Newdegate Grain Receival Site Expansion Native Vegetation Clearing Permit Supporting Document

CBH Group

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DOCUMENT TRACKING

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Abbreviations

Abbreviation	Description
BoM	Bureau of Meteorology
CBH Group	CBH
DAFWA	Department of Agriculture and Food Western Australia
DBCA	Department of Biodiversity, Conservation and Attractions
DoEE	Department of the Environment and Energy
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*
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
IBRA	Interim Biogeographic Regionalisation for Australia
ILUA	Indigenous Land Use Agreement
km	Kilometres
m	Metres
mm	Millimetres
mgbl	Metres below ground level
MNES	Matters of National Environmental Significance
NVCP	Native Vegetation Clearing Permit
PEC	Priority Ecological Community
SWALSC	South West Aboriginal Land and Sea Council
TDS	Total Dissolved Solids
TEC	Threatened Ecological Community
WONS	Weeds of National Significance

1. Introduction

CBH Group (CBH) is a Western Australian-based agricultural co-operative, owned and controlled by approximately 3,700 Western Australian grain growing businesses. The core purpose of CBH is to sustainably create and return value to grain growers. Since being established in Western Australia in 1933, CBH has continuously evolved, innovated and grown, with receival sites and offices located throughout Western Australia, and port terminals located at Geraldton, Kwinana, Albany and Esperance (Figure 1-1).

CBH proposes to expand its existing Newdegate Grain Receival Site located on Lake Biddy Road in Newdegate, in the Great Southern region of Western Australia (the project; Figure 1-2). The proposed expansion will accommodate the operation of additional grain receival and storage facilities and will include open grain bulkhead storages, associated discharge grids and loading systems, a rail out-loading facility, internal roads and stormwater drainage (Figure 1-3).

The project was referred to the then Department of the Environment and Energy (DoEE; now the Department of Agriculture, Water and the Environment [DAWE]) in December 2018 (EPBC reference 2018/8364, the 'original proposal'). The original proposal included clearing up to a total of 24 hectares (ha) of vegetation, which included Matters of National Environmental Significance (MNES) values. On 26 February 2019, the Minister for the Environment and Energy determined that the original proposal constituted a controlled action under s 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and thus required assessment and a decision about whether approval should be granted under that act (DoEE 2019). The controlling provision was 'Listed Threatened Species and Ecological Communities' (ss 18 and 18A of the EPBC Act), namely:

- *Calyptorhynchus latirostris* (Carnaby's Cockatoo)
- *Leipoa ocellata* (Malleefowl)
- Eucalypt Woodlands of the Western Australian Wheatbelt ecological community (Wheatbelt Woodlands TEC).

In June 2019, a Native Vegetation Clearing Permit (NVCP) application (CPS 8516/1) under Part V of the *Environmental Protection Act 1986* (EP Act) was submitted to the Department of Water and Environmental Regulation (DWER) for the clearing of 23.3 ha of vegetation within a 24.1 ha 'proposed clearing area' (i.e. 0.8 ha was mapped as already cleared). An assessment under the bilateral agreement between the Commonwealth and Western Australia under s 45 of the EPBC Act was proposed. A preliminary assessment of the application by DWER identified a number of environmental issues, including MNES, and further information was requested. In its Request for Information (6 March 2020) regarding the 2019 NVCP application DWER advised that in order for the application to progress, a modification to the area to be cleared should be considered, and additional avoidance and minimisation measures associated with the environmental impacts be provided. Following further discussions with DWER in June 2020, the NVCP application was withdrawn.

Since then, CBH has significantly revised the project by modifying the area to be cleared in order to reduce the environmental impacts, in accordance with the DWER advice. The project now includes the

removal of up to 11.4 ha of native vegetation within an 11.6 ha proposed clearing area (Figure 1-2). The remaining 0.2 ha includes already cleared areas such as tracks.

This document has been prepared to support the granting of a NVCP for the project under Part V Division 2 of the EP Act and approval under the EPBC Act.

This NVCP application includes the following information:

- The justification for the project
- An overview of the existing environmental conditions of the site
- An evaluation of potential impacts of the vegetation clearing
- An evaluation of compliance of the proposed clearing against the ten clearing principles listed under Schedule 5 of the EP Act
- Matters of National Environmental Significance
- Environmental approvals and management requirements
- Proposed environmental offsets
- Stakeholder consultation.

The following environmental assessments have been conducted for the project to specifically inform this NVCP application:

- A flora, vegetation and fauna assessment (ELA 2018a)
- A targeted Red-tailed Phascogale assessment (ELA 2018b)
- A targeted Black Cockatoo Habitat assessment (Harewood 2019)
- An environmental approvals strategy (ELA 2018c).

1.1 Location, ownership and tenure

The project lies adjacent to the CBH existing grain receival site and the Water Corporation waste water treatment ponds, approximately 0.5 km northwest from the main street of Newdegate town (Figure 1-2). The town cemetery is located approximately 300 m northwest of the proposed clearing area, and Lake Stubbs is located to the northeast. The railway servicing the CBH site runs along the southwest border, parallel to Lake Biddy Road.

The proposed clearing area occurs within an approximate 24.8 ha project area. The project area occurs within the following land parcels:

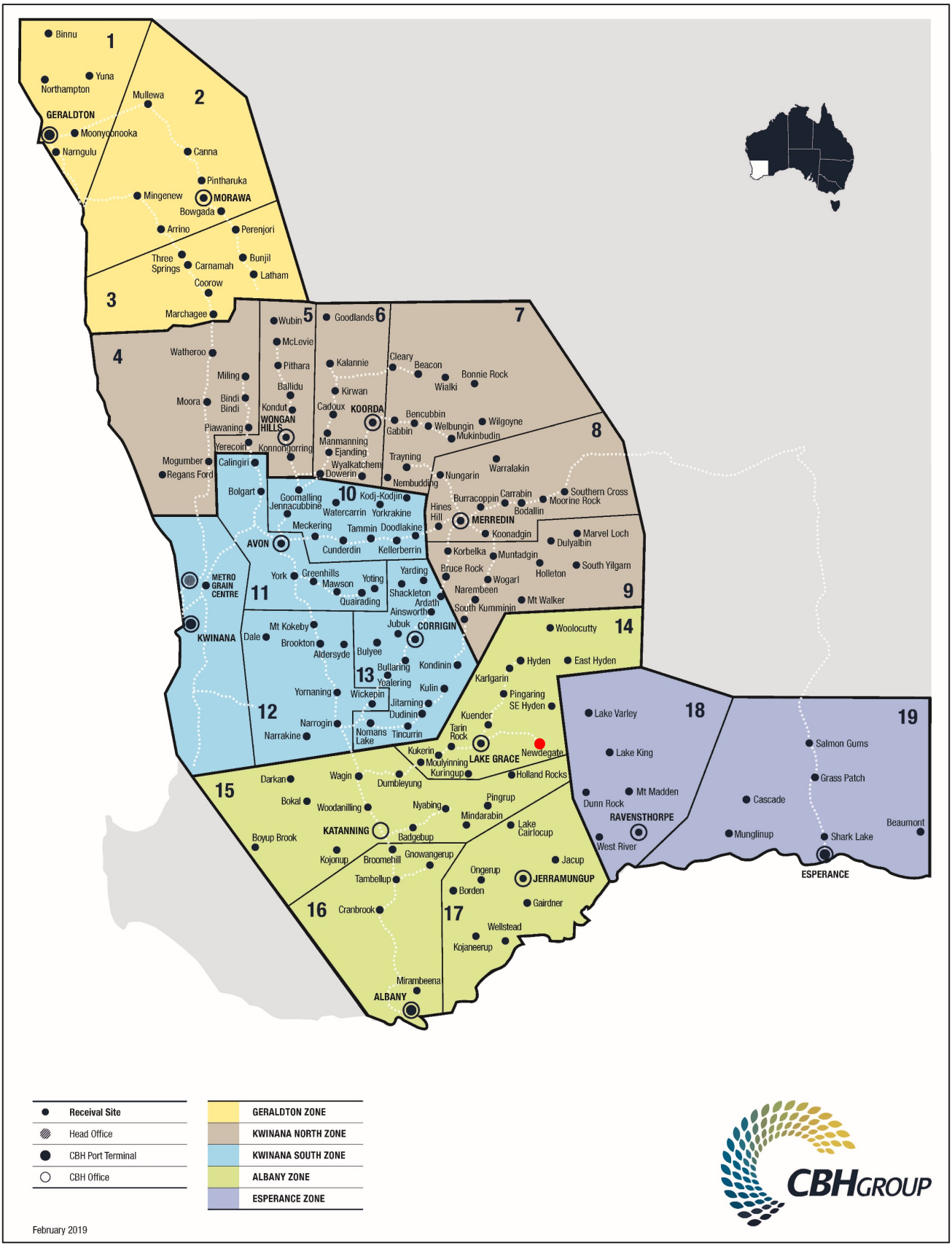
- Lots 102 (Deposited Plan 031366) Lake Biddy Road, Newdegate, Western Australia
- Lot 208 (Deposited Plan 193928) Lake Biddy Road, Newdegate, Western Australia
- UCL (identified by PIN 643570)
- Railway reserve and easements.

While a portion of the project area is reserved for conservation under the Shire of Lake Grace Local Planning Scheme, this area is also classified as Unallocated Crown Land (UCL) and road reserve and is not vested with the Conservation and Parks Commission as conservation estate. The closest conservation area is Lake Biddy Nature Reserve, a 'C' Class reserve approximately 9 km northwest of the project.

The project location is shown in Figure 1-2 and Lot details are presented in Table 1-1. Certificates of title for Lots 102 and 208 Lake Biddy Road and letters of authority for UCL on identified by PIN 643570, railway reserve and easements are presented in Appendix A.

Table 1-1: Site identification details for Lot 102 Lake Biddy Road, Newdegate, Western Australia

Subject	Detail
Lot 102 on Deposited Plan 31366	
Common name of the site	Lot 102 Lake Biddy Road, Newdegate, Western Australia
Current certificate of title	Volume: LR3089 Folio: 61
Status	Unallocated Crown Land
Current site owner	State of Western Australia
Local Government Authority	Shire of Lake Grace
Current Local Planning Scheme No. 4 District Zoning Scheme	General agriculture
Lot 208 on Deposited Plan 193928	
Common name of the site	Lot 208 Lake Biddy Road, Newdegate, Western Australia
Current certificate of title	Volume: LR3112 Folio: 109
Current site owner	State of Western Australia
Status	Unallocated Crown Land
Local Government Authority	Shire of Lake Grace
Current Local Planning Scheme No. 4 District Zoning Scheme	Conservation


Binnu
Yuna
Northampton
Mullewa
GERALDTON
Moonyoonooka
Narngulu
Canna
Pintharuka
Mingenew
MORAWA
Bowgada
Arrino
Perenjori
Three Springs
Carnamah
Bunjil
Latham
Coorow
Marchagee
Wubin
Goodlands
McLevie
Watheroo
Pithara
Kalannie
Cleary
Beacon
Bonnie Rock
Wialki
Miling
Ballidu
Kirwan
Moora
Bindi Bindi
Kondut
Cadoux
KOORDA
Bencubbin
Welbungin
Wilgoyne
Gabbin
Mukinbudin
WONGAN HILLS
Piawaning
Manmanning
Yerecoin
Konnongorring
Ejanding
Trayning
Warralakin
Mogumber
Regans Ford
Calingiri
Wyalkatchem
Dowerin
Nungarin
Nembudding
Bolgart
Goomalling
Jennacubbine
Kodj-Kodjin
Watercarrin
Yorkrakine
Burracoppin
Carrabin
Southern Cross
Moorine Rock
Bodallin
Hines Hill
MERREDIN
Meckering
Tammin
Doodlakine
Koonadgin
Marvel Loch
Dulyalbin
AVON
Cunderdin
Kellerberrin
Korbelka
Muntadgin
Holleton
South Yilgarn
Bruce Rock
Wogarl
Yarding
METRO GRAIN CENTRE
York
Greenhills
Mawson
Yoting
Quairading
Shackleton
Ardath
Narembeen
Mt Walker
Ainsworth
South Kumminin
Jubuk
CORRIGIN
Woolocutty
KWINANA
Mt Kokeby
Dale
Brookton
Aldersyde
Bulyee
Hyden
East Hyden
Bullaring
Kondinin
Karlgarin
Yealering
Kulin
Pingaring
SE Hyden
Yornaning
Wickepin
Jitarning
Dudinin
Kuender
Lake Varley
Narrogin
Tarin Rock
Narrakine
Normans Lake
Tincurrin
Salmon Gums
Lake King
Kukerin
Newdegate
Moulyinning
LAKE GRACE
Kuringup
Holland Rocks
Grass Patch
Darkan
Wagin
Dumbleyung
Mt Madden
Dunn Rock
Cascade
Bokal
Woodanilling
Nyabing
Pingrup
Mindarabin
Lake Cairlocup
RAVENSTHORPE
Beaumont
Munglinup
Shark Lake
Boyup Brook
KATANNING
Badgebup
West River
Kojonup
Broomehill
Gnowangerup
Jacup
Ongerup
JERRAMUNGUP
Tambellup
Borden
Gairdner
Cranbrook
Wellstead
Kojaneerup
Mirambeena
ALBANY
ESPERANCE
1
2
3
4
5
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7
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9
10
11
12
13
14
15
16
17
18
19
Receival Site
Head Office
CBH Port Terminal
CBH Office
GERALDTON ZONE
KWINANA NORTH ZONE
KWINANA SOUTH ZONE
ALBANY ZONE
ESPERANCE ZONE
February 2019
CBHGROUP

Figure 1-2: Project location

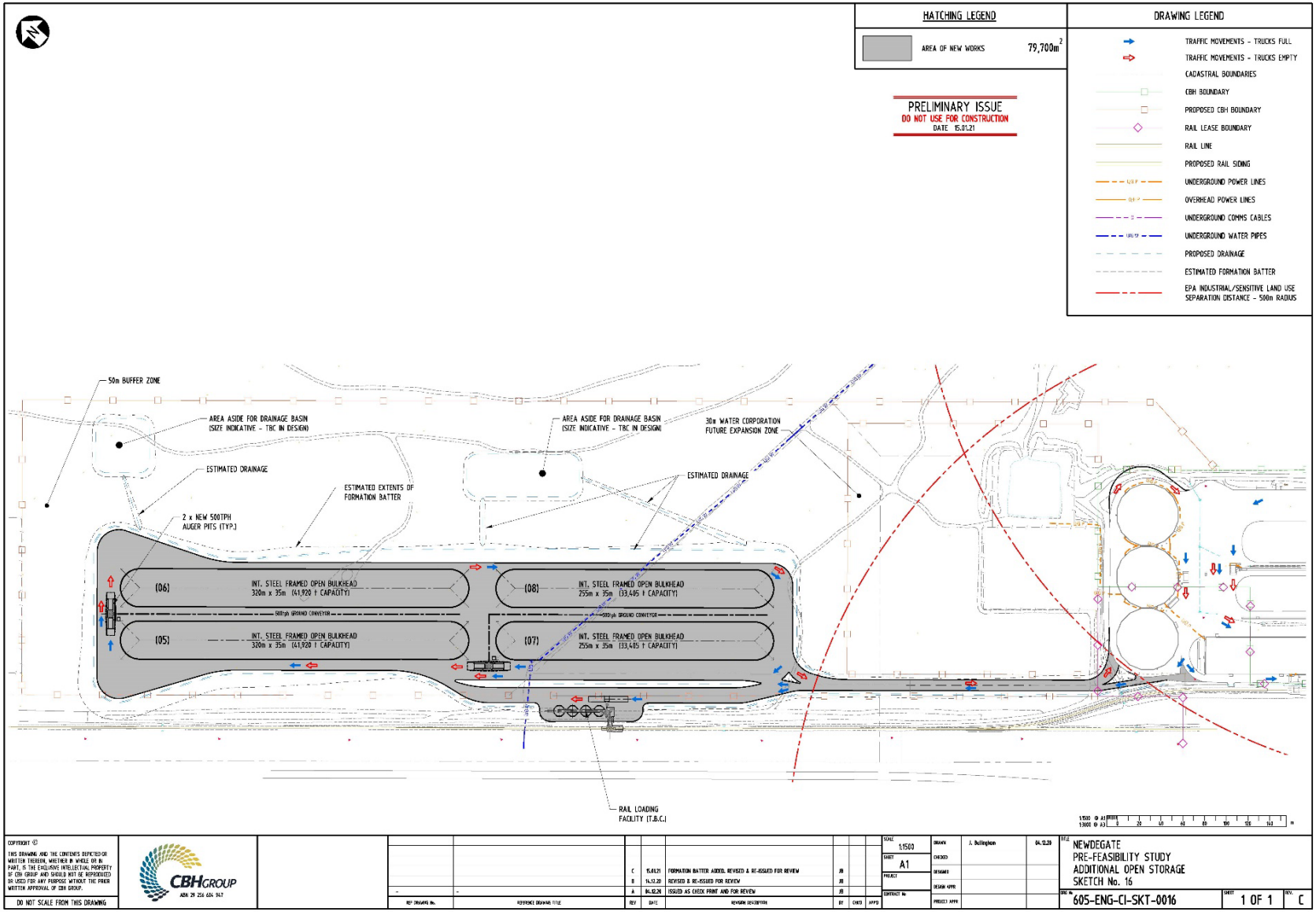

Figure 1-3: Project elements (exact location of elements within the proposed clearing area is subject to change)

1.2 Alternative Proposal options

CBH considered five alternative options for site selection to undertake the project prior to selecting the site proposed under this application. These sites included:

- Site 1: Private land on Lake Biddy Road (23.4 ha)
- Site 2: Private land on Newdegate-Ravensthorpe Road (approximately 29 ha)
- Site 3: Shire / Crown Land on the Newdegate Field Day Site (9 ha) and westward (200 ha)
- Site 4: Private land on the Newdegate Road North (66 ha, with 38 ha usable)
- Site 5: Private land on Newdegate-Ravensthorpe Road (approximately 30 ha).

