



NORTHERN STAR

R E S O U R C E S L T D

CAROSUE DAM TSF CELL 4 EXEMPT EAST LOCATION 55 (EEL55) OFFSET MANAGEMENT PLAN

EPBC 2021/9026

20 January 2025

Version No. 5.1

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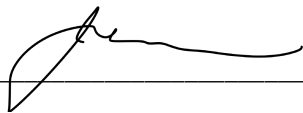
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5.0	19 December 2024	Revision to management actions in line with consultation with DBCA and National Malleefowl Recovery Team	KM	CB	John Albrecht
5.1	20 January 2025	Minor update to Section 6.2 and 6.4 to clarify interim questions from DCCEEW	KM	KT, CB	John Albrecht

Declaration of Accuracy

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the Environment Protection and Biodiversity Conservation Regulations 2000 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both.

I am authorised to bind the approval holder to this declaration, and I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed: 

Full Name: John Albrecht

Position: Site Senior Executive

Organisation: Northern Star (Carosue Dam) Pty Ltd

Date: 20 January 2025

Executive Summary

Northern Star (Carosue Dam) Pty Ltd has approval to develop a new cell (Cell 4) at its Tailings Storage Facility (TSF) at Carosue Dam Operations. Approval to construct Cell 4 was granted under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 22 November 2022 (EPBC 2021/9026).

Construction of Cell 4 was predicted to impact 152.6 ha of Malleefowl (*Leipoa ocellata*) habitat and Condition 2 of EPBC 2021/9026 requires the approval holder to control and legally secure the EEL55 offset to compensate for significant residual impacts to Malleefowl. Land parcel "EEL55", located approximately 140 km south-west of Cell 4, is an 800 ha parcel of freehold land owned by Northern Star and known to contain Malleefowl habitat.

This Offset Management Plan (OMP) has been prepared to meet the requirements of Condition 3 of EPBC 2021/9026, which states:

*'To compensate for significant residual **impacts to Malleefowl** the approval holder must submit, within 6 months of **commencement of action**, an Offset Management Plan to the **Department** for the **Minister's** approval. The Offset Management Plan must, to the satisfaction of the **Minister**, meet the requirements specified in Attachment D. The approval holder must implement the approved Offset Management Plan for the life of the approval.'*

This Offset Management Plan (OMP) has been prepared to meet the requirements of Condition 3 of EPBC 2021/9026. The objectives of this OMP are to:

- Protect Malleefowl habitat in EEL55 from future development by securing the site for long term conservation management.
- Improve Malleefowl habitat quality within the site through implementation of management measures.

The management approach outlined in this OMP has incorporated recovery actions identified in the National Malleefowl Recovery Plan (DCCEEW 2024). The primary strategies to achieve these objectives are:

- Securing a conservation covenant over EEL55
- Environmental management to improve Malleefowl habitat quality at the site, including:
 - Exclusion of grazing
 - Feral predator control
 - Bushfire prevention
 - Weed control

Monitoring will be undertaken to assess performance of these measures and an adaptive management approach will be used to implement contingency actions until completion criteria are achieved. The implementation of these measures will establish the offset site as a conservation area with high quality Malleefowl habitat.

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1 Introduction

1.1 Background

Northern Star (Carosue Dam) Pty Ltd has approval to develop a new cell (Cell 4) at its Tailings Storage Facility (TSF) at Carosue Dam Operations. Approval to construct Cell 4 was granted under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 22 November 2022 (EPBC 2021/9026).

Construction of Cell 4 was predicted to impact 152.6 ha of Malleefowl (*Leipoa ocellata*) habitat and Condition 2 of EPBC 2021/9026 requires Northern Star to control and legally secure the EEL55 offset to compensate for significant residual impacts to Malleefowl. Land parcel "EEL55", located approximately 140 km south-west of Carosue Dam Operations, is an 800 ha parcel of Freehold land owned by Northern Star and known to contain Malleefowl habitat.

Condition 3 of EPBC 2021/9026 requires the approval holder to submit an Offset Management Plan (OMP) to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for the Minister's approval. Condition 3 states:

*'To compensate for significant residual **impacts to Malleefowl** the approval holder must submit, within 6 months of **commencement of action**, an Offset Management Plan to the **Department** for the **Minister's** approval. The Offset Management Plan must, to the satisfaction of the **Minister**, meet the requirements specified in Attachment D. The approval holder must implement the approved Offset Management Plan for the life of the approval.'*

1.2 Purpose and Scope

This Offset Management Plan (OMP) has been prepared to meet the requirements of Northern Star's Offset Proposal and provides the details on land management actions, completion criteria, monitoring and reporting.

The purpose of this Offset Management Plan is to:

- Provide a framework for the implementation, monitoring and management actions required, to ensure the offset site is secure and protected from potential impacts associated with mining, agriculture, predation and other environmental risks that have the potential to degrade the environmental values at the site.
- Provide and maintain protection of 800 ha of land including 755.2 ha of Malleefowl habitat to improve conservation outcomes for Malleefowl within EEL55.

This OMP has been prepared to meet the requirements of Condition 3 of EPBC 2021/9026. A summary of relevant sections in the OMP is provided in Table 1: EPBC 2021/9026 Offset Management Plan requirements

The OMP was prepared in accordance with the Environmental Management Plan Guidelines (Commonwealth of Australia, 2014) by suitably qualified environmental experts: Kiera Mews (Principal Environmental Advisor), Karina Tedesco (Environment Manager) and Cliff Bennison (Principal Environmental Advisor). These personnel have over 50 years' combined experience in environmental management.

1.3 Objective

The objectives of the OMP are to:

- Protect the offset site from future development by securing the site for long term conservation management.
- Improve Malleefowl habitat quality within the site through implementation of management measures.

Table 1: EPBC 2021/9026 Offset Management Plan requirements

Item	EPBC 2021/9026 Offset Management Plan requirements	Section	Page No.	Commitment
	EPBC Approval Condition			
2	To compensate for residual significant impacts to Malleefowl, the approval holder must:	Sections 6.1, 7.0 & 8.4	40, 48, 50	
	a. control the EEL55 offset site within 6 months of the date of this approval decision,			Northern Star have control of the EEL55 offset site.
	b. legally secure the EEL55 offset site within 6 months of the date of Offset Management Plan being accepted by the Department,			Northern Star commit to legally securing the EEL55 offset site within 6 months of the date of OMP acceptance by the Department.
	c. within 10 business days of legally securing the EEL55 offset site, provide the Department with:			Northern Star will provide written evidence to the Department, including shapefiles and offset attributes, demonstrating that the EEL55 offset site has been legally secured, within 10 business days of securing offset site.
	i. written evidence demonstrating that the EEL55 offset site has been			
	ii. legally secured, and			
	iii. shapefiles and offset attributes of the EEL55 offset site,			
	d. once the EEL55 offset site has been legally secured, report annually on the presence of Malleefowl at the EEL55 offset site for the life of the approval, and	Northern Star will report annually on the presence of Malleefowl at EEL55 for the life of the approval.		
	e. provide the Department with evidence demonstrating the presence of Malleefowl at the EEL55 offset site within 5 years of this approval.	Northern Star will provide the Department evidence of Malleefowl at the EEL55 offset site within 5 years of this approval.		
3	To compensate for significant residual impacts to Malleefowl the approval holder must submit, within 6 months of commencement of the Action, an Offset Management Plan to the Department for the Minister's approval. The Offset Management Plan must, to the satisfaction of the Minister, meet the requirements specified in Attachment D [see below]. The approval holder must implement the approved Offset Management Plan for the life of the approval.	Section 6	36	Northern Star commit to submit an Offset Management Plan to the Department for approval. The approved Offset Management Plan will be implemented for the life of the approval.
6	If the approval holder is unable to demonstrate the presence of Malleefowl at the EEL55 offset site within 7 years of this approval, the approval holder must:	Section 7 & Section 8 .3	48-50	Northern Star commit to finding and legally securing an alternative suitable offset site if unable to demonstrate the presence of

Item	EPBC 2021/9026 Offset Management Plan requirements	Section	Page No.	Commitment
	<ul style="list-style-type: none"> a. submit an alternative offset site proposal, which meets the requirements of the Environmental Offsets Policy, to the Department, b. submit an Offset Management Plan for the alternative offset site in accordance with the requirement specified in Attachment D. c. not recommence undertaking the Action unless the Offset Management Plan for the alternative offset site is approved in writing by the Minister, d. legally secure the alternative offset site, and e. within 6 months of the Offset Management Plan for the alternative offset site being approved by the Minister, provide the Department with: <ul style="list-style-type: none"> i. written evidence to the demonstrating that the alternative offset site has been legally secured, and ii. shapefiles and offset attributes of the alternative offset site. 			<p>Malleefowl at EEL55 within 7 years of this approval.</p> <p>If required, an alternative Offset Site Proposal and associated Offset Management Plan will be submitted to the Department for approval in accordance with Condition 6a-b.</p> <p>The action will not be recommenced until the alternative offset site is approved by the Minister in accordance with Condition 6c.</p>
	<p>Note: The approval holder should commence seeking an alternative offset site if the presence of Malleefowl at the EEL55 offset site has not been demonstrated 5 years after this approval decision and initiate discussions with the Department about what measures it should take to avoid any interruption to implementation of the approved Action. The alternative offset site proposal and Offset Management Plan for the alternative offset site may be submitted to the Department well before 7 years after this approval decision.</p>			
7 - 8	<p>Revised Action Management Plans</p> <p>7. If the approval holder wishes to carry out any activity otherwise than in accordance with the Action management plans referred to in these conditions, the approval holder must submit to the Department for the Minister's written approval a revised version of that plan. The approval holder must not commence the varied activity until the Minister has approved the revised plan in writing.</p>	Section 8.2 & 8.3	49-50	<p>Northern Star will submit a revised Management Plan (this document) to the Department for approval where activities within the plan have changed. Northern Star will not commence the varied activity until the revised plan has been approved in accordance with Condition 7.</p>

Item	EPBC 2021/9026 Offset Management Plan requirements	Section	Page No.	Commitment
	<p>If the Minister approves such a revised plan, that version of the plan must be implemented in place of the version previously approved.</p> <p>8. If the Minister believes that it is necessary or convenient for the better protection of Malleefowl to do so, the Minister may request that the approval holder make specified revisions to a plan referred to in these conditions and submit the revised plan for the Minister's written approval. The approval holder must comply with any such request.</p>			<p>Northern Star will submit a revised plan if requested by the Minister in accordance with Condition 8.</p>
9-13	<p>Submission and Publication of Plans</p> <p>9. The approval holder must submit all plans required by these conditions electronically to the Department.</p> <p>10. Unless otherwise agreed to in writing by the Minister, the approval holder must publish each plan on the website within 15 business days of the date:</p> <ol style="list-style-type: none"> a. of this approval, if the version of the plan to be implemented is specified in these conditions; or b. the plan is approved by the Minister in writing, if the plan requires the approval of the Minister; or c. the plan is submitted to the Department in accordance with a requirement of these conditions, if the plan does not require the approval of the Minister <p>11. The approval holder must keep all published plans required by these conditions on the website until the expiry date of this approval.</p> <p>12. The approval holder is required to exclude or redact sensitive ecological data from plans published on the website or otherwise provided to a member of the public.</p> <p>13. If sensitive ecological data is excluded or redacted from a plan in accordance with condition 12, the approval holder must notify the Department in writing what exclusions and redactions have been made in the version published on the website.</p>	Section 8.5	50-51	<p>Northern Star commit to the submission and publication of all plans required by these conditions in accordance with Conditions 9-13.</p>

Item	EPBC 2021/9026 Offset Management Plan requirements	Section	Page No.	Commitment
Information Requested in EPBC 2021/9026 Attachment D				
a)	be prepared in accordance with the Environmental Management Plan Guidelines	Section 1.0	1	
b)	be prepared by a suitably qualified expert	Section 1.1	1	
c)	include a summary of the residual impacts to Malleefowl that the Offset Management Plan proposes to compensate for, including: i. the size of the area, in hectares, ii. the habitat quality of the area, and iii. the total number of suitable nest mounds identified during any pre-clearance survey	Section 3.0	9	
d)	reference the EPBC Act approval conditions to which the Offset Management Plan refers	Section 1.1 Table 1: EPBC 2021/9026 Offset Management Plan requirements	1, 2	
e)	include maps, prepared in accordance with the Maps Guide, of the proposed offset site(s)	Section 4.3, 4.6, 6.2 & 6.4	15, 16, 21, 42, 45	
f)	include details of the offset site(s), including: i. the size of the area, in hectares, ii. site survey results, iii. the habitat quality of the site(s), and, iv. the environmental values of the site(s), including the total number of nesting mounds within the site(s)	Section 4.0	12	
g)	detail measurable ecological outcomes and include commitments to achieve those outcomes	Section 6.0	38	
h)	detail management actions, and the timing of those actions, that will be implemented to achieve the ecological outcomes	Section 6.0	38	

Item	EPBC 2021/9026 Offset Management Plan requirements	Section	Page No.	Commitment
i)	include a program to monitor the implementation of the plan, including the progress of the plan towards achieving ecological outcomes	Section 6.0, Section 7.0	38, 47	
j)	detail a schedule to review and report on the implementation of the plan, including a progress assessment towards the attainment of ecological outcomes	Section 8.0	48	
k)	include a risk assessment which evaluates the risk of the plan not achieving the ecological outcomes	Section 5.0 Table 12	30-35	
l)	propose corrective actions, with measurable performance indicators and trigger values to ensure that ecological outcomes are attained and maintained once attained.	Section 5.0 Table 12	30-35	

2 Project Description

Expansion of the TSF was required to ensure continued operation of the Carosue Dam Project, located approximately 120km north-east of Kalgoorlie in the Pinjin region of the Eastern Goldfields. To continue processing operations into the future, Northern Star has developed a 10 year TSF permitting design, which includes the construction of an additional cell adjacent to the existing TSF.

