Karara Iron Ore Project – Mine Life Extension

Southern Whiteface Bioregional Assessment

Final

February 2026

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Prepared by
Umwelt (Australia) Pty Limited

On behalf of
Karara Mining Limited

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Report No.:	32429 / R06
Date:	February 2026

This report was prepared using Umwelt's ISO 9001 certified Quality Management System.

Acknowledgement of Country

Umwelt acknowledges the Traditional Owners of Country throughout Australia and their continuing values, culture and connection to the land, waters and sky.

We pay our respects to Elders past and present.

The below image is from the artwork *Yapung Maryiyang* (Pathway Forward) by Saretta Fielding.

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Document Status

Rev No.	Reviewer Name	Date	Approved for Issue Name	Date
V1	Emma Molloy	13/02/2026	Emma Molloy	13/02/2026
V2	Emma Molloy	24/02/2026	Emma Molloy	24/02/2026

Executive Summary

The Southern Whiteface (*Aphelocephala leucopsis*) is listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* and *Biodiversity Conservation Act 2016* (WA). However, the species is known to have a wide geographic range and the critical habitat described in the approved Conservation Advice (DCCEEW, 2023) provides a general vegetation description that corresponds to much of the inland areas of Australia. As a result, quantification of impacts to critical habitat do not necessarily reflect the impacts to the species on a regional population level.

A Bioregional Assessment is designed to calculate the impact a project will have on the species at a population level within a bioregion, and how this might impact its entire distribution. To achieve this, impacts to preferred habitat on a regional level are quantified and assessed against habitat on a national level.

In 2024 a Bioregional Assessment of Southern Whiteface was conducted by Umwelt on two projects in South Australia. This approach was endorsed by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for both projects, with no offset conditions being required for Southern Whiteface. The same approach has been adopted for this assessment.

The assessment concluded that Karara Mining Limited's Mine Life Extension (the Proposal) would impact 0.03% of potential habitat within the Tallering Interim Biogeographical Regionalisation of Australia (IBRA) subregion (where the project is located) and reduce the species national Area of Occupancy by 0.0001%.

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1.0 Introduction

1.1 Project Background

Karara Mining Limited (KML) operates the Karara Iron Ore Project (KIOP) and Mungada Iron Ore Project (MIOP), both located approximately 225 km east-southeast of Geraldton in the Midwest region of Western Australia (WA).

KIOP was approved under Ministerial Statement (MS) 805 in 2009 and consists of the Karara open-cut magnetite pit, a processing plant to produce magnetite concentrate, a waste rock dump (WRD), tailings storage facility (TSF), rail loading facilities, accommodation facilities, airport, access roads and linear infrastructure corridor.

MIOP was approved under MS 806 in 2009 and consists of the Blue Hills North and Terapod pits and WRDs and regional infrastructure. Mining was completed in 2014, and MIOP is currently in suspension from active mining. However, infrastructure such as pipelines, access roads, laydown areas, powerlines, rail siding and pits for water storage approved under MIOP are currently utilised by KIOP.

KML is proposing to further develop the KIOP with the Mine Life Extension significant amendment (MLE) which includes an expansion to the MS 805 Development Envelope (DE), an extension to the WRD and TSF, and the incorporation of infrastructure at MIOP. This significant amendment will consolidate all aspects MS 805 and MS 806 necessary for operation with the proposed KIOP MLE.

1.2 Bioregional Assessment Objectives

The Southern Whiteface (*Aphelocephala leucopsis*) is listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and is known to occur in the Proposal area. The main objective of this regional assessment is to provide supporting information to assess the significance of impacts to Southern Whiteface. This is achieved by:

- addressing DCCEEW's request for information on the referral (EPBC 2023/09566) and comments on the Environmental Review Document dated September 2025
- summarising current ecological information on Southern Whiteface, including description of biology, habitat, etc.
- presenting information on the occurrence of the species within the Proposal area and surrounding region.