Compared against the proposed site, these five locations were not deemed socially or financially viable due to:

- High capital costs to establish a new site due to the increased relative distance from the existing CBH receival site operations, potential upgrades to roads required to handle truck traffic, required additional upgrades to entry and exit points, and geotechnical concerns (primarily slope and related required infill, flooding risk and soil condition).
- Higher operating costs due to the increased relative distance from the existing CBH receival site and rail head.
- Additional trucks on some local roads due to the establishment of a new site, which is not in the interests of the local community, as indicated by concerns raised previously by it regarding increasing truck numbers and size. Access to rail resolves these concerns.
- Private land owners are currently unwilling to sell land and CBH is unwilling to lease land on long-life assets from private land owners.

The project area (Section 1.1) is an extension to the existing CBH receival site facilities, to improve operational efficiencies and reduce costs. The project area is also ideally placed to capture grain flow from multiple directions in the local Newdegate area and maximise grain volume transported on rail.

Environmental site constraints, including adjacent wetland and riparian habitat associated with Lake Stubbs, railway reserve and the cemetery, prompted significant design changes to reduce the project footprint and minimise the extent of clearing required, as far as practicable. The proposed clearing area for the project provides some limited flexibility in the final concept design for the proposal expansion facilities, should further amendments be required following detailed geotechnical investigations, while not limiting the capacity of future operations at the site.

The project is required to cater for the growth in grain receivals from around the Newdegate region as well as surrounding catchments, driven by improved farming techniques and higher yielding seed varieties utilised by WA Growers. The existing Newdegate site has no cleared land available for additional storage and handling facilities and has insufficient capacity to meet the current demand of the local area. This limitation has required CBH to operate a second site on a temporary basis at the nearby Newdegate Field Day location, also within the town area. CBH is unable to continue using the second site beyond 2027, which is owned by the local Shire; accordingly CBH is required to expand the existing operations to cater for the closure of the temporary site as well as cater for expected additional grain volumes. The operation of a second site also means the Newdegate operation will continue to rely

on heavy haulage trucks to move grain towards the rail line for out-loading to port, or to alternative sites as part of haulage and storage logistics.

The proposal to expand the existing site at the project area is largely due to the rail line, for out-loading grain to port, already being located there. The site is also well situated for the efficient and safe access of trucks transporting grain from landholders. The reliance on rail reduces trucking movements on both Local and State Government roads and reduces the CBH reliance on trucking capacity, reduces associated operating costs as well as reducing the financial burden on both State and Local Governments to maintain roads impacted by truck movements and improve road user safety. In addition, by integrating the sites, CBH can gain cost efficiencies and improve grower service in the Wheatbelt through offering storage of additional grain varieties and reducing growers' required time on site.

Should CBH not be able to proceed with the project, the current existing operations will be unable to cater for local growers' needs, which will either result in growers carting further to alternative sites or looking for alternative methods to store grain outside the CBH supply chain, increasing the reliance on the WA road network.

By expanding the CBH receival network on the rail corridor, CBH will also be able to manage customer shipments more efficiently and in-turn, achieve more value for the WA grain growing region.

The location of the project was selected due to:

- Providing potential for future options to enhance rail-loading capabilities, for example through upgrades to out-loading facilities and the potential to load larger trains.
- Increasing transport efficiencies by being close to rail line with more tonnes on rail over road.
- Reducing upfront capital due to reduced infrastructure requirement. An alternative location would require additional sampling and weighbridge equipment to operate as a standard alone site. It would also require substantial entry/exit road works and potential road upgrades. These additional costs to build a standalone site exceed the associated environmental costs of building at the proposed location. CBH is able to purchase the land rather than lease from private owners.

1.3 Proposal benefits

The benefits of the project are:

- Reduced truck movements within the Newdegate town centre
- Meeting future projected demands within the Newdegate grain catchment
- Reduced road maintenance costs in the Wheatbelt
- Increased job opportunities and local business support during the harvest period.

These benefits are further detailed in Section 1.3.1 to Section 1.3.4.

1.3.1 Reduced truck movements within the Newdegate town centre

CBH is currently operating two sites in Newdegate (the existing grain receival site and the temporary Newdegate Field Day site) which is resulting in heavy truck movements through the town centre. These truck movements represent substantial additional volume and presence of heavy haulage relative to

other regular trucking (e.g. to and from farms and for town supplies) and are raising safety concerns in the local community. The Shire of Lake Grace has confirmed CBH will no longer be able to continue using the temporary site yearly and accordingly CBH will require a permanent solution to cater for current and future receivals in the Newdegate catchment by 2027. The current storage capacity at the existing and temporary sites will not be adequate to handle the predicted increase in grain volumes in the region.

In order to address both the gap in expected grain volume and loss of the temporary site, the project has been designed to consolidate operations into a central location. This will also reduce CBH and grower truck movements, improve cycle times to grower paddocks through faster and more efficient receivals and reduce on-farm costs. The consolidation will also reduce operating costs, which will be passed back to Western Australian growers through lower fees.

The existing site is strategically located to capture truck movements and will avoid trucks using the centre of town to gain access to the receival site.

1.3.2 Meeting future projected demands within the Newdegate grain catchment

The Newdegate grain catchment is projected to grow at 1.2% to 2.9% per annum, driven by improved farming techniques and higher yielding seed varieties. As aforementioned, the current Newdegate sites are unable to cater for the projected growth. In peak years when the site is at capacity, the additional storage could generate approximately $35 million per annum of grower revenue in the Newdegate region. Increased returns for growers can be expected to have a flow-on effect to boost the local economy.

1.3.3 Reduced road maintenance costs in the Wheatbelt

The predicted reduction in trucking movements is a key benefit to the safety of the local community. Reduced movements should result in a reduction in road maintenance costs for the Shire with these funds being redeployed within the local community.

1.3.4 Increased opportunities in the local town

The larger storage and handling capacity of the project is expected to result in increased job opportunities for residents 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.

2. Physical Environment

2.1 Biogeographic and regional setting

The project is located within the Western Mallee (MAL2) subregion within the Mallee Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (DAWE 2021). This bioregion is described as a gently undulating landscape, with partially obstructed drainage. Soils are commonly duplex (sand over clay) supporting mallee over myrtaceous-proteaceous heaths. A mosaic of mixed eucalypt woodlands and mallee occur on calcareous earth plains and sandplains overlying Eocene limestone strata in the east. The landscape is fragmented, with some areas almost completely cleared for wheat crops (Beecham and Danks 2001).

The climate in the Western Mallee subregion is typically a warm Mediterranean climate, with annual rainfall between 250–500 millimetres (mm). The Newdegate Research Station (Station number 10692), located approximately 16 km to the west of the project, reports on average, 372.4 mm of rainfall per annum for the Newdegate area (BoM 2021). Rainfall falls throughout the year, with the greatest fall occurring during winter (May to August). Maximum mean monthly temperatures range from 31.3°C (January) to 15.3°C (July). Minimum mean monthly temperatures range from 14.1°C (February) to 4.2°C (July).

The site has a slight gradient, ranging from 300 m Australian Height Datum (AHD) at the western end of the proposed clearing area to 292 m AHD at its eastern extent (DPIRD 2021).

2.2 Geology, landform and soils

The project is located within the south-eastern part of the Yilgarn Craton and comprises sandplains, low hills and ridges, breakaway, salt lakes and dune fields (CSIRO 2019).

The proposed clearing area is mapped as the following broad scale geology units (1:250,000 scale geological maps; Geological Survey of WA and Geoscience Australia 2008):

- Qdlu (lunette dunes 72955): Quartz and gypsum dunes and mounds (kopi); may include minor silt, sand, gravel, and clay flats adjacent to playas; locally includes some playa sediments.
- Czs (sand plain 38499): Sand or gravel plains; quartz sand sheets commonly with ferruginous pisoliths or pebbles, minor clay; local calcrete, laterite, silcrete, silt, clay, alluvium, colluvium, aeolian sand.

Soil-landscape mapping describes broad soil and landscape characteristics from regional to local scales. The project is within the south-eastern Zone of Ancient Drainage within the Avon Province, which is described as a smooth to irregularly undulating plain dominated by salt lake chains in the main valleys with duplex and lateritic soils on the uplands. It supports mallee vegetation on duplex soils, and proteaceous vegetation on gravels and sands (DAFWA 2014).

The proposed clearing area gradually slopes towards Lake Stubbs, a salt lake located 50 m north of the proposed clearing area. Topography indicates that the proposed clearing area is relatively steep with an approximate 8 m decline (300–292 m) from its highest point in the west, to the vegetation associated with Lake Stubbs in the northeast.

2.2.1 Acid Sulfate Soils

Acid Sulfate Soils (ASS) are naturally occurring, iron-sulfide rich soils, sediments or organic substrates, formed under waterlogged conditions. If exposed to air, these sulfides can oxidise and release sulfuric acid and heavy metals. This process can occur in response to drainage, dewatering or excavation.

A search of the Australian Soil Resource Information System (ARIS) ASS risk mapping indicates that there is a 'low' risk of ASS occurring within 3 metres (m) of natural soil surface within the proposed clearing area. However, the closest 'high risk area of ASS occurring within 3 m of natural soil surface' is located within 500 m of the proposed clearing area, in an area associated with the neighbouring salt lake (Australian Government 2021).

2.3 Hydrology

CBH has commissioned separate geotechnical and hydrological assessments to support the progression of the project. These are yet to be completed. As a result, the following surface and ground water information is intended only as a desktop assessment, based on the findings of publicly available databases.

2.3.1 Groundwater

The groundwater in the proposed clearing area is mapped as very saline, with Total Dissolved Solids (TDS) of greater than 35,000 mg/L. This is likely influenced by the proximity to the surrounding salt lakes (DPIRD 2018). Groundwater is estimated to be encountered at a depth of approximately 10.4 metres below ground level (mbgl; Raper et al. 2014).

2.3.2 Surface Water

No surface water features have been identified within the proposed clearing area. The nearest surface water feature is Lake Stubbs, located approximately 50 m northeast of the proposed clearing area, at the closest point (DWER 2018a).

The proposed clearing area occurs within the Magenta Internal catchment of the Albany Coast Basin. The average evaporation rate (1,800–2,000 mm) in the local area exceeds the local annual rainfall (372.4 mm; BoM 2021).

Neither the project area or proposed clearing area intersect any designated wetlands or watercourses. The nearest conservation category wetland is Lake Biddy Nature Reserve, which is located 9 km northwest of the proposed clearing area (DWER 2018a).

3. Biological Environment

The *Biodiversity Conservation Act 2016* (BC Act) commenced on 1 January 2019, replacing the *Wildlife Conservation Act 1950* (WC Act) and the *Sandalwood Act 1929*. Threatened flora taxa listed as Specially Protected under the WC Act as at 31 December 2018 are now recognised as Threatened under the BC Act. Threatened ecological communities (TECs) previously endorsed by the Minister for Environment as at 31 December 2018 are also provided for under the BC Act.

CBH notes that technical studies undertaken for this project prior to 2019 may refer to the acts in force at the time of those studies; however, they have been reviewed to ensure this NVCP considers values consistent with the BC Act. Priority flora taxa and priority ecological communities (PECs) continue to be listed by the Department of Biodiversity, Conservation and Attractions (DBCA).

3.1 Previous ecological surveys

Five historical field studies have been undertaken for the project in relation to flora, vegetation and fauna:

- Level 1 (reconnaissance) flora and fauna survey (Cardno 2014)
- Level 2 (detailed) flora and vegetation survey (360 Environmental 2015a)
- Targeted black cockatoo assessment (360 Environmental 2015b) – later updated (Harewood 2019)
- Flora, vegetation and fauna assessment (ELA 2018a; Appendix B)
- Targeted Red-tailed Phascogale assessment (ELA 2018b).

The most recent flora and fauna survey undertaken by ELA (2018a) included consolidating all previous studies and is provided in Appendix B (ELA 2018a).

Since the completion of the ELA (2018a) assessment, a targeted black cockatoo investigation was conducted across the project area in March 2019 (Harewood 2019; Appendix C). This study revised and updated the black cockatoo habitat values identified onsite by 360 Environmental (2015b).

The studies included a desktop assessment using Florabase, Australian Government EPBC Act Protected Matters Search Tool, NatureMap, DBCA databases and available literature to identify the possible occurrence of TECs, PECs, and/or Threatened and Priority flora, fauna and/or vegetation communities potentially occurring within the project area (ELA 2018a, c). A summary of these previous ecological surveys is presented in Table 3-1.

Table 3-1: Previous ecological studies conducted for the project

Author and year	Title	Methodology	Key findings*
Cardno 2014	CBH Grain Facility Expansion, Newdegate. Flora, Fauna and Vegetation	• October 2014 • Three relevés (one per vegetation association) • 13 ha surveyed • Two field days with two ecologists	**Flora and Vegetation** A total of 88 vascular plant species were identified from 69 genera from 29 families, including 16 introduced species, represented within three vegetation communities of Excellent to Very Good Condition: • *Eucalyptus kondoniensis* and *E. salmonophloia* woodland over *Atriplex bunburyana* and *A. cinera* low shrubland • *Eucalyptus loxophleba* subsp. *gratiae* low woodland over *Dodonaea ptarmicaefolia* and *Acacia hemitales* open shrubland over *A. eriaceae*, *Enchylaena tomentosa* and *Olearia muelleri* low open shrubland • *Eucalyptus loxophleba* subsp. *gratiae* low open woodland over *Melaleuca acuminata* subsp. *acuminata* tall open shrubland over *Austrostipa elegantissima* very open grassland. **Fauna** Twelve fauna species were recorded during the survey including seven birds, one reptile and four mammals. Three conservation significant fauna species were identified as having a high likelihood of occurrence: • Carnaby's Cockatoo • Chuditch • Western Brush Wallaby. A further two conservation significant species were considered to have a 'medium' likelihood of occurrence: • Peregrine Falcon • Fork-tailed Swift.
360 Environmental 2015a	Newdegate Flora and Vegetation Assessment	• September 2015 (single season) • 10 quadrants and three relevés (13 sites surveyed) • Each of the six vegetation communities contained at least two sites, with the exception of ElgMl which only contained one site due to its small size	A total of 130 vascular plants were identified from 90 genera from 37 families, including 20 introduced species, represented within six vegetation communities with a majority in Very Good (20.3 ha) condition: • EkElg: *Eucalyptus kondininensis*, *E. longicornis* open forest over *Atriplex paludosa* subsp. *baudinii* scattered low shrubs. Some parts included where *E. longicornis* occurs as the single dominant tree species (7.8 ha) • EkAv: *Eucalyptus kondininensis* open forest over *Atriplex vesicaria* low open shrubland over *Threlkeldia diffusa* very open low herbland (4.5 ha). • Elx: *Eucalyptus loxophleba* subsp. *gratiae* low open mallee forest over *Melaleuca acuminata* subsp. *acuminata* scattered tall shrubs to tall open shrubland (open to closed scrub in parts) over *Dodonaea ptarmicaefolia*, *Acacia hemiteles* shrubland over *Austrostipa elegantissima* very open grassland (3.9 ha). • Es: *Eucalyptus salmonophloia* open to closed forest over *Dodonaea stenozyga* scattered shrubs to open shrubland over *Olearia muelleri, Acacia erinacea* low open shrubland (2.9 ha). • TuAv: *Tecticornia undulata*, *Atriplex vesicaria, Tecticornia syncarpa* low open heath over *Disphyma crassifolium* subsp. *clavellatum* very open herbland (1.8 ha).

