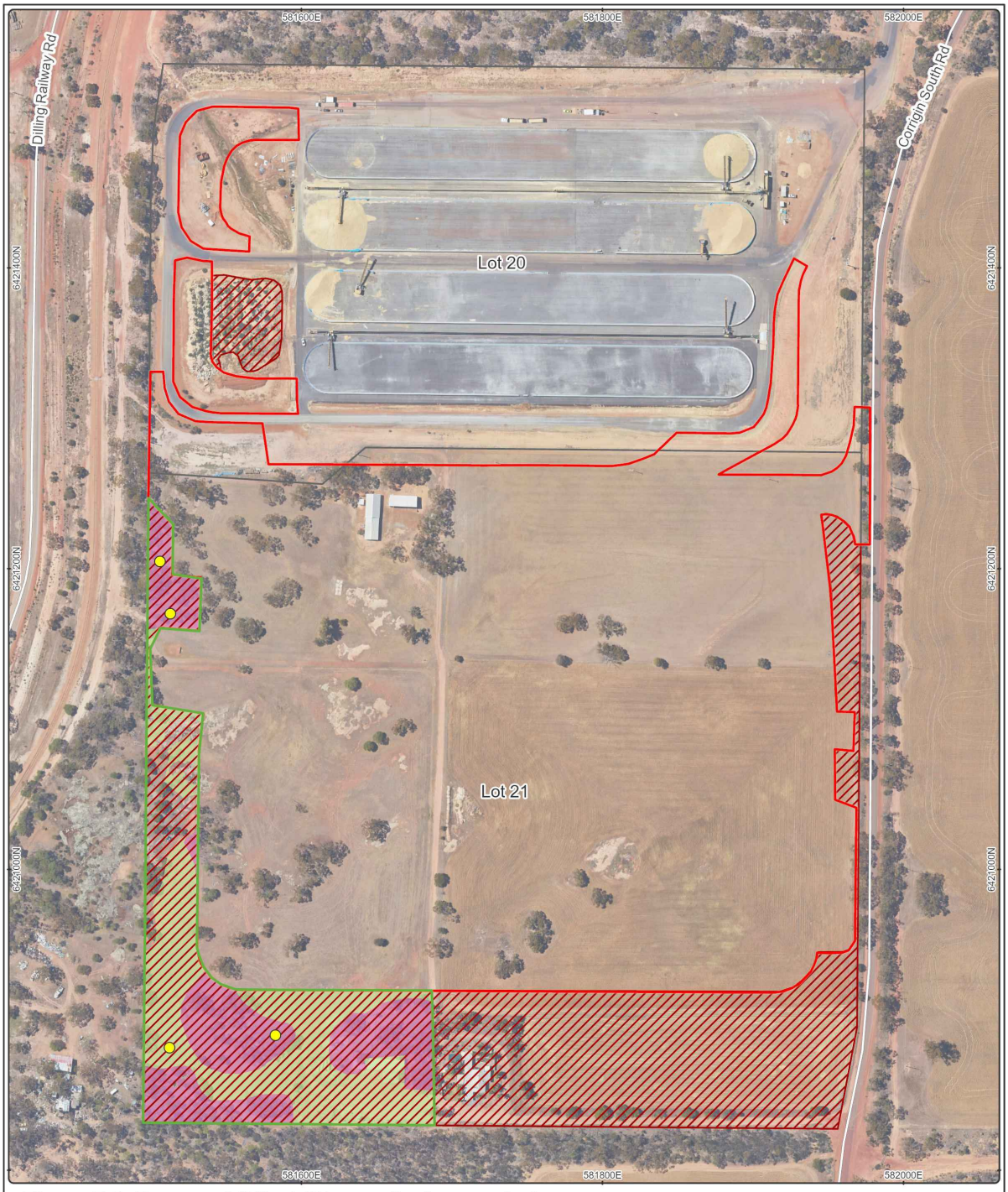

Figure 5-7: Proposed Offset Site monitoring quadrats

5.4. Roles and responsibilities

CBH are ultimately responsible for implementing this management plan until such a time that the site is handed over to a government body organisation.

Suitably qualified specialists will be engaged to undertaken weed surveys, weed and feral fauna control, revegetation works and vegetation monitoring; however, it will be the responsibility of CBH to ensure these are undertaken in accordance with this management plan.