In 2024 the Bioregional Assessment of Southern Whiteface had been conducted by Umwelt on Zen Energy's Solar River Project (EPBC 2024/09922) and Peak Iron Mines Pty Ltd's Hawks Nest Project (EPBC 2024/10008) in South Australia. This approach was endorsed by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for both projects, with no offset conditions being required for Southern Whiteface. The same approach has been adopted for this assessment. The structure of the report is as follows:

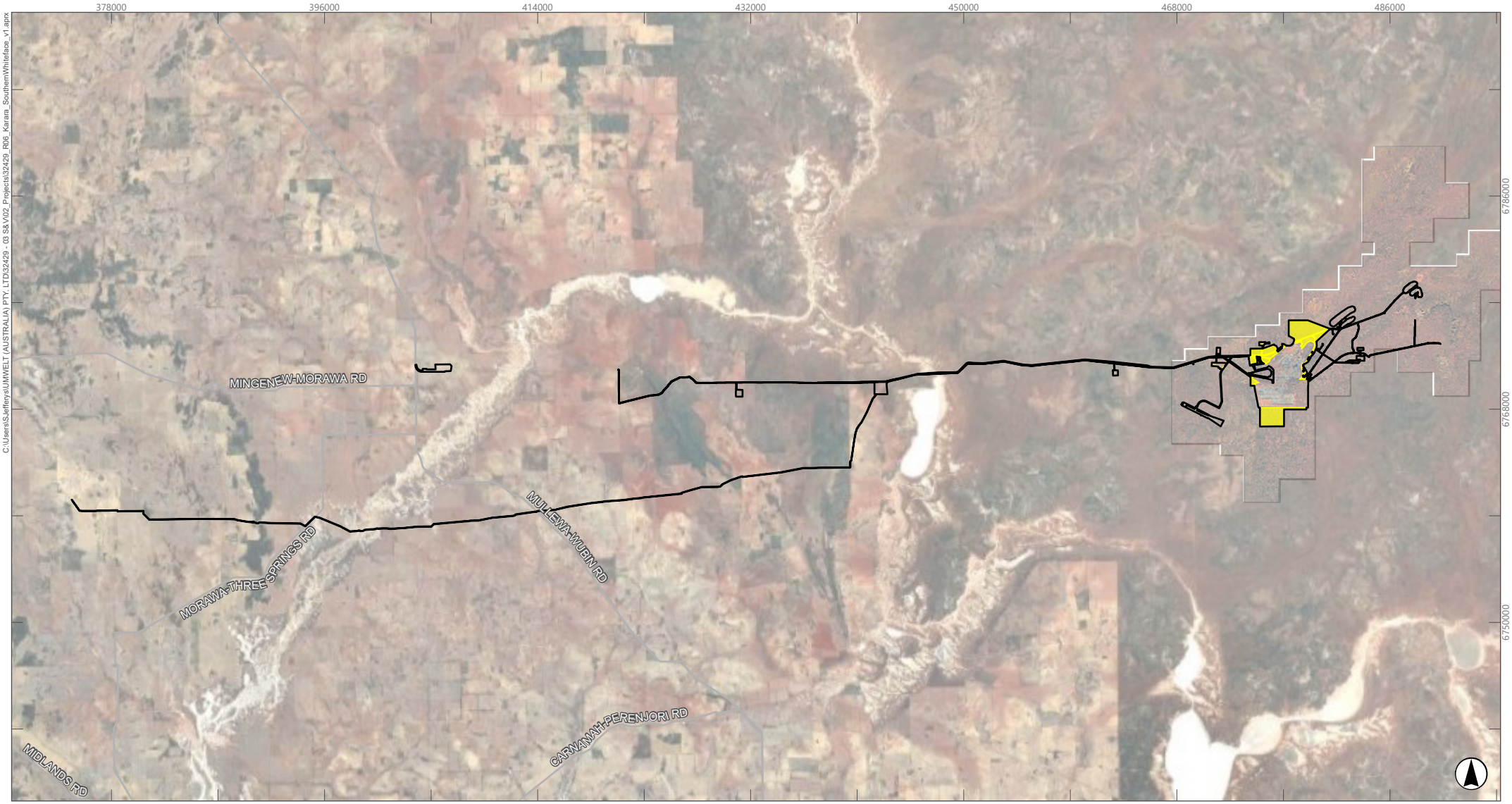
- **Section 2.0** describes the methods used in the assessment

