Moora Rail Loading Enhancement Project

Offset Management Plan

DOCUMENT CONTROL

Document Information			
STORE 365 ID	**Document Name**	**Revision**	**Document Author**
STORE-310043234-107452	Moora Rail Loading Enhancement Project Offset Management Plan	0	D Dowdell

Revision History					
Rev No.	**Description**	**Date**	**Prepared By**	**Checked By**	**Approved By**
A	Initial draft	16/10/23	D Dowdell		
0	Final	5/12/23	D Dowdell	J Roberts	T Manning

Executive Summary

Cooperative Bulk Handling Ltd (CBH) proposes to expand its facilities at the existing Moora Grain Receival Site (the project), located directly south of the Moora townsite, approximately 225 kilometres (km) northeast of Perth in the Avon-Wheatbelt bioregion of Western Australia (WA). This existing facility consists of twelve (12) open bulkheads with a total storage capacity of 362,000 tonnes (t). The site is situated adjacent to a rail line that runs through to CBH's largest export terminal in Kwinana. The work is required to cater for the growing quantities of grain receivals around the Moora region and surrounding catchments, which is driven by improved cropping and farming techniques, and higher yielding seed varieties being planted by regional (and WA) growers. The reliance on rail reduces trucking movements on both Local and State government roads and reduces the reliance on trucking capacity and operating costs for CBH.

The development will result in the following significant residual impacts requiring an offset:

- Approximately 1.7 ha of native vegetation that provides suitable habitat for Carnaby's cockatoos
- Approximately 1.7 ha of native vegetation inclusive of vegetation that is representative of the Wheatbelt Woodland Threatened Ecological Community (TEC)
- Approximately 1.7 ha of native vegetation that is representative of an under-represented vegetation association (Victoria Plains 142)

This Offset Management Plan outlines how the offsets areas will be managed to maintain and improve the native vegetation and Carnaby's cockatoo breeding and foraging habitat by the following:

- Improving the condition of degraded and completely degraded areas and improving Carnaby's cockatoo foraging habitat within the Lot 4300 offset site by:
  - Planting 590 native Carnaby's cockatoo foraging species seedlings
  - Utilising tree guards around all seedlings planted
  - Protection of remnant native by fencing to restrict access
  - Managing weed infestation through herbicide application during spring and autumn
- Improving Carnaby's cockatoo breeding opportunities by installing Artificial Nesting Hollows within the Lot 4300 offset area
- Improving the condition of Wheatbelt Woodland TEC community within Lot 4300 and Lot 1397 by mitigation planting and weed control

The above strategies will be further supported by an intensive three year maintenance program that incorporates spring and autumn weed management, and replacement of seedling mortality. An ongoing monitoring program will be implemented to ensure that regular observation of the offset sites occurs to document the quality of the vegetation communities is achieving the performance criteria and that the ANH remain available for Carnaby's cockatoo breeding.

TABLE OF CONTENTS

TABLES

FIGURES

1.0 Introduction

1.1 Purpose and scope

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

After the application of avoidance and mitigation measures, the proposed action is expected to result in the clearing of approximately 1.7 hectares (ha) of native vegetation, which contains Matters of National Environmental Significance (MNES), including ecological communities and fauna (or fauna habitat) listed as Threatened under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Biodiversity Conservation Act 2016 (BC Act), and/or listed by the Department of Biodiversity, Conservation and Attractions (DBCA).

After the application of avoidance and mitigation measures, the action will result in the following impacts:

- Clearing of 1.7 ha of native vegetation inclusive of vegetation that is representative of the Wheatbelt Woodland Threatened Ecological Community (TEC)
- 1.7 ha of vegetation to be cleared forms poor quality foraging habitat for Carnaby's cockatoos
- 27 suitable size trees of species that are known to form hollows for Carnaby's cockatoo breeding within the impact area, of which one (1), had a hollow suitable for Carnaby's cockatoo breeding, although this hollow was unoccupied at the time of the survey.

A requirement for offsets to address these significant residual impacts was required as part of the assessment process and this Offset Management Plan (OMP) has been prepared to outline the protection and vegetation and fauna management activities that will be undertaken to achieve a successful offset.

CBH has established an offset proposal which incorporates two areas that are referred to in this plan as Lot 4300 and Lot 1397 to address the residual impacts associated with the implementation of the activity. Lot 4300 is an approximate 13.7 ha parcel of land located approximately 40 m north of the existing Moora Grain Receival site (Figure 2). The entire Lot is freehold property owned by CBH and occurs on land zoned as industrial. The parcel will be used to offset impacts to Carnaby's Cockatoo and Wheatbelt Woodland TEC.

Lot 1397 is a freehold property and CBH has entered an agreement to subdivide the parcel to allow the purchase of the area of remnant vegetation to be used as an offset. Lot 1397 is a 63 ha parcel of land bisected by the Waddington-Wongan Hills Road area, with the vegetated portion located on the southern side of the Waddington-Wongan Hills Road (Figure 1). The subdivision has resulted in a Lot of approximately 15 ha that will be used to offset Wheatbelt Woodland TEC.

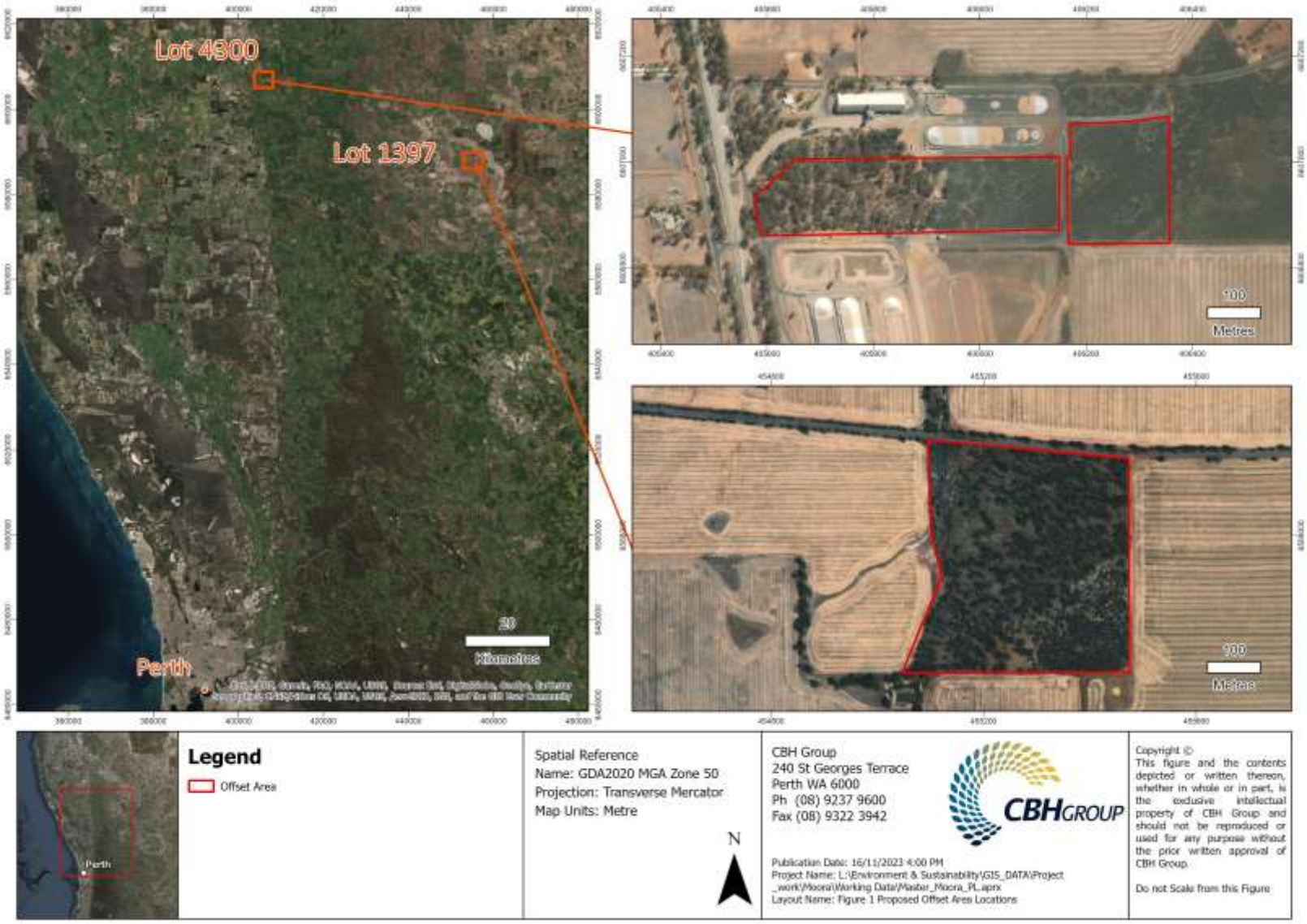

Figure 1: Moora Offset Areas

1.2 Project overview

CBH proposes to expand its facilities at the existing Moora Grain Receival Site (the project), located directly south of the Moora townsite, approximately 225 kilometres (km) northeast of Perth in the Avon-Wheatbelt bioregion of Western Australia (WA).

This existing facility consists of twelve (12) open bulkheads with a total storage capacity of 362,000 tonnes (t). The site is situated adjacent to a rail line that runs through to CBH's largest export terminal in Kwinana. The work is required to cater for the growing quantities of grain receivals around the Moora region and surrounding catchments, which is driven by improved cropping and farming techniques, and higher yielding seed varieties being planted by regional (and WA) growers. The reliance on rail reduces trucking movements on both Local and State government roads and reduces the reliance on trucking capacity and operating costs for CBH.

1.3 Approvals process and context

The project was referred to the then Department of Agriculture, Water and the Environment (DAWE, now known as the Department of Climate Change, Energy, the Environment and Water [DCCEEW]) on 4 March 2021 (EPBC 2021/8894) under the requirements of the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act). On 6 April 2021, a delegate of the Minister for the Environment decided that the proposed development was a controlled action. A native vegetation clearing permit was submitted under Part V of the *Environmental Protection Act 1986* (WA) (EP Act) to the Department of Water and Environmental Regulation (DWER) in July 2021 (CPS 9352/1). On 2 August 2021, DWER advised that they would assess the impacts of clearing on relevant matters of national environmental significance while undertaking an EP Act clearing impact assessment under the bilateral agreement.

As a result of this assessment, and after avoidance and mitigation measures were applied, the identification of an offset was required to address the residual impacts associated with the proposed development. These impacts are:

- Clearing of 1.7 ha of native vegetation inclusive of vegetation that is representative of the Wheatbelt Woodland Threatened Ecological Community (TEC)
- 1.7 ha of vegetation to be cleared forms poor quality foraging habitat for Carnaby's cockatoos
- 27 suitable size trees of species that are known to form hollows for Carnaby's cockatoo breeding within the impact area, of which one (1), had a hollow suitable for Carnaby's cockatoo breeding.

1.4 Definitions and acronyms

Table 1 provides a list of key definitions and acronyms that have been used in this OMP.