The project occurs on existing mining tenure (M28/269 & M31/295) and involved 217.3 ha of vegetation clearing within a 229.1 ha development envelope, of which 52.5ha is considered suitable (used for foraging and cover) and 100.1 ha critical (used for breeding and foraging) Malleefowl habitat. Within the development envelope, 11.8 ha has been previously cleared.

Table 2 provides a summary of the indicative implementation schedule for construction, operation, and decommissioning/rehabilitation of the TSF.

Table 2: Implementation schedule for the TSF

Phase	Activity Description	Start Date	Completion Date	Duration
Construction	Clearing of impact area	November 2022	December 2022	1 month
	Construction of embankments	November 2022	July 2023	8 months
	Compaction & construction of roads	November 2022	July 2023	9 months
	Redirection of surface water flows through construction of drainage channels	November 2022	September 2023	11 months
Operations	Commence deposition of tailings into Cell 4	October 2024	October 2031	7 years
	Maintenance of infrastructure	October 2024	October 2031	7 years
	Twice daily inspections of pipelines during operation	October 2024	October 2031	7 years
	Road maintenance including dust suppression and surface grading	August 2022	January 2031	9 years
Decommissioning & Rehabilitation	Cease deposition and allow consolidation and drying of tailings material	January 2031	July 2031	6 months
	Reshape and batter slopes to <18°;	August 2031	January 2032	6 months
	Cap top surface with competent rock;	January 2032	March 2032	3 months
	Respread topsoil;	March 2032	April 2032	2 months
	Rip on the contour	April 2032	April 2032	1 month
	Seed with local native species	April 2032	April 2032	1 month
	Rehabilitation monitoring	September 2032	September 2042	10 years

3 Impacts of Controlled Action

The controlling provisions for EPBC 2021/9026 comprise Listed threatened species and ecological communities (section 18 and 18A of the EPBC Act). Specifically, the project has potential to result in significant residual impacts to Malleefowl (*Leipoa ocellata*), which is listed as Vulnerable under the EPBC Act.

Significant residual impacts to Malleefowl include:

- clearing up to 152.6 ha of suitable Malleefowl habitat, comprising 100.1 ha of critical habitat suitable for breeding and foraging, and 52.5 ha of supporting habitat suitable for foraging and shelter.
- Removal of up to seven inactive nest mounds, including four recently inactive mounds and three abandoned mounds.

3.1 Habitat Quality

In accordance with the EPBC offsets assessment guide (How to use the Offsets assessment guide) three components, i) site condition, ii) site context and iii) stocking rate, were rated to provide an assessment of habitat within the disturbance envelope (Table 3).

The basis for habitat assessment was a targeted Malleefowl survey conducted by Alexander Holm & Associates in 2021 (Alex Holm and Associates, 2022a), and vegetation surveys conducted over the impact area and surrounds reported in Alexander Holm & Associates (2012, 2019). These surveys provide spatially-described information within land units each occupying a similar topographic position with similar vegetation and soil type.

Within the 229.1 ha disturbance envelope, 11.8 ha has been previously cleared for a haul road, minor access roads and boundary fencing, leaving 217.3 ha of habitat for assessment. Of this, alluvial plains with chenopods (land unit 5a) occupy 29%; acacia shrubland (land unit 4a) 26%; spinifex sandplain (land unit 4d) 21%; basalt foot slopes (land unit 2b) 20%; sandy rises with spinifex (land unit 1d) 3% and laterite rises (land unit 2a) 1%.

When indices for habitat condition, context and Malleefowl stocking rate are combined, sandy rises with spinifex (land unit 1d) score the highest for Malleefowl habitat followed by acacia shrublands (land unit 4a), spinifex sandplain (land unit 4d), and basalt footslopes (land unit 2b) which all rate highly. Alluvial plains (land unit 5a) and lateritic rises (land unit 2a) are of limited value.

After combining area-adjusted ratings for each land unit and expressing this as a ratio of the maximum possible score of 10, the total habitat score for the disturbance envelope is 5.41. The habitat quality assessment for the disturbance envelope is summarised in Table 3.

3.2 Malleefowl Mounds

The action will result in removal of seven inactive mounds. Most of these are located within the 100.1 ha of acacia shrublands and basalt footslopes, which are critical habitat suitable for breeding and foraging by Malleefowl. While two nesting mounds were found in spinifex sandplain and sandy rises with spinifex, these mounds were restricted to small, favoured locations without spinifex, where acacias occur and are not prone to fire.

Elsewhere, there were no nesting mounds where spinifex is the dominant ground cover and fire is common. Consequently, these spinifex-dominated systems covering 52.5 ha are considered primarily habitat for foraging and cover.

Alluvial plains and lateritic rises, covering 64.8 ha which make up the balance of the disturbance envelope, are of limited value as Malleefowl habitat (Alexander Holm & Associates 2022a).

Table 3: Habitat assessment of impact site

Assessment component	Factors	Proportional score (out of 10)	Summary
Site condition	Vegetation condition Site attributes	1.67	Disturbed by recent mining and historic pastoral grazing. Roads, vehicle tracks fragment the area. Spinifex sandplain and sandy rises with spinifex are mostly in excellent condition and the remainder mostly in fair condition. Litter abundance is optimal in acacia- dominated units and minimal elsewhere. Sandy loam soils suitable for mound construction are prevalent in all land units except alluvial plains. No evidence of predators noted.
Site context	Movement patterns of the species Proximity of the site in relation to other suitable areas of habitat	2.05	Connectivity with surrounding landscapes is compromised by mining infrastructure and pastoral fencing. Site is part of a regionally significant contiguous suitable habitat; records on site for Malleefowl within last 6-10 years; site is within known distribution of species.
Malleefowl stocking rate	Occurrence of nesting mounds.	1.69	No active Malleefowl nesting mounds. Previously active mounds found within acacia shrublands, basalt footslopes, and in localised sites within spinifex units. Lateritic rises unsuitable
Overall site rating		5.41	



Figure 1: Malleefowl habitat at impact site

4 Offset Site Values

4.1 Property Details and Land Use

Land parcel "EEL55" has been identified as a suitable offset and is located approximately 140 km south-west of the Project in the City of Kalgoorlie-Boulder (Figure 2). The site is 800 ha of Freehold land owned by Northern Star and holds a special land category 'Exempt East Location' (EEL) allowing mining and/or exploration activities to occur on the land under agreement, exempt from the provisions of the *Mining Act 1978* and *Mining Regulations 1981*.

EEL55 is surrounded by mining and exploration tenure, and pastoral leases (Figure 3). A pastoral licence agreement was formerly in place over EEL55, allowing for pastoral grazing activities to occur within the site. On approval of the Offset Management Plan in March 2024, the agreement was then revised to exclude EEL55 from the broader pastoral area, and there are no longer any pastoral activities permitted within EEL55. Prior to this there had been no formal protection and/or management over EEL55 for the purposes of conservation, to prevent pastoral, mining and/or exploration activities.

EEL55 is located within a continuous patch of vegetation and abuts the Department Biodiversity, Conservation and Attractions (DBCA) managed Yallari Timber Reserve, providing a connection to regional Malleefowl habitat. Scahill Timber Reserve is approximately 8 km southwest from EEL55 as shown in Figure 3.

4.2 Climate

The Goldfields region is arid to semi-arid with average annual rainfall decreasing from about 250 mm in the south-west to 200 mm in the north-east. The area experiences hot summers and mild winters with cold nights. Rainfall varies widely between years and droughts are common. Remnants of tropical cyclones occasionally bring heavy summer rain and can cause flooding to the area. The area transitions between desert summer and winter dominated rainfall and desert: non-seasonal bioclimatic (Alex Holm and Associates 2022b).

Malleefowl have been recorded within EEL55 and surrounding areas, suggesting the climate supports Malleefowl occurrence.

4.3 Bioregional Context

The proposed offset site is located within the Murchison bioregion at the western edge of the Eastern Goldfields subregion (Phoenix Environmental Services 2022).

The Eastern Goldfields subregion is characterised by:

- subdued relief comprised of undulating plains interrupted by low hills and ridges in the west and a horst in the east
- playa lakes associated with the remnants of an ancient major drainage line
- calcareous earths that cover much of the plains and greenstone areas
- vegetation dominated by Mallees, Acacia thickets, shrubland heaths, Eucalyptus woodlands and dwarf samphire shrublands
- land use dominated by Unallocated Crown Land, Crown Reserves and grazing.

The proposed offset site is located within a continuous patch of vegetation and abuts the DBCA managed Yallari Timber Reserve.