Table 5-3:: Roles and responsibilities

Role	Responsibility
CEO	Establish appropriate values to ensure the company meets their external obligations and provides a safe working environment
Head; HSE	- Lead and review risk assessment activities, assist in incident investigation to ensure environmental and community risks and opportunities are identified and managed - Liaise with key stakeholders - Report to the CEO
Manager; Environment and Sustainability	- Ensure compliance with all legislation, approvals, policies, procedures, conditions and commitments - Support and provide advice to all personnel in relation to environmental and community matters - Review effectiveness of the OMP and other environmental documentation - Participate in risk assessment activities, assist in incident investigation to ensure environmental and community risks and opportunities are identified and managed - Ensure contracts contain relevant environmental provisions and contractors fulfill their contractual obligations
Coordinator; Environment and Sustainability	- Assist the Manager Environment and Sustainability with reviewing the effectiveness of the OMP and other environmental documentation - Collate environmental data for mandatory environmental reporting - Maintain all documentation (hard copy, electronic and emails) for inspection during internal and external audits - Manage external contractors by ensuring they are correctly set up in SitePass and have submitted all relevant documentation prior to entering site - Manage and report contractor activity to the Manager Environment and Sustainability - Organise any routine environmental audits as outlined in the OMP
Area Manager	- Ensure requirements of the OMP are implemented within their area and all employees and contractors comply - Support, mentor, advise and manage RPOIC and site staff in the implementation of the OMP - Provide adequate environmental training to key personnel - Assist or facilitate with investigating environmental incidents and co-ordinating corrective actions, if required - Coordinate any routine environmental audits as outlined in the OMP
RPOIC	- Support the Area Manager and provide advice to improve day to day environmental performance - Report on areas of improvement and corrective actions - Facilitate environmental monitoring and auditing as outlined in the OMP

Role	Responsibility
External Contractors	- Complete all relevant training and induction activities prior to commencing work on site - Comply with the requirements of the OMP and related procedures - Ensure all employees are aware of the requirements of this OMP and relevant reporting requirements of any related environmental incidents
All Personnel on Site	- Comply with the requirements of this OMP and related procedures - Report all environmental incidents as they occur - Attend environmental inductions or any other training as required - Assist with environmental incident investigations, if relevant, and implement any identified corrective actions because of the investigation outcomes

6. Adaptative Management and Review

6.1. Management plan review

CBH will implement an adaptive management system to ensure that the environmental objectives are being met. To achieve this and to ensure continuous improvement of the management plan, the OMP will be reviewed every five years to ensure the plan is meeting the completion criteria for establishing the objectives. Where relevant, updates to the plan will be made to ensure that it can meet its objectives (Section 4.1).

Notwithstanding the formal five year review of the OMP, the management targets and completion criteria will be reviewed annually and as required in response to monitoring results. If management targets are not being met, corrective actions are proposed to ensure the environmental objectives are achieved (Table 5-2).

Any changes to management targets and/or actions will be reported to DCCEEW at the time.

6.2. Reporting

An Offset Site Monitoring Report will be prepared post each monitoring event that will identify the following:

- Any changes to rehabilitation approach, actions and monitoring due to new knowledge regarding the presence/ absence of conservation significant species
- A summary of monitoring results in comparison to objective and management targets
- Any contingency actions implemented
- Any other issues encounters (e.g. fire occurrence).

The status of rehabilitation progress against management targets and completion criteria (whether they have been met or the level of achievement), and reasons for any changes will be reported as part of annual reporting expected to be a condition of approval (and incorporated into management plan review [Section 6.1]).

7. References

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Appendix A Species list

Species	Common name	WWTEC key species*	Carnaby's Foraging? ^	Carnaby's breeding / roosting? ^	Vegetation type# (Source**)
Primary (dominant) canopy (seedlings and seed mix)					
E. loxophleba	York Gum	Yes (dominant)	Yes	Yes	ElW, EsElW (WWTEC) (ELA) SG, JYG (F&H)
E. salmonophloia	Salmon Gum	Yes (dominant)	Yes	Yes	EsElW (WWTEC) (ELA) SGW, SGWwM (N&C) SG, JYG (F&H)
E. wandoo	Wandoo	Yes (dominant)	Yes	Yes	SGW (N&C)
Secondary (associated) canopy (seedlings and seed mix)					
Acacia acuminata	Jam	Yes	-	-	ElW, AsT, EwW (ELA) SG, JYG (F&H)
Callitris canescens	-	Yes	-	-	WW (N&C)
Allocasuarina huegeliana	Rock Sheoak	Yes	-	-	SG, JYG (F&H)
Eucalyptus celastroides	Mirret	Yes	-	-	SGWwM (N&C)
E. eremophila	Tall Sand Mallee	Yes	-	-	SGWwM (N&C)
Eucalyptus flocktoniae	Merrit	Yes	-	-	SGWwM (N&C)
Primary understorey (seedlings and seed mix)					
Acacia erinacea	-	Yes	-	-	SGW, SGWwM (N&C)
Acacia hemetiles	-	Yes	-	-	SG, JYG(F&H)
Acacia lasiocarpa (var. *sedifolia)*	Panjang	Yes	-	-	EwW (ELA) WW (N&C)
Acacia microbotrya	Manna Wattle	Yes	-	-	SG (F&H)