Table 1: Definitions and acronyms

Term	Definition
ANB	Artificial nesting box
Area 4 Manager	Manager in charge of the following sites: Bindi Bindi, Miling, Mogumber, Moora, Muchea, Piawaning, Regan's Ford, Watheroo, Wongan Hills
CBH	Cooperative Bulk Handling
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DWER	Department of Water and Environmental Regulation
Quality	A measure of how functional and useful habitat is in providing what is needed to enable Carnaby's cockatoos to recover and persist into the future, including proximity and availability of foraging, breeding, night roosting and water resources
IMS	Integrated management system
Offset	Compensation for any residual significant impact on protected matters
OMP	Offset Management Plan
Rehabilitation	Additional plantings, as well as weed and pest management, and fencing, to improve low quality habitat, so that it becomes higher quality habitat
Revegetation	Re-planting habitat in an area where no or limited habitat currently exists (in the wheatbelt this is known as restoration)
ROAM	CBH application for recording hazards and incidents
RPOIC	Receival Point Officer in Charge
TEC	Threatened Ecological Community
WoNS	Weeds of National Significance
WWTEC	Wheatbelt Woodland Threatened Ecological Community

2.0 Objectives

This OMP details the environmental management actions for offset sites Lot 4300 and Lot 1397 to manage and monitor the sites for the purposes of ensuring that the Carnaby's Cockatoo and Wheatbelt Woodland TEC values at these sites meets the offset proposal objectives.[1]

It is a 'management-based' plan to document actions required to achieve the required objectives.

The following management objectives have been identified:

- Install five artificial nesting boxes (ANB) at Lot 4300
- Manage the ANBs at Lot 4300 to ensure breeding opportunities for Carnaby's cockatoos are maintained
- Improve and then maintain condition of the Wheatbelt Woodland Threatened Ecological Community (WWTEC) at Lot 4300 and Lot 1397
- Improve the quality of Carnaby's cockatoo foraging habitat at Lot 4300

The starting condition of the vegetation and foraging habitat is determined from the biological surveys conducted as part of the assessment (ELA 2020; ELA 2021; ELA 2023). The management plan has been prepared with consideration to guidance provided by the Department of Environment (now DCCEEW) Environmental Management Plan Guidelines (DoE 2014), and the Department of Environmental Regulation (now DWER) guide to preparing revegetation plans for clearing permits under Part V of the *Environmental Protection Act 1986* (DER 2013) so far as these are applicable to the OMP.

[1] See Moora Grain Receival Site Expansion Offset Proposal, prepared by Eco Logical Australia Pty Ltd October 2022 and Response to RFI memo prepared by Eco Logical Australia Pty Ltd June 2023

3.0 Roles and responsibilities

To ensure CBH maintains compliance with this OMP, the relevant organisational positions accountable for the implementation and ongoing adherence to this Plan have been identified and their specific responsibilities detailed (Table 2). The Head of Health, Safety and Environment (HSE) will maintain overall responsibility to ensure that the management actions are implemented by the relevant employees and contractors on behalf of the Chief Executive Officer (CEO) of CBH.

Table 2: Roles and responsibilities

Role	Responsibility
CEO	Establish appropriate values to ensure the company meets their external obligations and provides a safe working environment
Head; HSE	- Lead and review risk assessment activities, assist in incident investigation to ensure environmental and community risks and opportunities are identified and managed - Liaise with key stakeholders - Report to the CEO
Manager; Environment and Sustainability	- Ensure compliance with all legislation, approvals, policies, procedures, conditions and commitments - Support and provide advice to all personnel in relation to environmental and community matters - Review effectiveness of the OMP and other environmental documentation - Participate in risk assessment activities, assist in incident investigation to ensure environmental and community risks and opportunities are identified and managed - Ensure contracts contain relevant environmental provisions and contractors fulfill their contractual obligations
Coordinator; Environment and Sustainability	- Assist the Manager Environment and Sustainability with reviewing the effectiveness of the OMP and other environmental documentation - Collate environmental data for mandatory environmental reporting - Maintain all documentation (hard copy, electronic and emails) for inspection during internal and external audits - Manage external contractors by ensuring they are correctly set up in SitePass and have submitted all relevant documentation prior to entering site - Manage and report contractor activity to the Manager Environment and Sustainability - Organise any routine environmental audits as outlined in the OMP

Area 4 Manager	- Ensure requirements of the OMP are implemented within their area and all employees and contractors comply - Support, mentor, advise and manage RPOIC and site staff in the implementation of the OMP - Provide adequate environmental training to key personnel - Assist or facilitate with investigating environmental incidents and co-ordinating corrective actions, if required - Coordinate any routine environmental audits as outlined in the OMP
Moora RPOIC	- Support the Area Manager and provide advice to improve day to day environmental performance - Report on areas of improvement and corrective actions - Facilitate environmental monitoring and auditing as outlined in the OMP
External Contractors	- Complete all relevant training and induction activities prior to commencing work on site - Comply with the requirements of the OMP and related procedures - Ensure all employees are aware of the requirements of this OMP and relevant reporting requirements of any related environmental incidents
All Personnel on Site	- Comply with the requirements of this OMP and related procedures - Report all environmental incidents as they occur - Attend environmental inductions or any other training as required - Assist with environmental incident investigations, if relevant, and implement any identified corrective actions because of the investigation outcomes

4.0 Offset sites

4.1 Size, location and zoning

Lot 4300 is an approximate 13.7 ha parcel of land located approximately 40 m north of the existing Moora Grain Receival Site (Figure 1). The entire Lot is freehold property already owned by CBH and occurs on land zoned as industrial (Government of Western Australia 2022a).

Lot 1397 is an approximate 60 ha parcel of land located nearly 52 km south-east of the existing Moora Grain Receival site (Figure 1). The entire Lot is freehold property which CBH has signed an option to purchase a 15 ha vegetated portion from the current owner, with the entire Lot occurring on land zoned as rural. The 15 ha lot has been the subject of a formal subdivision process to enable CBH to acquire title over the land. The Western Australian Planning Commission (WAPC) provided 'Approval subject to conditions' to subdivide the block on 10 November 2022. The conditions of this approval require a conservation covenant in perpetuity be placed over the 15 ha lot and be in place by 10 November 2025.

4.2 Biological environment

A single season detailed flora and vegetation survey was undertaken within Areas A and B of Lot 4300, as well as Lot 4170 to the north of Lot 4300 (ELA 2023a). Lot 4170 does not form part of the proposed offset for the project. The survey was undertaken in accordance with the Environmental Protection Authority (EPA) Technical Guidance for flora and vegetation (EPA 2016) as far as practicable; however, it should be noted that this was an out of season survey, aimed at providing supplementary data to inform the project offset strategy. The survey included:

- Mapping and describing vegetation types, including the presence of any TECs or PECs and any vegetation of ecological importance and compiling a species inventory
- Vegetation condition mapping adapted from Keighery (1994; EPA 2016)
- The location of any identified Weeds of National Significance (WoNS) or Declared Pests listed under the State *Biosecurity and Agriculture Management Act 2007* (BAM Act).

Figure 2, Figure 3 and Figure 4 display vegetation communities, vegetation condition and location of Wheatbelt Woodland TEC.

A single season flora and vegetation survey within Lot 1397 (ELA 2023b) in accordance with the EPA Technical Guidance for flora and vegetation (EPA 2016). The survey included:

- Mapping and describing vegetation types, including the presence of any TECs or PECs and any vegetation of ecological importance and compiling a species inventory
- Vegetation condition mapping adapted from Keighery (1994; EPA 2016)
- The location of any identified Weeds of National Significance (WoNS) or Declared Pests listed under the State Biosecurity and Agriculture Management Act 2007 (BAM Act)

The survey covered Area A and Area B of Lot 1397 however, the survey results for Area B represents the proposed offset site. Figure 5, Figure 6 and Figure 7 display the vegetation communities, vegetation condition and location of Wheatbelt Woodland TEC within Lot 1397.

The Offset Proposal provides further information regarding the values of the offset site as considered during the assessment and should be referred to for additional information.