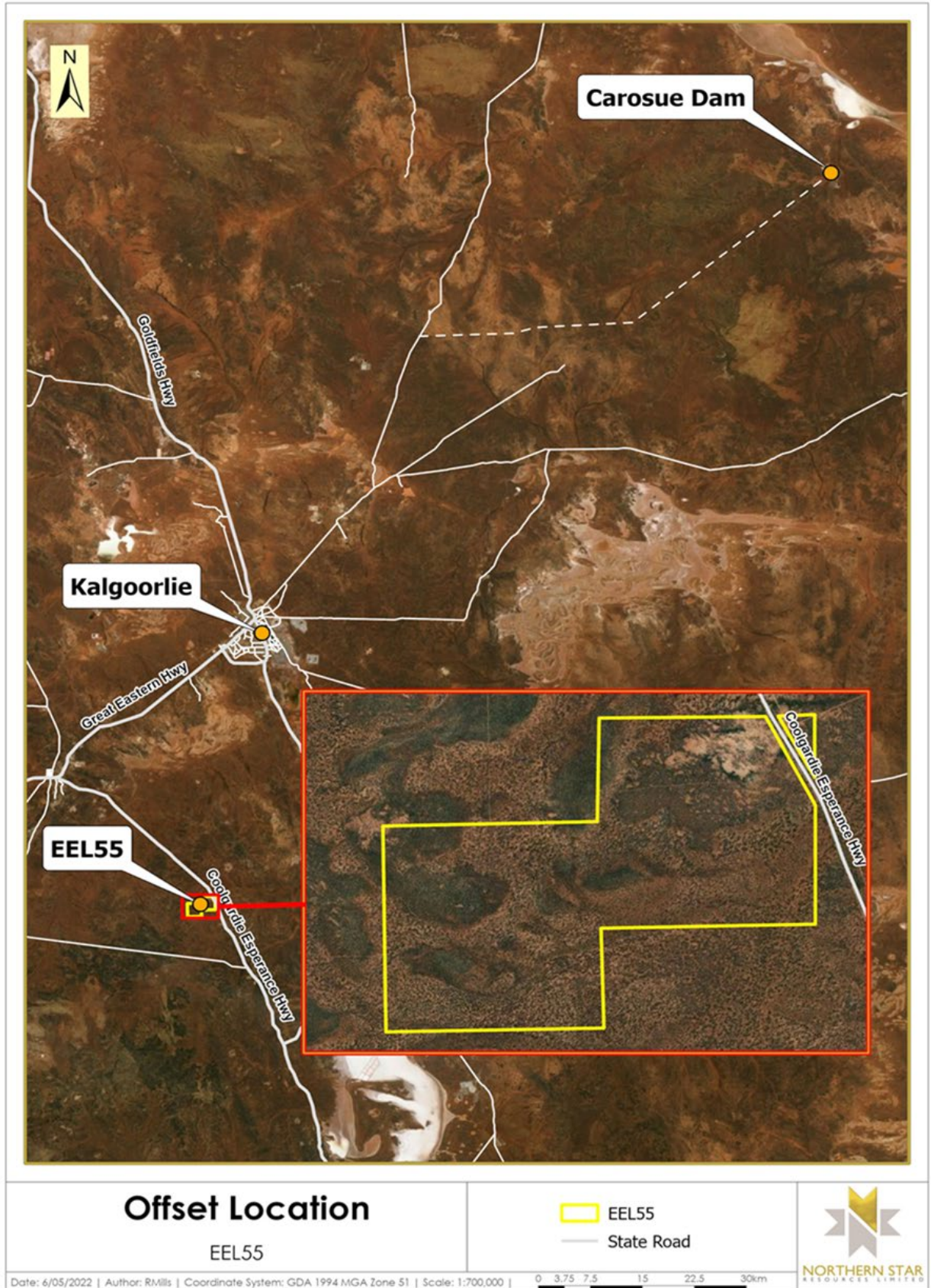


Figure 2: Exempt East Location 55

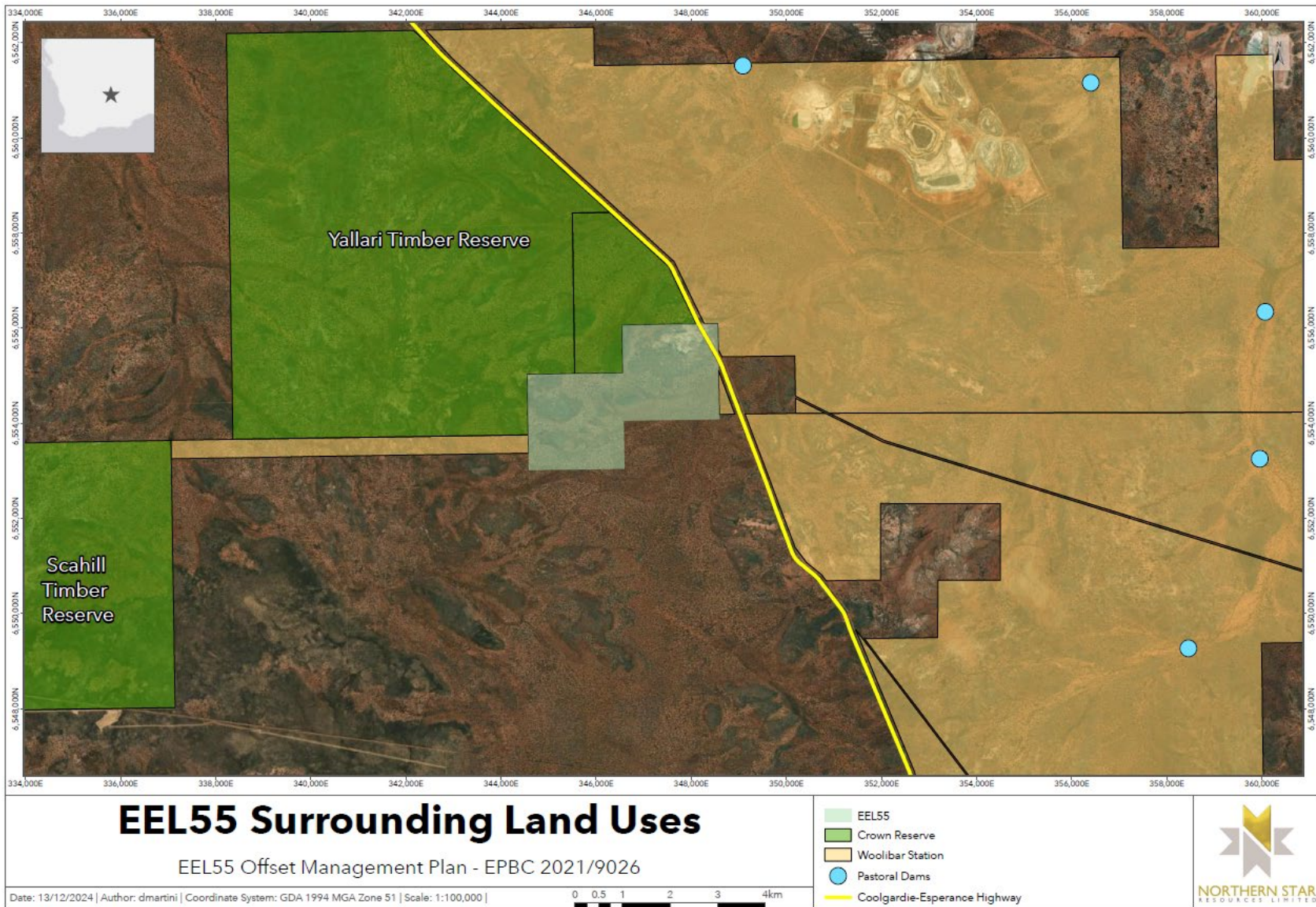


Figure 3: Surrounding Land Use to Offset Site

4.4 Land Systems and Surface Geology

The Department of Primary Industries and Regional Development (DPIRD) undertakes land system mapping for Western Australia using a nesting soil-landscape mapping hierarchy. While the primary purpose of the mapping is to inform pastoral and agricultural land capability, it is also useful for informing biological assessments. Under this hierarchy, land systems are defined as areas with recurring patterns of landforms, soils, vegetation and drainage. EEL55 intersects two land systems, of which Mx41 is the most extensive and colluvium 38491 and Depot Granodiorite H dominated surface geology (Phoenix Environmental Services 2022).

Land Systems and Surface Geology within the EEL55 include:

Land systems

- Mx41: Flat to undulating pediments marginal to unit AC1; granitic rock outcrop; some low escarpments
- Mx42: Broad flat to undulating valleys with isolated granitic, and

Surface geology:

- colluvium 38491: Colluvium, sheetwash, talus; gravel piedmonts and aprons over and around bedrock; clay-silt-sand with sheet and nodular kankar; alluvial and aeolian sand-silt-gravel in depressions and broad valleys in Canning Basin; local calcrete, reworked laterite
- Depot Granodiorite H: Hornblende granodiorite and tonalite with scattered microcline phenocrysts; mafic granite

4.5 Habitat Assessment

Phoenix Environmental Services (2022) completed a fauna habitat assessment across EEL55 to determine the quality of Malleefowl habitat within EEL55. Habitat type Eucalyptus woodland (405.5 ha, 50.7%) dominated the site followed by Acacia shrubland (309 ha, 38.6%), then Melaleuca shrubland (40.7 ha, 0.3%). A total of 1 ha was cleared land and 44.4 ha (5.5%) was attributed to a granite extrusion. Habitat structure was considered suitable across the site, with Acacia shrubland and Melaleuca shrubland providing highest suitability for Malleefowl (Phoenix Environmental Services, 2022 and Alexander Holm & Associates, 2022b).



EEL55 and the surrounding Yallari Timber Reserve are important to the regional Malleefowl population. Following an initial survey by Phoenix Environmental Services (2022), EEL55 was considered likely to contain Malleefowl populations based on the presence of suitable habitat and historic records within and/or immediately adjacent to the sites. As a result, an additional targeted survey was conducted over EEL55 by Alexander Holm and Associates (2022b), during which both active and inactive Malleefowl mounds and evidence of recent Malleefowl activity were identified, demonstrating the suitability of EEL55 as an offset site.



Based on these surveys, the resulting assessment of habitat quality for Malleefowl within EEL55 is detailed in Table 4. Malleefowl habitat suitability has been mapped in Figure 4.

4.6 Vegetation Condition

Vegetation condition for EEL55 was considered pristine, showing no signs of anthropogenic disturbance or damage. There was observed old drums and PVC piping left on the site from historical unauthorised access, however, was not seen to be impacting vegetation (Phoenix Environmental Services 2022).

Table 4: Habitat Summary within EEL55

Habitat type	Description	Extent in EEL55 (ha and %)	Contains suitable Malleefowl habitat	Representative photograph
Eucalyptus woodland	Tall, open <i>Eucalyptus</i> woodland tall, isolated <i>Acacia</i> shrubs over variably present shrubs of <i>Eremophila</i> , <i>Melaleuca</i> , <i>Senna</i> , <i>Maireana sedifolia</i> and <i>Phebalium</i> sp.. Contains suitable Malleefowl habitat.	405.5 (50.7)	Yes	
Acacia shrubland	Tall <i>Acacia</i> shrubland over variable mid open shrubland of <i>Dodonaea</i> sp., <i>Phebalium</i> and <i>Sclerolaena</i> sp., over low <i>Rhagodia</i> , <i>Senna</i> , and <i>Maireana</i> shrubs. Contains suitable Malleefowl habitat.	309.0 (38.6)	Yes	

Habitat type	Description	Extent in EEL55 (ha and %)	Contains suitable Malleefowl habitat	Representative photograph
Granite extrusion forbland	<p>Large open granite extrusion with isolated <i>Acacia</i> and <i>Hakea</i> shrubs over forbland of <i>Helipterum roseum</i>, <i>Maireana</i> and <i>Sclerolaena</i> sp..</p> <p>Does not contain suitable Malleefowl habitat.</p>	44.4 (5.5)	No	
Melaleuca shrubland	<p><i>Melaleuca</i> shrubland over low scattered <i>Maireana sedifolia</i>, <i>Grevillea</i> and <i>Atriplex</i> sp. (saltbush), <i>Phebalium</i> and greybush.</p> <p>Contains suitable Malleefowl habitat.</p>	40.7 (5.1)	Yes	
Cleared	<p>Roads, agricultural infrastructure such as watering holes etc.</p> <p>Does not contain suitable Malleefowl habitat.</p>	1.0 (0.1)	No	NA
Total		800.6		

4.7 Malleefowl (*Leipoa ocellata*)

Malleefowl (*Leipoa ocellata*) are a stocky ground-dwelling bird, that rarely flies, belonging to the family Megapodiidae that build distinctive nests comprised of larger mounds built from soil and leaf litter to incubate their eggs. Breeding season usually begins in September when egg laying begins and ends in late January. During this time, the male bird remains at the mound constantly re-working it. Breeding pairs are monogamous, will pair for life and will breed in the same area using existing mounds. Chicks typically begin hatching in November, with most chicks emerging from mounds by January, however it has been noted that in some seasons hatching may continue until March (Benshemesh, 2007; DCCEEW 2024). Malleefowl (eggs and chicks) are threatened by predation, habitat clearing, isolation due to habitat fragmentation and increased wildfires.

4.8 Distribution and Habitat

Historically, Malleefowl have been found in semi-arid mallee shrublands and woodlands across southern Australia, however although the species is still found across its range, its remaining populations are highly fragmented due to extensive land clearing (Department of Parks and Wildlife, 2016). Malleefowl habitat is generally found in shrublands and low woodlands dominated by mallee. In Western Australia, habitat generally consists of Acacia dominated shrublands and occasionally woodlands dominated by eucalypts. Habitat areas require a sandy substrate and abundance of leaf litter for the construction of mounds. Studies have found density of birds is greater in areas of higher rainfall, on more fertile soils and where shrub diversity is greatest. Habitats characterised by numerous food plants (especially leguminous shrubs and herbs), a dense canopy cover and open ground layer are generally associated with high breeding densities. Malleefowl also prefer long unburnt country (Benshemesh, 2007; DCCEEW 2024). Thick vegetative corridors are beneficial to Malleefowl that predominantly disperse on foot.

At the broader land system scale, most nesting mounds are within Deadman land system characterised by level to gently undulating plains with casuarina-acacia shrublands which include the Malleefowl-favoured acacia shrublands of land units 4a and 4b. Nesting mounds occur on footslopes of Lawrence and Leopold land systems characterised by low hills with eucalypt or acacia woodlands with halophytic under-shrubs which include basalt hill footslopes of land unit 2b. Nesting mounds also occur in favoured locations within the extensive Kirgella land system characterised by sandplain supporting spinifex and acacia/eucalypt shrublands which is dominated by spinifex sandplain of land unit 4d (Alexander Holm and Associates 2022).

Deadman, Kirgella, Lawrence and Leonora land systems occupy approximately 18,000 ha within 10 km of the disturbance envelope and provide potential habitat for Malleefowl. Kirgella land system, which extends up to 40 km to the west and is contiguous with the disturbance envelope, occupies two thirds of the potential habitat (Alexander Holm and Associates 2022).

4.9 Conservation Status

The Malleefowl is one of three mound - building birds species in Australia and is recognized as a threatened species under State and Commonwealth legislation. The Malleefowl is listed as Vulnerable fauna under the EPBC Act. The species is also listed as Vulnerable under the *Biodiversity Conservation Act 2016 (WA)*.