Author and year	Title	Methodology	Key findings*
		• 21.6 ha surveyed • Equivalent to two days with two ecologists	• ElgMl: *Eucalyptus longicornis* open forest over *Melaleuca lanceolata* open scrub over *Atriplex paludosa* subsp. *baudinii* scattered low shrubs (0.6 ha). Qualitative assessment of floristic values determined 15.8 ha of the site represents the Wheatbelt Woodlands PEC/TEC and 8.4 ha representing the Red Morrel Woodlands of the Wheatbelt (DBCA P1 PEC).
360 Environmental 2015b	Newdegate Black Cockatoo Habitat Assessment	• May 2015 • 21.9 ha surveyed • Two days with two ecologists	No Black Cockatoos or foraging evidence were directly or indirectly observed during the survey; however, potential breeding and foraging habitat for Carnaby's Cockatoo was recorded and included: • 1.5 ha of Habitat Quality Category (HQC) 1 (potential nesting and foraging habitat) containing 92 potential breeding trees with 31 observable hollows suitable to be used for black cockatoo nesting • 18.9 ha of HQC2 (foraging habitat). The conservation listed Red-tailed Phascogale was also observed on a motion sensor camera.
ELA 2018b	Red-tailed Phascogale Assessment, Lots 102, 194, and 208 Lake Biddy Road, Newdegate	• June 2018 • 22 ha surveyed • Four nights with two ecologists: ○ 713 Elliot trap nights; ○ 36 camera trap nights; and ○ 72 cage trap nights	Fauna observed: Red-tailed Phascogale (4 individuals), House Mouse, Cat. All vegetation within the study area was considered to provide suitable habitat for the Red-tailed Phascogale.
Harewood 2019	Black Cockatoo Habitat Assessment Newdegate Grain Receival Site Proposed Expansion	• Field investigation undertaken 24 & 25 March 2019 • 24.8 ha surveyed.	The review of black cockatoo values within the proposed clearing area identified the following: • No evidence of foraging by black cockatoos • 8.98 ha of potential foraging habitat – this excludes areas containing Red Morrel and Kondinin Blackbutt previously included by 360 Environmental (2015b) • 88 potential breeding trees • 10 potentially suitable nesting hollows for black cockatoos based on internal dimensions, orientation and position. Two hollows contained some evidence of possible black cockatoo activity but was not conclusive (i.e. could be evidence of other species nesting). • No evidence of roosting or any other black cockatoo activities observed within the proposed clearing area.

*Note that surveys were undertaken for the 24.8 ha project area and the old proposed clearing area. The proposed clearing area has since been revised and so previously mapped values may no longer occur within the proposed clearing area.

3.2 Flora and Vegetation

3.2.1 Flora

A total of 178 taxa (including species, subspecies, varieties and forms, and specimens not identified to species level) from 111 genera and 42 families were recorded from quadrants, relevés and opportunistic collections in the project area during previous investigations (360 Environmental 2015a; Carndo 2014; ELA 2018a). The most commonly occurring families were Asteraceae (30 taxa), Chenopodiaceae (23 taxa) and Poaceae (19 taxa) over the three previous surveys (360 Environmental 2015a; Cardno 2014).

Quadrat species richness across the survey area ranged from 7 to 35 taxa with an average of 17.2 taxa per quadrat. In studies on the flora diversity conducted by Woodland Watch of selected remnant eucalypt woodlands, species richness for these quadrants ranged from 8–29 (mean of 16 taxa; ELA 2018a), indicating that species richness and floristic diversity of the proposed clearing area is typical to that found in nearby eucalypt woodland communities.

3.2.1.1 Threatened and Priority Flora

A likelihood of occurrence assessment was undertaken in order to identify conservation listed flora species that may occur within the project area based on previous survey results and updated database searches (ELA 2018a). A list of 60 flora taxa was generated as part of the assessment (Appendix B).

One of these taxa, the Priority 1 flora species *Thysanotus lavanduliflorus,* was recorded within the project area (15 individuals), but outside the proposed clearing area (ELA 2018a; Figure 3-1). There are a further four DBCA regional records within 20 km of the project area in similar habitat (ELA 2018a). No other threatened or priority flora taxa were recorded within the project area or the proposed clearing area.

One Priority listed species, *Haegiela tatei* (listed as Priority 4 by DBCA), was assessed as having the potential to occur within the project area based on availability of suitable habitat and proximity of nearby records (ELA 2018a). This species occurs on clay, sandy loam and gypsum soils in saline habitats (ELA 2018a). Whilst this species was not recorded in previous studies, it could have been overlooked due to its small stature (2-8 cm high). Approximately 0.1 ha of suitable habitat occurs in the proposed clearing area in vegetation association TuAV, adjacent to Lake Stubbs (ELA 2018a). In addition, there is a DBCA record of this species approximately 17 km from the project (ELA 2018a). Given the presence of a small area of suitable habitat, this species has the potential to occur within the proposed clearing area (ELA 2018a).

The remaining 58 taxa were considered unlikely to occur within the project area, or were downgraded to unlikely to occur following field investigations due to a lack of suitable habitat, lack of nearby records and given that these species were not recorded despite the high extent of survey effort (ELA 2018a).

Previous surveys recorded several non-conservation listed flora taxa records of interest due to range extensions, or due to their location being near the edge of their current known distribution (360 Environmental 2015a):

- *Austrostipa acrociliata*
- *Chenopodium desertorum* subsp. *desertorum*
- *Tecticornia undulata*
- *Trymalium myrtillus* subsp. *myrtillus.*

3.2.1.2 Introduced flora species

A total of 32 introduced flora taxa (weeds; 18% of total flora taxa) were identified within the project area including three taxa not identified to species level (360 Environmental 2015a; Cardno 2014, ELA 2018a). None of these species are listed as Weeds of National Significance (WONS) or Declared under the *Biosecurity and Agriculture Management Act 2007* (BAM Act).

3.2.2 Vegetation

3.2.2.1 Broad-scale regional vegetation

Vegetation type and extent have been mapped at a regional scale by Beard (1972) who categorised vegetation into broad vegetation associations. Based on this mapping, the Department of Primary Industries and Regional Development (DPIRD; previously Department of Agriculture and Food Western Australia; DAFWA) has compiled a list of vegetation extent and types across WA (Shepherd et al. 2002). The proposed clearing area is mapped as vegetation association Hyden 511 (e8,9Mi; medium woodland; Salmon Gum and Morrel).

A total of 38,059 ha (37%) of Hyden 511 remains within the Western Mallee sub-region (Table 3-2).

Table 3-2: Vegetation Association and Complex mapping units occurring within the site

Vegetation (Beard 1972)	Association	Pre-European extent (ha)*	Current extent (ha) (% remaining)*	Extent proposed for clearing (ha) (% of current extent)
Hyden 511		102,932.7	38,059.0 (37.0%)	11.4 (0.03%)

*Government of WA 2018a

3.2.2.2 Local vegetation

Six vegetation communities have been mapped within the project area (360 Environmental 2015a; ELA 2018a; Table 3-3; Figure 3-1). These vegetation communities are predominantly *Eucalyptus* open forest, with some areas of *Eucalyptus* mallee over *Melaleuca* shrubland and *Tecticornia* heath.

Vegetation communities, descriptions and associated extent within the project area and within the proposed clearing area are described in Table 3-3 and shown in Figure 3-1.

Table 3-3: Vegetation communities within the project area and proposed clearing area

Vegetation community and description*	Extent in project area (ha)	Extent in proposed clearing area (ha)
EkElg: *Eucalyptus kondininensis*, *E. longicornis* open forest over *Atriplex paludosa* subsp. *baudinii* scattered low shrubs. Some parts included where *Eucalyptus longicornis* occurs as the single dominant tree species	7.90	4.30
EkAv: *Eucalyptus kondininensis* open forest over *Atriplex vesicaria* low open shrubland over *Threlkeldia diffusa* very open low herbland	4.56	0.83
Elx: *Eucalyptus loxophleba* subsp. *gratiae* low open mallee forest over *Melaleuca acuminata* subsp. *acuminata* scattered tall shrubs to tall open shrubland (open to closed scrub in parts) over *Dodonaea ptarmicaefolia*, *Acacia hemiteles* shrubland over *Austrostipa elegantissima* very open grassland	5.72	4.21
Es: *Eucalyptus salmonophloia* open to closed forest over *Dodonaea stenozyga* scattered shrubs to open shrubland over *Olearia muelleri, Acacia erinacea* low open shrubland	3.26	1.78
TuAv: *Tecticornia undulata*, *Atriplex vesicaria*, *Tecticornia syncarpa* low open heath over *Disphyma crassifolium* subsp. *clavellatum* very open herbland	1.71	0.13
ElgMl: *Eucalyptus longicornis* open forest over *Melaleuca lanceolata* open scrub over *Atriplex paludosa* subsp. *baudinii* scattered low shrubs	0.87	0.12
Total native vegetation (ha)#	**24.0**	**11.4**
Cleared: cleared areas, completely devoid of vegetation	0.79	0.21
Total area (ha)#	**24.8**	**11.6**

*Vegetation descriptions sourced from 360 Environmental (2015a); #Total numbers are rounded up to one decimal place

3.2.2.3 Vegetation condition

Most of the vegetation within both the project area and proposed clearing area is in Very Good condition with condition in remaining parts reflecting historical disturbance from vehicle access tracks, the presence of introduced (feral) fauna species and localised dumping of inert wastes such as cars and bottles (Table 3-4; Figure 3-2; ELA 2018a).

Table 3-4: Vegetation condition within the project area and proposed clearing area

Vegetation condition	Project area (ha)	Proposed clearing area (ha)
Very Good	21.48	10.50
Good	1.97	0.88
Degraded	0.49	0.0
Completely Degraded	0.08	0.0
Total area (ha)*	**24.0**	**11.4**

*Total numbers are rounded up to one decimal place

3.2.2.4 Threatened and Priority Ecological Communities

A qualitative assessment of floristic values identified the Wheatbelt Woodlands TEC is present within the project area (16.6 ha) and proposed clearing area (7.0 ha; Table 3-5 and Figure 3-3; 360 Environmental 2015a; ELA 2018a). The Wheatbelt Woodlands TEC is listed under the EPBC Act as

Critically Endangered and listed under the DBCA as a Priority 3 PEC (ELA 2018a). The PEC (synonymous with the TEC) is described as (DBCA 2021):

> *The community occurs in the IBRA Avon Wheatbelt 1 and 2 and Western Mallee subregions. It also includes 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. 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%. The key dominant or co-dominant species of the tree canopy are species of Eucalyptus trees that typically have a single trunk. Native understorey is present but is of variable composition, being a combination of grasses, other herbs and shrubs.*

Vegetation within the proposed clearing area was assessed (ELA 2018a) against the key diagnostic characteristics of the Wheatbelt Woodlands TEC (DoE 2015). A total of 16.6 ha of vegetation (comprising vegetation associations EkAv, EkElg, ElgMl and Es) within the project area meets the key diagnostic characteristics of the Wheatbelt Woodlands TEC (and subsequently, the associated State listed PEC; Table 3-5). These vegetation associations were classified under the *Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt* (DoE 2015) as Category A, which is described as *'Patches likely to correspond to a condition of Pristine / Excellent / Very Good (Keighery, 1994)',* despite some areas being in Good, Degraded or Completely Degraded condition.

The 7.0 ha of the Wheatbelt Woodlands TEC in the proposed clearing area is also classified as Category A as it is relatively intact and weed species cover is below 30% (ELA 2018a).

In addition, approximately 4.4 ha (related to vegetation associations ElgMl and EkElg) of the Wheatbelt Woodlands TEC within the proposed clearing area is also considered by ELA (2018a) to represent the Red Morrel Woodlands of the Wheatbelt, a DBCA Priority 1 PEC. This PEC is a component of (i.e. wholly contained within) the Wheatbelt Woodlands TEC and is described as (DBCA 2021):

> *Tall open woodlands of Eucalyptus longicornis (Red Morrel) found in the Wheatbelt on lateritic, ironstone or granitic soil types. Sometimes found with E. salmonophloia (Salmon Gum), or E. loxophleba (York Gum) woodlands and has very little understorey. It is also found directly above lake systems in the central and eastern Wheatbelt. The landscape unit in which it is found is valley floors, usually adjacent to saline areas.*

The areas of conservation listed vegetation communities within the project area and proposed clearing area are listed in Table 3-5 and mapped in Figure 3-3.

Table 3-5: Extent of TECs/PECs within the project and proposed clearing areas

TEC/PEC	Extent within project area (ha)	Extent within proposed clearing area (ha)	% within the project area proposed for clearing
Eucalypt Woodlands of the Western Australian Wheatbelt (EPBC TEC, DBCA P3)	16.6	7.0	42.2
Red Morrel Woodlands of the Wheatbelt (DBCA P1)*	8.8	4.4	50.0

*Note the Red Morrel Woodlands of the Wheatbelt PEC is a component of the Wheatbelt Woodlands TEC – i.e. the areas shown in the second row are wholly contained within, not additional to, the areas shown in the first row.