Figure 2: Lot 4300 Vegetation Communities

Figure 3: Lot 4300 Vegetation Condition

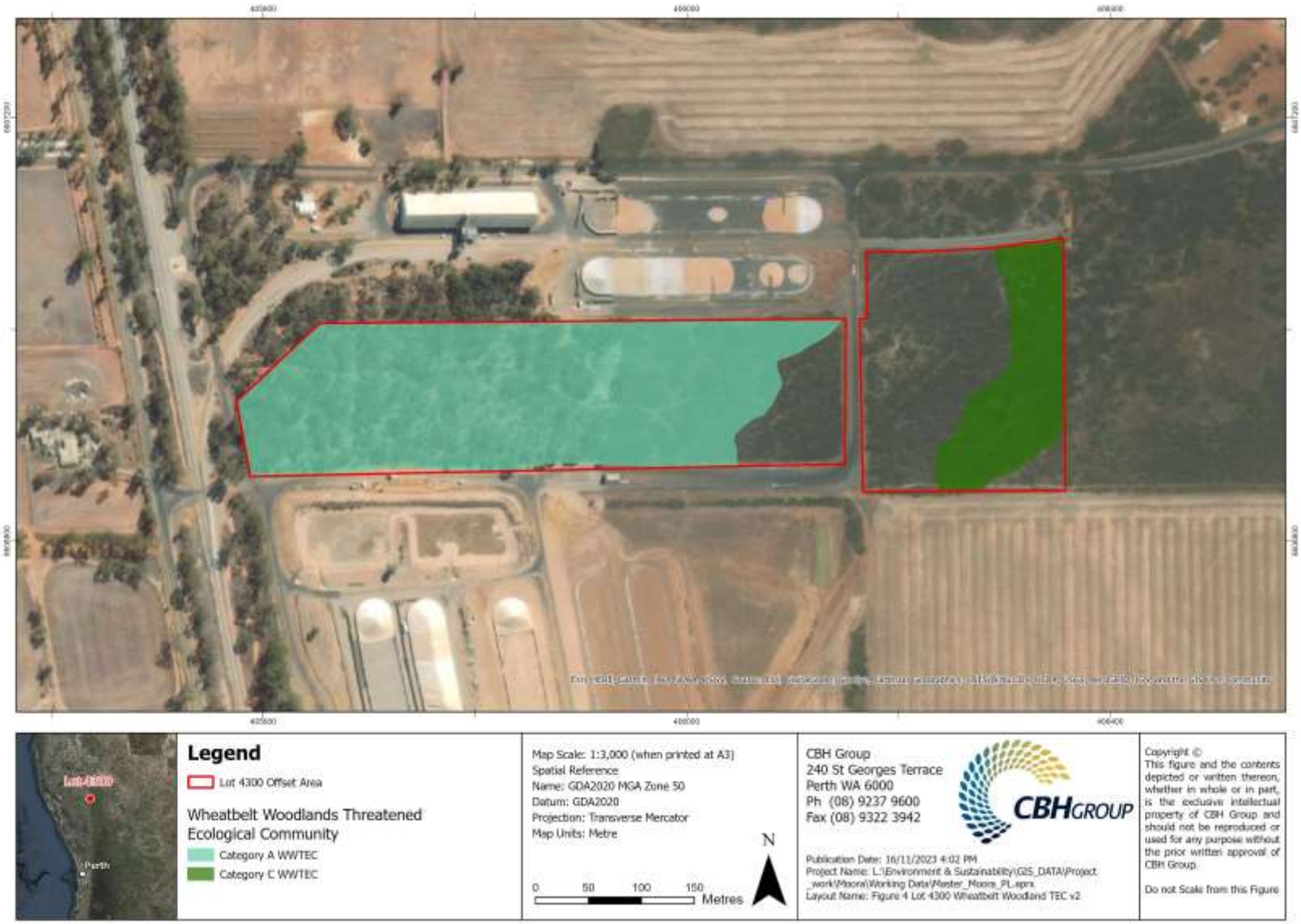

Figure 4: Lot 4300 Wheatbelt Woodland TEC

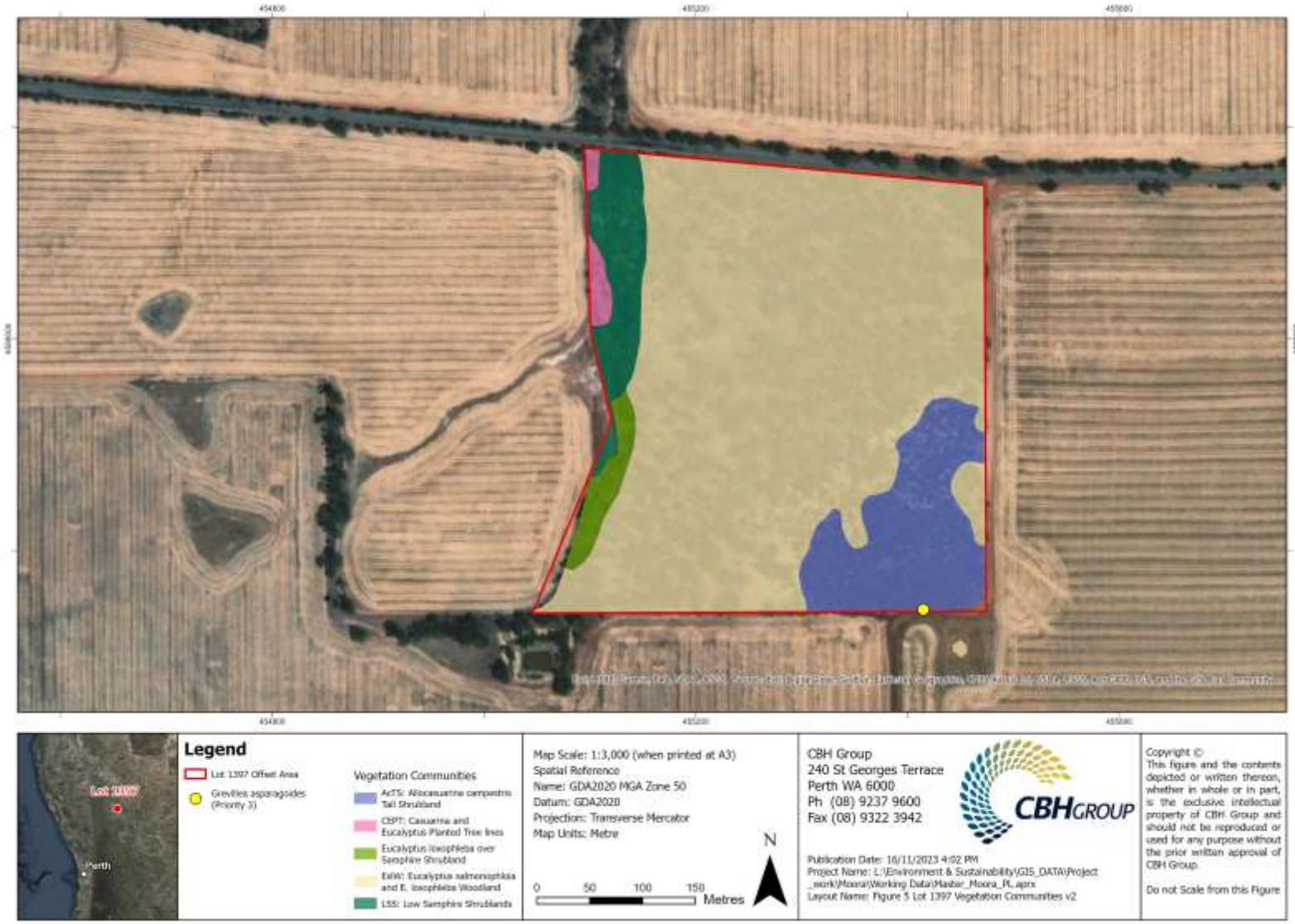

Figure 5: Lot 1397 Vegetation Communities

Figure 6: Lot 1397 Vegetation Condition

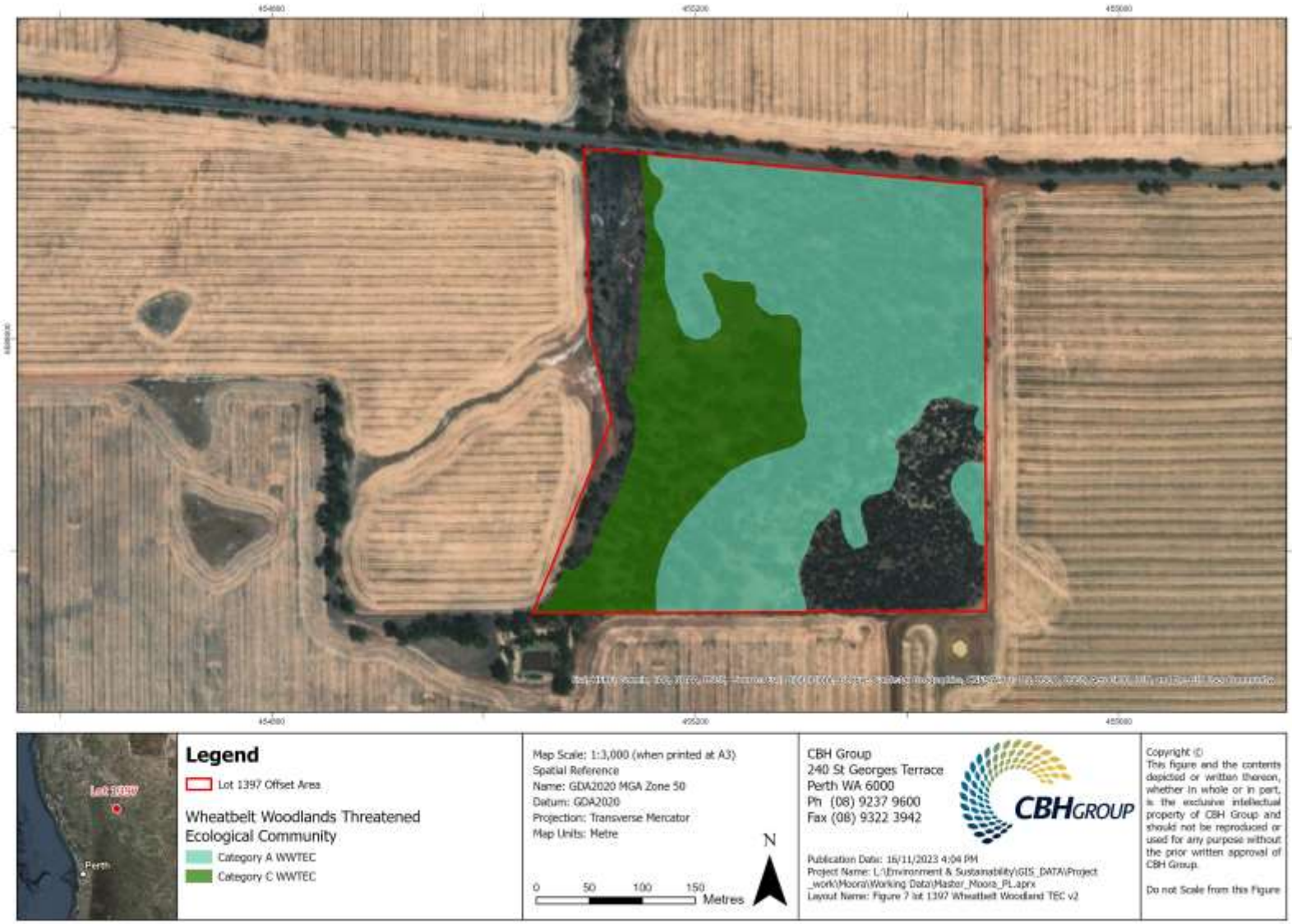

Figure 7: Lot 1397 Wheatbelt Woodland TEC

5.0 Threatening processes

5.1 Threatening processes

The Department of Sustainability Environment Water Protection and Communities (DSEWPaC) (2012) and the Department of Parks and Wildlife (now Department of Biodiversity, Conservation and Attractions) (2013) identify the key threats to Carnaby's Cockatoo as:

- Habitat loss and habitat degradation - loss of foraging habitat, nesting hollows, habitat connectivity and habitat quality
- Interactions with humans - vehicle strikes, agriculture protection measures, disturbance from noise/light, unauthorised taking (poaching)
- Invasive species - competition for nest hollows with European honey bees and invasive birds, injury/death from European honey bees

The potential threats to Wheatbelt Woodland TEC (DoE, 2015), include:

- Clearing of vegetation and fragmentation of vegetation into smaller, disconnected patches
- Weed invasion
- Chemical spray drift
- Grazing
- Salinity
- Fire
- Dieback

6.0 Offset management measures

6.1 Offset plan objectives

The following are the key OMP objectives that have been identified:

- Install and manage five ANBs at Lot 4300 to ensure breeding opportunities for Carnaby's cockatoos are maintained
- Improve and then maintain the condition of the Wheatbelt Woodland Threatened Ecological Community (WWTEC) at Lot 4300 and Lot 1397
- Improve and then maintain the quality of Carnaby's cockatoo foraging habitat at Lot 4300
- Legally protect portions of Lot 4300 and acquire and protect a portion of Lot 1397 through the placement of a conservation covenant under the *Soil and Land Conservation Act 1945* (WA) (refer Figure 1)

6.2 Offset plan performance criteria and targets

Performance criteria and targets have been established as auditable criteria linked to the OMP objectives. The intent of these criteria and target is to allow monitoring of the effectiveness of this plan in meeting the objectives of the offset proposal. The offset management plan performance targets are documented in Table 3.