4.10 Introduced Fauna

Predation by feral animals (fox, cats, and dingos) is a key factor contributing to the decline of Malleefowl species due to mortality (Bode et al., 2011; Benshemesh 2007; DCCEEW 2024). Feral animals are known to take Malleefowl at all stages of the bird's life cycle, reducing recruitment of Malleefowl into populations (Benshemesh 2007; DCCEEW 2024). Table 5 outlines evidence of predators observed at EEL55 during surveys.

Table 5: Observed feral predator activity

Species	Record Evidence	of	Comments
Cat (<i>Felis catus</i>)	Scats/tracks		Recorded on the track (NS030). (Phoenix Environmental Services, 2022). Alexander Holm and Associates (2022b) confirmed presence of Cat.
Dog/Dingo	Tracks		Fresh tracks of wild dog/dingo were noted at several locations throughout the assessment by Alexander Holm and Associates (2022b).

4.11 Malleefowl Mounds and Malleefowl Activity on EEL55

Phoenix Environmental Services (2022) has undertaken a fauna habitat assessment across EEL55 to determine the quality of Malleefowl habitat within the proposed offset which included a desktop review identifying 120 Malleefowl records within a 40 km radius of the site. During the habitat assessment one degraded Malleefowl mound was recorded on the northwest boundary track of EEL55 situated within *Acacia* Shrubland (Table 6).

Further survey work undertaken by Alexander Holm and Associates (2022b) identified twelve nesting mounds of which two were active, one inactive recent, two inactive abandoned and seven long unused. Fresh tracks of one adult and one juvenile Malleefowl were found either within or nearby 'acacia shrubland' (Table 7).

Table 6: Single Malleefowl Mound observed by Phoenix Environmental Services (2022)






Site	Latitude	Longitude	Mound Status
NS026	-31.1220	121.3908	<p>Long unused: Evidence of an extended period of inactivity such as dense shrubs or trees growing from hollow or mound very degraded/poorly formed. Highly unlikely to become Active in the future.</p> 

Table 7: Malleefowl Mounds surveyed by Alec Holm and Associates (2022).

Details	Photo	Details	Photo
<p>EEL55_01</p> <p>Outer rim: 3.85m Inner rim; 2.45m Depth: 0.26m Long unused</p>		<p>EEL55_03</p> <p>Outer rim: 3.7m Inner rim; 2.1m Depth: 0.13m Long unused</p>	
<p>EEL55_02</p> <p>Outer rim: 3.12m Inner rim; 1.70m Depth: 0.12m Long unused</p>		<p>EEL55_04</p> <p>Outer rim: 2.80m Inner rim; 1.50m Depth: 0.12m Long unused</p>	

EEL55_05

Outer rim: 4.00m
Inner rim; 2.67m
Depth: 0.30m
Long unused



EEL55_07

Outer rim: 4.20m
Inner rim; 2.35m
Depth: 0.26m
Inactive abandoned



EEL55_06

Outer rim: 4.45m
Inner rim; 2.45m
Depth: 0.41m
Active



EEL55_08

Outer rim: 3.70m
Inner rim; 2.65m
Depth: 0.30m
Long unused



EEL55_09

Outer rim: 4.35m
Inner rim; 1.80m
Depth: 0.41m
Active



EEL55_011

Outer rim: 5.30m
Inner rim; 3.45m
Depth: 0.31m
Long unused



EEL55_010

Outer rim: 4.55m
Inner rim; 2.00m
Depth: 0.33m
Inactive recent



EEL55_012

Outer rim: 5.00m
Inner rim; 2.75m
Depth: 0.18m
Long unused



4.12 Habitat Quality Assessment Score

A habitat quality score for EEL55 was calculated using the three components laid out in the EPBC Act Offsets Assessment Guide (DSEWPC, 2012): Malleefowl stocking rate, Site condition and Site context.

These were combined in a framework that differentiates, describes and weights these components to derive a Habitat quality score out of a maximum value of ten. Scores for these components were calculated for each habitat type within each individual site. The framework gave a greater weighting to species presence, with Site context and Site condition each making up 30% of the total score and Malleefowl stocking rate making up the final 40%. The total score for each habitat type was then weighted based on the proportion of that habitat type within the offset site. These scores were then summed, resulting in an overall habitat score out of ten, which aligns with the EPBC Act Offset Assessment Guide (DSEWPC, 2012).

A summary of the habitat quality score for EEL55 is provided below in Table 8.

Table 8:Habitat quality assessment for offset site EEL55

Factor	Score	Condition/details	Habitat type				
			Eucalyptus woodland	Acacia shrubland	Granite extrusion	Melaleuca shrubland	Cleared
Site condition							
Vegetation condition	5	Pristine	4.7	4.8	5.0	5.0	0.0
	4	Excellent					
	3	Very good					
	2	Good					
	1	Degraded					
	0	Completely degraded					
Score out of 3			2.8	2.9	3.0	3.0	0.0
Habitat structure - Diversity of habitat species present - Habitat features (Based on Malleefowl habitat assessment)	3	High suitability (score of 6-8/8)	2.0	3.0	0.0	3.0	0.0
	2	Medium suitability (score of 5/8)					
	1	Low suitability (score of 4/8)					
	0	Not suitable (score of 0-3/8)					
Score out of 3			2.0	3.0	0.0	3.0	0.0
Feral Predator Activity	3	Not detected in targeted survey	0.0	1.0	2.0	3.0	3.0
	2	Low (one record within habitat)					
	1	Medium (Multiple records of single species or single records of more than one species)					
	0	High (Multiple records of more than one species)					
Score out of 3			0.0	1.0	2.0	3.0	3.0
Overall score out of 3 (weighted so Vegetation condition = 40% of total and Habitat structure = 60% of total)			1.7	2.5	1.3	3.0	0.8
Site context							
Movement patterns of Malleefowl Proximity of the site in relation to other suitable areas of habitat Overall population or extent of Malleefowl	3	Site is part of a regionally large contiguous suitable habitat; records on the site for Malleefowl within last 5 years; site is within known distribution of Malleefowl and has connectivity with protected areas.	3.0	3.0	1.0	2.5	1.0
	2.5	Site is part of a regionally significant contiguous suitable habitat; records on site or immediately adjacent (within 3 km) for Malleefowl within last 6-10 years; site is within known distribution of Malleefowl.					
	2	Site is part of a contiguous suitable habitat; Malleefowl records on site or adjacent (within 5 km) to site within last 6-10 years; site is within known distribution of Malleefowl.					
	1.5	Site is part of a contiguous suitable habitat; Malleefowl records on or adjacent (within 10 km) to site within last 6-10 years; site is located within known distribution of Malleefowl.					
	1	Site is unsuitable or isolated from suitable habitat. Malleefowl records on site or in region (within 10 km) within last 10 years and Malleefowl are capable of migrating to site. Site is located within known distribution of Malleefowl.					
	0.5	Site is unsuitable or isolated from suitable habitat. Records on site or in region (within 10 km) within last 10 years and species are capable of migrating to site. Site is not located within known distribution of species.					
	0	Site is unsuitable or isolated from suitable habitat. No Malleefowl records on site or in region (within 10 km) within last 10 years and Malleefowl unlikely to migrate to site.					
Score out of 3			3.0	3.0	1.0	2.5	1.0
Malleefowl stocking rate							
Known presence	4	Malleefowl recorded on site annually for three consecutive years, includes evidence of active mounds and other signs of recent/current presence such as direct sightings of birds, fresh tracks and scats.	3.0	3.0	0.0	2.0	0.0
	3	Malleefowl recorded on site, includes evidence of active mounds and other signs of recent/current presence such as direct sightings of birds, fresh tracks and scats.					
	2	Malleefowl previously recorded on site, no recent activity in mounds, sightings or tracks and scats.					
	1	No records of Malleefowl on site, within known range of Malleefowl, suitable habitat present.					

Factor	Score	Condition/details	Habitat type				
			Eucalyptus woodland	Acacia shrubland	Granite extrusion	Melaleuca shrubland	Cleared
	0	Site outside current known range of Malleefowl or habitat is unsuitable.					
Score out of 4			3.0	3.0	0.0	2.0	0.0
Scores							
		Score out of 10 (before scaling)	7.7	8.5	2.3	7.5	1.8
		Habitat area (ha)	405.5	309.0	44.4	40.7	1.0
		Habitat area proportion	0.5	0.4	0.1	0.1	0.0
		Scaled score (score scaled to proportion of tenement)	3.9	3.3	0.1	0.4	0.0
Final Habitat quality score out of 10			7.7				

5 Risk Assessment

A risk assessment for the key risks potentially impacting Malleefowl habitat and Malleefowl species at the offset site has been completed. This process allows identified risks to be evaluated and outlines mitigation measures and effectiveness of these measures. The Risk Assessment has been completed in accordance with the Australian/New Zealand standard 4360:1999 Risk Management. The risk assessment considers the likelihood of an impact event (Table 9) and the relative consequence of that event (Table 10) using the risk matrix provided in Table 11. The risk assessment is detailed in Table 12.

Table 9: Qualitative measures to determine an event likelihood rating

Likelihood		Description
A	Almost Certain	The event is expected to occur in most circumstances, once per week.
B	Likely	The event will probably occur in most circumstances, once per month.
C	Possible	The event could possibly occur at some time, once per year.
D	Unlikely	The event could possibly occur at some time but is unlikely, once every 5-10 years.
E	Rare	The event may occur in exceptional circumstances >10 years.

Table 10: Qualitative measures to determine an event consequence

Consequence		Description
1	Very Low	None or insignificant impact to MNES (Malleefowl) with no effect on ecosystem function.
2	Minor	Moderate to minor impact to MNES (Malleefowl) resulting in a minor, recoverable impact.
3	Moderate	Minor and short-term impact to MNES expected, resulting in a moderate, recoverable impact.
4	Major	Long-term impact to MNES expected, resulting in a major, recoverable impact.
5	Catastrophic	Irreversible impact to MNES expected.

Table 11: Risk Rating Matrix

		CONSEQUENCES				
		Very Low 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
LIKELIHOOD	A Almost Certain	H (11)	H (16)	E (20)	E (23)	E (25)
	B Likely	M (7)	H (12)	H (17)	E (21)	E (24)
	C Possible	L (4)	M (8)	H (13)	E (18)	E (22)
	D Unlikely	L (2)	L (5)	M (9)	H (14)	E (19)
	E Rare	L (1)	L (3)	M (6)	M (10)	H (15)

Matrix Legend:

- E:** Extreme risk Immediate action required; further reduction needed. If not possible, Country Manager or COO approval required
- H:** High risk Senior management attention needed
- M:** Moderate risk Management responsibility must be specified
- L:** Low risk Manage by routine procedure

Table 12: Risk Assessment and management

Objective	Risk	Risk Factors	Likelihood	Consequence	Risk	Management Measures	Likelihood	Consequence	Residual Risk	Trigger	Corrective Actions
Protect Malleefowl habitat at the offset site	Loss of habitat from future land use e.g. exploration, mining, pastoralism.	<ul style="list-style-type: none"> The Goldfields is a highly prospective area for exploration and mining Much of the Goldfields is overlaid with Exploration, Miscellaneous and Mining tenure. Site has mineral resources that may become economical in future, subjecting land to exploration and mining activity Land subject to pastoral licence agreements Potential sale of property with unknown future land use 	B	4	E21	<ul style="list-style-type: none"> Placing land under a conservation covenant will protect the land from future mining or exploration activities that would contribute to significant habitat loss and degradation. Excise EEL55 from Pastoral Licence Agreement. 	E	1	L1	Conservation covenant not secured within 6 months post approval of the OMP.	<ul style="list-style-type: none"> Identify basis for not securing conservation covenant and either secure covenant for the site or an alternative mechanism, to protect the site from future land use impacts.
Improve Malleefowl habitat quality	Degradation of habitat from grazing.	<ul style="list-style-type: none"> Land has previously been, subject to, a pastoral licence agreement allowing stock grazing on the land contributing to degradation in habitat quality. Without an offset, pastoral activity can occur. 	C	4	E18	<ul style="list-style-type: none"> Excise EEL55 from Pastoral Licence Agreement. Existing Wild Dog Fence located on eastern side of Coolgardie-Esperance Hwy provides an adequate barrier to livestock movement into EEL55. 	E	1	L1	Annual Malleefowl monitoring records evidence of livestock and degradation of habitat quality due to grazing.	<ul style="list-style-type: none"> Consultation with adjacent pastoralist and removal of livestock from EEL55.
	Presence of foxes, cats and wild dogs increasing risk of predation	<ul style="list-style-type: none"> Evidence of cats recorded during the site survey. Evidence of wild dogs were recorded during surveys on EEL55 and EEL55 is adjacent to a known vermin cell (Goldfields Nullabor Rangelands Biosecurity Association) 	A	5	E25	<ul style="list-style-type: none"> Implementation of a predator control program in consultation with DBCA and relevant stakeholders (e.g. baiting) 	C	3	H13	Annual predator control monitoring shows predator activity unchanged or increased from baseline.	<ul style="list-style-type: none"> Increase of intensity, extent or type of predator control measures
	Unplanned fire causing habitat loss and degradation	<ul style="list-style-type: none"> Fire is becoming a more common occurrence throughout the state. Malleefowl populations are extremely susceptible to fire. Increased risk of weed encroachment in areas disturbed by fire. Increased predator activity post fire 	D	4	H14	<ul style="list-style-type: none"> Existing tracks are maintained to allow emergency vehicle access. DFES on standby to respond to fire event. Closest DFES Fire and Rescue Service is located within the township of Coolgardie located approximately 30km to the northwest of EEL55 DBCA are responsible for fire suppression on managed lands, including the adjacent Yallari Timber Reserve. 	E	4	M10	Catastrophic bushfire impacts offset site.	<ul style="list-style-type: none"> Re-instate access and ensure fire protection is consistent with industry standards. Weed and predator populations will be monitored and adaptive management implemented post the event.