Species	Common name	WWTEC key species*	Carnaby's Foraging? ^	Carnaby's breeding / roosting? ^	Vegetation type# (Source**)
Allocasuarina campestris	Shrubby Sheoak	Yes	Yes	-	EwW (ELA) WW (N&C)
Atriplex semibaccata	Creeping Saltbush	Yes	-	-	ElW, EwW (ELA) SG, JYG (F&H)
Callistemon phoeniceus	Lesser Bottlebrush	Yes	Yes	-	JYG (F&H)
Dampiera lavandulacea	-	Yes	-	-	EwW (ELA)
Enchylaena tomentosa	Ruby Saltbush	Yes	-	-	EsElW (WWTEC) (ELA) SG, JYG (F&H)
Eucalyptus gardneri	Blue Mallet	Yes	-	-	WW (N&C)
Gastrolobium spinosum	Prickly Poison	Yes	-	-	EwW (ELA)
Gastrolobium trilobum	Bullock Poison	Yes	-	-	WW (N&C)
Grevillea patentiloba	-	-	Yes##	-	SGW, SGWwM (N&C)
Hakea lissocarpha	Honey Bush	Yes	Yes	-	WW (N&C)
Hakea meisneriana	-	-	Yes##	-	EwW (ELA)
Hakea scoparia	Kangaroo Bush	-	Yes	-	WW (N&C)
Hemiandra pungens	Snakebush	-	-	-	EwW (ELA)
Maireana brevifolia	Small Leaved Bluebush	Yes	-	-	ElW, EsElW (WWTEC) (ELA) SG (F&H)
Melaleuca lateriflora	Gorada	Yes	-	-	SG (F&H)
Melaleuca pauperiflora	Boree	Yes	-	-	SG (F&H)
Melaleuca uncinata	Broom Bush	Yes	-	-	SGW, WW (N&C)
Rhagodia preissii	-	-	-	-	EwW (ELA)
Santalum acuminatum	Quandong	Yes	-	-	EwW (ELA) WW (N&C)

Species	Common name	WWTEC key species*	Carnaby's Foraging? ^	Carnaby's breeding / roosting? ^	Vegetation type# (Source**)
Templetonia sulcata	Centipede Bush	Yes	-	-	SGW, SGWwM (N&C)
Secondary understorey – other shrubs, grasses, herbs (use in seed mix if available, encourage regeneration [e.g. through weed control, removal of stock etc])					
Acacia brachyclada	-	-	-	-	SGW (N&C)
Acanthocarpus canaliculatus	_	-	-	-	EwW (ELA)
Amphipogon strictus	Greybeard Grass	-	-	-	EwW (ELA)
Austrostipa elegantissima	Windmill Grass	-	-	-	EwW (ELA)
Austrostipa variabilis	Variable Speargrass	-	-	-	ElW, AsT, EwW (ELA)
Beyeria sulcata	-	-	-	-	EwW (ELA)
Borya nitida	Pincushions	Yes	-	-	WW (N&C)
Comesperma scoparium	Broom Milkwort	-	-	-	EwW (ELA)
Daviesia scoparia	-	-	-	-	WW (N&C)
Desmocladus asper (ex *Loxocarya aspera*)	-	-	-	-	SGWwM, WW (N&C)
Dianella revoluta	Blue Flax-lily	-	-	-	EwW (ELA)
Eucalyptus conglobata	Port Lincoln Mallee	-	-	-	SGWwM (N&C)
Glischrocaryon angustifolium	-	-	-	-	EwW (ELA)
Hibbertia rupicola	-	-	-	-	EwW (ELA)
Lepidosperma resinosum	(Sedge)	-	-	-	EwW (ELA)
Lepidobolus chaetocephalus	Bristle-headed Chaff Rush	-	-	-	WW (N&C)
Lomandra effusa	Scented Matrush	-	-	-	EwW (ELA)
Marianthus bicolor	-	-	-	-	EwW (ELA)
Olearia subspicata	Spike Daisy Bush	-	-	-	SGW, SGWwM (N&C)
Opercularia vaginata	Dog Weed	-	-	-	EwW (ELA)

Species	Common name	WWTEC key species*	Carnaby's Foraging? ^	Carnaby's breeding / roosting? ^	Vegetation type# (Source**)
Phebalium megaphyllum	-	-	-	-	EwW (ELA)
Ptilotus polystachyus	Prince of Wales Feather	-	-	-	AsT (ELA)
Rytidosperma caespitosum	Common / White Top Wallaby Grass	-	-	-	EwW (ELA)
Scholtzia drummondii	-	-	-	-	EwW (ELA)
Thysanotus patersonii	Twining Fringe-lily	-	-	-	EwW (ELA)
Trymalium daphnifolium	-	-	-	-	WW (N&C)

*Based on Table 2a, 2b and Appendix A of WWTEC Conservation Advice (DoE 2015). ^Groom 2011. **Sources of information on species: ELA = ELA (2021), N&C = Napier and Coats 1986, F&H = Fry and Hobbs 2014. ##Not listed in Groom (2011) but proteaceous genera such as *Grevillea* and *Hake*a are known cockatoo foraging plants (DAWE 2022b).

#Vegetation community codes as described in the source documents:

- ELA: AsT – Acacia Shrubland, ElW – *E. loxophleba* Woodland, EsElW - *E. salmonophloia E. loxophleba* Woodland (i.e. Wheatbelt Woodlands TEC [WWTEC])
- N&C: SGW – Salmon Gum Woodland, SGWwM – Salmon Gum Open Woodland with Mallee, WW – Wandoo Woodland
- F&H: SG – Salmon Gum country, JYG – Jam or York Gum country.

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