Table 3: Offset plan performance criteria and targets

Objectives	Criteria	Target	Completion criteria	Timeframe
Improve and maintain Wheatbelt Woodland TEC (and Carnaby's cockatoo foraging habitat)	Successful rehabilitation and revegetation program	• To meet the completion criteria within 5 years	• Described in Table 6	20 years
	Salinity	No change in salinity indicators	Lot 1397 current extent of saline impacted area 1.12 ha: • No extension of mapped saline tolerant vegetation • No increase in saline stress indicators • No evidence of extension of soil crusting from increasing salinity	Annually, for 20 years
	Dieback	No dieback indicators present	No presence of dieback demonstrated through assessment by ecological specialist	Biennial, for 20 years
Provide protection in perpetuity	Legal protection	Protection under the *Soil and Land Conservation Act 1945* (SLC Act)	Conservation covenant established and notification placed on land titles	Within 1 year from date of approval
	Ownership	Security of ownership to protect landholding	Lot 1397 formally subdivided, and 15 ha portion owned by CBH	Within 1 year from date of approval
Maintain Carnaby's cockatoo breeding opportunities	Artificial Nesting Boxes	Provide for Carnaby's cockatoo breeding	5 ANBs installed >5m above ground (where possible)	Within 1 year from date of approval
		Provide for Carnaby's cockatoo breeding	5 ANBs available each year for native fauna breeding	Annually, for 20 years

Table 4: Category Condition for Wheatbelt Woodland TEC

Cover of exotic plants (weeds)	Mature trees (DBH >30 cm)	Minimum patch size
Category A: Patches likely to correspond to a condition of Pristine / Excellent / Very Good (Keighery, 1994)		
Exotic plant species account for 0 to 30% of total vegetation cover in the understorey layers (ie below the tree canopy)	Mature trees may be present or absent	2 or more hectares
Category B: Patches likely to correspond to a condition of Good (Keighery, 1994)		
Exotic plant species account for more than 30, to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy)	Mature trees are present with at least 5 trees per 0.5 ha.	2 hectares or more
Category C: Patches likely to correspond to a condition of Good (Keighery, 1994)		
Exotic plant species account for more than 30, to 50% of total vegetation cover in the understorey layers (i.e. below the tree canopy).	Mature trees either absent or less than 5 trees per 0.5 ha are present.	5 hectares or more
Category D: Patches likely to correspond to a condition of Degraded to Good (Keighery, 1994)		
Exotic plant species account for more than 50 to 70% of total vegetation cover in the understorey layers (i.e. below the tree canopy).	Mature trees are present with at least 5 trees per 0.5 ha.	5 hectares or more

Table 5 provides a list of the flora species that have been identified within Lot 4300 and Lot 1397 during biological surveys completed to June 2023 (ELA 2020, ELA 2021, ELA 2023). Planting programs at Lot 4300 and Lot 1397 will prioritise these species. Additional species lists (Appendix 1) have been developed by ELA to support the rehabilitation activities, focusing on Wheatbelt Woodland TEC and black cockatoo foraging species.

Table 5: Flora species identified during botanical surveys

Lot 4300 Flora species		
Acacia acuminata[1]	*Comesperma integerrimum*	*Muehlenbeckia adpressa*
Acacia bidentata	*Conostylis aculeata subsp. Bromelioides*	*Panaetia lessonii*
Acacia ericifolia	*Crassula colorata*	*Poaceae sp.*
Acacia erinacea[1]	*Daviesia benthamii*	*Podolepis aristata*
Acacia hemiteles[1]	*Daviesia divaricata*	*Podolepis sp*[1]
Acacia leptospermoides ssp. leptospermoides[1]	*Daviesia hakeoides ssp. Subnuda*	*Pterostylis sp*[1]
Acacia lineolata ssp. lineolata	*Daviesia triflora*[1]	*Ptilotus manglesii*
Acacia microbotrya	*Dianella revoluta*	*Ptilotus polystachyus*

Acacia saligna[3]	*Enchylaena lanata*[1]	*Rhagodia preissii*
Allocasuarina huegeliana	*Enchylaena tomentosa*[1]	*Rhodanthe pygmaea*
Amyema preissii	*Erymophyllum tenellum*	*Rytidosperma caespitosum*
Aristida holathera	*Eucalyptus loxophleba ssp. Loxophleba*[2]	*Salsola australis*
Asteraceae sp.	*Eucalyptus salmonophloia*[2]	*Sclerolaena diacantha*
Atriplex semibaccata[1]	*Exocarpos sparteus*	*Siemssenia capillaris*
Austrostipa elegantissima[1]	*Goodenia sp.*[1]	*Solanum lasiophyllum*
Austrostipa variabilis	*Grevillea biternata*[3]	*Sowerbaea laxiflora*
Blennospora drummondii	*Hakea preissii*[2]	*Stylobasium australe*
Brassicaceae sp.	*Hakea recurva subsp. recurva*	*Templetonia sulcata*[1]
Burchardia congesta	*Hyalosperma glutinosum ssp. glutinosum*	*Thysanotus manglesianus*
Caladenia flava subsp. flava	*Lomandra effusa*	*Trachymene cyanopetala*[1]
Calandria calyptrata[1]	*Maireana brevifolia*[1]	*Trachymene ornata*
Calytrix sp.	*Marsilea drummondii*	*Xanthorrhoea preissii*[3]
Lot 1397 Flora species		
Acacia acuaria[1]	*Desmocladus asper*[1]	*Petrophile shuttleworthiana*[1]
Acacia acuminata[1]	*Dianella revoluta*	*Plantago debilis*
Acacia aestivalis	*Dichopogon preissii*	*Platysace cirrosa*
Acacia erinacea[1]	*Dodonaea pinifolia*[1]	*Poaceae sp.*
Acacia hemiteles[1]	*Ecdeiocolea monostachya*	*Podolepis aristata*
Acacia microbotrya[1]	*Enchylaena tomentosa*	*Podolepis sp*[1]
Allocasuarina campestris[1]	*Eragrostis sp.*	*Pterostylis sp*[1]
Amphipogon caricinus[1]	*Eremophila decipiens ssp decipiens*[1]	*Ptilotus divaricatus*
Aristida holathera	*Ericomyrtus serpyllifolia*	*Rhagodia drummondii*[1]
Asteraceae sp.	*Eucalyptus loxophleba*[2]	*Rytidosperma sp.*[1]
Atriplex codonocarpa	*Eucalyptus salmonophloia*[2]	*Scaevola spinescens*
Atriplex semibaccata	*Gahnia drummondii*	*Sclerolaena diacantha*
Atriplex stipitata	*Grevillea asparagoides (P3)*	*Senna artemisioides ssp filifolia*
Austrostipa elegantissima[1]	*Hordeum leporinum*	*Stylobasium australe*
Austrostipa sp[1]	*Lepidium sp*[1]	*Stypandra glauca*

Austrostipa variabilis[1]	*Lepidosperma leptostachyum*[1]	*Styphelia serratifolia*
Borya sphaerocephala[1]	*Lomandra effusa*[1]	*Tecticornia indica ssp bidens*[1]
Cassytha glabella	*Maireana brevifolia*[1]	*Tecticornia pergranulata ssp pergranulata*[1]
Casuarina obesa[1]	*Melaleuca adnata*[1]	*Templetonia sulcata*
Crassula colorata	*Melaleuca hamata*[1]	*Thysanotus manglesianus*
Dampiera lavandulacea[1]	*Melaleuca radula*[1]	*Thysanotus sp*
Daucus glochidiatus[1]	*Neurachne alopecuroidea*[1]	*Wilsonia humilis*

[1] Wheatbelt Woodland species

[2] Wheatbelt Woodland species and Black Cockatoo foraging species

[3] Black cockatoo foraging species

7.0 Carnaby's Cockatoo

The following section outlines the management plan activities, targets, actions and monitoring for Carnaby's cockatoo breeding outcomes. Given the overlap between WWTEC and Carnaby's foraging habitat, the activities, targets, actions and monitoring relating to foraging habitat are contained in the WWTEC section (Section 0).

7.1 Carnaby's Cockatoo

Given the time needed to recruit replacement hollows for those lost to clearing, logging or natural senescence, there will be a significant shortage of natural hollows available to the cockatoos in some areas in the foreseeable future (Groom 2010). Artificial nesting boxes (Figure 8) are a useful tool for managing some of the impacts to Black Cockatoo breeding through the provision of suitable containers that replicate the natural hollows preferred by Black Cockatoos. The analysis of the use of ANB by Groom (2010) found that they were particularly effective when existing breeding is known to occur in the vicinity.

Photo: Christine Groom (left), Rick Dawson (centre and right)

Figure 8: Examples of artificial nesting hollows for Carnaby's Cockatoo

Table 9 provides an overview of the activities and performance targets to effectively install and manage the ANB.

8.0 Rehabilitation and revegetation strategy

8.1 Management zones

Management zones have been established for the two offset sites. The management zones are established to address the vegetation requirements for the Wheatbelt Woodlands TEC and non-Wheatbelt Woodland TEC vegetation. Figure 9 shows the two management zones established within Lot 4300 offset site and Table 6 provides an overview of the completion criteria. Figure 10 shows the three management areas that have been established for Lot 1397 offset site and Table 7 shows the completion criteria for this site.

The broader management objectives for the offset sites were previously discussed in Section 6.0 and shown in Table 3. Revegetation will be based on the planting of seedlings sourced from accredited native vegetation nurseries, with supplementary direct seeding where its considered appropriate and necessary to meet the completion requirements.

Lot 4300

Zone A (8.36 ha)

Comprises of (i) Wheatbelt Woodland TEC (WWTEC) Cat A (ii) WWTEC Cat C a revegetation / rehabilitation plan

- Vegetation Communities: (a) EIW *Eucalyptus loxophelba* woodland (b) EsIW *Eucalyptus salmonophloia* and *Eucalyptus loxophleba* open forests in Good to Very Good condition
- Moderate foraging quality for Carnaby's black cockatoo

Zone B (3.59 ha)

- ATS vegetation community: *Allocasuarina huegeliana* tall shrubland in Good to Very Good condition
- Low foraging quality for Carnaby's black cockatoo

Reference Quadrats:

- minimum 3 quadrats from the WWTEC Cat A (Very Good Condition) with Moderate foraging quality for Carnaby's black cockatoo (reference quadrats 1,2 and 3)
- 1 quadrat from the ATS vegetation community with Low foraging quality (reference quadrat 4).

***Monitoring Quadrats*:**

- minimum 2 quadrats from each vegetation unit / community being rehabilitated, as depicted in Figure 10

Table 6: Rehabilitation and revegetation completion criteria for each zone in Lot 4300

Item	Criterion	Objectives/targets	Completion Criteria for each zone and target area		Monitoring
			Zone	Criterion	Timeframe
1	Seedling survival	Planted seedlings survive	All zones and target areas	A minimum of 70 percent survival of planted seedlings in the monitoring quadrats	Twice a year in spring and autumn in the first three years and annually in the spring by an *environmental specialist* until completion criterion has been met and maintained for two years.
2a	Species richness – Dominant overstorey species.	For each target rehabilitation type and zone, the revegetation needs to maintain and / or improve species richness of the dominant overstorey species from the	Zone A WWTEC Cat A	Dominant species across Zone A and within the monitoring quadrats are at least 80 per cent of the average	Annually in spring by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).

		target *reference quadrats*.		recorded at the *reference quadrats 1, 2 and 3.*	
			Zone A WWTEC Cat C	Dominant species across Zone A and within the monitoring quadrats are at least 60 per cent of the average recorded at the *reference quadrats 1, 2* and *3.*	
			Zone B	Dominant species across Zone B and within the monitoring quadrats are at least 80 per cent of the average recorded at the *reference quadrat 4.*	
2b	Species richness – Dominant overstorey species. Species richness – native species in each structural layer	For each target rehabilitation type and zone, the revegetation needs to maintain and / or improve species richness of the dominant overstorey species from the target *reference quadrats*.	Zone A WWTEC Cat C	Dominant species across Zone A and within the monitoring quadrats are at least 60 per cent of the average recorded at the *reference quadrats 1, 2* and *3.*	Annually in spring by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events). Annually in spring by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. four successive monitoring events).
			Zone A WWTEC Cat C	Native species in each structural layer across Zone A and within the monitoring quadrats are at least 60 per cent of the average recorded at the *reference*	

				quadrats 1, 2 and *3.*	
			Zone B	Native species in each structural layer across Zone B and within the monitoring quadrats are at least 80 per cent of the average recorded at the *reference quadrat 4.*	
3a	Cover and density – stem/ha of the dominant overstorey species	For each target rehabilitation type, the revegetation needs to similar number of stems/ha of the dominant overstorey species from the target *reference quadrats*.	Zone A WWTEC Cat A	Monitoring quadrats and overall rehabilitated sites contain minimum 80% of the number of stems/ ha of the dominant overstorey species found in the *reference quadrats 1, 2 and 3.*	Annually by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
			Zone A WWTEC Cat C	Monitoring quadrats and overall rehabilitated sites contain minimum 60% of the number of stems/ ha of the dominant overstorey species found in the *reference quadrats 1, 2 and 3.*	
			Zone B ATS community	Monitoring quadrats and overall rehabilitated sites contain minimum 80% of the number of stems/ ha of the dominant overstorey species found in the reference quadrat 4.	