Objective	Risk	Risk Factors	Likelihood	Consequence	Risk	Management Measures	Likelihood	Consequence	Residual Risk	Trigger	Corrective Actions
						<ul style="list-style-type: none"> Northern Star have Emergency Response teams within the Kalgoorlie region to assist in the event of an emergency. In the event of a fire event, weed and predator activity will be monitored and adaptive management implemented post the event. 					
	Encroachment of weeds into site reducing habitat quality	<ul style="list-style-type: none"> The Coolgardie-Esperance Hwy runs through the northwest corner of the site. This presents a risk of vehicles spreading weeds to the site if travelling through. 	B	1	M7	<ul style="list-style-type: none"> Implementation of weed control program. 	D	1	L2	Annual weed monitoring shows weed coverage increased.	<ul style="list-style-type: none"> Increase of intensity, extent or type of weed control
	Degradation from external factors such as climate change	<ul style="list-style-type: none"> Drying conditions resulting in more frequent fires 	D	3	M9	<ul style="list-style-type: none"> Access tracks maintained DFES, DBCA and Northern Star on standby to respond to fire event. In the event of a fire event, weed and predator activity will be monitored and adaptive management implemented post the event. 	E	3	M6	Catastrophic bushfire impacts offset site.	<ul style="list-style-type: none"> Re-instate firebreaks and ensure fire protection is consistent with industry standards. Weed and predator populations will be monitored and adaptive management implemented post the event.
	Failure to achieve competition criteria	<ul style="list-style-type: none"> Insufficient funding to implement plan. 	C	3	H13	<ul style="list-style-type: none"> Offset management costs incorporated into mine operation and closure budget, which has a similar timescale. 	E	3	M6	Budget does not include funding for environmental management of EEL55.	<ul style="list-style-type: none"> Secure additional funding.
		<ul style="list-style-type: none"> Efficacy of management measures is lower than anticipated 	C	3	H13	<ul style="list-style-type: none"> Monitoring programs implemented to assess environmental performance against performance targets and completion criteria. Corrective actions implemented when triggered (in line with this Table). Continue to consult relevant Departments, conservation bodies, expert consultants, and key stakeholders to ensure success of the offset site. 	E	3	M6	Completion criteria not achieved i.e. Malleefowl habitat quality less than 8.7 ¹ after 20 years.	<ul style="list-style-type: none"> Implementation of additional management measures and/or identification of an alternative or additional offset.

¹ Methods for scoring Malleefowl habitat quality are outlined in Section 4.12 of this OMP and described further in Phoenix (2022) and Alexander Holms and Associates (2022b).

6 Management Measures

This OMP will be implemented upon approval by the Minister and will be regularly reviewed to ensure its effectiveness of the implemented management measures. Northern Star will coordinate the ongoing and adaptive management of the offset for the life of the approval.

Preliminary management measures, completion criteria and associated monitoring has been outlined in the implementation schedule below (Table 13). The implementation schedule outlines management measure to be implemented, along with the completion criteria for monitoring performance of management. Thresholds and corrective actions for management are included in the risk assessment and management table.

Research suggests implementation of integrated management strategies can provide improved outcomes managing land for conservation of Malleefowl (Berry et al., no date). Accordingly, this OMP incorporates multiple management measures to mitigate key threats identified in the National Malleefowl Recovery Plan. The aim is to improve habitat quality through improving fire management and reducing pressure from grazing to preserve vegetation cover, increase food resources, retain soil moisture content, and protect the species from extreme temperatures.

Management measures implemented will include:

- Place a conservation covenant over EEL55 (Management Action 1)
- Exclusion of grazing (Management Action 2)
- Predator management (Management Action 3)
- Bushfire prevention and management (Management Action 4)
- Weed Management (Management Action 5)

These align with the following strategies and actions in the Malleefowl Recovery Plan (DCCEW 2024).

Strategy 1. Enhance protection and improve or maintain quality, connectivity and extent of habitat

- Action 1.1.2: Retain Malleefowl habitat areas.
- Action 1.1.3: Increase area of Malleefowl habitat and quality of existing Malleefowl habitat.
- Action 1.1.6: Control other weeds (especially newly emerging or highly invasive weeds) in and adjacent to Malleefowl habitat to retain habitat quality.
- Action 1.1.7: Identify viable Malleefowl habitat on private land to target for conservation covenants.
- Action 1.1.8: Provide information and opportunities for private landholders of Malleefowl habitat to enter into permanent conservation covenants that are registered on title of the property.

Strategy 2. Manage fire

- Action 2.1.1: Update or establish fire management plans at local and landscape scales. Where appropriate, incorporate traditional patch burning around Malleefowl habitat (for fuel-reduction burning and to promote patchiness), wildfire control (to prevent large scale or frequent fire) and no-burn areas. Consider limiting the establishment of fuel breaks and access tracks, as they promote the movement of exotic animals.

Strategy 3. Manage impacts of herbivore grazing and habitat destruction from feral animals

- Action 3.3.1: Control feral animals and other herbivores (especially goats, deer, rabbits/hares, camels, pigs and, in some situations, kangaroos) where there is evidence that they negatively affect Malleefowl habitat.

- Action 3.1.2: Identify and decommission (remove/fill in) or fence artificial water source that support herbivore populations (feral stock, feral herbivores, or kangaroos) posing a threat to Malleefowl habitat.

Strategy 4. Manage and monitor introduced predators

- Action 4.1.2: Undertake control of introduced predators (particularly foxes and cats) where Malleefowl populations show decline and predation is a likely explanation of decline.

Strategy 6. Engage the community

- Action 6.1.7: Invite mining companies with operations in Malleefowl habitat to undertake monitoring.

Strategy 7. Survey, monitoring and research – determine the distribution, habitat requirements and population dynamics

- Action 7.1.2: Undertake targeted surveys to detect Malleefowl, where distribution and abundance are poorly known.
- Action 7.1.3: Assess population trend of Malleefowl across all regions.

Strategy 8. Monitor the impacts of management intervention across sites, and use the information to adapt management

- Action 8.1: Annually monitor mound activity at sites.
- Action 8.2: Adaptively manage Malleefowl populations.

Table 13 outlines the Implementation Schedule, completion criteria and remedial actions to be taken should monitoring and review indicate completion criteria are not being met or are not on track to being met. It includes threshold triggers to ensure timely responses.

Table 13: Implementation Schedule, Completion Criteria and Monitoring

Objective	Completion Criteria	Management Measure	Performance Indicator	Timing	Monitoring Activity & Purpose	Methods	Parameters	Frequency	Threshold triggers and remedial actions	Evidence demonstrate compliance to
Secure protection of habitat for Malleefowl	Conservation covenant placed over EEL55	Establish conservation covenant over site (Management Action 1)	Conservation covenant documentation obtained	Legally secure the EEL55 offset site within 6 months of the date of Offset Management Plan being accepted by the Department	N/A	N/A	N/A	N/A	N/A	Conservation covenant will be registered on the Certificate of Title
Demonstrate adequacy of the offset	Malleefowl active within EEL55	Malleefowl Survey	Malleefowl presence is demonstrated at EEL55 within 5 years of this approval in accordance with Condition 2e	Within 5 years of the approval	<u>Malleefowl monitoring</u> Collect data on locations of Malleefowl mounds and evidence of activity to inform habitat quality assessments	LiDAR imagery and analysis Malleefowl mound monitoring in accordance with National Malleefowl Monitoring Manual (National Malleefowl Recovery Team, 2020)	Locations of mounds Malleefowl activity and mound status	5-yearly Annually	N/A - Malleefowl presence was identified in February 2023, demonstrating compliance with Condition 2e	Active Malleefowl mounds identified through breeding season surveys and/or records of scats, tracks, feathers and other evidence of Malleefowl activity Details to be provided within the Annual Compliance Report
Improve Malleefowl habitat quality	Future increase in Malleefowl habitat quality to at least 8.7 ²	Exclusion of livestock grazing (Management Action 2)	No evidence of livestock impacting habitat quality	For the life of the approval	Livestock presence monitoring Collect data on livestock presence to inform habitat quality assessments	Record evidence of livestock (prints/scats/sightings) within Offset site during biennial vegetation condition monitoring	Livestock presence and Habitat Quality	Biennially	Threshold Trigger: Evidence of livestock activity within site leading to degradation of habitat quality Remedial Action: Stock to be removed from site if present	Evidence of livestock activity will be recorded as part of the Vegetation Condition Monitoring data.
		Implementation of a predator control program each year (Management Action 3)	Reduced evidence of predator activity from established baseline	Predator activity baseline is to be established within 12 months of approval of this OMP For the life of the approval	<u>Predator activity monitoring</u> Collect data on predator activity to inform habitat quality assessments and track trends in predator activity	Record evidence of predators using methodology based on guidance by Hradsky, B. et al., (2021) and in consultation with relevant DBCA & other land managers	Predator activity and species	Annually	Threshold Trigger: Predator activity unchanged or increased from baseline Investigate reasons for ineffective predator control Remedial Action: Increase of intensity, extent or type of predator control measures	Survey by suitably qualified personnel, recording evidence of predator activity
		Existing access tracks are maintained around EEL55 (Management Action 4)	Existing access tracks are in good condition and easily accessible in the event of a bushfire	For the life of the approval	<u>Infrastructure inspections</u> Inspect condition of existing access tracks to confirm they are in suitable condition to manage fire risk and inform maintenance program.	Visual inspections of access tracks DFES Guide to Constructing and Maintaining Firebreaks	Access track condition	Annually	Threshold Trigger: Access tracks have been reported to be inaccessible for vehicle traverse Remedial Action: Maintenance of access tracks to ensure adequate vehicle access.	Annual visual inspection to verify existing access tracks are clear and accessible. Removal of vegetation growth and woody debris from access tracks where required. Compliance checklist completed

² Methods for scoring Malleefowl habitat quality are outlined in Section 4.124.12 of this OMP and described further in Phoenix (2022) and Alexander Holms and Associates (2022b).

Objective	Completion Criteria	Management Measure	Performance Indicator	Timing	Monitoring Activity & Purpose	Methods	Parameters	Frequency	Threshold triggers and remedial actions	Evidence to demonstrate compliance
		Weed Management Establish baseline weed percentage cover across the site (Management Action 5)	There will be no increase in weed coverage in EEL55 relative to baseline	Weed coverage baseline is to be established within 12 months of approval of this OMP For the life of the approval	<u>Vegetation and habitat monitoring</u> Monitor changes to vegetation condition and habitat quality. Monitor trends in weed occurrence	Vegetation condition and habitat assessments Visual inspections for weeds	Vegetation condition Habitat structure - diversity of habitat present and habitat features Weed cover and species composition	Biennially, for first 6 years and triennially thereafter Annually, and within 6 months of fire	Threshold Trigger: An increase in weed coverage in the EEL55 site relative to baseline Remedial Action: Further weed control measures to be undertaken including mechanical and chemical removal	Assessment by suitably qualified person Weeds are managed in accordance with Northern Star's Weed Management Procedure Site weed register

6.1 Management Action 1 - Protection Mechanism

Several mechanisms exist to provide legal protection of land for the purposes of conservation. One method includes an Agreement to Reserve which involves the land being set aside for the protection and management of vegetation under Section 30B of *Soil and Land Conservation Act 1945*. Under this mechanism, Section 30E of the Act allows provision for the Agreement to be varied or discharged. Alternatively, a Conservation Covenant under the *Soil and Land Conservation Act 1945* can be applied to ensure the protection of the Offset site.