- **Section 3.0** provides the environmental context for Southern Whiteface on a regional scale
- **Section 4.0** provides conservation status and ecological considerations for the species
- **Section 5.0** presents the findings of the bioregional assessment.

1.3 Assessment Areas

The assessment undertaken in this report is exclusively focused on new disturbance, analysing the area directly surrounding the KIOP (the KIOP MLE mitigated disturbance footprint) rather than the entire consolidated Proposal, which includes MS805 and MS806. However, this report does reference the consolidated Proposal area (Combined Proposal mitigated disturbance footprint) to contextualise previously approved operations in relation to the Proposal. Assessment areas are defined below:

- **KIOP MLE mitigated disturbance footprint:** the area of proposed new disturbance (**Figure 1.1**).
- **Combined Proposal mitigated disturbance footprint (Combined Proposal mitigated DF):** includes the KIOP MLE mitigated disturbance footprint and several areas previously approved under MS 805 and MS 806 (**Figure 1.1**).
- **Mine Area:** the area surrounding the KIOP that comprises of infrastructure corridors, Karara pit, TSF, and WRDs.



Scale: 1:450,000 at A4, GDA2020 MGA Zone 50

Legend

- Combined Proposal Mitigated Disturbance Footprint
- KIOP MLE Mitigated Disturbance Footprint
- Main Road

FIGURE 1.1
Location of the Project Area

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0 9 18 km

Image Source: KML (2024), ESRI Basemap (2025) | **Data Source:** Landgate (2025), KML (2025)

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2.0 Assessment Method

This regional assessment has involved the following tasks, with more information provided further below where relevant:

- Review of the Conservation Advice for *Aphelocephala leucopsis* (Southern Whiteface) (the Conservation Advice) (DCCEEW, 2023).
- Review of previous studies relevant to the Project.
- Review and analysis of Southern Whiteface occurrence records from Bamford Consulting Ecologists (BCE) and Atlas of Living Australia (ALA).
- Calculation of the Area of Occupancy for Southern Whiteface within the KIOP MLE mitigated disturbance footprint.
- Identification of suitable habitat for Southern Whiteface based on vegetation information from the National Vegetation Information System (NVIS) and assessment of vegetation within the Proposal area.

2.1 Records of Occurrence

Records of occurrence for Southern Whiteface within Western Australia have been obtained from BCE's *Fauna assessment of proposed disturbance areas 2020 and 2024* (2025) and from the ALA occurrence records map (2026). These sources provided a total of 63 records within the assessed area which is defined by the 'Cumulative Assessment Area 1 (CAA 1)' (see Table 1.1 [(Umwelt, 2026a)]). CAA 1 is based upon guidance for regional context from the EPA (EPA, 2020). No records were present within the Combined Proposal mitigated DF, which includes the KIOP MLE mitigated disturbance footprint, portion of the Mine Area.

2.2 Calculating the Extent of Occurrence and Area of Occupancy

This assessment uses the national Extent of Occurrence (EOO) and Area of Occupancy (AOO) for Southern Whiteface from the previous bioregional assessments conducted by Umwelt (2024), which had been calculated using records sourced from ALA consistent with the *Guidelines for using the IUCN Red List categories and criteria* (2025). The use of IUCN guidelines is recommended by Part D of the *Guidelines for assessing the conservation status of native species according to the EPBC Act and Environment Protection and Biodiversity Conservation Regulations 2000* (TSSC, 2000). Estimates from the *Action Plan for Australian Birds* (Garnett & Baker, 2021) and the Approved Conservation Advice (DCCEEW, 2023) were also considered.