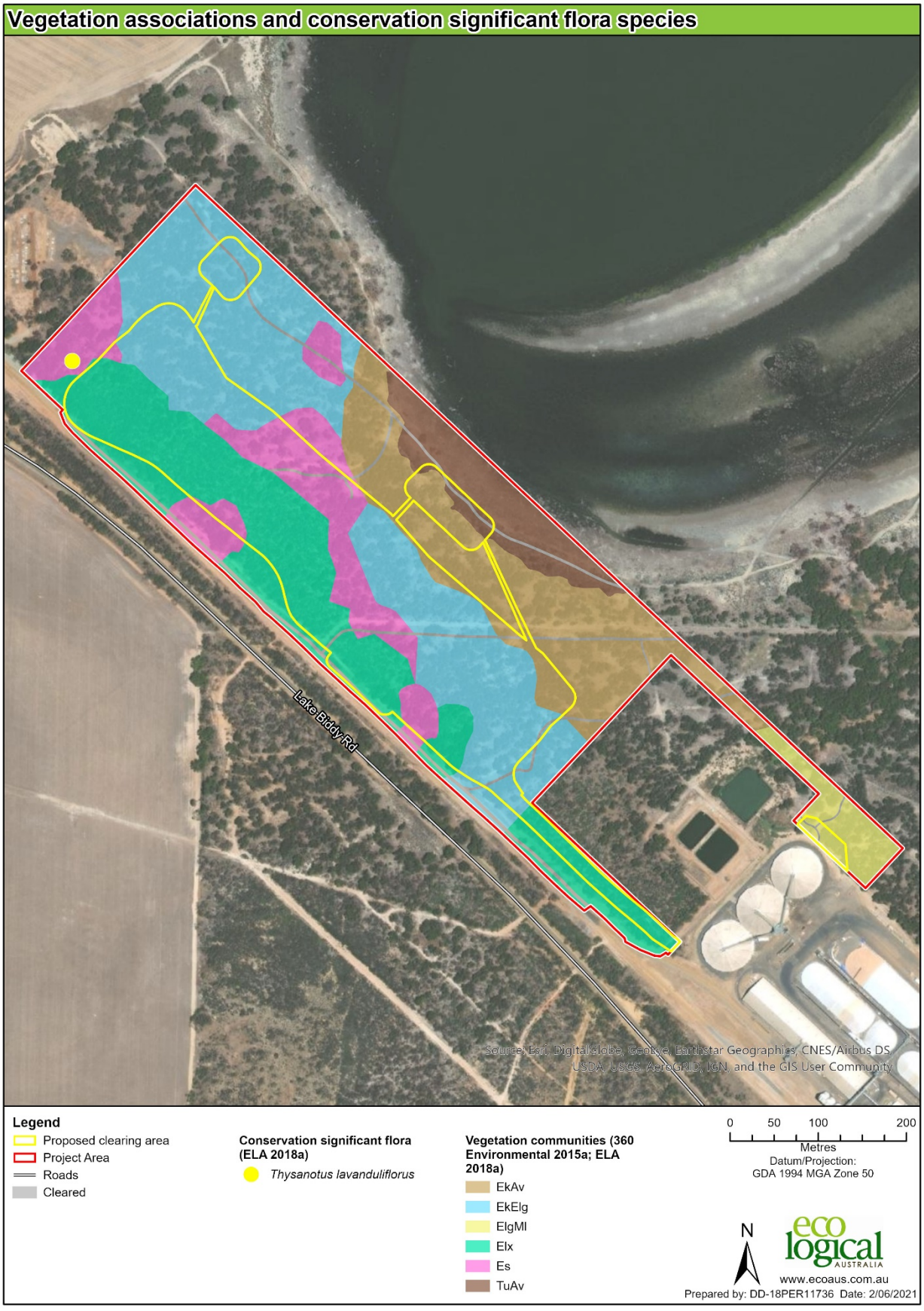

Figure 3-1: Vegetation associations and conservation significant flora species

Figure 3-2: Vegetation condition

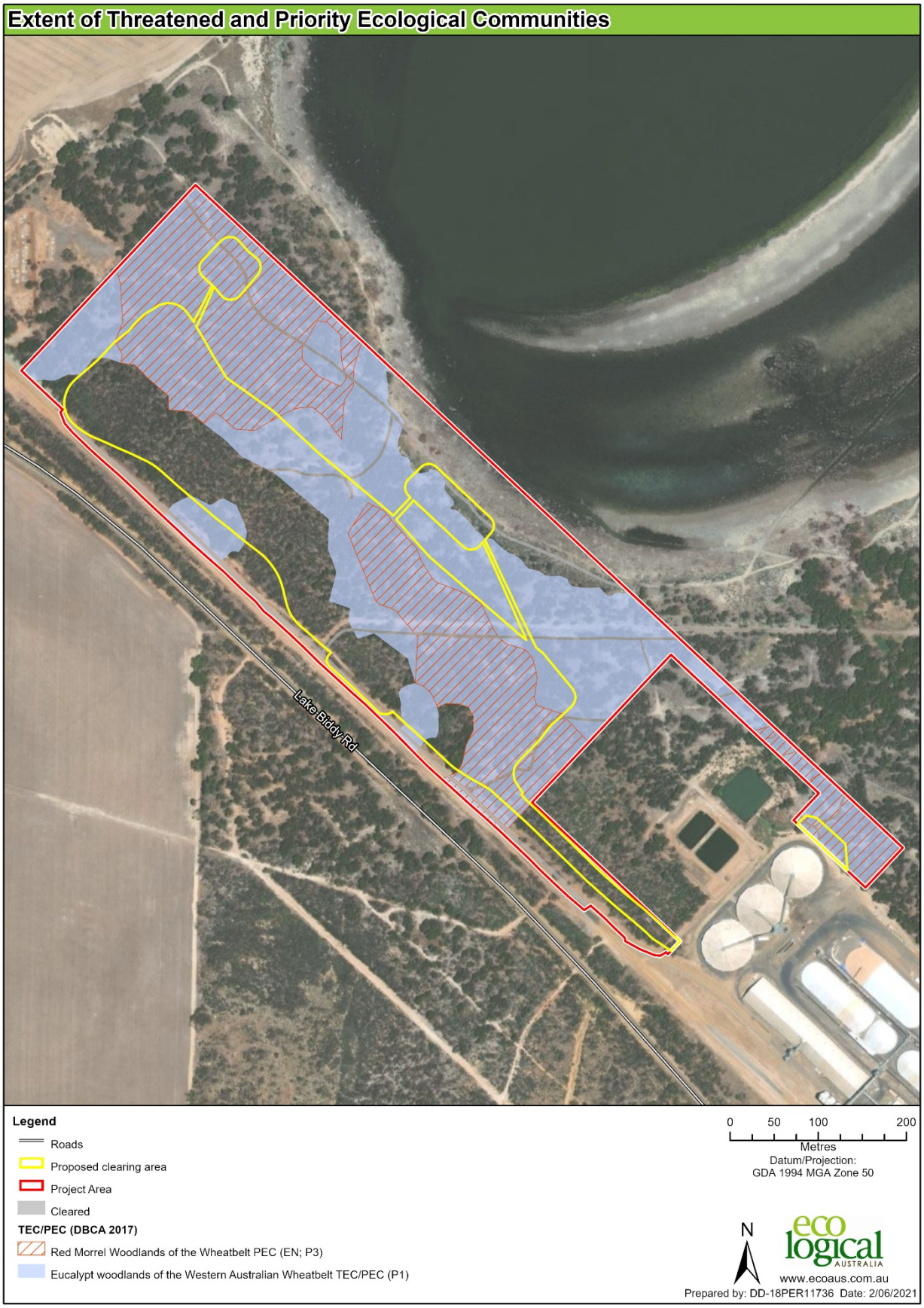

Figure 3-3: Extent of Threatened and Priority Ecological Communities

3.3 Terrestrial Fauna

3.3.1 Terrestrial fauna habitat

Three broad fauna habitats occur within the project area, all of which are also present in the proposed clearing area (ELA 2018a; Table 3-6; Figure 3-4):

- *Eucalyptus* open forest
- *Eucalyptus* mallee over *Melaleuca* shrubland
- *Tecticornia* heath.

The majority of the proposed clearing area comprises *Eucalyptus* open forest (7.0 ha) and to a lesser extent, *Eucalyptus* mallee over *Melaleuca* shrubland (4.2 ha; Table 3-6; Figure 3-4). The *Tecticornia* (samphire) heath habitat, associated with Lake Stubbs, accounts for 0.1 ha of the proposed clearing area (Table 3-6; Figure 3-4).

Table 3-6: Extent of fauna habitats within the project area and proposed clearing area

Fauna habitat	Extent within project area (ha)	Extent within proposed clearing area (ha)
Eucalyptus mallee over *Melaleuca* shrubland	5.72	4.21
Eucalyptus open forest	16.58	7.03
Tecticornia heath	1.71	0.13
Total fauna habitats*	**24.0**	**11.4**
Cleared areas	0.79	0.21
Total area*	**24.8**	**11.6**

*Totals are rounded up to one decimal place

3.3.2 Terrestrial fauna species

Fifteen species of native vertebrate fauna have been recorded in the project area during previous surveys (ELA 2018a; Appendix B). The fauna assemblage includes two mammal species, twelve bird species and one reptile species. Three introduced mammals and two introduced birds were also recorded within the project area, including Kookaburra (*Dacelo novaeguineae*), House Mouse (*Mus musculus*), Sheep (*Ovis aries*), Cat (*Felis catus*) and Rainbow Lorikeet (*Trichoglossus moluccanus*) (360 Environmental 2015a, 2015b; Cardno 2014; ELA 2018a, 2018b). ELA considers the species diversity typical for the habitats present in the project area.

3.3.2.1 Threatened and Priority fauna

One conservation significant fauna species has previously been recorded within both the project area and proposed clearing area: Red-tailed Phascogale, *Phascogale calura* (listed as Vulnerable under the EPBC Act and Conservation Dependent under the BC Act). This species has been directly observed during previous field studies (360 Environmental 2015b; ELA 2018b; refer to Section 3.3.2.3).

A likelihood of occurrence assessment for conservation listed fauna species identified a further two fauna species as likely to occur within the project area and proposed clearing area (ELA 2018a) :

- Carnaby's Cockatoo, *Calyptorhynchus latirostris* (listed as Endangered under the EPBC Act and the BC Act)

- Western Rosella, *Platycerus icterotis xanthogenys* (listed as Priority 4 by DBCA).

Carnaby's Cockatoo is described in further detail in Section 3.3.2.2.

The Western Rosella is found in open dry eucalypt forest and timbered areas. The species is relatively uncommon; however, there is a record of this species less than 1 km from the proposed clearing area. As such, it is considered likely to occur (ELA 2018a).

An additional 10 conservation significant fauna species were considered to potentially occur within the project area based on availability of suitable habitat including:

- Malleefowl*, Leipoa ocellata* (listed as Vulnerable under the EPBC Act and BC Act)
- Bradshaw's Bothriembryontid Land Snail (Tambellup), *Bothriembryon bradshawi* (listed as Priority 3 by DBCA)
- Western Brush Wallaby, *Notamacropus irma* (listed as Priority 4 by DBCA)
- Western Whipbird (western mallee), *Psophodes nigrogularis oberon* (listed as Priority 4 by DBCA)
- Hooded Plover, *Thinornis rubricollis* (listed as Priority 4 by DBCA) – vagrant
- Fork-tailed Swift, *Apus pacificus* (listed as Migratory under the EPBC Act and BC Act) – vagrant
- Red-necked Stint, *Calidris ruficollis* (listed as Migratory under the EPBC Act and BC Act) – vagrant
- Sharp-tailed Sandpiper, *Calidris acuminata* (listed as Migratory under the EPBC Act and BC Act) – vagrant
- Common Greenshank, *Tringa nebularia* (listed as Migratory under the EPBC Act and BC Act) – vagrant
- Peregrine Falcon, *Falco peregrinus* (listed as Other Specially Protected Fauna under the BC Act) – vagrant.

Approximately 4.2 ha of suitable foraging habitat for Malleefowl is present within the proposed clearing area, comprising the *Eucalyptus* mallee over *Melaleuca* shrubland vegetation community; however, no evidence of the species (i.e. direct observations, scats, tracks or mounds [nests]) was observed during the targeted assessment undertaken in 2018 and the habitat is expected to be marginal at best (ELA 2018a). There are over 400 records of this species within a 10 km radius; however, only around 15 records within a 5 km radius, with the closest non-historical record approximately 1.1 km away (ELA 2018a). Given the presence of some (marginally) suitable foraging habitat, the proximity of nearby records, and the highly mobile nature of this species, Malleefowl are considered to potentially occur within the proposed clearing area, but this is likely to be on a foraging only basis (ELA 2018a).

Little is known about Bradshaw's Land Snail and the closest known record is approximately 42 km away (ELA 2018a). This species has been included as potentially occurring on a precautionary basis as habitat preferences are unknown (ELA 2018a).

There are three records of Western Brush Wallaby within 20 km of the proposed clearing area; however, the species is capable of utilising a wide variety of habitats and as such, is not expected to depend on any of the habitats available within the proposed clearing area if present (ELA 2018a).

There is one record of the Western Whipbird approximately 16 km away, and suitable habitat is present within the mallee vegetation in the proposed clearing area; however, the species is not expected to rely on any habitats within the proposed clearing area (ELA 2018a).

The remaining six species are Migratory or vagrant birds that may occasionally visit the proposed clearing area, but which are unlikely to solely depend on any of the habitats present for survival (ELA 2018a). The four Migratory species are often associated with salt lakes and could potentially utilise the small area of *Tecticornia* heath habitat (0.1 ha) present in the northern section of the proposed clearing area, but only on an occasional basis.

None of the above-mentioned species would solely rely on the habitats present in the proposed clearing area for survival based on known species distributions and ecology. In addition, suitable habitat for these species is present in areas outside of the proposed clearing area.

3.3.2.2 Carnaby's Cockatoo foraging habitat

Based on revised mapping undertaken in 2019, there is approximately 9.0 ha of suitable foraging habitat for Carnaby's Cockatoo within the project area, which includes 6.0 ha within the proposed clearing area (Harewood 2019; Table 4-7; Figure 3-5).

A black cockatoo breeding and foraging habitat assessment was originally undertaken within the project area in 2015 (360 Environmental 2015b). Based on the distribution of the three black cockatoo species and the habitats available within the proposed clearing area, it was determined that Carnaby's Cockatoo was the only black cockatoo species with potential to use habitats available within the project area (360 Environmental 2015b). Results from the 2015 investigation were revised in 2019 to refine the habitat mapping and address information gaps in the investigation (Harewood 2019). Potential foraging habitat was reduced to exclude areas of Red Morrel and Kondinin Blackbutt that were originally included in the 2015 assessment (360 Environmental 2015b) as foraging habitat, as these species are not specifically documented as being foraging material for black cockatoos (Harewood 2019).

Foraging habitat for Carnaby's Cockatoo occurs within vegetation communities containing York Gum and Salmon Gum (i.e. Elx and Es vegetation communities - see Section 4.2.2.2; ELA 2018a; Harewood 2019). The foraging habitat was given a habitat quality score of 7 (high quality) (Harewood 2019) in accordance with the quality scoring tool presented in the *Revised draft referral guideline for three threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black Cockatoo* (DoEE 2017). However, it should be noted that there were only three foraging species present within the proposed clearing area (York Gum, Salmon Gum and *Raphanus raphanistrum* [Wild Radish]). The York Gum and Salmon Gum present within the proposed clearing area are small-fruited eucalypts, which would only provide low foraging value to Carnaby's Cockatoo, whereas the Wild Radish was present at low densities and would only provide a negligible food source (Harewood 2019). In addition, there has never been any evidence of the species utilising the proposed clearing area for foraging, despite multiple surveys being undertaken for the project (Cardno 2014, 360 Environmental 2015b; ELA 2018a; Harewood 2019). As such, the quality of foraging habitat within the proposed clearing area is expected to be much lower than the high quality score of 7 attributed by the foraging quality scoring tool (Harewood 2019).

3.3.2.3 Carnaby's Cockatoo breeding and roosting habitat

A total of 78 potential breeding trees are located within the project area (Harewood 2019; Figure 3-5). This includes potential black cockatoo breeding trees that meet the diameter at breast height requirements of 500 mm (or 300 mm if the species is Salmon Gum; DSWEPaC 2012; DoEE 2017). Of these, a total of 62 potential breeding trees occur within the proposed clearing area comprising (Table 3-7; Figure 3-5):

- 60 Salmon Gum (*Eucalyptus salmonophloia*)
- Two Red Morrel (*Eucalyptus longicornis*).

Six trees in the proposed clearing area contain hollows potentially suitable for nesting black cockatoos based on apparent internal dimensions, orientation and position (e.g. diameter greater than 120 mm and hollows located at a height suitable for nesting use; Harewood 2019; Figure 3-5).

Harewood (2019) noted that chew marks were present around the entrance of two hollows within the project area; however, these marks could be attributable to other species such as Galah (*Cacatua roseicapilla*), which were observed breeding within the project area. No Carnaby's Cockatoo individuals have been either directly or indirectly observed within the proposed clearing area.

The large trees within the proposed clearing area could potentially provide suitable roosting habitat for Carnaby's Cockatoo; however, no evidence of roosting has been observed within either the project area or proposed clearing area (360 Environmental 2015b; Harewood 2019).

Based on available vegetation mapping, there is approximately 5,500 ha of native vegetation within 12 km of the proposed clearing area. These areas have not been specifically assessed but are anticipated to contain some suitable foraging, breeding and roosting habitat for Carnaby's Cockatoo. There are no known breeding or roosting sites within the proximity of the proposed clearing area, with the two closest known sites approximately 34 km and 130 km southeast of the project (Harewood 2019).

The closest species records occur approximately 16 km south of the proposed clearing area (Harewood 2019). Based on proximity of species records and availability of suitable habitat, Carnaby's Cockatoo are considered likely to occur; however, to date there has been no evidence that the species is utilising the site for either foraging or breeding (360 Environmental 2015a; ELA 2018a; Harewood 2019).

Table 3-7: Extent of Carnaby's Cockatoo foraging and potential breeding habitat

Habitat value/type	Extent in project area (ha)	Extent in proposed clearing area (ha)
Foraging habitat	9.0	6.0
Potential breeding habitat	1.5	0.9
Potential breeding trees	88	62
Potential breeding trees with suitable hollows	10	6

3.3.2.4 Red-tailed Phascogale habitat

Approximately 24.0 ha of suitable Red-tailed Phascogale habitat occurs within the project area, of which 11.4 ha is within the proposed clearing area.

A Red-tailed Phascogale targeted field survey was completed in June 2018 (ELA 2018b). This species is known to occur within the proposed clearing area, with four Red-tailed Phascogale individuals recorded during this targeted survey (ELA 2018b). Two of the same individuals were captured daily for the duration of the four trapping nights during the targeted survey. Individuals were recorded in traps across all vegetation associations, with the exception of TuAv (lowest trapping density due to proximity to Lake Stubbs) and ElgMl (not trapped; located in the far southeast of the proposed clearing area) (ELA 2018b). In addition, an individual Red-tailed Phascogale was recorded incidentally via motion camera during the 2015 black cockatoo habitat assessment (360 Environmental 2015b).

All vegetation communities within the proposed clearing area, excluding existing cleared areas or those in Completely Degraded condition, were considered by ELA (2018b) to represent suitable Red-tailed Phascogale habitat (Figure 3-6). Red-tailed Phascogale habitat comprises woodlands with old-growth hollow-producing eucalypts; however, the species has also been recorded in shrublands and various mosaics of woodland, shrubland and scrub-heath, particularly on the periphery of its current range (ELA 2018b). The project area predominantly comprises Eucalyptus open forest (*Eucalyptus kondininensis*, *E. longicornis*, *E. loxophleba* subsp. *gratiae* and/or *E. salmonophloia*), with some areas of *Melaleuca* sp. open to closed shrubland (ELA 2018b), all of which could be utilised by Red-tailed Phascogale for nesting/shelter and foraging activities. This vegetation also provides dispersal opportunities into adjacent areas of remnant vegetation to the south and east of the project. Vegetation community TuAv (*Tecticornia* sp.; samphire), while not meeting the requirements for Red-tailed Phascogale habitat, is still considered by ELA (2018b) to represent suitable habitat due to its connectivity to other areas of suitable habitat and the presence of stags (dead trees), which may provide nesting/shelter opportunities for Red-tailed Phascogale (ELA 2018b).

A total of 2,289 ha of remnant vegetation surrounding the project area and the Newdegate townsite was assessed and mapped for its ability to provide habitat for the Red-tailed Phascogale (ELA 2018b). Of this vegetation, 160 ha was considered suitable habitat (including the project area), mainly due to the availability of large *Eucalyptus* trees that have the potential to form hollows, a key factor limiting Red-tailed Phascogale persistence (Short and Hide 2012; Figure 3-7). The remaining 2,129 ha was considered less suitable for Phascogale, due to the lack of hollow bearing trees (ELA 2018b; Figure 3-7).