Northern Star has confirmation the Soil Commissioner of Western Australia is willing to enter into a conservation covenant under the *Soil and Land Conservation Act 1945* with regards to EEL55 should this be accepted by DCCEEW as a suitable offset site. This mechanism provides protection of the land in perpetuity and is irrevocable. This conservation covenant will protect the land from impacts through clearing and/or degradation of the vegetation and habitat qualities over time, including grazing, mining and exploration disturbances.

This approach is consistent with Action 1.1.7: Identify viable Malleefowl habitat on private land to target for conservation covenants and Action 1.1.8: Provide information and opportunities for private landholders of Malleefowl habitat to enter into permanent conservation covenants that are registered on title of the property,, as outlined in the Malleefowl Recovery Plan. These actions aim to reduce habitat loss by retaining sites that support Malleefowl and protecting them from incremental clearing and encourage landholders to enter into conservation covenants and similar agreements.

Northern Star has provided a copy of the proposed draft conservation covenant under the *WA Soil and Land Conservation Act 1945* to the department prior to the document being signed and lodged with the WA Government and submitted a copy of the final covenant to the department on 8 September 2023.

6.2 Management Action 2 - Exclusion of grazing

Since 2015 EEL55 was subject to a Pastoral Licence Agreement under which Northern Star granted a licence to the neighbouring pastoralist to use areas of land including EEL55 for pastoral activities until 30 June 2030 (Pastoral Licence). Northern Star has since secured an amendment to this Agreement to exclude EEL55, with the result that no rights to pastoral activities exist on EEL55.

Impacts of grazing on Malleefowl habitat are described in the National Malleefowl Recovery Plan (Benshemesh 2007; Commonwealth of Australia 2022; DCCEEW 2024). Grazing by livestock has been attributed to reduce breeding densities by 80% - 90% (Frith 1962) and herbivores have also been linked to impacting important food sources such as seeds (Commonwealth of Australia 2022). Feral goats have also been recognised as being abundant in some areas and may even more damaging. These are less common in other areas such as central Australia, but in these areas impacts from introduced herbivores such as cattle, rabbits and camels are recognised as a key threat.

Environmental impacts from grazing include changes to vegetation structure and composition, leaf litter availability, and soil moisture content and soil structure (Eldridge, D. et al., 2015). Although habitat requirements for Malleefowl are poorly understood, these factors are recognised as being important for the breeding success of Malleefowl (Stenhouse, P and Moseby, K. 2022).

In its initial site assessments, Phoenix Environmental Services identified that land with active pastoral activity (grazing and livestock use) had low suitability for Malleefowl habitat due to degraded habitat structures, these areas also had fewer Malleefowl records, increased feral animals and invasive weed species (Phoenix Environmental Services 2022a). The grazing had altered the vegetation structure and composition rendering the sparsely vegetated areas unsuitable, having impacted key habitat attributes critical for Malleefowl survival (foraging and breeding) such as sandy substrate, leaf litter, and canopy. This also increased predation pressure due to increased open areas (Phoenix Environmental Services 2022a). In addition, studies have indicated the altered vegetation structure and composition from pastoral activity reduced the abundance and diversity of food resources

(seeds, flowers, and fruits) of understory shrubs and herbs, an important attribute for ongoing presence of Malleefowl (Benshemesh 2007; DCCEEW 2024; Wheeler 2018; Parsons 2008).

The reduced abundance of food resources increased time spent foraging resulting in prolonged exposure to predators (Greenslade 1992 and Wheeler 2018). Evidence stated above is potentially a contributing factor to why there are fewer Malleefowl records at sites with active pastoral activity. This is consistent with other studies that indicated pastoral activity had profound ecosystem changes and degradation, including altered vegetation structure and composition resulting in an increased predation risk (Hobbs 2001; Lunt et al. 2007; Benshemesh 2007; DCCEEW 2024; Saunder et al. 2003; Spooner & Lunt 2004).

Malleefowl have been shown to utilise disturbed habitat provided the habitat structure remains suitable (Wheeler 2018). Malleefowl presence was strongly related to habitat characteristics with high shrub and leaf litter with an abundance of native food shrubs Parsons (2008). Other studies strongly suggests that these habitat characteristics are negatively impacted by livestock grazing (Hobbs 2001; Pettit & Froend 2001; Saunder et al. 2003; Spooner & Lunt 2004), and thus livestock presence may result in a reduction in the quality of Malleefowl habitat and thus a decline in Malleefowl presence. Lewis et al 2012 indicated the removal of grazing had positive vegetation outcomes required for maintaining critical Malleefowl habitat.

With the exclusion of livestock, it is also possible that vegetation structure and/or condition in areas previously impacted by livestock could also improve, as previously grazed vegetation recovers.

When the management plan for EEL55 was originally developed in 2024, it was expected that a perimeter fence would need to be installed along the boundary of the offset site to prevent cattle from entering the site. However, it has now been identified that there is an existing fence between EEL55 and Woolibar Station (the only pastoral station within 15km of the offset site) (Figure 5). The existing fence is a wild dog fence that was recently installed by a third party along the eastern boundary of Coolgardie-Esperance Hwy as part of the Kalgoorlie Pastoral Alliance Cell. The wild dog fence prevents cattle from moving between Woolibar Station site and EEL55 (Figure 6 and Figure 7). No pastoral activity is currently taking place to south, west or north of EEL55. The areas are characterised by Unallocated Crown Land and reserves managed by DBCA.

Additionally, there are no water points within EEL55 which means that, should livestock be introduced to land west or south of the offset site, cattle are unlikely to be attracted to the site. Accordingly, no further fencing or water management would be required in align with Action 3.1.2 of the Malleefowl Recovery Plan, which is to 'Identify and decommission (remove/fill in) or fence artificial water source that support herbivore populations (feral stock, feral herbivores, or kangaroos) posing a threat to Malleefowl habitat.'

Further consultation has also been conducted with the National Malleefowl Recovery Group and the DBCA, who have suggested that installing an additional fence may not benefit the Malleefowl population, as it will remove additional habitat and potentially create a barrier between Malleefowl habitat within the offset site and the adjoining reserve.

Northern Star therefore proposed to adopt adaptive management to utilise the existing wild dog fence to exclude livestock from EEL55. Avoiding the installation of a cattle fence between Yallari Timber Reserve and EEL55 will allow continued connectivity with surrounding areas of Malleefowl habitat and reduce impacts from clearing, including minimising the risk of increased movements of predators through the area.

During previous monitoring programs at EEL55 there has been no evidence of livestock activity, indicating that existing controls are effectively excluding livestock from the offset site. Monitoring of vegetation condition will continue in accordance with the OMP and monitoring indicates that the existing fencing is not effectively excluding cattle then contingency measure such as the installation of additional fencing could be implemented.