3b	Cover and density – number of plants /ha in each structural layer.	For each target revegetation type, the revegetation needs to achieve a similarity in the number of plants / ha to the average record at the *reference quadrats*.	Zone A WWTEC Cat A	Minimum 80% of the number of plants / ha in each structural layer based on the reference quadrats 1, 2 and 3.	Annually by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
			Zone A WWTEC Cat C	Minimum 60% of the number of plants / ha in each structural layer based on the reference quadrats 1, 2 and 3.	
			Zone B	Minimum 80% of the number of plants / ha in each structural layer based on the reference quadrat 4.	
4a	Weeds	Weed cover is no greater than the baseline at *reference sites*	All zones	For each target rehabilitation type and zone, weed cover shall be no greater than the baseline recorded at the *reference sites*.	Annually in spring by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
4b	Weeds	No priority, high impact or highly invasive weeds present	All zones	No weeds present that are listed as Priority Alert, High Impact or Rapid invasiveness on the DBCA Wheatbelt Region Impact and Invasiveness Ratings list as updated from time to time.	Annually in spring by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
5	Bare ground	No more than 5 per cent greater than the baseline at the *reference sites*	All zones	For each target rehabilitation type and zone, the *rehabilitated area* must not have bare ground more than 5 per cent greater than the	Annually in summer by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).

				baseline recorded at the *reference sites*	
6	Gates and boundary fence	Gates and boundary fence to be in good condition with no obvious damage that will enable access by the general public and fauna, including livestock and kangaroos.	Lot 4300		Annually until completion criteria 1 – 5 has been met

Lot 1397

Zone C (1.12 ha):
Comprises of remnant vegetation in degraded condition with Vegetation Communities:

- CEPT Casuarina and Eucalyptus planted tree lines
- LSS low samphire Shrublands
- ElSS *Eucalyptus loxophleba* over samphire shrubland

Zone D (12.65 ha):

- WWTEC Category A in Good to Excellent condition (Keighery, 1994) and WWTEC Category C in Very Good condition (Keighery, 1994)
- Vegetation communities:
- EslW *Eucalyptus salmonophloia* and *Eucalyptus loxophleba* open forest
- ElSS *Eucalyptus loxophleba* over samphire shrubland

Zone E (2.17 ha):

- Remnant vegetation in Excellent condition (Keighery, 1994)
- Vegetation community: AcTS *Allocasuarina campestris* tall shrubland

Reference Quadrats:

- minimum 1 quadrat from the WWTEC Cat A in Excellent condition (reference quadrat 5) and
- 1 quadrat from the AcTS vegetation in Excellent condition (reference quadrat 6).

***Monitoring Quadrats*:**

- quadrats to be established within each vegetation unit / community being rehabilitated, as depicted in Figure 12

Table 7: Rehabilitation and revegetation completion criteria for each zone in Lot 1397

Item	Criterion	Objectives/targets	Completion Criteria for each zone and target area		Monitoring
			Zone	Criterion	Timeframe
1	Seedling survival	Planted seedlings survive	All zones and target areas	A minimum of 70 percent survival of planted seedlings in the monitoring quadrats	Twice a year in spring and autumn in the first three years and annually in the spring by an *environmental specialist* until completion criterion has been met and maintained for two years.
2a	Species richness – Dominant	For each target rehabilitation type	Zone C	Dominant species across	Annually in spring by an *environmental specialist*

	overstorey species.	and zone, the revegetation needs to maintain and / or improve species richness of the dominant overstorey species from the target *reference quadrats*.		Zone C and within the monitoring quadrats are at least 40 per cent of the baseline average recorded at the *reference quadrat 5.*	until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
			Zone D WWTEC Cat A	Dominant species across Zone D and within the monitoring quadrats are at least 80 per cent of the baseline average recorded at the *reference quadrat 5.*	
			Zone D WWTEC Cat C	Dominant species across Zone D and within the monitoring quadrats are at least 60 per cent of the baseline average recorded at the *reference quadrat 5.*	
			Zone E AcTS	Dominant species across Zone E and within the monitoring quadrats are at least 80 per cent of the baseline average recorded at the *reference quadrat 6.*	
2b	Species richness – Dominant overstorey species. Species richness –	For each target rehabilitation type and zone, the revegetation needs to maintain and / or improve species	Zone C	Native species in each structural layer across Zone C and within the monitoring	Annually in spring by an *environmental specialist* until completion criterion has been met and maintained for two years

	native species in each structural layer	richness of the dominant overstorey species from the target *reference quadrats*.		quadrats, are at least 40 per cent of the baseline average recorded at the *reference quadrat 5.*	(i.e. three successive monitoring events).
			Zone D WWTEC Cat A	Native species in each structural layer across Zone D and within the monitoring quadrats, are at least 80 per cent of the baseline average recorded at the *reference quadrat 5.*	
			Zone D WWTEC Cat C	Native species in each structural layer across Zone D and within the monitoring quadrats, are at least 60 per cent of the baseline average recorded at the *reference quadrat 5.*	
			Zone E AcTS	Native species in each structural layer across Zone E and within the monitoring quadrats, are at least 80 per cent of the baseline average recorded at the *reference quadrat 6.*	
3a	Cover and density – stem/ha of the dominant overstorey species	For each target rehabilitation type, the revegetation needs to similar number of stems/ha of the dominant	Zone C	Monitoring quadrats and overall rehabilitated sites contain minimum 40%	Annually by an *environmental specialist* until completion criterion has been met and maintained for two years

		overstorey species from the target *reference quadrats*.		of the baseline number of stems/ ha of the dominant overstorey species found in the reference quadrat 5.	(i.e. three successive monitoring events).
			Zone D WWTEC Cat A	Monitoring quadrats and overall rehabilitated sites contain minimum 80% of the baseline number of stems/ ha of the dominant overstorey species found in the reference quadrat 5.	
			Zone D WWTEC Cat C	Monitoring quadrats and overall rehabilitated sites contain minimum 60% of the baseline number of stems/ ha of the dominant overstorey species found in the reference quadrat 5.	
			Zone E AcTS	Monitoring quadrats and overall rehabilitated sites contain minimum 80% of the baseline number of stems/ ha of the dominant overstorey species found in the reference quadrat 6.	
3b	Cover and density – number of plants /ha in each structural layer.	For each target revegetation type, the revegetation needs to achieve a similarity in the number of plants / ha to the average	Zone C	Minimum 40% of the number of plants / ha in each structural layer based on the baseline recorded at	Annually by an *environmental specialist* until completion criterion has been met and maintained for two years

		record at the *reference quadrats*.		reference quadrat 5.	(i.e. three successive monitoring events).
			Zone D WWTEC Cat A	Minimum 80% of the number of plants / ha in each structural layer based on the baseline recorded at reference quadrat 5.	
			Zone D WWTEC Cat C	Minimum 60% of the number of plants / ha in each structural layer based on the baseline recorded at reference quadrat 5.	
			Zone E AcTS	Minimum 80% of the number of plants / ha in each structural layer based on the baseline recorded at the reference quadrat 6.	
4a	Weeds	Weed cover is no greater than the baseline at *reference sites*	All zones	For each target rehabilitation type and zone, weed cover shall be no greater than the baseline recorded at the *reference sites*.	Annually in spring by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
4b	Weeds	No priority, high impact or highly invasive weeds present	All zones	No weeds present that are listed as Priority Alert, High Impact or Rapid invasiveness on the DBCA Wheatbelt Region Impact and Invasiveness Ratings list as updated from time to time.	Annually in spring by an *environmental specialist* until completion criterion has been met and maintained for two years (i.e. three successive monitoring events).
5	Bare ground	No more than 5 per cent greater than the	All zones	For each target rehabilitation type and zone, the *rehabilitated*	Annually in summer by an *environmental specialist* until completion criterion has been met and

		baseline at the *reference sites*		*area* must not have bare ground more than 5 per cent greater than the baseline recorded at the *reference sites*	maintained for two years (i.e. three successive monitoring events).
6	Gates and boundary fence	Gates and boundary fence to be in good condition with no obvious damage that will enable access by the general public and fauna, including livestock and kangaroos.	Lot 1397		Annually until completion criteria 1 – 5 has been met

Table 8: Wheatbelt Woodland TEC values identified during biological surveys

Parameter	Lot 4300	Lot 1397
Flora families	Asteraceae (15 species) Chenopodiaceae (7 species) Fabaceae (15 species) Myrtaceae (3 species) Poaceae (14 species)	Asteraceae (4 species) Chenopodiaceae (10 species) Fabaceae (8 species) Myrtaceae (6 species) Poaceae (16 species)
No. native flora species	74	66
No. weed species	17	11
Wheatbelt Woodland TEC vegetation type	EslW: *Eucalyptus salmonophloia* and *E. loxophleba* woodland ElW: *Eucalyptus loxophleba* Woodland	EslW: *Eucalyptus salmonophloia* and *E. loxophleba* woodland
No. Wheatbelt Woodland TEC species	29	35
Dominant Wheatbelt Woodland TEC species	*Eucalyptus salmonophloia* *E. loxophleba*	*Eucalyptus salmonophloia* *E. loxophleba*