Figure 3-4: Fauna habitats

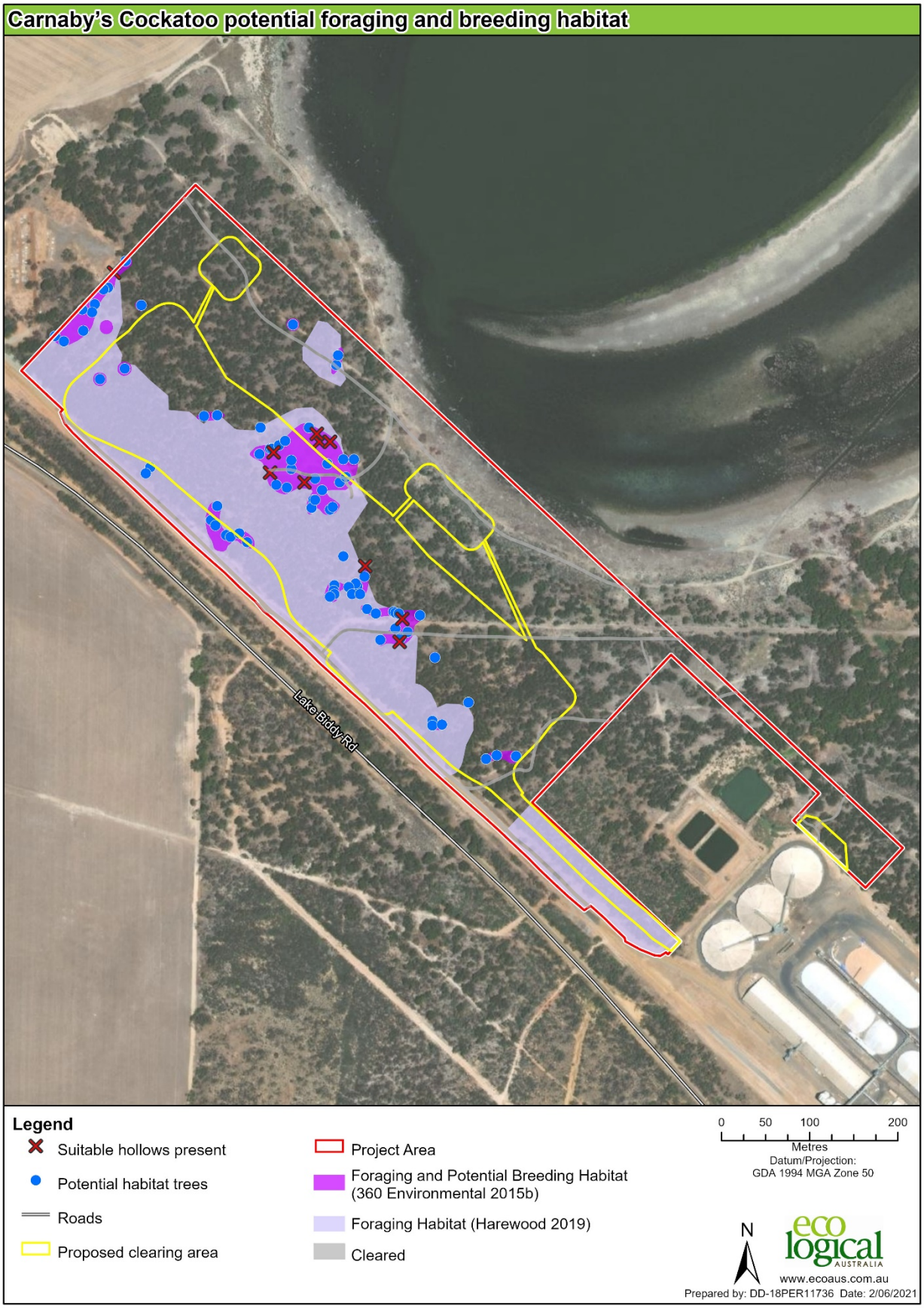

Figure 3-5: Carnaby Cockatoo potential foraging and breeding habitat

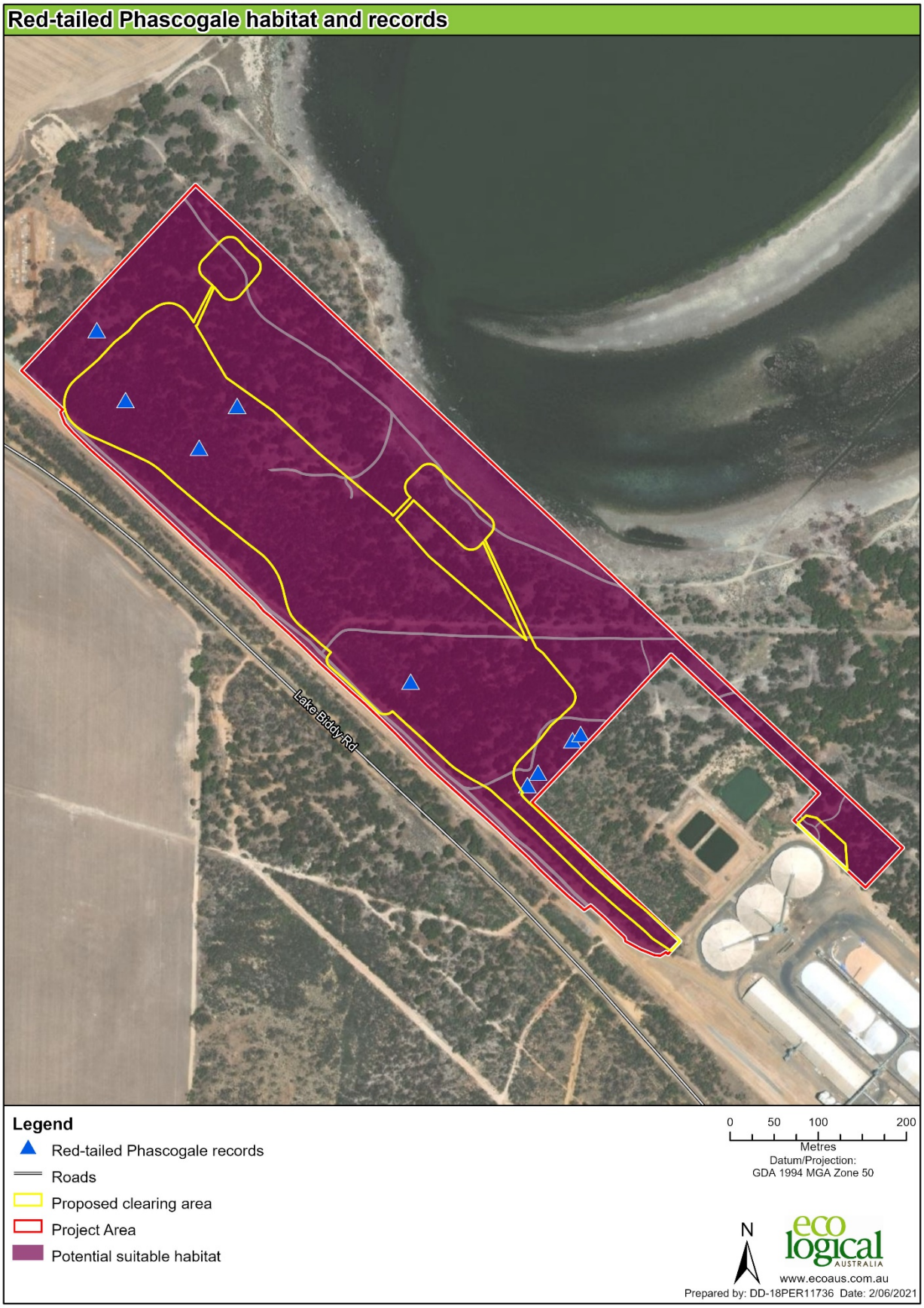

Figure 3-6: Red-tailed Phascogale habitat and records

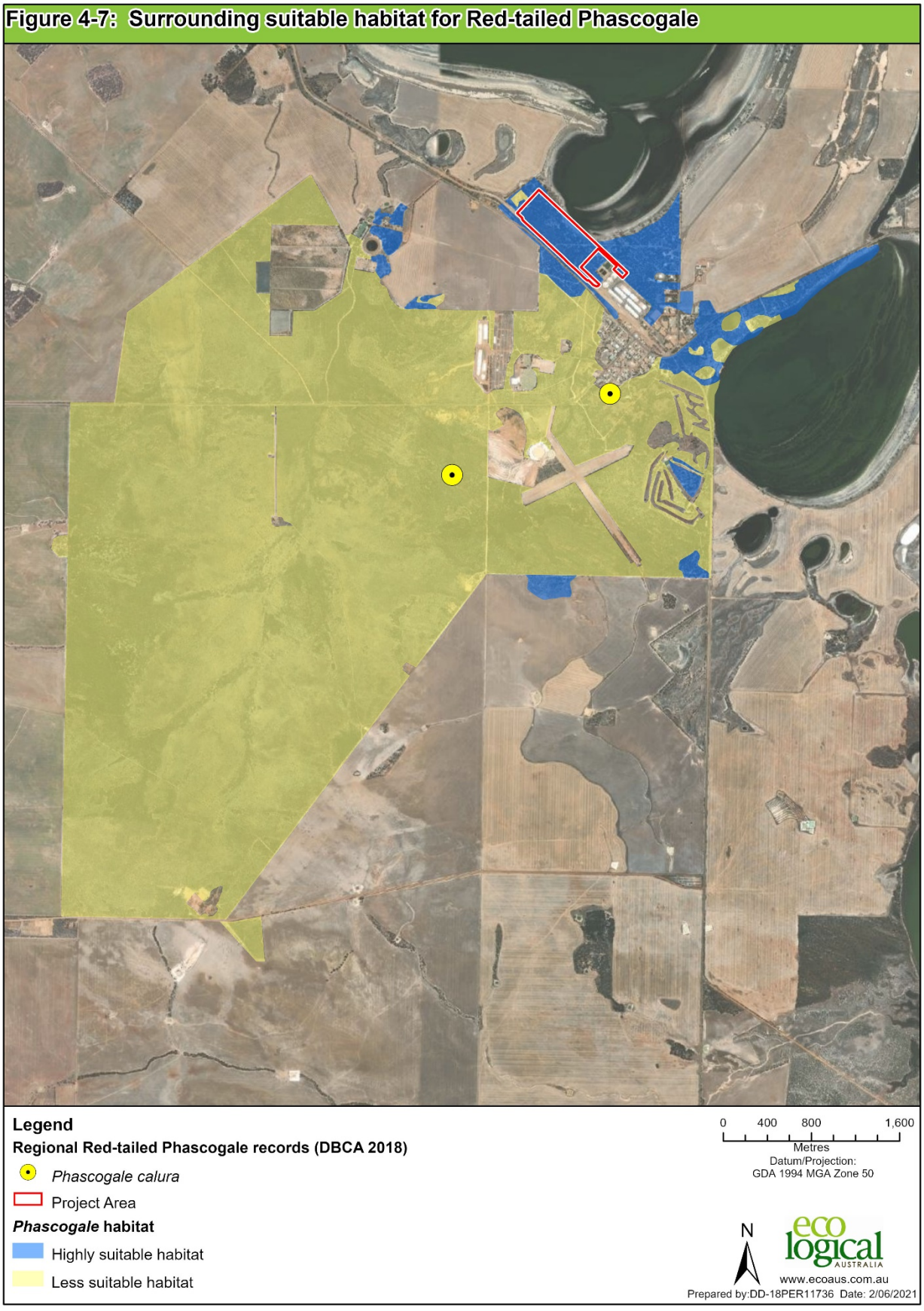

Figure 3-7: Surrounding suitable habitat for Red-tailed Phascogale

4. Clearing of native vegetation

Excluding activities that are exempt under Schedule 6 of the EP Act or s 5 (Prescribed Clearing) of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004, all native vegetation clearing should be done so in accordance with a NVCP.

4.1 Measures to avoid and minimise clearing

All practicable measures to avoid and minimise disturbance and clearing will be undertaken. Measures to avoid and minimise clearing include (but are not limited to):

- The significant redesign of the proposed clearing area to reduce clearing of native vegetation from 23.3 ha to 11.4 ha, a 51.1% reduction.
- The significant redesign will allow for the ability to progressively convert some grain storages to higher density configurations on the same footprint.
- The significant redesign of the proposed clearing area will result in the reduction of impacts to a number of conservation significant values including:
    - The Wheatbelt Woodlands TEC
    - Red Morrel Woodlands of the Wheatbelt PEC
    - Carnaby's Cockatoo foraging and potential breeding habitat
    - Red-tailed Phascogale habitat and records
    - Malleefowl potential habitat.
- Total avoidance of the Priority 1 flora species *Thysanotus lavanduliflorus*.
- Implementation of a 25 m wide work and disturbance exclusion buffer adjacent to the cemetery (Figure 1-2), approximately 300 m from the proposed clearing area and which extends into the project area, to avoid dust impacts and provide an additional opportunity for vegetation retention.
- Implementation of a Construction Environmental Management Plan (CEMP) to minimise potential impacts to flora and vegetation, terrestrial fauna and inland waters.
- Drainage modification to avoid impacts to adjacent riparian vegetation.

In addition to the above measures, the Proponent is committed to implementing best practice by improving retained native vegetation and habitat adjacent to the proposed clearing area (e.g. through targeted revegetation and/or weed control), to mitigate potential impacts to threatened species which utilise the project area. The Proponent is committed to engaging with the DBCA to identify potential additional measures, which may include installation of artificial nest boxes in the adjacent retained vegetation.

5. Assessment against the Ten Clearing Principles

A detailed assessment of the proposed vegetation clearing of up to 11.4 ha against the 10 native vegetation Clearing Principles contained in Schedule 5 of the EP Act is provided in Sections 5.1 to 5.10. Table 5-1 contains a summary of the assessment.

The proposed clearing may be at variance with Clearing Principle b, with management and offset strategies proposed to mitigate the environmental impacts proposed.

Table 5-1: Summary of assessment against the ten clearing principles

Clearing Principle	Is not at variance	May be at variance
a) Native vegetation should not be cleared if it comprises a high level of biological diversity	☒	☐
b) Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia	☐	☒
c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of Rare flora	☒	☐
d) Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of a threatened ecological community (TEC)	☒	☐
e) Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared	☒	☐
f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland	☒	☐
g) Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation	☒	☐
h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area	☒	☐
i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water	☒	☐
j) Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence of flooding	☒	☐

5.1 Comprises high level of biological diversity

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

A total of 178 vascular plant taxa from 111 genera from 42 families were recorded in the project area, including 32 introduced species (ELA 2018a). The most commonly occurring families were Asteraceae (30 taxa), Chenopodiaceae (23 taxa) and Poaceae (19 taxa). Quadrat species richness varied from 7 to 35 taxa (mean 17.2). This level of species richness is comparable to surveys conducted within the vicinity of Newdegate by Woodland Watch (a collaborative project involving WWF Australia and the Western Australian Herbarium. The species richness recorded during these surveys ranged from 8 to 29 (mean of 16 taxa). Floristic diversity was not considered to be atypical of surrounding *Eucalyptus* open woodland (ELA 2018a).

A likelihood of occurrence assessment identified a total of 60 conservation significant flora taxa that could possibly occur within the proposed clearing area. Of these, only one Priority 1 flora species, *Thysanotus lavanduliflorus*, was recorded in the project area, outside of the proposed clearing area. One other species, *Haegiela tatei* (listed as Priority 4 by DBCA), was assessed as potentially occurring within 0.1 ha of the proposed clearing area; however, no individuals of this species were identified during field surveys (ELA 2018a). The remaining 58 conservation significant flora taxa were considered unlikely to occur following the field surveys (ELA 2018a).

Six vegetation communities have been mapped within the proposed clearing area, representing predominantly *Eucalyptus* open forest, with some areas of *Melaleuca* shrubland and *Tecticornia* heath. The majority of the vegetation (92.1%) is classed as being in Very Good condition (10.5 ha), with the remainder in Good condition (0.9 ha; 7.9%). Vegetation types comprising EkAv, EkElg, ElgMl and Es were found to meet key diagnostic characteristics of the EPBC Act-listed Wheatbelt Woodlands TEC. A total of 7.0 ha of this TEC was identified within the proposed clearing area, classified as Category A patches under the *Approved Conservation Advice (including listing advice) for the Eucalypt Woodlands of the Western Australian Wheatbelt* (DoE 2015).

A total of fifteen species of native vertebrate fauna were identified within the project area during field surveys, including two mammals, twelve birds and one reptile (Cardno 2014, 360 Environmental 2015a, b; ELA 2018a, b). One conservation significant fauna species has been recorded within the proposed clearing area, the Red-tailed Phascogale. A further two conservation significant fauna species are considered likely to occur based on availability of suitable habitat and proximity of nearby records, Carnaby's Cockatoo and the Western Rosella. An additional 10 conservation significant fauna species were considered to potentially occur within the proposed clearing area based on availability of suitable habitat; however, none of these species would be dependent on any of the fauna habitats present within the proposed clearing area for survival (if present).

Overall, flora and fauna diversity in the proposed clearing area is not atypical of eucalypt woodland communities in the surrounding area (ELA 2018a). As such, the biological diversity within the proposed clearing area is not expected to be significantly affected given the relatively small area (11.4 ha) of vegetation proposed for clearing. Proposed clearing activities are therefore not at variance with this Principle.