The AOO was also calculated on a local scale using BCE and ALA occurrence records within a grid (2 km by 2 km) to the extent of CAA 1. This was used to identify the impact of the proposed KIOP MLE on the local AOO and compare with the estimated national AOO.

2.3 Limitations

While grid placement has the ability to affect the AOO relative to the proposed new disturbance, a lack of records within the Combined Proposal mitigated DF meant alternate positioning would likely result in negligible effect on the assessment results.

3.0 Environmental Context

This section provides the broad context for vegetation extent and type for the region associated with the Proposal.

3.1 Regional Context

The regional context of the Proposal area, including its Interim Biogeographical Regionalisation of Australia (IBRA) classification, is summarised in **Table 3.1**.

The Mine Area is located within the Yalgoo IBRA bioregion (Tallering subregion) which has extensive native vegetation cover. It is estimated that up to 97% of this subregion is still occupied by native vegetation in varying degrees of condition. Dominant vegetation of each subregion is shown in **Table 3.2**.

Table 3.1 Regional Context of the Proposal Area

IBRA bioregion	IBRA subregion	Estimated remaining subregion native vegetation* (ha)	Vegetated area in Subregion (%)	Description (Environment Australia, 2000)	LGA
Yalgoo	Tallering	3,383,918	97	This Bioregion has been extended westwards to the boundary of the South-west Botanical Province so that it now includes the Toolonga Plateau of the southern Carnarvon Basin. This region is an interzone between South-western Bioregions and Murchison.	Shire of Perenjori

*Calculated using the Department of Primary Industries and Regional Development's (DPIRD [(2026)]) Native Vegetation Extent, minus areas defined in the Currently Cleared or Approved to be Cleared (CCAC) area defined in Section 1.3 of the Environmental Values Updated Impact Assessment (Umwelt, 2026a).