Source: ELA 2023

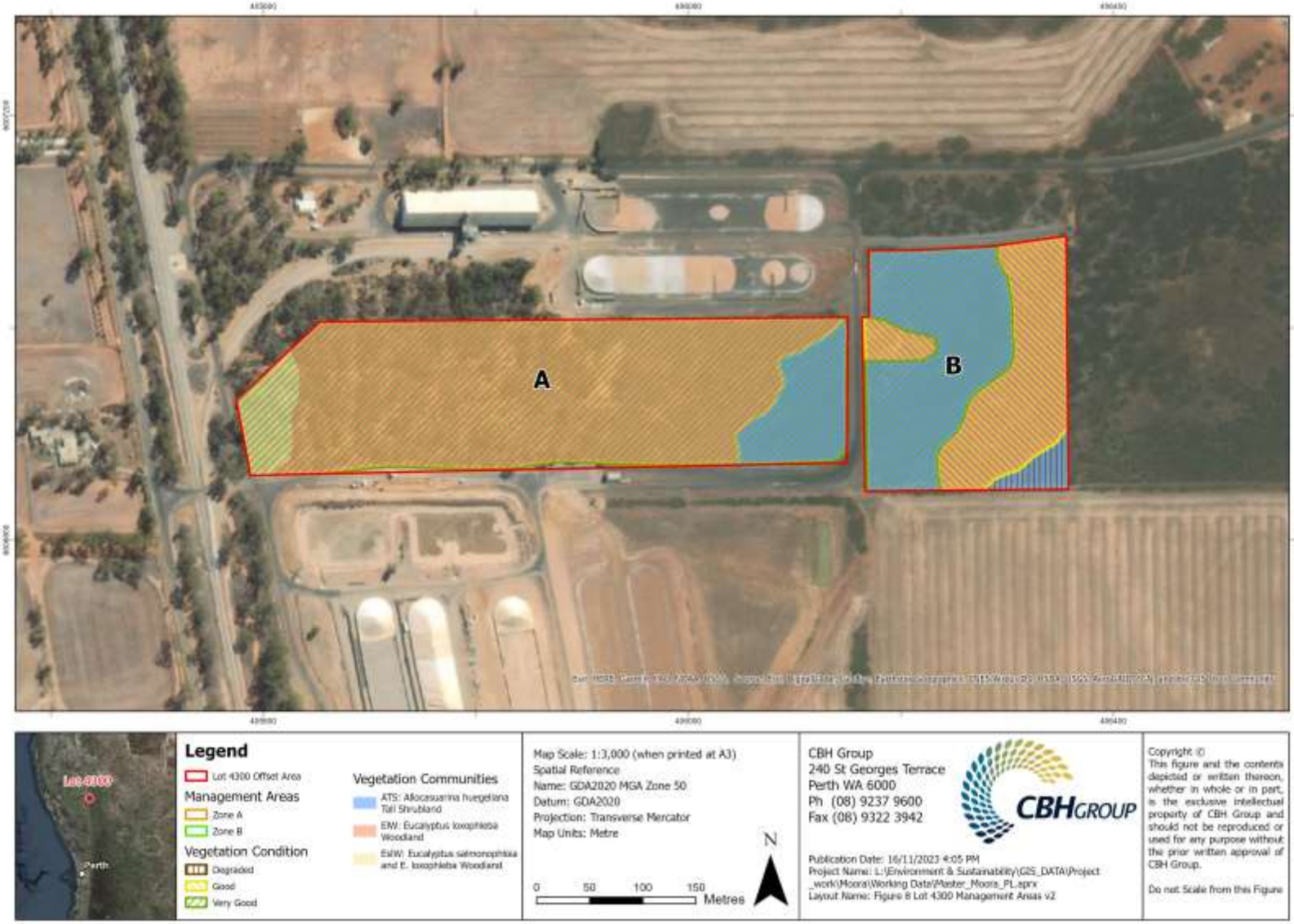

Figure 9: Lot 4300 Management Areas

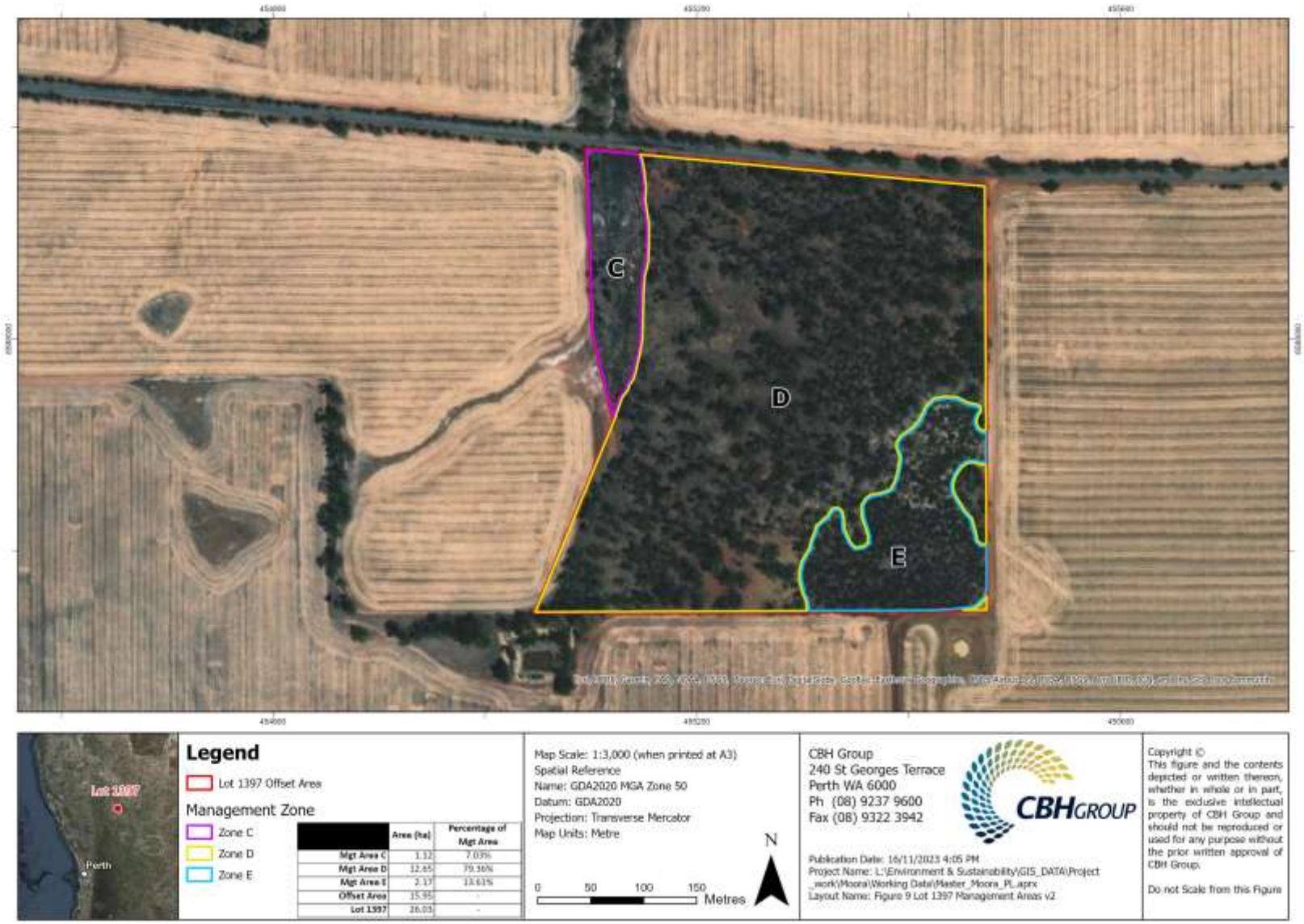

Figure 10: Lot 1397 Management Areas

8.2 Rehabilitation methodology

Revegetation works, including site preparation, will be undertaken by a suitably qualified contractor. These activities will be monitored and amended based upon feedback from qualified revegetation specialists and emerging scientific data on wheatbelt restoration activities.

8.2.1 Site preparation

Species selection and plant allocations

A preliminary list of priority species for revegetation activities at the offset sites has been developed based upon surveys conducted by ELA (2023a and 2023b) (Appendix A and Table 5). The use of these species will be dependent upon available stocks from nurseries and seed suppliers and their relevance within the offset site. The list has been informed by species identified within the Wheatbelt Woodland TEC Conservation Advice (DoE 2015) and other sources such as the *Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black- cockatoo* (DAWE 2022).

Seed sources and seedling propagation

Seedlings will be acquired from a commercial nursery, propagated from material sourced as close to the site as available at the time of order. Alternatively, if timing permits it may be possible to collect seeds from the site for future propagation.

Seeds used for seedlings and direct seeding will be of local provenance (ie within 100 km of the offset sites) where possible, however it is expected that seed sources are expected to be extremely limited and may need to be supplemented from sources further away in the Avon-Wheatbelt bioregion.

Ripping

Depending on site conditions, ripping may be initiated to support the planting program. Ripping will include single or multi-tyne approach and will be determined by specific site requirements. Where ripping is required, it will assist rehabilitation activities through providing a suitable seedbed for direct seeding, aid in rainfall infiltration, increase root area, aerate soil and remedy any soil compaction at the sites.

Weed management

Weed control works will be undertaken by a suitably qualified contractor. Prior to undertaking weed control, baseline weed mapping will be undertaken across the reference sites at each offset location to obtain a full inventory of weed species and % cover. The intent of this activity will be to establish the weed target to be met for the weed management program across the offset sites.

Initial surveys indicate there are 11 species present within Lot 1397 and 20 species present in Lot 4300.

Weed management practices will be consistent with guidance from qualified contractor and may include the following actions:

- Applying a broad spectrum herbicide to kill existing competitive plants and prevent seed set (avoiding areas of native grass)
- Follow up application of herbicides to occur (annually)
- Manual removal of key weed species

8.2.2 Rehabilitation

Seedling planting

Seedlings will be watered on the day of planting before delivery to site to reduce the potential for transplant shock. It is expected that the planting (including remedial planting) will be undertaken over the naturally wet months of the year and provided the soil is moist no other watering is considered necessary.

Seedling watering after planting is not recommended for the following reasons:

- It promotes shallow root development, which can impact long term plant survival, and
- There is no guarantee that watering will ensure long-term seedling survival.

Seedlings will be randomly planted within the designated planting areas. However, given the relatively hard nature of the land, it may be necessary to augur planting holes unless the ground is softened after rainfall.

One 10 g native fertiliser tablet (low in Phosphorus) will be buried adjacent to each native seedling, as research has shown them to improve survival and growth rates. Tablets are preferred over granules as they provide the nutrients directly to the target seedlings and are less accessible to nearby weeds.

Tree guards

Green triangular corflute tree guards will be installed with one hardwood support stake around all seedlings. This is to reduce the potential loss of seedlings from herbivory by fauna, and from unauthorised traffic (foot and vehicle) by visually delineating the extent of the revegetation area.

Weed management

Further weed management will be undertaken during the planting period to ensure that competition from weed species is minimised. Competition effects from weeds can influence survival of seedlings and their overall growth.

Hygiene control

No evidence of dieback or other pathogens was identified during surveys so no activities prior to commencement of rehabilitation is proposed. During rehabilitation activities all contractors and CBH staff will be required to adhere to hygiene measures to minimise the potential for weeds and pathogens to be introduced to the site and will include:

- Ensuring that vehicles, tools, equipment and machinery brought onto the site are free of mud and soil
- Limiting vehicle access into the site and requiring the use of existing tracks
- Seedlings and seed mix to be sourced from reputable suppliers and demonstrated to be free of pathogen risks

8.3 Monitoring

8.3.1 Reference sites

The final reference sites will be established within 12 months of the clearing permit being approved. Baseline data will be collected from each site against which the completion criteria can be developed. Baseline data collected will include species richness, species density, vegetation structure, bare ground cover, weed cover and vegetation condition. Lot 4300 will have four reference sites established and Lot 1397 will have two reference sites, providing a total of six reference sites across the different vegetation units in the two offset lots.

The indicative reference sites (Figure 11 and Figure 12) were selected with input from a botanist who had been involved in the baseline vegetation assessments of both Lot 4300 and Lot 1397. Given vegetation in Very Good (Keighery, 1994) condition exists within Lot 4300 and that vegetation within Lot 1937 meets the Excellent (Keighery, 1994) condition, botanical specialist advice has recommended reference sites be established within different vegetation communities across the Offset areas.

The reference sites will be established during baseline data collection, identified with markers and georeferenced. Regular monitoring of the reference sites will occur and be documented along with other reporting requirements.