5.2 Potential impact to any significant habitat for fauna indigenous to Western Australia

Principle (b): Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

The proposed clearing area supports three broad fauna habitats, *Eucalyptus* open forest (7.0 ha), *Eucalyptus* mallee over *Melaleuca* shrubland (4.2 ha), and *Tecticornia* heath (0.1 ha), in Good to Very Good condition. The remaining 0.2 ha of the proposed clearing area is already cleared and does not provide fauna habitat (please note the disparity between the 11.6 ha total proposed clearing area and the 11.5 ha total indicated in this paragraph is a result of rounding; refer to Table 3-6). No fauna species were considered by ELA (2018a) to rely solely on the habitats present in the proposed clearing area for survival.

The proposed clearing area contains suitable habitat for Threatened fauna species including Carnaby's Cockatoo, Malleefowl and Red-tailed Phascogale.

There is approximately 6.0 ha of suitable foraging habitat for Carnaby's Cockatoo and 0.9 ha of potential breeding habitat, which includes 62 potential breeding trees, six of which contain suitable hollows. However, it should be noted that no evidence of Carnaby's Cockatoo utilising the proposed clearing area for foraging, breeding or roosting has been observed during any of the surveys undertaken for the project.

There is a small area of marginal, suitable Malleefowl foraging habitat (approximately 4.2 ha) within the proposed clearing area; however, the species has never been recorded and is considered only to have the potential to occur.

Red-tailed Phascogales have been recorded within the proposed clearing area (2018b). There is 11.4 ha of suitable Red-tailed Phascogale habitat within the proposed clearing area. All vegetation communities within the proposed clearing area were considered suitable to provide opportunities for nesting/shelter, foraging activities and dispersal into adjacent areas of remnant vegetation to the south and east of the project. Large areas of connected native vegetation are uncommon in the Wheatbelt. Of the additional remaining remnant vegetation surrounding Newdegate, approximately 148.6 ha is considered to provide suitable habitat to Red-tailed Phascogale due to the presence of large *Eucalyptus* trees with the potential to form hollows in these surrounding areas. The presence of hollows for nesting is a key factor limiting Red-tailed Phascogale persistence (ELA 2018b).

There is also approximately 5,500 ha of native vegetation within 12 km of the project which is anticipated to contain some foraging, breeding and/or roosting habitat values for Carnaby's Cockatoo (Harewood 2019). In addition, there are no historical records of Carnaby's Cockatoo within 16 km of the proposed clearing area, with most regional records concentrated around larger nature reserves and remnants, particularly south of the proposed clearing area (Harewood 2019). Black cockatoo nesting has been recorded around Magenta and further east, approximately 40 km south and southeast of Newdegate, and some unconfirmed breeding records occur approximately 34 km southeast of Newdegate (Harewood 2019). These areas south of Newdegate may be favoured by Carnaby's Cockatoo for breeding due to their proximity to larger nature reserves where large areas of quality foraging habitat are likely to occur. There are also no known roost sites within or near the proposed clearing area, with the nearest record approximately 130 km southeast of the project (Harewood 2019).

The project will remove approximately 11.4 ha of habitat that comprises part of a significant habitat for indigenous fauna species; therefore, the project may be at variance with this Principle. However, it should be noted that suitable habitat for Carnaby's Cockatoo, Malleefowl, Red-tailed Phascogale and other fauna species will persist within the wider project area and throughout the general area.

5.3 Potential impact to any rare flora

Principle (c): Native vegetation should not be cleared if it includes or is necessary for the continued existence of Rare flora.

No Threatened or Priority listed flora species have been recorded within the proposed clearing area. One Priority 1 flora species, *Thysanotus lavanduliflorus,* was recorded within the project area, approximately 18 m from the proposed clearing area boundary. A total of 15 individuals were identified at this location (ELA 2018). A further four historical records have been identified within 20 km of the project (DBCA 2018).

One other species, *Haegiela tatei* (listed as Priority 4 by DBCA), was assessed as having potential to occur within the proposed clearing area due to proximity of a nearby record (approximately 17 km) and availability of suitable habitat (vegetation association TuAv); however, this species has not been recorded during previous surveys. This species is cryptic and is found on clay, sandy loam and gypsum soils in saline habitats similar to the vegetation association TuAv. Only a small area of this habitat type is proposed for clearing (approximately 0.1 ha; ELA 2018a).

There are no known Rare flora species within the proposed clearing area; therefore the project is not considered to be at variance with this Principle.

5.4 Potential of any threatened ecological communities

Principle (d): Native vegetation should not be cleared if it comprises the whole, or part of, or is necessary for the maintenance of a threatened ecological community (TEC).

A total of 7.0 ha of the Wheatbelt Woodlands TEC, a Critically Endangered TEC listed under the EPBC Act (including 4.4 ha that is also classified as a DBCA Priority 3 PEC), occurs within the proposed clearing area. However, noting that this is not a state-listed TEC, impacts to this community have been described under Principle (a).

As there are no state listed TECs present on site, the clearing for this project is not considered to be at variance to this Principle.

5.5 Significance as a remnant of native vegetation in the area that has been extensively cleared

Principle (e): Native vegetation should not be cleared if it is significant as remnant vegetation in an area that has been extensively cleared.

Six vegetation communities have been mapped within the proposed clearing area, which are predominantly represented by *Eucalyptus* open forest, with some areas of *Melaleuca* shrubland (ELA 2018a). These vegetation communities are largely intact, with 92.1% of the vegetation described as in Very Good condition.

The location of this vegetation is in Newdegate, within the Shire of Lake Grace and in the Western Australia Wheatbelt region. The Wheatbelt has been extensively cleared for agriculture with approximately 60% of the native vegetation of the Avon River Basin cleared since European settlement (Australian Government 2019). Locally, the project will not cause significant fragmentation of the native vegetation surrounding the project (approximately 2,289 ha) due to its location on the northern edge of the remnant; however, it will reduce the extent of this vegetation remnant by 0.5% (ELA 2018b).

The State Government is committed to the National Objectives and Targets for Biodiversity Conservation (Commonwealth of Australia 2001) that includes a target that prevents a clearance of ecological communities with an extent below 30% of that present prior to European settlement. The proposed clearing area intersects one vegetation association defined by Shepherd et al. (2002), Hyden 511 (e8, 9Mi; medium woodland; Salmon Gum and Morrel) with a current total extent of 38,059 ha). The extent proposed for clearing is 11.4 ha, which will result in a further reduction of 0.03%, taking the extant total to 37.0%.

Given the small area of remnant vegetation proposed for clearing (11.4 ha) and that the project will not reduce the sub-regional extent of any vegetation community below 30% of its pre-European extent, the project is not considered to be at variance with this Principle.

5.6 Impact on any watercourses and/or wetlands

Principle (f): Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

No watercourses or wetlands are located within the proposed clearing area.

The proposed clearing area is located approximately 50 m south from Lake Stubbs, a salt lake. Frequent or persistent surface water ponding is not expected within the proposed clearing area; any ponding that may occur is expected to drain in an easterly direction towards Lake Stubbs, following the natural topography of the site.

A total of 0.1 ha of vegetation within the proposed clearing area is mapped as the salt tolerant *Tecticornia* heath (vegetation community TuAv) which is intermittently waterlogged and associated with the lake system.

Management of water quality and hydrocarbon and chemical storage will be consistent with 'AS 1940:2017 Storage and handling of flammable and combustible liquids', and the CBH Environmental Management Standard (Appendix D) which outlines minimum requirements for water quality, management of spills, and other mandatory water management measures that must be implemented.

Drainage design will also be finalised as development of the project progresses, to ensure stormwater capacity is sufficient under final constructed conditions. Should there be identified potential risk factors for groundwater, riparian vegetation and/or wetlands, monitoring programs will be implemented.

Although the project will result in the clearing of vegetation community TuAv, which is associated with a wetland, given that the wetland does not occur within the proposed clearing area, the small amount of riparian vegetation to be impacted (0.1 ha) and the water management measures proposed

(Appendix D), any impacts to the vegetation community TuAv are not expected to be significant and the project is not considered to be at variance with this Principle.

5.7 Potential to cause appreciable land degradation

Principle (g): Native vegetation should not be cleared if the clearing of vegetation is likely to cause appreciable land degradation.

The proposed clearing area is adjacent to Lake Stubbs. Salinity levels in proximity to Lake Stubbs are increasing, with evidence of tree deaths along the salt lake margins and a change to more salt tolerant species (Cardno 2014; 360 Environmental 2015a). The removal of vegetation in the proposed clearing area has the potential to cause land and vegetation degradation, caused by rising groundwater and associated salinity. However, water management infrastructure will be installed, surface and groundwater flows will be managed within the proposed clearing area, to avoid pooling of water and flooding and to ensure adequate drainage to designated areas. The project is not expected to result in nutrient export or the increase of salinity, water logging, water or wind erosion within the proposed clearing area or immediate surroundings following management measures.

The project is not expected to be at variance to this Principle.

5.8 Potential to impact on the environmental values of adjacent or nearby conservation areas

Principle (h): Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

While a portion of the project area is reserved for conservation under the Shire of Lake Grace Local Planning Scheme, this area is classified as Unallocated Crown Land and road reserve and is not vested with the Conservation and Parks Commission as a conservation estate. The project is not located in proximity to any conservation areas, with the closest conservation area being Lake Biddy Nature Reserve, a C Class reserve located 9 km from the project.

The project is not anticipated to impact environmental values of nearby conservation areas; thus, the project is not considered to be at variance to this Principle.

5.9 Potential deterioration in the quality of surface or underground water

Principle (i): Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

There are no surface water features within the proposed clearing area. There is one surface water feature approximately 50 m to the north of the proposed clearing area, Lake Stubbs. The majority of native vegetation within the proposed clearing area is not associated with any surface or ground water; however, a small proportion (0.1 ha) of the proposed clearing area comprises *Tecticornia* heath (vegetation community TuAv) which is associated with Lake Stubbs. Management during the construction phase of the project, together with the implementation of appropriate drainage management measures, will ensure proposed clearing does not contribute to increased salinity and water quality issues in areas outside the proposed clearing area. Suitable management measures will

be implemented to maintain and manage surface and ground water quality to predevelopment expectations.

The average annual evaporation rate (1,800-2,000 mm) in the local area already exceeds local annual rainfall (372.4 mm; BoM 2021). Clearing of up to 11.4 ha of native vegetation is unlikely to exacerbate the annual evaporation rate further nor impact the quality of any nearby surface water.

The groundwater in the vicinity of the project is mapped as very saline, at >35,000 mg/L TDS and the proposed clearing is unlikely to cause any further deterioration in the quality of groundwater.

Management of water quality and hydrocarbon and chemical storage will be consistent with 'AS 1940:2017 Storage and handling of flammable and combustible liquids', and the CBH Environmental Management Standard (Appendix D) which outlines minimum requirements for water quality, management of spills, and other mandatory water management measures that must be implemented.

The proposed clearing of 11.4 ha of native vegetation is not expected to cause the deterioration of surface or underground water quality; thus, the project is not considered to be at variance to this Principle.

5.10 Potential of clearing to cause, or exacerbate, the incidence of flooding

Principle (j): Native vegetation should not be cleared if the clearing of vegetation is likely to cause, or exacerbate, the incidence of flooding.

The proposed clearing area is fairly flat and low lying, sloping gradually towards Lake Stubbs, located to the northeast. The Newdegate area receives low levels of rainfall; on average 372.4 mm per annum (BoM 2021). Surface water flows will be managed within the proposed clearing area, to avoid pooling of water and flooding, and to ensure adequate drainage into designated areas.

The project design will manage water flows on site and is not anticipated to cause or exacerbate flooding. The project is therefore not considered to be at variance with this Principle.

6. Matters of National Environmental Significance

The EPBC Act provides a legal framework for the protection of MNES. The EPBC Act requires that all actions that will or may have a significant impact on a MNES must be referred to the Minister for the Environment via DAWE. Protected matters under the EPBC Act include:

- World heritage properties
- National heritage places
- Wetlands of international importance
- Listed threatened species and ecological communities
- Migratory species protected under international agreements
- Commonwealth marine areas
- A water resource, in relation to coal seam gas activities and large coal mining activities
- The Great Barrier Reef Marine Park
- Nuclear Actions including uranium mining.

In addition, protected matters include the environment where actions proposed will affect Commonwealth land or proposed actions are being undertaken by a Commonwealth agency.

6.1 Proposed action and assessment

The project will involve the removal of 11.4 ha of vegetation to accommodate for the proposed expansion of the existing CBH facilities. For consistency with the EPBC Act, the project is referred to as the proposed action in this section of the NVCP, and the proposed clearing area the 'proposed action area'. Further information regarding the proposed action is presented in Section 1.

A summary of existing environmental values relating to MNES is provided in Section 3.

6.2 Controlled action provisions

The proposed action was referred to the DoEE on 21 December 2018 (EPBC Ref: 2018/8364) and was determined to be a 'controlled action' with assessment required under the EPBC Act. The controlling provision was 'Listed Threatened Species and Ecological Communities' (ss 18 and 18A of the EPBC Act), namely:

- *Calyptorhynchus latirostris* (Carnaby's Cockatoo)
- *Leipoa ocellata* (Malleefowl)
- Eucalypt Woodlands of the Western Australian Wheatbelt ecological community (Wheatbelt Woodlands TEC).

Since this assessment, the proposed action has been revised to reduce the environmental impacts. The revised proposed action now includes the removal of up to 11.4 ha of native vegetation within an 11.6 ha proposed action area (refer to Figure 1-2). A request to vary the proposal to take action will be submitted to DAWE to amend the proposed action area in accordance with s 156A of the EPBC Act.

An assessment of the significant impacts to MNES has been undertaken based on the revised proposal and is described in Section 6.4 below.

6.3 Potential impacts to listed threatened species and communities

The proposed action has the potential to result in impacts to MNES include the following:

- Direct removal of:
  - up to 7.0 ha of Wheatbelt Woodlands TEC
  - up to 6.0 ha of potential foraging habitat for Carnaby's Cockatoo
  - up to 0.9 ha of potential breeding habitat including 62 potential breeding trees
  - up to 11.4 ha of Red-tailed Phascogale habitat
  - up to 4.2 ha of potential Malleefowl habitat.
- Direct impacts to fauna associated with injury and/or mortality from vegetation clearing and/or vehicle movements
- Indirect impacts associated with degradation of adjacent remnant vegetation from:
  - introduction and/or spread of weed species or disease into vegetation adjacent to the proposed action area
  - contamination of surface water and groundwater during construction and operation of the proposed expansion from hydrocarbons and dangerous goods
  - fragmentation of vegetation.
- Potential degradation of adjacent remnant vegetation may also lead to a reduction in vegetation health on adjacent Wheatbelt Woodlands TEC occurrences and reduced availability of foraging resources for Carnaby's Cockatoo.

A summary of environmental impacts on MNES species is presented in Table 6-1.

Table 6-1: Environmental impacts on MNES species

Species and communities	Impact
Eucalypt Woodlands of the Western Australian Wheatbelt ecological community Recorded in the proposed action area	Removal of 7.0 ha of the TEC (Category A).
Carnaby's Cockatoo, *Calyptorhynchus latirostris* Likely to occur in the proposed action area	Removal of 0.9 ha of potential breeding habitat, including 62 potential breeding trees, 6 of which contain suitable hollows for nesting Carnaby Cockatoo. Removal of 6.0 ha of potential foraging habitat
Malleefowl, *Leipoa ocellata* Potentially occurring in the proposed action area	Removal of up to 4.2 ha of suitable but marginal potential foraging habitat for Malleefowl.
Red-tailed Phascogale, *Phascogale calura* Recorded in the proposed action area	Removal of 11.4 ha of known habitat; four individuals recorded on site during June 2018.

6.4 Assessment of significance of potential impacts

The following section provides an assessment of the significance of potential impacts against significant impact criteria.

6.4.1 Threatened ecological communities

One TEC listed under the EPBC Act was identified to occur within the proposed action area. A total of 7.0 ha of Wheatbelt Woodlands TEC is located within the proposed action area. The Wheatbelt

Woodlands TEC within the proposed action area is classified as 'Category A: Patches likely to correspond to a condition of Pristine / Excellent / Very good' (Keighery 1994).

An assessment of significance for Wheatbelt Woodlands TEC is presented in Table 6-2. This assessment, against criteria presented in the *Significant Impact Guidelines* (DoE 2013), was based on the key characteristics described in the conservation advice relating to the Wheatbelt Woodlands TEC.

All patches of the Wheatbelt Woodlands TEC that meet the key diagnostic characteristics and condition thresholds are considered critical to the survival of this community (DoE 2015). The clearing of up to 7.0 ha of this Wheatbelt Woodlands TEC is considered a significant residual impact due to the following:

- the action reduce the extent of an ecological community
- the action fragment or increase fragmentation of an ecological community
- the action adversely affect habitat critical to the survival of an ecological community.