Figure 5: Image of Wild Dog Fence along Coolgardie-Esperance Hwy and EEL 55

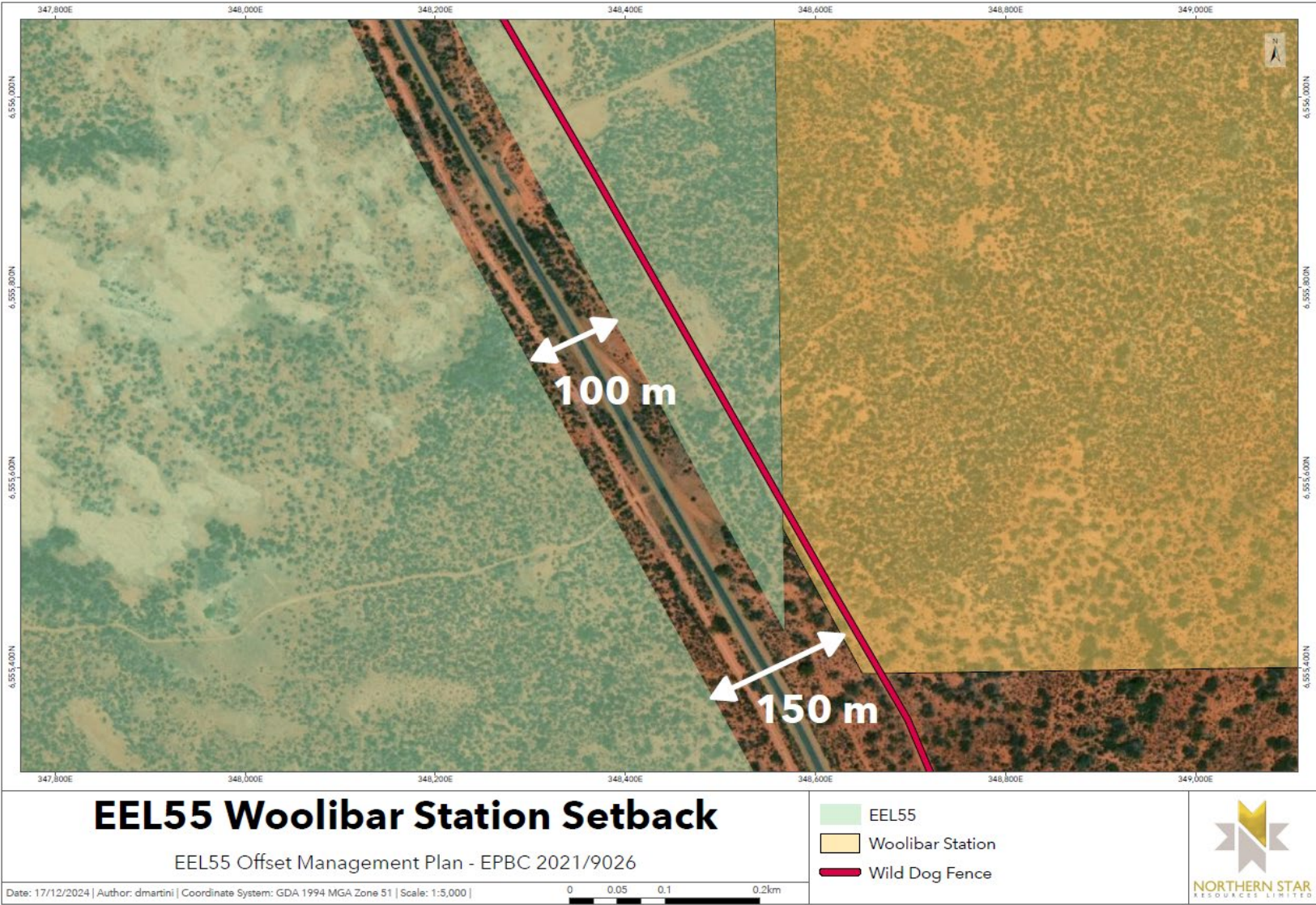


Figure 6: EEL55 Woollibar Station Setback

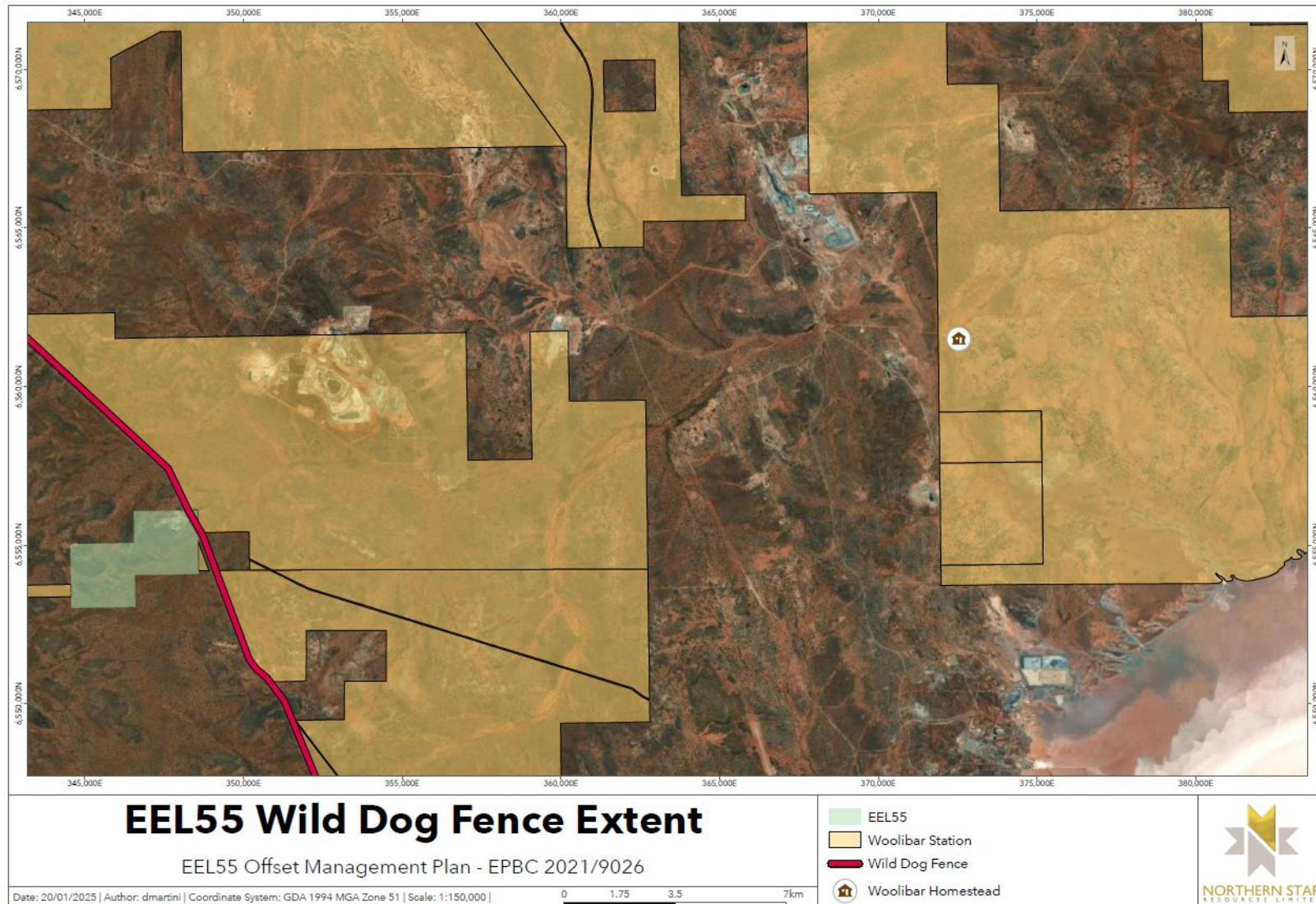


Figure 7: Wild Dog Fence along Coolgardie-Esperance Hwy

6.3 Management Action 3 - Predator Management

Feral animals are a known threat to biodiversity primarily through predation of, and competition with native fauna species (Department of Environment and Conservation 2013). Predation by feral animals (fox, cats, and dingos) is a key factor contributing to the decline of Malleefowl species due to mortality (Bode et al. 2011; Benshemesh 2007; DCCEE 2024). Feral animals are known to take Malleefowl at all stages of the bird's life cycle, reducing recruitment of Malleefowl into populations (Benshemesh 2007; DCCEE 2024). Research indicates land managers should prioritise conservation efforts targeted at adult survivorship to have the greatest influence on population viability (Bode et al 2011). Brouscale aerial baiting has been successful in enhancing Malleefowl survival by reducing mortality rates from predation (Wheeler et al 2009). However, research indicates success in improving outcomes for Malleefowl is underpinned by incorporating other feral animal control methods like fencing, trapping and monitoring inclusive of frequent brouscale and localised baiting programs (Bode et al 2011; Priddel et al 1997 and Walsh et al 2012).

Wild dogs and feral cats within the Kalgoorlie area are in high numbers and widespread (GNRBA 2021 and Wynne 2011). Survey work undertaken on EEL55 recorded evidence of wild dog/dingo and cat activity. There is a high likelihood of predation risk to any existing Malleefowl population at the site, resulting in a reduction in stocking rates. Therefore, it is proposed that feral animal monitoring will be undertaken over EEL55 to collect feral animal activity evidence such as scats, tracks, sightings, and fauna deaths. Feral animal activity will be analysed in combination with Malleefowl activity to determine the potential predation risks, and to verify the effectiveness of predator control. The Threatened Species Recovery Hub Project: A guide to surveying red foxes and feral cats in Australia (Hradsky, B. et al., 2021) will be used to guide methodology for development of baselines and monitoring of feral predators. Development of this methodology will be done in consultation with DBCA and other land management groups in the region, such as GNRBA (Goldfields Nullarbor Rangelands Biosecurity Association). Details of methodology implemented and results from baselines will be provided in the Annual Compliance Report.

Recent studies (Nou 2021) noted there is scientific uncertainty regarding the effectiveness of baiting programs on Malleefowl but also that there are many factors affecting efficacy of baiting programs, including the type of bait used, and the intensity and extent of the programs. Northern Star will take these findings into consideration when planning predator control and implementing adaptive management measures should our predator control appear ineffective. The Nou (2021) study also noted the importance of implementing a range of management measures to achieve success. This is supported by Berry et al (n.d.) who identified that conservation fencing is required to completely eradicate introduced predators from mainland reserves and found breeding success was notably improved within fenced reserves.

To achieve the best results practicable, this offset will use an integrated approach to feral animal control that includes a variety of control methods locally and at the broader scale, along with the other management measures that aims to reduce threats to Malleefowl and improve conditions for Malleefowl survival i.e. exclusion of grazing, bushfire protection and weed control. A site-specific control program for implementation at EEL55 will be developed based on results and information gained during the predator baseline survey.

Relevant stakeholders (e.g. DBCA, Goldfields Nullarbor Rangelands Biosecurity Association, adjacent landowners, and the Malleefowl Recovery Team) will be consulted to identify opportunities for feral animal control programs to contribute towards regional control programs and optimise benefits of predator control at a landscape scale.

Adaptive management will be triggered if monitoring indicates there is an increase in feral animal activity. Additional adaptive management may include: doggers, trapping, brouscale baiting and a biosecurity fence.

This approach is consistent with Strategy 4 of the Malleefowl Recovery Plan which aims to manage and monitor introduced predators.

6.4 Management Action 4 - Bushfire Prevention

Malleefowl are found in semi-arid shrublands, and low woodlands dominated by mallee and acacias, and these habitats are highly prone to fire, potentially having lasting effects on Malleefowl populations (Benshemesh 2007; DCCEEW 2024 and Parsons et. al. 2011). The habitat structure and condition at the offset site was considered suitable for Malleefowl and in pristine condition and a fire through the area would have the potential to remove all and/or parts of the vegetation including influencing the recovery of habitat structure and floristic composition post fire (Benshemesh 2007; DCCEEW 2024). After fire, Malleefowl may not be active in the area for more than ten years, with the loss of suitable habitat structure and floristic composition (leaf litter, vegetation cover, soil gravel and food sources) (Benshemesh 2007; DCCEEW 2024).

Furthermore, the impact of a changing climate suggests that resulting drier conditions and more frequent fires will cause further declines in current Malleefowl populations, and to minimise the impacts from climate change, implementing proactive management practices to protect habitat quality will be required. Climate change projections predict Western Australia can expect longer fire seasons, with around 40% more 'very high' fire danger days, increasing the risk of bushfire at EEL55 and in the wider region. Climate Change impacts of increased temperatures, periods of drought and an increased risk of wildfires adds additional pressure to the conservation of habitat for Malleefowl within the Goldfields region (Matthew et al 2020 and Parsons et al 2011).

Therefore, to minimise the impacts from climate change and subsequent increase in risk of bushfires, proactive management practices will be implemented to protect habitat quality at the offset site. This approach is consistent with Strategy 2 - Manage Fire, outlined in the Malleefowl Recovery Plan which aims to reduce the occurrence of large fires, where Malleefowl conservation is a priority in large reserves.

When the OMP was originally developed, it was expected that the most effective way of managing fire within the site would be through the installation of firebreak around the perimeter of EEL55, to provide safe access for fire response. However, following recommendations from the DBCA and Malleefowl Recovery Group to avoid unnecessary clearing of Malleefowl habitat, Northern Star has reviewed the extent of firebreak that would need to be installed to facilitate adequate fire management. This approach is consistent with Action 2.1.1 of the National Malleefowl Recovery Plan which highlights that consideration should be given to limiting the establishment of fuel breaks and access tracks, as they promote the movement of exotic animals.

This review has identified there are several existing access tracks that can provide access to the site in event of a bushfire (Figure 6). Consequently, Northern Star proposes to utilise the existing access for fire management. Existing access tracks will be maintained to ensure the area is accessible by emergency vehicles, if required, in the event of a bushfire (Figure 6).

Fire management will be implemented in consultation with neighbouring stakeholders and include maintaining existing access tracks at the site. In the event of a bushfire, the Department of Fire and Emergency Services WA (DFES) coordinate the response working closely with other state and local government authorities and volunteer bushfire brigades. The closest DFES Fire and Rescue Service is located within the township of Coolgardie located approximately 30km to the northwest of EEL55. DBCA is responsible for bushfire suppression on the land it manages, including the adjacent Yallari Timber Reserve. Northern Star also has Emergency Response teams and resources located in the Kalgoorlie region to assist in the event of an emergency.

The integration of all management measures, inclusive with fire management, will preserve the habitat quality, structure and composition to protect the species from the impacts associated with climate change (Stenhouse and Moseby, 2022).

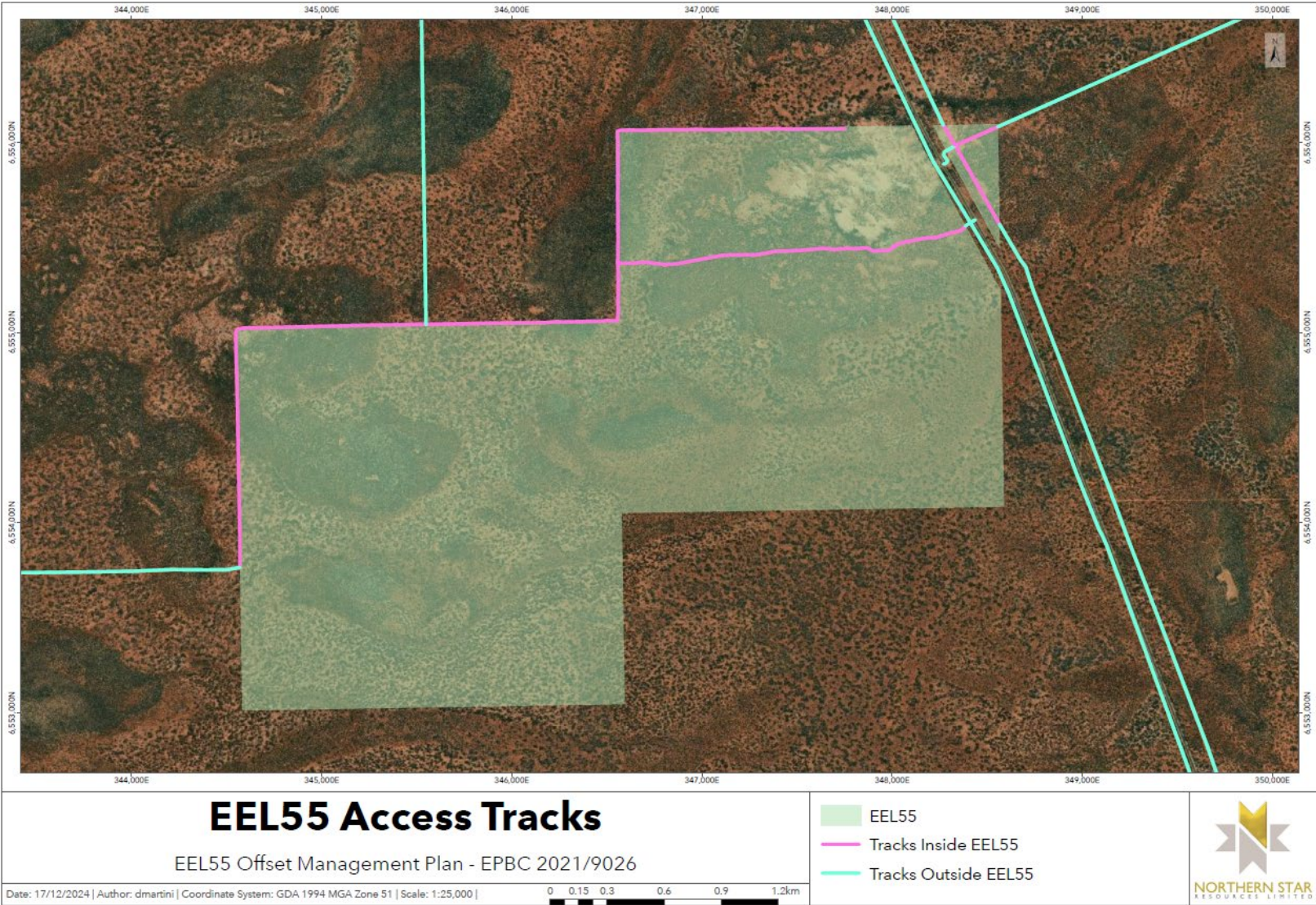


Figure 8: EEL55 Access Tracks

6.5 Management Action 5 - Weed Management

Introduced flora compete with native plants and, therefore, reducing weeds can lead to an increase in habitat condition. Buffel grass (*Cenchrus ciliaris*) in particular, has been identified as posing a threat to Malleefowl, because it may affect Malleefowl through loss of dietary resources, changes to vegetation structure, and increased occurrence and intensity of fire (Grice et al., 2013; Read et al., 2020).