8.3.2 Monitoring sites

Monitoring sites will be established within the areas where rehabilitation activities will occur. Within Lot 4300, two monitoring sites within vegetation units ATS and EIW and one within EslW will be established (~n=6). The monitoring sites will also be targeting areas that the baseline survey has identified as requiring improvement to achieve the Keighery (1994) scale of Excellent. It is anticipated that Lot 4300 will have at least four monitoring sites located within Zone A and two monitoring sites in Zone B. These sites will be established during initial baseline data collection, identified with markers and geo-referenced.

Monitoring sites within Lot 1397 will follow a similar approach to Lot 4300. Three monitoring sites will be established within vegetation community EslW, two in vegetation community AcTs and one in vegetation communities LSS and CEPT where possible (~n=7). Given the small area of the planted vegetation community, it may not be possible to establish two monitoring sites, but efforts will be made to monitor this community along with the *E.loxophleba* over samphire and low samphire community. Monitoring of these communities will be to focus on structural components to ensure that management actions are improving the complexity and density and continue to monitor for any ongoing changes from salinity impacts.

In addition to the vegetation monitoring sites, monitoring transects will also be established. These were selected to provide further monitoring of the areas for potential salinity impacts within the offset area. The primary salinity monitoring transects were selected to extend from the low valley point in the landscape up slope approximately 100 m to where the vegetation changes from Good to Very Good/Excellent (Figure 13).

The monitoring sites within Lot 1397 will be established as quadrats of 5 m x 5 m, while the salinity monitoring will establish a mini-quadrat of 2 m x 2 m every 20 m along the 100 m transect (salinity monitoring mini-quadrats n=15 and monitoring sites n = 8).

The monitoring activities will collect the following data:

- Site number
- Species names
- Native flora species density (plants per m^2) – noting primary canopy, secondary canopy, understorey and Carnaby's cockatoo foraging species
- Native species flora richness (per quadrat) - noting primary canopy, secondary canopy, understorey and Carnaby's cockatoo foraging species
- Native species and foliage cover (%)
- Vegetation condition under the Keighery Scale (Keighery 1994)
- Weed species and foliage cover (%)
- Number of mature trees (DBH>30 cm)
- Indicators of the presence of fauna (eg scats, burrows, tracks)
- General observations (eg pest insects, feral animal disturbance, fire occurrence)

To support the monitoring program, photo monitoring points will be established at representative locations within each monitoring site and recorded with a GPS. At each point, two photographs will be taken along each direction of a transect or one photo from a quadrat corner. All photos will be date stamped and photo number recorded with appropriate details (monitoring site number and direction of photo).

During the intensive rehabilitation phase, there will be two formal monitoring events undertaken each year during the key growth periods of spring and autumn. A brief one to two-page report will be developed by the rehabilitation specialist, giving a snapshot of the current status of the revegetation program. This brief report will provide a results summary, establish trends with respect to previous assessments (including photographs) and give recommendations for action. Seedling survival will be monitored by counting alive and dead/missing plants. Weed cover will be estimated by visual site assessment, and the presence of any particularly significant weed species noted.

The results of the monitoring and general observations will determine whether remedial action such as weed control and infill planting are required to meet the success targets identified in Table 9. Informal monitoring of the site condition will also be undertaken on an occasional basis, with any significant findings or required actions to be reported immediately.

The implementation of this OMP will be reported to the DCCEEW and DWER as part of the annual compliance reporting requirements under the conditions of approval for the Moora Rail Outloading Project (EPBC 2021/8894; CPS 9352-1). The reporting format and content will be in accordance with the requirements of the reporting conditions as identified within these approval documents.

A monitoring report will be prepared post each monitoring event that will identify the following:

- Condition of each artificial nesting hollow and any maintenance (if required)
- Any evidence of utilisation of the nesting hollow by Carnaby's cockatoos
- Any evidence of utilisation of the nesting hollow by other species
- Seedling survival
- Weed cover and declared weeds
- Identification of any change in threatening processes (ie salinity) and contingency actions that may be required
- Species richness of Wheatbelt Woodland TEC canopy and understorey species as listed in Table 8
- Other key features that may affect achieving or maintaining the offset site objectives. Where these are identified, the monitoring report will outline what corrective actions are being taken to address the situation

Table 9: Schedule of Revegetation and Monitoring Activities

Phase	Action	Performance Indicator	Responsibility	Evidence/Output	Frequency/Timing	Corrective Action
Year 1	Seed collection	Supply of seeds to meet annual revegetation rates	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries
	Weed control	Eradication of any declared weed species and reduction of number of weed species and cover	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Rubbish and litter removal	Site inspection shows all litter and rubbish removed from offset site	Revegetation specialist/contractor	Inspection report	Within 12 months of permit grant	Assign Action in SHARE to appoint contractor to remove rubbish and litter
	Offset sites are protected	Conservation covenant established with placement of a notification on title	CBH	Memorial on title/correspondence under SLC Act	within 12 months of permit grant	Investigate cause and rectify by lodging application with agency responsible for conservation covenant under SLC Act
	Planting	Seedlings planted and installation of tree guards	Revegetation specialist/contractor	Inspection report	Annual	Investigate cause and assign action in SHARE
	Installation of fencing	Site inspection shows fencing installed	Contractor	Photographic evidence/inspection report	within 12 months of permit grant	Investigate cause and assign action in SHARE

	Reference & Monitoring sites	Confirm location of all reference and monitoring sites and establish baseline data	Revegetation specialist/contractor	Monitoring report	Within 12 months of permit grant	Investigate cause and assign action in SHARE
	Installation of Artificial Nesting Boxes	Artificial nesting boxes have been installed and in functioning order	Contractor	Photographic evidence/inspection report	Within 12 months of permit grant	Investigate cause and assign action in SHARE
Year 2	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (eg weed control, pest control and infill planting)	Environmental specialist	Monitoring report	2 per year	Investigate cause and assign action in SHARE
	Seed & plant supply	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries
	Seeding & replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Investigate cause and assign action in SHARE
	Weed control	Implement weed management and control as required from monitoring report	Contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Pest control	Implement pest management and control as required from monitoring report	Contractor	Inspection report	Biennial	Investigate cause and assign action in SHARE Determine appropriate remedy (eg adjusted method, alternative pesticides, changed timing)

						Implement remedy
	Installation of signage	Site inspection shows signage installed	Contractor	Photographic evidence/inspection report	Within 2 years of permit grant	Investigate cause and assign action in SHARE
	Rubbish and litter removal	Implement rubbish and litter management and control as required from monitoring report	Contractor	Inspection report	Annual	Investigate cause and assign action in SHARE
	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (eg weed control, pest control and infill planting)	Environmental specialist	Monitoring report	2 per year	Investigate cause and assign action in SHARE
	Monitoring of Artificial Nesting Boxes	Artificial nesting boxes must be in good condition and functioning order	Contractor	Photographic evidence/inspection report	Annually before breeding season	Investigate cause and assign action in SHARE
Year 3	Seed & plant supply	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries
	Seeding & replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Identify revegetation shortfalls (via monitoring report) • Identify likely cause of failure (e.g. weeds, lack of water, inappropriate timing of revegetation, lack of nutrients, poor soil condition, lack of water, insect/fungus attack, dieback, predation by herbivores)

						• Address cause of failure (this may include mulching, soil stabilisation, pest control, tree guards) Plan infill planting/seeding to compensate for vegetation shortfalls
	Weed control	Implement weed management and control as required from monitoring report	Contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg additional round of weed control, adjusted method, alternative herbicides, changed timing) • Implement remedy
	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (eg weed control, pest control and infill planting)	Environmental specialist	Monitoring report	2 per year	Investigate cause and assign action in SHARE
	Monitoring of Artificial Nesting Boxes	Artificial nesting boxes must be in good condition and functioning order	Contractor	Photographic evidence/inspection report	Annually before breeding season	Investigate cause and assign action in SHARE
Year 4	Seed collection	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries
	Seeding & replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Identify revegetation shortfalls (via monitoring report) • Identify likely cause of failure (e.g. weeds, lack of

						water, inappropriate timing of revegetation, lack of nutrients, poor soil condition, lack of water, insect/fungus attack, dieback, predation by herbivores) • Address cause of failure (this may include mulching, soil stabilisation, pest control, tree guards) Plan infill planting/seeding to compensate for vegetation shortfalls
	Weed control	Implement weed management and control as required from monitoring report	Contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Pest control	Implement pest management and control as required from monitoring report	Contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg adjusted method, alternative pesticides, changed timing) Implement remedy

	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (eg weed control, pest control and infill planting)	Environmental specialist	Monitoring report	Annual	Investigate cause and assign action in SHARE
	Monitoring of Artificial Nesting Boxes	Artificial nesting boxes must be in good condition and functioning order	Contractor	Photographic evidence/inspection report	Annually before breeding season	Investigate cause and assign action in SHARE
Year 5 and beyond	Seed collection	Order local endemic plants on species list based on survival rates from monitoring activities	Revegetation specialist/contractor	Invoice/seed stock supplies	Annual	Source additional supply from revegetation / accredited nurseries
	Seeding & replanting	Implement infill planting as required from monitoring report	Revegetation specialist	Inspection report	Annual	Identify revegetation shortfalls (via monitoring report) • Identify likely cause of failure (e.g. weeds, lack of water, inappropriate timing of revegetation, lack of nutrients, poor soil condition, lack of water, insect/fungus attack, dieback, predation by herbivores) • Address cause of failure (this may include mulching, soil stabilisation, pest control, tree guards) Plan infill planting/seeding to compensate for vegetation shortfalls