Table 6-2: Assessment of significant impact criteria for Eucalypt woodlands of the Western Australia Wheatbelt community TEC – Critically Endangered

Significance criteria	Response
Will the action reduce the extent of an ecological community?	The proposed action will involve the clearing of up to 7.0 ha of Wheatbelt Woodlands TEC and will therefore reduce the extent of an ecological community. The patch of the TEC present with the proposed action area was classified (DoE 2015) as 'Category A: Patches likely to correspond to a condition of Pristine / Excellent / Very Good (Keighery, 1994). All patches of the Wheatbelt Woodlands TEC that meet the key diagnostic characteristics and condition thresholds are considered critical to the survival of this community (DoE 2015). The clearing of up to 7.0 ha of this TEC is therefore considered a significant residual impact of the clearing.
Will the action fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines?	The proposed action lies along the roadside of Lake Biddy Road on its southwestern extent, where fragmentation of the TEC has already occurred. The proposed action, however, will increase fragmentation of the Wheatbelt Woodlands TEC as clearing will result in removal of previously uncleared vegetation for the proposed action. The proposed action will involve the clearing of up to 7.0 ha of Wheatbelt Woodlands TEC of mostly continuous vegetation, with one small patch isolated from the rest of the mapped area of TEC classified as part of the same patch (ELA 2018a). The proposed action will result in increased fragmentation and therefore represents a significant residual impact.
Will the action adversely affect habitat critical to the survival of an ecological community?	The proposed action will involve the clearing of up to 7.0 ha of the Wheatbelt Woodlands TEC classified as 'Category A'. All patches of the Wheatbelt Woodlands TEC that meet the key diagnostic characteristics and condition thresholds are considered critical to the survival of this community (DoE 2015). Therefore, the clearing of up to 7.0 ha of the Wheatbelt Woodlands TEC will adversely affect habitat critical to the survival of an ecological community and is therefore considered a significant residual impact.

Significance criteria	Response
Will the action 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?	The impacts are confined to the clearing of 7.0 ha of the Wheatbelt Woodlands TEC. Indirect impacts to areas outside the proposed action area will be managed appropriately. Therefore, the proposed action does not represent a threat to the survival of patches of the ecological community that will be retained in adjacent areas.
Will the action 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?	While the proposed action will clear up to 7.0 ha of Wheatbelt Woodlands TEC classified as 'Category A', this ecological community will continue to be present in the proposed action area, in and around Newdegate and within the wider region. It is unlikely that the small area proposed for clearing will cause a substantial change in the species composition of an occurrence of the ecological community.
Will the action 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?**	A total of 32 introduced flora taxa were recorded in the proposed action area (ELA 2018a), however none of these species listed as WONS or Declared under the BAM Act. A CEMP will be prepared prior to the commencement of vegetation clearing/construction to reduce potential direct and indirect impacts on the environment. This CEMP will outline the appropriate handling of chemicals and hydrocarbons, weed management and hygiene measures during the construction period. Therefore, the proposed action will not cause a substantial reduction on the quality or integrity of an occurrence of an ecological community,
Will the action interfere with the recovery of an ecological community?	The proposed action is unlikely to interfere with the recovery of the ecological community as the Wheatbelt Woodlands TEC will continue to be present in the proposed action area, in and around Newdegate, and the wider region. As the loss of 7.0 ha of WA Wheatbelt Woodlands TEC is considered significant, CBH is proposing an offset strategy through land acquisition for this proposal, which will assist in the recovery of the TEC. The proposed action will therefore not interfere with the recovery of an ecological community.

6.4.2 Terrestrial fauna

Three fauna species protected under the EPBC Act were recorded or identified as likely or potential to occur within the proposed action area:

- Carnaby's Cockatoo, listed as Endangered under the EPBC Act
- Malleefowl, listed as Vulnerable under the EPBC Act
- Red-tailed Phascogale, listed as Vulnerable under the EPBC Act.

6.4.2.1 Carnaby's Cockatoo

An assessment of the proposed action on Carnaby's Cockatoo is detailed in Table 6-3, with reference to the *Significant Impact Guidelines* (DoE 2013). While none of the significant impact criteria were considered to be met, CBH recognises that there will still be impacts to potential breeding and foraging habitat as a result of the proposed action. Particularly, the removal of 62 potential breeding trees, including six that contain hollows suitable for nesting, could be considered a significant residual impact to this Endangered species.

Table 6-3: Assessment of significant impact criteria for Carnaby's Cockatoo

Significance criteria	Response
Lead to a long-term decrease in the size of a population	The proposed action area contains 6.0 ha of potential foraging habitat and 0.9 ha of potential breeding habitat (including 62 potential breeding trees). However, targeted surveys for Carnaby's Cockatoo did not identify any individuals or foraging evidence within the proposed action area, and there are no records of Carnaby Cockatoo within 16 km of the proposed action. Approximately 5,500 ha of native vegetation is located within 12 km of the proposed action area, which is likely to provide some foraging, breeding and roosting habitat for the species (Harewood 2019). Although the proposed action area contains suitable habitat for Carnaby's Cockatoo, the species do not appear to be utilising the site and therefore, the proposed action is not expected to result in a long-term decrease in the size of a population for the species.
Reduce the area of occupancy of the species	No individuals or foraging evidence have been recorded within the proposed action area, despite multiple targeted field surveys being undertaken. Based on the IUCN (2019) recommended grid size of 2 km x 2 km for estimating area of occupancy, the removal of potential habitat (not currently known to be occupied) within the proposed action area (approximately 0.6 km x 0.2 km) will not reduce the area of occupancy of Carnaby's Cockatoo, and the species, if it occurs in the area, will be able to continue to access potential habitat (approximately 5,500 ha) surrounding Newdegate and the wider region.
Fragment an existing population into two or more populations	The proposed action will not result in the fragmentation of an existing population. Despite the presence of suitable habitat for Carnaby's Cockatoo, there are currently no records of breeding or foraging from the proposed action area. It is likely that if the species utilises available habitats in the proposed action area, it is only as a transient visitor. Approximately 5,500 ha of native vegetation is also located within 12 km of the proposed action area (Harewood 2019). This native vegetation is likely to contain some potential black cockatoo habitat (Harewood 2019). Carnaby's Cockatoos are highly mobile species and the small amount of clearing associated with the proposed action is unlikely to fragment an existing population into two or more populations.

Significance criteria	Response
Adversely affect habitat critical to the survival of a species	Habitat critical to survival for Carnaby's Cockatoo can be summarised as (outlined in DPaW [2013]): • *Eucalyptus* woodlands that provide nest hollows used for breeding, together with nearby vegetation that provides feeding, roosting and watering habitat that supports successful breeding • Woodland sites known to have supported breeding in the past and which could be used in the future, provided adequate nearby food and/or water resources are available or are re-established • In the non-breeding season, the vegetation that provides food resources as well as the sites for nearby watering and night roosting that enable the cockatoos to effectively utilise the available food resources. While the proposed action will remove up to 6.0 ha of potential foraging habitat and up to 0.9 ha of potential breeding habitat within vegetation described as predominantly comprised of Eucalypt open forests, with some areas of *Melaleuca* shrubland, there are no records, or evidence of use, that would indicate that Carnaby's Cockatoo utilise the site for either foraging or breeding (i.e. the closest known breeding occurs over 35 km away). On this basis, the habitats present are considered potential habitat and do not represent habitat critical to the survival of the species. The proposed action is not expected to adversely affect habitat critical to the survival of the species.
Disrupt the breeding cycle of a population	There are 62 potential breeding trees within the proposed action area, of which six contain hollows suitable for nesting; however, there is no evidence that Carnaby's Cockatoo are utilising the site. The closest known breeding site is located over 35 km away. As such, the proposed action is unlikely to disrupt the breeding cycle of a population.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action area contains 0.9 ha of potential breeding habitat comprising 62 potential breeding trees, and 6.0 ha of potential foraging habitat. Carnaby's Cockatoo is a highly mobile species and there is approximately 5,500 ha of native vegetation that is likely to provide some suitable foraging, breeding and roosting habitat for the species in the wider region. The proposed action will also operate under a CEMP which will reduce potential direct and indirect impacts to the surrounding vegetation, ensuring no decline in habitat within adjacent retained areas. Therefore, the proposed action is not expected to affect habitat in such a way as the species is likely to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	The proposed action will not introduce any invasive species that may be harmful to the species.
Introduce disease that may cause the species to decline	Disturbance from the proposed action is unlikely to introduce diseases that may cause the species to decline.
Interfere with the recovery of the species	The proposed action is not expected to interfere with the recovery of Carnaby's Cockatoo given: • The limited clearing of potential breeding and foraging habitat • Lack of evidence of breeding or foraging within the proposed action area • A total of 5,500 ha of native vegetation expected to contain some potential foraging, breeding and roosting habitat is located close to the proposed action area.

6.4.2.2 Malleefowl

An assessment of the proposed action against the Significant Impact Criteria for the Malleefowl, listed as Vulnerable under the EPBC Act, is provided in Table 6-4 (DoE 2013). Based on this assessment, the proposed action is unlikely to have a significant residual impact on Malleefowl.

Table 6-4: Assessment of significant impact criteria for Malleefowl

Significant impact criteria	Assessment of impacts to Malleefowl
Potential to cause a long-term decrease in the size of an important population	Populations important for the long-term survival of the species have not been defined for the Malleefowl, as no particular population or general area is considered as being of greater importance than any other (Benshemesh 2007). There are no records of Malleefowl in the proposed action area, despite numerous surveys being undertaken. Given the lack of records, the proposed action is unlikely to result in the long-term decrease of an important population.
Potential to reduce the area of occupancy of an important population	There are no records of Malleefowl within the proposed action area. Whilst there is some suitable foraging habitat present in the *Eucalyptus* mallee over *Melaleuca* shrubland fauna habitat, there has been no evidence of the species utilising this habitat despite multiple surveys being undertaken. There are numerous records of the species occurring in and around the Newdegate townsite; however, no records within the proposed action area itself. The proposed action is therefore unlikely to reduce the area of occupancy, given that the species does not appear to occupy the proposed action area. Furthermore, based on the IUCN (2019) recommended grid size of 2 km x 2 km for estimating area of occupancy, the removal of potential habitat (approximately 0.5 km x 0.07 km) within the proposed action area will not reduce the area of occupancy of the Malleefowl, and the species will be able to continue to access intact habitat adjacent to the proposed action area.
Potential for fragmentation of an existing important population into two or more populations	Remnant vegetation surrounds the proposal action area, providing access for dispersal into adjacent areas of remnant vegetation, primarily located in the south. Malleefowl are also able to move between vegetation remnants that are separated by <5 km (Short and Parsons 2008), so are less susceptible to the problems associated with fragmented habitat. Therefore, the removal of 4.2 ha of potential habitat will not cause the fragmentation of the local population into two or more populations.
Potential to adversely affect habitat critical to the survival of a species	Habitat critical to the survival of the species has not been well defined for Malleefowl but is broadly considered to be any habitat where the species is present (Benshemesh 2007). Malleefowl have not been recorded within the proposed action area, despite numerous surveys being undertaken. The species is considered to potentially occur, given the small amount of foraging habitat available and proximity of nearby records; however, it should be noted that the majority of nearby records occur to the south of the proposed action area in larger reserves and remnants that are well connected. The habitat within the proposed action area does not represent habitat critical to the survival of the species, and the are no records of Malleefowl from the wider remnant that the proposed action occurs in. Based on this, the proposed action is unlikely to adversely affect habitat critical to the survival of the species.
Potential to disrupt the breeding cycle of an important population	No active mounds have been recorded within the proposed action area and no suitable breeding habitat is present. As such, the proposed action is unlikely to disrupt the breeding cycle of a population.
Potential to modify, destroy, remove isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Whilst the proposed action will remove a small amount of suitable foraging habitat for Malleefowl, given the high mobility of the species, the occurrence of the species in areas outside those to be impacted, and the availability of both foraging, breeding and dispersal habitat remaining within the surrounding area, the proposed action is unlikely to affect habitat to the extent that the species is likely to decline.

Significant impact criteria	Assessment of impacts to Malleefowl
Potential for the establishment of invasive species in the vulnerable species' habitat that are harmful to the vulnerable species	Management measures such as vehicle hygiene, waste management and effective reinstatement will be implemented to minimise risk of the introduction of invasive species across the proposed action area and surrounds. The proposed action is unlikely to result in the establishment of invasive species into Malleefowl habitat that are harmful to the species.
Potential for the introduction of disease that may cause the species to decline	There are no known diseases in the area. Management measures such as vehicle and machinery hygiene will be implemented to minimise risk of the introduction of any disease within the proposed action area or immediate surrounds. The proposed action is unlikely to introduce disease that may cause the species to decline.
Potential substantial interference with the recovery of the species	Whilst the proposed action will result in the removal of potential foraging and breeding habitat for Malleefowl, this is unlikely to interfere with the recovery of the species given that the species is highly mobile and able to utilise a variety of habitats available within the wider area. Impacts associated with vehicle strike will be minimal and given the high mobility of the species, impacts from vegetation clearing are also expected to be minimal.

6.4.2.3 Red-tailed Phascogale

An assessment of the proposed action on Red-tailed Phascogale against the Significant Impact Guidelines (DoE 2013) is found in Table 6-5. A key factor in determining this assessment is the determining whether this population present within the proposed action area represents an 'important population'. The definition of 'important population' of the species is described as:

> "…a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:
>
> - Key source populations either for breeding or dispersal;
> - Populations that are necessary for maintaining genetic diversity; and/or
> - Populations that are near the limit of the species range."

Newdegate is located on the eastern edge of Red-tailed Phascogale current known core range with isolated records found further east at Jerdacuttup and south of Marvel Loch near Southern Cross (Short and Hide 2012). Therefore, while the small population located in the proposed action area is unlikely a key source population or necessary for maintaining genetic diversity of this species, it may be considered to meet the third criteria of an 'important population' and shall be treated as such in the following assessment.

CBH will also undertake a number of management actions (see Section 6.6.4) to ensure that potential impacts to this species are minimised, including but not limited to pre-clearance trapping prior to the removal of vegetation within the proposed action area and subsequent relocation of any captured individuals to suitable adjacent habitat.

Given the small population size found within the proposed action area and the management measures proposed, the proposed action is not anticipated to cause a significant residual impact to this species.

Table 6-5: Assessment of significant impact criteria for Red-tailed Phascogale

Significant impact criteria	Response
Lead to a long-term decrease in the size of an important population of a species	The proposed action will result in the clearing of 11.4 ha of suitable Red-tailed Phascogale habitat. A review of the surrounding remnant vegetation using aerial imagery and historical records of the species also identified an additional 148.6 ha of suitable habitat to Red-tailed Phascogale due to the presence of large *Eucalyptus* trees with the potential to form hollows in these areas found in the immediate vicinity of the proposed action area (ELA 2018b) (Figure 4-7). Newdegate is located on the eastern edge of the Red-tailed Phascogale's current known range, although there are isolated records further east at Jerdacuttup and Marvel Loch (ELA 2018b). There are two records (opportunistic sightings) of Red-tailed Phascogales 1.0 km south, and 2.2 km southwest from the proposed action area within the remnant vegetation assessed by ELA (2018b) for habitat, although the vegetation these records occur in is not considered optimal habitat. The Proponent commits to undertaking pre-clearance trapping to relocate individuals present in the proposed action area to adjacent suitable habitat. Due to the presence of suitable habitat within the immediate vicinity of the proposed action area and the relocation of Red-tailed Phascogale individuals present within the proposed action area immediately prior to clearing, it is considered unlikely the proposed action will cause a long-term decrease in the size of an important population of this species.
Reduce the area of occupancy of an important population	The proposed action will result in the clearing of 11.4 ha of suitable habitat for Red-tailed Phascogale, located on the eastern edge of Red-tailed Phascogale current known core range. Red-tailed Phascogale have been recorded in traps in all mapping vegetation associations with the exception of TuAv and ElgMl. A further 148.6 ha of remnant vegetation in the immediate vicinity to the proposed action area has been identified as suitable habitat for Red-tailed Phascogale. Based on the IUCN (2019) recommended grid size of 2 km x 2 km for estimating area of occupancy, the removal of known habitat within the proposed action area (approximately 0.6 km x 0.2 km) will not reduce the area of occupancy of the Red-tailed Phascogale, and the species will be able to continue to access the 148.6 ha of intact habitat adjacent to the proposed action area.
Fragment an existing important population into two or more populations	Suitable remnant vegetation surrounds the proposed action area, providing access for dispersal into adjacent areas of remnant vegetation to the south and east. Therefore, the proposed action will not cause the fragmentation of an existing important population into two or more populations.
Adversely affect habitat critical to the survival of a species	There is no recovery plan for this species, and such as, areas of 'critical habitat' have not been defined for the Red-tailed Phascogale. It is proposed a CEMP is prepared prior to the commencement of vegetation clearing/construction to reduce potential direct and indirect impacts to the environment. With reduced potential impacts to the surrounding habitat, and suitable remnant vegetation surrounding the proposed action area, the proposed action is not considered likely to adversely affect habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population	The Red-tailed Phascogale has a semelparous breeding system, which makes this species particularly vulnerable to population decline during unfavourable conditions. The proposed action will remove 11.4 ha of native vegetation capable of supporting breeding for the species; however, suitable habitat is available adjacent to the proposed action area. Construction management measures will ensure that clearing does not occur during the breeding cycle when young may be present. The Proponent also commits to undertaking pre-clearance trapping to relocate individuals present in the proposed action area to adjacent suitable habitat. On this basis, proposed action is considered unlikely to disrupt the breeding cycle of an important population.