Weed management will aim to improve habitat condition through improving vegetation structure and minimising the establishment of dietary sources for Malleefowl. Weed management would prioritise the detection and control of weeds known to impact Malleefowl such as Buffel Grass. Control of weeds is likely to include physical and/or chemical removal. Weed management has been identified in the Malleefowl Recovery Plan (2024) as a key requirement for Malleefowl conservation (Action 1.1.6 - Control other weeds (especially newly emerging or highly invasive weeds) in and adjacent to Malleefowl habitat to retain habitat quality), and typically forms part of multidisciplinary land management for conservation of the species, contributing to overall habitat quality.

7 Monitoring

This OMP aims to benefit Malleefowl through protecting the offset site via a conservation covenant and improving Malleefowl habitat quality at the offset site. To demonstrate that completion criteria (Table 13) are achieved, habitat quality will need to be monitored.

In accordance with Condition 2d and 2e, once legally secured, Northern Star will monitor and report annually on the presence of Malleefowl at EEL55 and provide evidence to the Department demonstrating the presence of Malleefowl at EEL55 within 5 years of this approval.

Habitat quality assessments will be conducted biennially for the first six years and then triennially thereafter. As outlined in Section 3.5.4, habitat quality is determined through consideration of numerous parameters that include vegetation condition, habitat structure, feral predator activity and Malleefowl activity.

Several monitoring programs will be implemented to collect information on habitat quality parameters. The objectives, methods and frequency of these monitoring programs are outlined in the OMP Implementation Schedule, Completion Criteria and Monitoring (Table 13). Changes to monitoring regimes will be submitted through a revised OMP to the Department for approval.

Northern Star (Carosue Dam) Pty Ltd will be responsible for overseeing management and monitoring required as part of this OMP. Monitoring will be conducted by suitably qualified personnel and commence within one year post approval of this OMP. Over time, monitoring will be adapted to account for any trends observed, including accounting for any seasonal or climatic variability, and will be used to determine effectiveness of management measures.

Monitoring has already commenced at EEL 55 and has demonstrated presence of Malleefowl in accordance with Condition 2e and 6 of the approval. As such, an alternative offset site is not required to comply with these Conditions. The associated evidence will be provided in the Annual Compliance Report.

8 Audit, Review, Adaptive Management, Reporting and Data Management

8.1 Environmental Auditing

Annual audits will be conducted to assess compliance with this plan. The audits will be undertaken by suitably qualified Northern Star personnel, or external consultants. Audit results will be included in the annual compliance reports for EPBC 2021/9026. An example compliance audit record is provided in Appendix A.

In accordance with Condition 28-31 Northern Star will ensure that an independent audit of compliance with the conditions is conducted for every three-year period following commencement of the Action.

8.2 Offset Management Plan Review

At a minimum, this Offset Management Plan will be reviewed every three years by a suitably qualified environmental expert, for a period of the life of the approval.

This plan will also be reviewed if:

- the results of the audits outlined in section 8.1 show that the completion criteria are not being met or are not tracking towards being met.
- research findings indicate there may be new or better ways to improve outcomes for Malleefowl or their habitat that could be implemented at the site.
- EPBC Act policies or guidance material related to Malleefowl is updated, or if there are otherwise changing circumstances.
- emergency contact details outlined in section 11.0 change.

Where a review of the OMP indicates significant changes are required, the updated OMP will be submitted to DCCEE for review and approval in accordance with Condition 7 and 8.

8.3 Adaptive Management

Adaptive management is important to ensure performance targets and completion criteria are met. It allows for changes in management to be made should audit and review identify performance criteria are not being met or are not on track to being met. Table 12 identifies triggers and corrective actions should this be the case.

Adaptive management measures that stem from new research may also be implemented, where opportunities are identified to improve performance of offset management. These adaptive management measures will be implemented in consultation with DCCEE. This may require the OMP to be updated and re-submitted to DCCEE for assessment and approval in accordance with Condition 7 and 8.

As adaptive management measures are implemented, subsequent audits are expected to identify whether actions are effective or whether further actions are required. Management of the offset site will therefore be a continuous process of monitoring, review and action.

Adaptive management measures implemented will be outlined in the annual compliance report. This may include, for example, where trapping, in addition to baiting, is implemented or if monitoring frequency is increased.

Northern Star will provide an alternative and/or additional offset if the completion criteria are not met after implementing adaptive management measures and in accordance with Condition 6.

8.4 Reporting

In accordance with Condition 2c, Northern Star will provide written evidence to the Department, including shapefiles and offset attributes, demonstrating that the EEL55 offset site has been legally secured, within 10 business days of securing offset site. Once the EEL55 offset site has been legally secured, Northern Star will report annually on the presence of Malleefowl at the EEL55 offset site for the life of the approval and provide evidence demonstrating the presence of Malleefowl at EEL55 within 5 years of this approval in accordance with Condition 2d-e.

8.4.1 Annual Compliance Reporting

The annual compliance report for EPBC 2021/9026 in accordance with Conditions 21-24, will include a compliance audit that assesses performance against the OMP. The OMP compliance audit will outline:

- Management actions implemented within the reporting period, including any adaptive management measures implemented.
- Monitoring conducted during the reporting period (e.g. annual weed, predator and Malleefowl monitoring, biennial/triennial vegetation monitoring and habitat quality assessments) and any changes to monitoring frequency.
- Management triggers actioned during the reporting period and corrective actions implemented or planned.
- Review of progress towards completion criteria in accordance with the implementation schedule, and identification of potential non-compliances.

8.4.2 Reporting Non-Compliance

Northern Star will notify the Department of any incident and/or potential or actual non-compliance with conditions or commitments made in this OMP, in accordance with Conditions 25-27.

8.5 Data Management

Northern Star commits to the submission and publication of all plans required by these conditions in accordance with Conditions 9-13.

Data will be stored and protected by Northern Star for the duration of the approval. This will include maintaining data records to confirm all activities associated with the management actions in this OMP have been undertaken as outlined in the OMP.

Monitoring data may be provided to other stakeholders such as the National Malleefowl Recovery Team, DBCA, Traditional Owners and other Conservation Groups, to facilitate a broader understanding of Malleefowl. Acknowledging that environmental management at a landscape scale can enable a deeper understanding the species, allow for identification of regional population trends, and provides for more effective management over time, leading to better conservation outcomes for the species.

Submission of this OMP to DCCEEW will be accompanied by a digital version of the offset attributes and shapefiles of Malleefowl habitat at EEL55, in accordance with the DAWE (2021) Guide for providing maps and boundary data for EPBC Act projects.

If the specifics of the offset change, updated shapefiles will be published with annual compliance reports for EPBC 2021/9026.

9 Environmental Roles and Responsibilities

Table 14 identifies the roles and responsibilities relating to the implementation of this OMP.

Table 14: Environmental roles and responsibilities

Role	Responsibility
Site Senior Executive	<ol style="list-style-type: none">1. Ensure adequate provisioning to meet the requirements of the plan.2. Facilitate implementation of the plan, including associated monitoring, review and reporting.
Site Environmental Advisors	<ol style="list-style-type: none">3. Maintain site records of surveys and any other relevant environmental data.4. Coordinate management activities such as maintenance and predator control.5. Implement monitoring programs that allow for review of effectiveness of the plan and progress toward completion criteria.6. Complete compliance reporting.

10 Environmental Training

Environmental training will be provided to all relevant staff including temporary contractors prior to the commencement of land management within EEL55 to ensure they understand the requirements of the plan. Training will be aimed at minimising impacts on the species whilst land management is being undertaken, ensuring site environmental controls, and key roles and responsibilities of all personal are adhered to.

Training will cover topics such as:

- The requirement to prevent vegetation disturbance.
- Identifying Malleefowl and keeping a distance from them.
- Identifying Malleefowl mounds to avoid disturbance of mounds.
- The importance of good housekeeping at the offset site.
- Other topics as deemed relevant by the Site Environmental Advisors

Records of staff and contractors completing training will be maintained as per site training protocols.

11 Emergency Contacts and Procedures

During land management activities, the Carosue Dam Operations Environment Department must be notified in emergency events including, but not limited to:

- Bushfire at the site or nearby where authorities have indicated that EEL55 is at risk.
- Where there is, or likely to be, a direct impact to the Malleefowl/fauna or mound during land management activities.

The Carosue Dam Environment Department can be contacted on:

Phone: (08) 6229 9519

Email: cdoenviro@nsrltd.com

12 Glossary

Term	Definition
DBCA	Department of Biodiversity, Conservation and Attractions
Department and/or DCCEEW	Department of Climate Change, Energy, the Environment and Water
DFES	Department of Fire Emergency Services
DPIRD	Department of Primary Industries and Regional Development
DSEWPC	Department of Sustainability, Environment, Water, Population and Communities
EEL55	Exempt East Location 55
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
Malleefowl	Malleefowl (<i>Leipoa ocellata</i>)
MNES	Matters of National Environmental Significance
Northern Star	Northern Star (Carosue Dam) Pty Ltd
Offset Proposal	Refers to document Carosue Dam TSF Cell 4 Project Offset Proposal EPBC Act Referral 2021/9096 15 July 2022.
OMP	Offset Management Plan
TSF	Tailings Storage Facility
The Project	The construction of TSF Cell 4 and associated infrastructure

13 References

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APPENDIX A - OFFSET COMPLIANCE ASSESSMENT EXAMPLE

Completion Criteria	Actions	Schedule & Timeframes	Evidence/Comments (Examples)	Date	Compliance (Y/N)	Management Actions Implemented	Monitoring Completed	Management Triggers Actioned	Corrective Actions Implemented
Conservation covenant granted.	<ul style="list-style-type: none"> Conservation covenant applied for and granted 	<ul style="list-style-type: none"> Application made within 6 months of approval of EPBC 2021/9026 (Condition 2a) Conservation covenant granted within 6 months of approval of the OMP (Condition 2b) 	<ul style="list-style-type: none"> Application for Conservation Covenant submitted to the Soil Commissioner on [date]. Conservation Covenant accepted on [date] and registered on the Certificate of Title. Documentation received and retained on [file location]. 						
Exclusion of livestock grazing	<ul style="list-style-type: none"> Exclusion of livestock from EEL55 Excise EEL55 from Pastoral Licence Agreement 	<ul style="list-style-type: none"> Within 12 months 	<ul style="list-style-type: none"> No evidence of livestock presence within site leading to degradation of habitat quality 						
Decrease in predator activity	<ul style="list-style-type: none"> Predator control program Annual predator activity surveys 	<ul style="list-style-type: none"> Review of effectiveness of program conducted annually 	<ul style="list-style-type: none"> Records of predator control included [type] implemented at [location] Annual predator activity survey reports including records of predator activity (sightings, scats, tracks and other evidence) Records of predator activity registered within a spatial database and retained on [file location] 						
Existing access tracks are maintained	<ul style="list-style-type: none"> Maintain existing access tracks as required 	<ul style="list-style-type: none"> Access tracks inspected annually 	<ul style="list-style-type: none"> Access track inspected on [date] Record of maintenance, if required 						
No degradation to habitat quality due to increased weed cover	<ul style="list-style-type: none"> Weed control program Annual weed monitoring 	<ul style="list-style-type: none"> Annual inspection for life of the approval 	<ul style="list-style-type: none"> Visual inspection for weeds conducted during monitoring and/or maintenance inspections on [date] by [personnel] Inspection record and photos retained on [file location] 						
Malleefowl habitat quality score 8.7	<ul style="list-style-type: none"> Habitat quality assessments informed by: <ul style="list-style-type: none"> - Vegetation and habitat monitoring - Malleefowl monitoring - Predator Activity monitoring 	<ul style="list-style-type: none"> Habitat quality assessment and vegetation monitoring biennially for the first six years then triennially thereafter Predator and weed monitoring annually 	<ul style="list-style-type: none"> Habitat quality assessment reports LiDAR analysis reports Malleefowl mound monitoring inspection records and photos retained on (file location) Vegetation and habitat inspection records and photos retained on (file location) Weed inspections records and photos retained on (file location) Predator activity inspections records and photos retained on (file location) 						