	Weed control	Implement weed management and control as required from monitoring report	Contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg additional round of weed control, adjusted method, alternative herbicides, changed timing) Implement remedy
	Pest control	Implement pest management and control as required from monitoring report	Contractor	Inspection report	Annual	Investigate cause and assign action in SHARE Determine appropriate remedy (eg adjusted method, alternative pesticides, changed timing) Implement remedy
	Monitoring and reporting	Undertake monitoring to determine the required maintenance measures (eg weed control, pest control and infill planting)	Environmental specialist	Monitoring report	Annual	Investigate cause and assign action in SHARE
	Monitoring of Artificial Nesting Boxes	Artificial nesting boxes must be in good condition and functioning order	Contractor	Photographic evidence/inspection report	Annually before breeding season	Investigate cause and assign action in SHARE
Year 10 or two years after completion criteria being met	Monitoring and reporting	Completion survey and closure report	Environmental specialist	Monitoring report	Annual	Investigate cause and assign action in SHARE

and maintained						

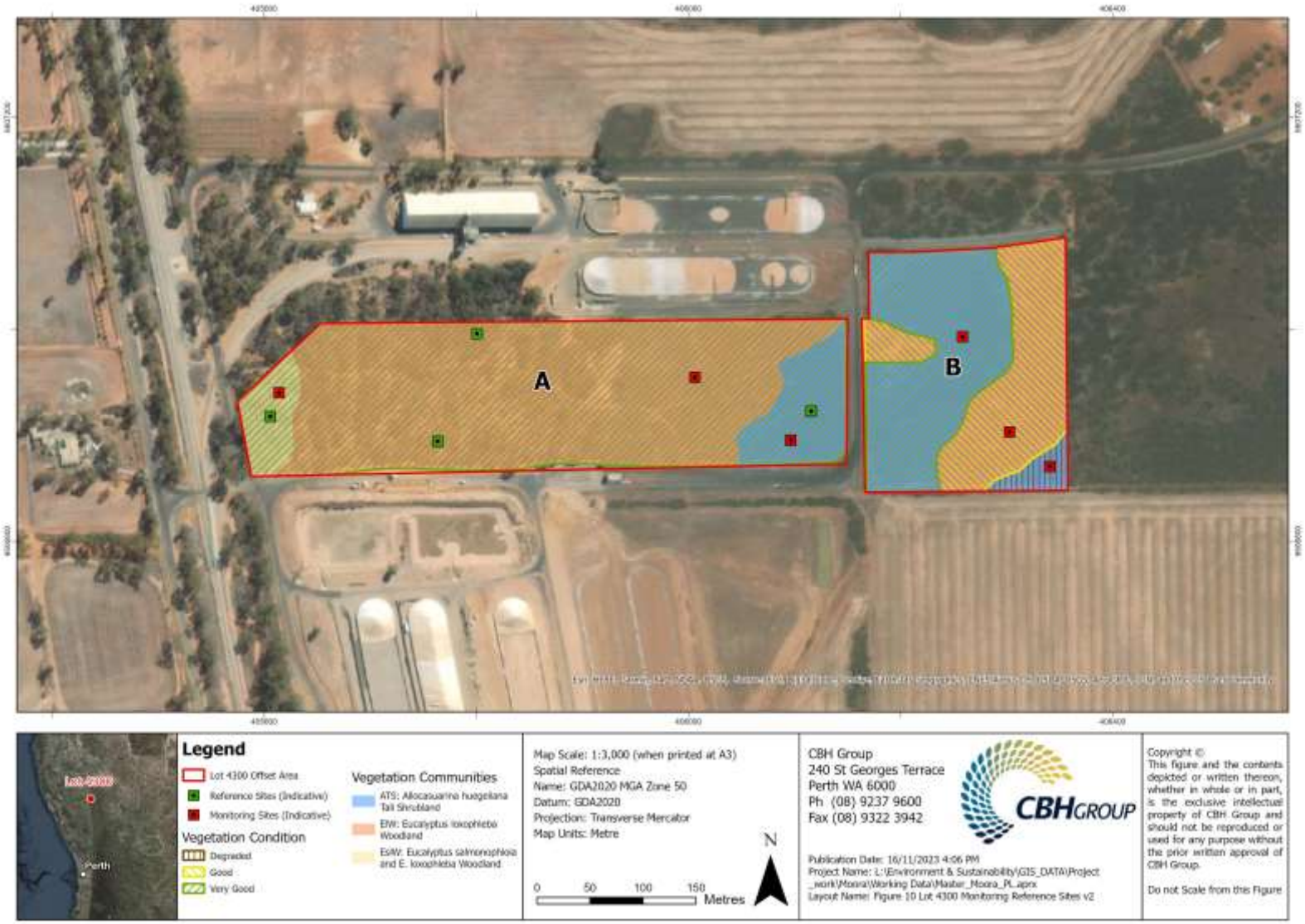

Figure 11: Lot 4300 Monitoring and Reference Sites

Figure 12: Lot 1397 Monitoring and Reference Sites

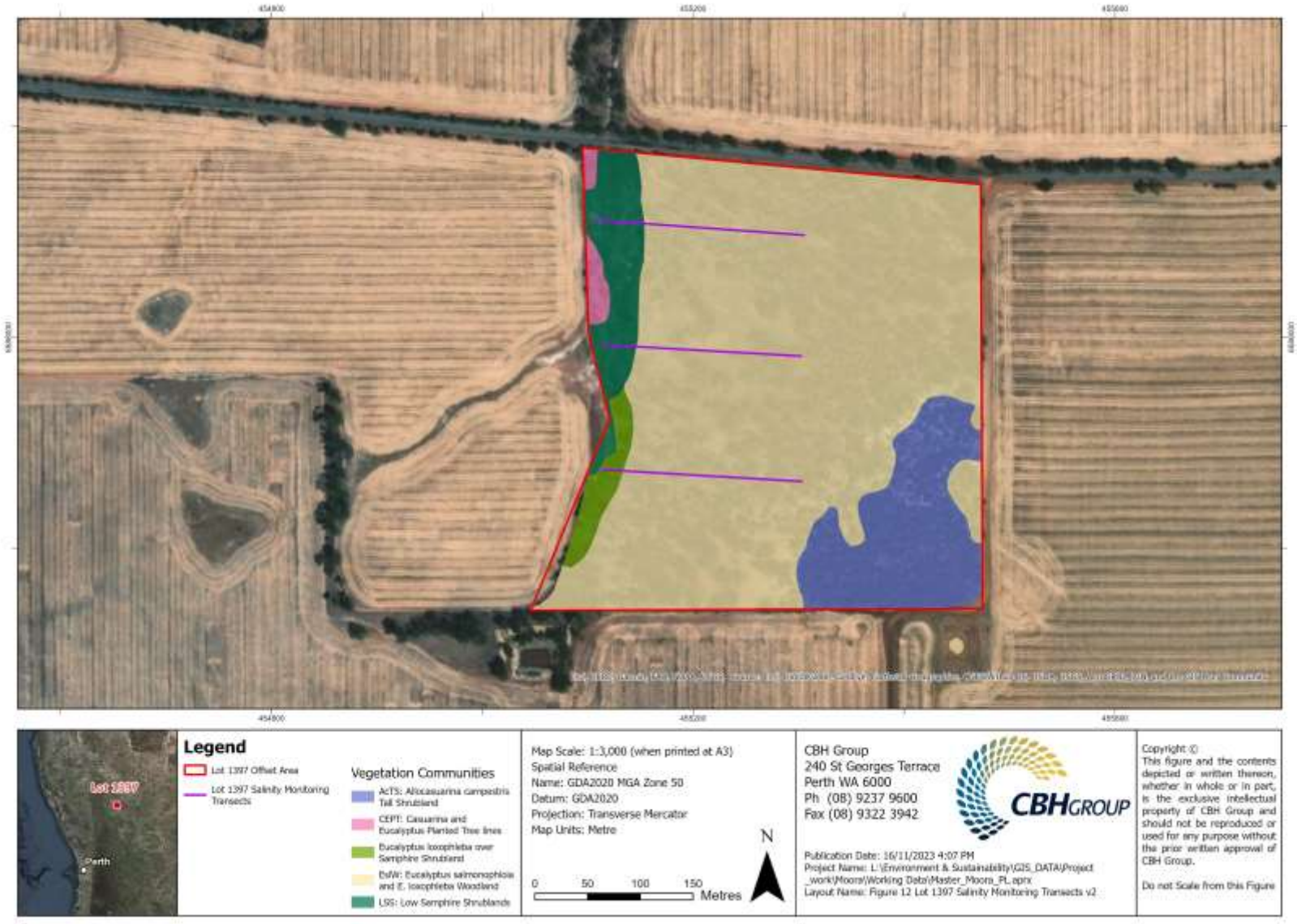

Figure 13: Lot 1397 Salinity Monitoring Transects

Appendix A: Species Lists

Lot 4300

		Cockatoo habitat (Groom 2011)			Cockatoo habitat (Groom 2011)	
Species recorded in the woodlands (ELA phase 1 survey)	Priority for reveg	Foraging	Nesting/ Roosting	Additional species from WWTEC Approved Conservation Advice Appendix 1 Table A1 suitable for use at Lot 4300	Foraging	Nesting/ Roosting
Acacia erinacea	Yes			Acacia acuaria		
Acacia leptospermoides				Acacia acuminata		
Acacia lineolata subsp. Lineolata	Yes			Acacia hemiteles		
Acacia saligna	Yes	X		Acacia lasiocarpa		
Allocasuarina huegeliana				Acacia microbotrya		
Austrostipa elegantissima				Atriplex semibaccata		
Austrostipa sp				Atriplex stipitata		
Crassula colorata				Calothamnus quadrifidus		
Dianella revoluta var. divaricata	Yes			Comesperma integerrimum		
Enchylaena tomentosa	Yes			Dampiera lavandulacea		
Eucalyptus loxophleba	Yes	X	X	Dampiera lindleyi		
Eucalyptus salmonophloia	Yes	X	X	Dodonaea pinifolia		
Grevillea biternata	Yes	*		Dodonaea viscosa		
Hakea preissii	Yes	X	X	Enchylaena lanata		
Lomandra effusa				Eucalyptus orthostemon		
Panaetia lessonii (ex Podolepis lessonii)				Gastrolobium spinosum		
Ptilotus manglesii				Hakea lissocarpha	X	
Thysanotus manglesianus				Hibbertia hypericoides		
				Melaleuca adnata		
				Melaleuca hamata		
				Melaleuca lanceolata		
				Neurachne alopecuroidea		
				Pimelea argentea		
				Pittosporum angustifolium		
				Rhagodia preissii		
				Scaevola spinescens		
				Templetonia sulcata		

* Not in Groom 2011 but as a Proteaceous species this grevillea (along with other grevilleas, hakeas, banksias etc) is expected to provide foraging value (the Groom list is not taken to be comprehensive)

Lot 1397

Species recorded in the woodlands (ELA phase 1 survey)	Priority for reveg		Additional species from WWTEC Approved Conservation Advice Appendix 1 Table A1 suitable for use at Lot 1397
Acacia acuaria	Yes		Acacia acuminata
Acacia erinacea	Yes		Acacia lasiocarpa
Acacia hemiteles	Yes		Acacia leptospermoides
Acacia microbotrya			Atriplex stipitata
Aristida holathera			Casuarina obesa
Atriplex codonocarpa	Yes		Comesperma integerrimum
Atriplex semibaccata	Yes		Dampiera lavandulacea
Austrostipa elegantissima			Dampiera lindleyi
Austrostipa variabilis			Daviesia nematophylla
Crassula colorata			Dodonaea pinifolia
Daucus glochidiatus			Dodonaea viscosa
Dianella revoluta	Yes		Enchylaena lanata
Enchylaena tomentosa	Yes		Eremophila decipiens
Eucalyptus loxophleba	Yes		Eremophila oppositifolia
Eucalyptus salmonophloia	Yes		Eucalyptus sargentii
Lomandra effusa	Yes		Gastrolobium spinosum
Neurachne alopecuroidea	Yes		Hakea lissocarpha
Ptilotus divaricatus	Yes		Hakea preissii
Rhagodia drummondii	Yes		Hibbertia hypericoides
Rytidosperma sp.			Leptospermum erubescens
Scaevola spinescens	Yes		Maireana marginata
Sclerolaena diacantha			Maireana trichoptera
Stylobasium australe	Yes		Melaleuca acuminata
Templetonia sulcata	Yes		Melaleuca adnata
Thysanotus sp.			Melaleuca halmaturorum
Wilsonia humilis	Yes		Melaleuca hamata
			Melaleuca hamulosa
			Melaleuca lanceolata
			Melaleuca lateriflora
			Melaleuca scalena
			Melaleuca strobophylla
			Melaleuca thyoides
			Melaleuca viminea
			Pimelea argentea
			Pittosporum angustifolium
			Rhagodia preissii
			Westringia cephalantha