Significant impact criteria	Response
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action will result in the clearing of up to 11.4 ha of suitable habitat for Red-tailed Phascogale. A further 148.6 ha of suitable habitat was found in the immediate vicinity of the proposed action area (ELA 2018b), therefore it is considered unlikely the clearing of this remnant vegetation will result in a species decline within the area.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Feral cats are known to be present in the area; however, the proposed action will not introduce any invasive species that are not already present in the surrounding local area and may provide opportunities for feral animal management and control within the site.
Introduce disease that may cause the species to decline	Disturbance from the proposed action will not introduce disease that may cause the species to decline. Disease is not an identified threat to the species.
Interfere substantially with the recovery of the species.	The proposed action is not expected to interfere with the recovery of Red-tailed Phascogale given: • The implementation of management measures to avoid direct impacts to individuals, and to avoid impacts to breeding • Availability of suitable habitat adjacent to the proposed action area.

6.5 Alternatives to the proposed action

CBH considered five alternate sites for the proposed expansion. These five locations were deemed financially unviable compared to the proposed action area due to cost, an increase in truck movements and an inability to purchase the land (see Section 1.2). The proposed action area is an extension to the existing CBH footprint resulting in operational efficiencies and cost reductions and is ideally placed to capture grain flow from multiple directions in the local Newdegate area.

6.6 Proposed management for MNES

Management of the environmental impacts associated with the clearing of native vegetation within the proposed action area has been assessed against the mitigation hierarchy of avoid, mitigate, rehabilitate and offset. Alternatives to the proposed action area have been assessed, as above, to avoid the required clearing of the proposed action area, however it has been determined none of these options were financially viable. Thus, mitigation measures have been developed to reduce the effects of the environmental impacts.

The design of the proposed action has also been optimised to avoid the adjacent salt lake habitat, railway reserve and cemetery.

The main environmental impact associated with the proposed action will be the direct loss of vegetation and fauna habitat within the proposed action area.

A summary of residual impacts to MNES following implementation of management and mitigation measures is presented in Table 6-6.

6.6.1 Wheatbelt Woodlands TEC

The proposed action will result in the removal of 7.0 ha of Wheatbelt Woodlands TEC. This impact is expected to be significant based on the scale of clearing and the conservation status of this community.

However, 9.6 ha of the TEC was avoided by the redesign of the proposed action and will be retained on site. The following management measures are proposed to minimise impacts to the retained Wheatbelt Woodlands TEC adjacent to the proposed action area:

- A CEMP will be implemented during construction to manage dust emissions, clearing boundaries, weed and disease hygiene protocols and best practice to use and store any chemicals/hazardous materials
- CBH will implement appropriate stormwater design to minimise potential impact from stormwater or wastewater on adjacent land.

6.6.2 Carnaby's Cockatoo

While none of the significant impact criteria were considered to be met for Carnaby's Cockatoo (Table 6-3), The proposed action will result in the removal of 6.0 ha of potential foraging habitat and 0.9 ha of potential breeding habitat. Particularly, the removal of 62 potential breeding trees, including six that contain hollows suitable for nesting, could be considered a significant impact to Carnaby's Cockatoo, despite the current lack of evidence of usage of this habitat. The Proponent commits to the implementation of a CEMP including the following management measures to ensure that potential impacts are avoided and/or minimised:

- Undertake a pre-clearance survey for nesting Carnaby's Cockatoo if clearing works are undertaken during the Carnaby's Cockatoo breeding season. Clearing will not commence within a 10 m radius of any breeding tree currently in use until the young have left the nest
- Accurately delineating the approved clearing boundary to provide accuracy to the limits of the allowable clearing lines
- Undertake progressive clearing to allow fauna to move away from clearing activities.

Implementation of the CEMP will also ensure that any indirect impacts to surrounding Carnaby's Cockatoo habitat such as habitat degradation associated with edge effects, increased dust, introduction or spread of weeds and/or altered fire regimes, are also minimised.

The Proponent is also committed to implementing best practice and engaging with DBCA to identify opportunities to improve habitat condition and availability for the species locally in Newdegate through a number of measures which may include:

- Revegetation and/or rehabilitation in areas of lower quality value habitat
- Provision of artificial nest boxes in appropriate locations.

6.6.3 Malleefowl

The proposed action will result in the removal of up to 4.2 ha of suitable foraging habitat for Malleefowl. The proposed action is not expected to cause a significant impact to an important population. Despite this predicted outcome, the Proponent commits to implementing a CEMP including the following management measures to ensure that potential impacts are avoided and minimised:

- Undertake progressive clearing to allow fauna to move away from clearing activities
- Undertaken a pre-clearance survey for active Malleefowl mounds prior to clearing works if undertaking during the Malleefowl breeding season. Clearing will not commence within a 50 m radius of any active Malleefowl mound until the young have left the nest.

Implementation of the CEMP will also ensure that any indirect impacts to surrounding Malleefowl habitat, such as habitat degradation associated with edge effects, increased dust, introduction or spread of weeds and/or altered fire regimes, are also minimised.

6.6.4 Red-tailed Phascogale

The proposed action will result in the removal of 11.4 ha of suitable habitat for Red-tailed Phascogale. The proposed action is not expected to cause a significant impact to an important population, due to the following management measures that will be implemented to ensure that potential impacts are avoided and/or minimised:

- Undertake pre-clearance trapping immediately prior to the removal of vegetation within the proposed action area and subsequent relocation of any captured individuals to suitable adjacent habitat
- Conduct clearing activities at the appropriate time of year to avoid the breeding season
- Ensure a trained fauna handler is on site at all times during vegetation clearing to relocate dislocated fauna.

The Proponent is also committed to implementing best practice and engaging with DBCA to identify opportunities to improve habitat condition and availability for the species locally in Newdegate through a number of measures that may include:

- Revegetation and/or rehabilitation in areas of lower value habitat
- Provision of artificial nest boxes in appropriate locations
- Feral predator control.

Table 6-6: Summary of residual impacts to MNES following implementation of management and mitigation measures

Potential impact	Avoidance	Minimisation	Rehabilitation	Residual impact
Loss and fragmentation of vegetation, including Wheatbelt Woodlands TEC and fauna habitat	The proposed action area has been redesigned to reduce the clearing of native vegetation from 23.3 ha to 11.4 ha, which represents a 51.1% reduction.	Minimise the proposed action area to minimise impacts to salt lake vegetation. Measures to minimise the impacts to vegetation will be detailed in a CEMP which will include: • The proposed action area will be demarcated to prevent clearing outside of approved areas • Manage indirect impacts such as dust, to surrounding vegetation • Measures to prevent the distribution of weed species offsite and prevent introduction of *Phytophthora* dieback to the surrounding vegetation.	The Proponent commits to best practice and engaging with the DBCA on opportunities to enhance retained habitat available locally for Red-tailed Phascogale through measures which may include revegetation or rehabilitation, feral predator control and provision of artificial nest boxes.	Removal of 7.0 ha of Wheatbelt Woodlands TEC. Removal of 6.0 ha of Carnaby Cockatoo foraging habitat, 0.9 ha of potential breeding habitat including 62 potential habitat trees. Removal of 11.4 ha of Red-tailed Phascogale foraging habitat.
Loss of life/injury to wildlife	Pre-clearance survey for evidence of Carnaby's Cockatoo and Malleefowl breeding will be undertaken prior to clearing works commencing. Clearing will not commence in a 10 m radius from an active nesting tree or a 50 m radius from an active mound until young have departed the nest, avoiding impacts to these individuals.	Implementation of a CEMP that will include the following measures: • Conducting clearing activities at the appropriate time of year to minimise affects to MNES fauna species • Undertake pre-clearing fauna trapping for approximately five to seven days before clearing activities commence onsite • Undertake progressive clearing to allow fauna to move away from clearing activities • Ensure a trained fauna handler is on site at all times to handle and relocate fauna • Accurately delineating the approved clearing boundary to provide accuracy to the limits of the allowable clearing lines • Further contingency measures to be developed in consultation with DBCA and implemented to avoid or minimise impacts to significant fauna if identified during searches	Fauna injured during fauna habitat clearing will be rehabilitated by a wildlife carer, where practical.	Loss of fauna individuals during clearing of fauna habitat.

Potential impact	Avoidance	Minimisation	Rehabilitation	Residual impact
Loss of potential breeding trees for black cockatoos	The proposed action area has been redesigned to reduce the clearing of potential breeding trees from 78 to 62 trees, which represents a 15.4% reduction.	• Implementation of a CEMP that will include measures to delineate the approved clearing boundary • Inspection of potential breeding trees prior to clearing to ensure no active hollows.	Not applicable.	Removal of 62 potential breeding trees for Carnaby's Cockatoo.
Loss and degradation of habitat by indirect impacts such as introduction of dieback caused by *Phytophthora cinnamomi* (and other plant diseases), weed invasion leading to local hydrological changes	Not applicable.	Measures to minimise the impacts to vegetation will be detailed in a CEMP which will include: • Require all personnel to complete a site induction that will include hygiene training with regards to weed and disease management requirements.	Not applicable.	Potential residual impacts are as low as reasonably practicable.
Contamination of groundwater impacting on adjacent vegetation	Not applicable.	Minimise the access to standing water on site to reduce fauna interactions Implementation of the CEMP to minimise the risk of contamination, including: • Installation of drainage diversion around chemical storage areas • Implementation of drainage controls to prevent offsite discharge of runoff • Spill response procedures and training • Storage of fuels or chemicals in bunds capable of storing 110% of the capacity of the largest storage tank • Secondary spill containment around tanks (with a perimeter bund) with sufficient freeboard capacity to contain all captured rainwater from a 20-year average return interval, 72-hour storm • Spill kits located in storage and refuelling areas.	Not applicable.	Potential residual impacts are as low as reasonably practicable. Contamination risk is managed with no significant residual impact flora or vegetation.

7. Offsets

This section represents a preliminary offsets strategy, summarising the project's significant residual impacts and proposed offsets. As this NVCP considers impacts to values under both the EP Act and the EPBC Act, requirements for offsets for those impacts are considered under WA and Commonwealth offsets policies as applicable, specifically:

- WA Environmental Offsets Policy (Government of Western Australia 2011)
- EPBC Act Environmental Offsets Policy (Australian Government 2012).

A final Environmental Offsets Strategy will be prepared as a standalone document following issue of conditions of approval for the project.

7.1.1 Significant residual impacts

Environmental offsets will only be applied where residual impacts are determined to be significant after avoidance, minimisation and rehabilitation have been pursued (Australian Government 2012; Government of Western Australia 2014). Following the implementation of mitigation measures outlined in Table 6-7, offsets are likely to be required for the following MNES and State listed species and communities:

- Wheatbelt Woodlands TEC
- Carnaby's Cockatoo.

The environmental offsets proposed will be in accordance with State (Government of Western Australia 2014) and Commonwealth offset guidelines (DSEWPaC 2012b) and will also take into consideration the following:

- The Wheatbelt Woodlands TEC and the Red Morrel Woodlands of the Wheatbelt PEC will continue to be present in proximity to Newdegate and within the wider region
- The MNES species will continue to persist within the Newdegate locality (if currently present) and within the wider region.

While there are unlikely to be significant residual impacts to Red-tailed Phascogale, the provision of offsets for the Wheatbelt Woodlands TEC and Carnaby's Cockatoo will also provide additional benefits to this species, which is known to utilise Eucalypt woodlands. Offsets are not proposed for Malleefowl, as it is considered unlikely there will be significant residual impacts to this species due to the project.

Significant residual impacts for environmental values recognised under WA policy will be determined after applying the:

- WA Offsets Template in the WA Environmental Offsets Guidelines (Government of Western Australia 2014)
- Residual Impact Significance Model in the WA Environmental Offsets Guidelines (Government of Western Australia 2014).

Significant residual impacts for environmental values recognised under Commonwealth policy will be determined after applying the:

- Commonwealth Offsets Assessment Guide (DSEWPAC 2012b)
- Commonwealth Significant Impact Guidelines 1.1 (DoE 2013).

7.1.2 Preliminary offset options

Preliminary discussions with the DBCA Wheatbelt Region Parks and Wildlife Service office (Peter Lacey, pers. comm., August 2018) has indicated that there are a number of patches of remnant vegetation that DBCA would be interested in acquiring in the Newdegate region that could be suitable as land acquisition offsets for the project. The areas of interest are located in proximity to existing larger reserves or are linked to other patches of remnant vegetation. Land acquisition offsets will usually have the ongoing cost of managing the site inbuilt into the purchase price. Potential offset options suggested by DBCA could include one or a combination of the following:

- Transferring suitable land already owned by CBH to DBCA
- Providing funds to DBCA to purchase a particular suitable site
- Providing funds to DBCA, which will be pooled with other offset funding to purchase a larger area of suitable land in the future
- Providing funds for the management of existing sites
- Providing funds for the rehabilitation of existing sites.

Approval regarding the suitability of these offset options will require assessment by both DAWE and DWER during the approvals process. DWER also maintains an offset fund that CBH could contribute to financially, which is used to acquire, rehabilitate or otherwise manage land.

The current proposed offset strategy is to provide funds to DBCA or DWER for either department to acquire suitable land near Newdegate that is currently in unprotected tenure or zoning (e.g. freehold land zoned for general agriculture). In light of the reduced clearing footprint, onsite offsets within the project area will also be considered, as well as rehabilitation. The land acquired will either 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. This strategy is preferred as it is believed the selection and management of the offset site by a government environmental agency will provide the best outcome for the environment. The Wheatbelt Woodlands TEC has a high conservation status (Critically Endangered); therefore, this will require an offset commensurate with its value relative to the level of impact from the project. Low intensity management of the offset site is proposed to be undertaken by DBCA (subject to future negotiations), such as the maintenance of fence and firebreaks, with the current habitat values/community condition maintained.

Following discussions with DBCA (Alex Errington pers. comm. multiple dates 2019), preliminary investigations were undertaken in October 2019 at four potential offsets sites indicated by DBCA as potentially suitable for the required values and land acquisition. Discussions with DBCA will recommence following the submission of this NVCP application. CBH is committed to continuing to engage with DBCA and DWER to identify and secure suitable offsets, including investigating alternatives such as opportunities for CBH to acquire offset site/s and implement rehabilitation and revegetation program/s.

8. Stakeholder consultation

Stakeholder consultation will be required prior to native vegetation clearing and the implementation of the proposal.

The role and interests of Aboriginal people in promoting conservation and ecologically sustainable use of natural resources and knowledge of biodiversity and Aboriginal heritage as applicable was addressed through the following consultation with the South West Aboriginal Land and Sea Council (SWALSC).

Since July 2018 CBH has been in discussions with SWALSC regarding the proposed use of the project area and is currently in consultation regarding the entering into an Indigenous Land Use Agreement (ILUA) with the Ballardong peoples with the intent of resolving outstanding native title claims on the project area. This includes a formal briefing on the proposal to the SWALSC Board in November 2018 and a formal meeting to commence negotiations on terms for a ILUA in January 2019. These negotiations are continuing, and both parties are supportive. Correspondence from both SWALSC and CBH went to Department of Planning, Lands and Heritage in March 2019 confirming this, and seeking the withdrawal of the relevant land parcels from the State's South West Native Title Settlement agreement.

CBH has been monitoring the ongoing process with respect to the State's South West Native Title Settlement and associated six ILUAs, which were subject to judicial reviews. CBH was advised by SWALSC on 9 February 2021 that the six ILUAs with the State of WA were conclusively registered on 27 January 2021, after the High Court of Australia refused to hear special leave applications to overturn the Full Federal Court of Australia's earlier decision that confirmed the six ILUAs were duly registered and should remain on the Native Title Register. SWALSC also advised CBH on 9 February 2021 that this now paves the way for the State's South West Native Title settlement to be implemented. A further significant consequence of conclusive registration is that the Native Title claims over the regions covered by the aforementioned six State ILUAs will be surrendered during or about early April 2021 pursuant to the provisions of the ILUAs, with a final determination of Native Title to be made by the Federal Court soon after.

CBH has been in discussions with the Shire of Lake Grace regarding the potential expansion of the CBH Newdegate site and proposed use of the area since 2015. The Shire of Lake Grace is generally supportive, with the last formal meeting on the proposal taking place in April 2018 between senior managers of CBH and the Shire of Lake Grace. However informal updates have been given throughout 2019 and 2020 during discussions with the Shire regarding the extension to the Newdegate Field Day site which has been extended to provide additional time for CBH to explore options for site expansion.

CBH has been in consultation with the general community via a series of grower and stakeholder meetings regarding the project. Initial meetings were held in December 2015. The most recent formal meeting was held in December 2019 to discuss the project. Informal meetings were conducted in Lake Grace on 25 February 2020 and 16 February 2021 with community stakeholders.

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