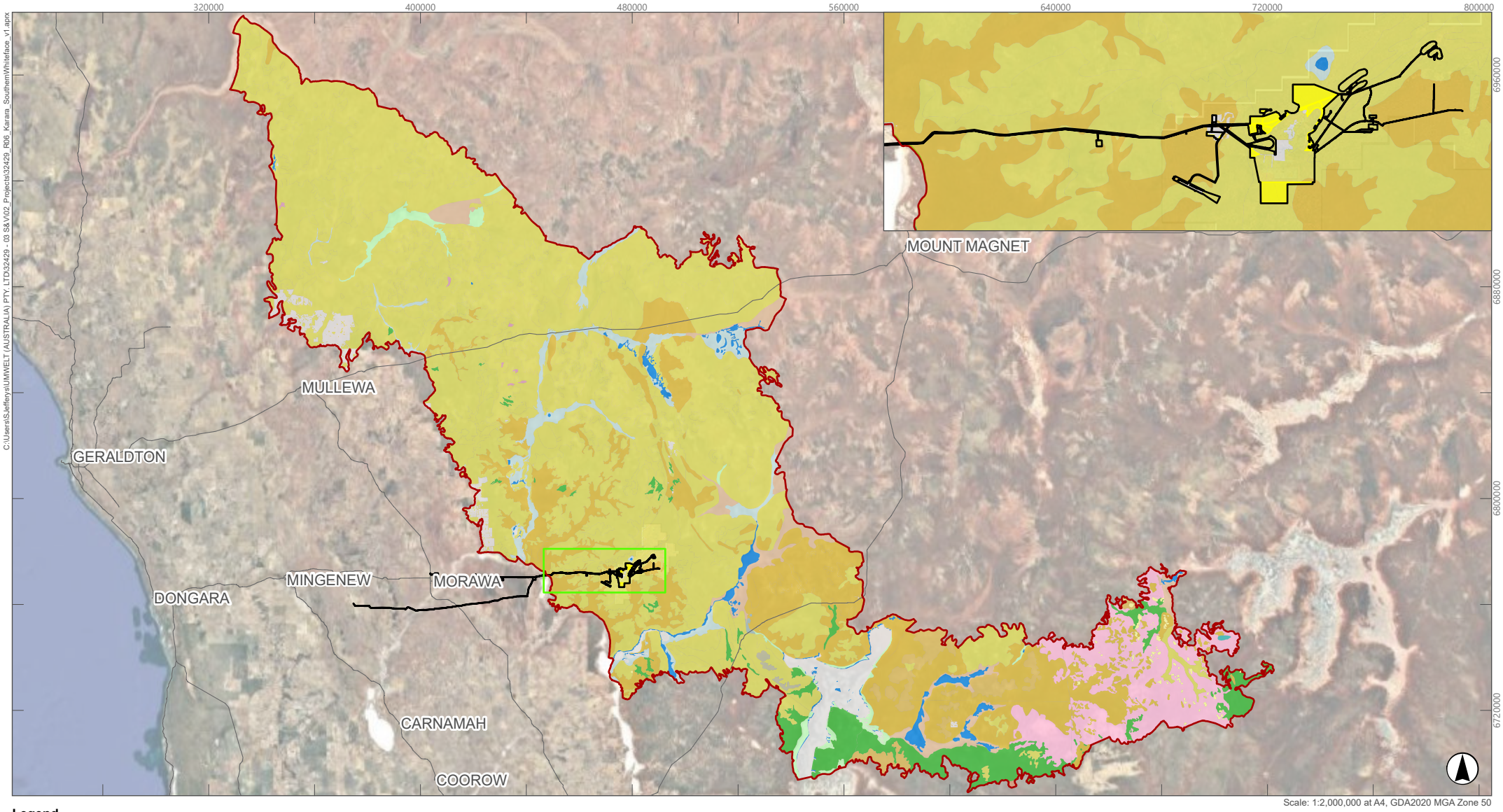
The National Vegetation Information System (NVIS) maps 14 Major Vegetation Groups (MVGs) across the entirety of the Tallering IBRA subregion which is 3,498,926 ha in size. This includes areas of non-native vegetation. In a regional context, this introduces minor uncertainty when assessing habitat suitability for threatened species.

MVGs are listed in **Table 3.2**. Bioregional vegetation mapping is provided in **Figure 3.1**.

Table 3.2 Major Vegetation g Groups in the Tallering IBRA Subregion, as Mapped by NVIS (DCCEEW, 2025)

Major vegetation group	Total extent in subregion (ha)
Acacia Forests and Woodlands	445,967
Acacia Shrublands	2,400,597
Chenopod Shrublands, Samphire Shrublands and Forblands	120,237
Cleared, non-native vegetation, buildings	111,843

Major vegetation group	Total extent in subregion (ha)
Eucalypt Open Woodlands	1,447
Eucalypt Woodlands	150,643
Heathlands	141
Hummock Grasslands	48
Inland aquatic - freshwater, salt lakes, lagoons	42,047
Low Closed Forests and Tall Closed Shrublands	104
Mallee Open Woodlands and Sparse Mallee Shrublands	206,654
Mallee Woodlands and Shrublands	2,747
Naturally bare - sand, rock, claypan, mudflat	6,737
Other Shrublands	9,714
Total	**3,498,926**



Scale: 1:2,000,000 at A4, GDA2020 MGA Zone 50

Legend

- Combined Proposal Mitigated Disturbance Footprint
- KIOP MLE Mitigated Disturbance Footprint
- State Road Network
- Tallering IBRA Subregion

FIGURE 3.1

Major Vegetation Groups for the Tallering IBRA subregion

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0 40 80 km

Image Source: ESRI Basemap (2025) | **Data Source:** MRWA (2024), DCCEEW (2023, 2025), KML (2025)

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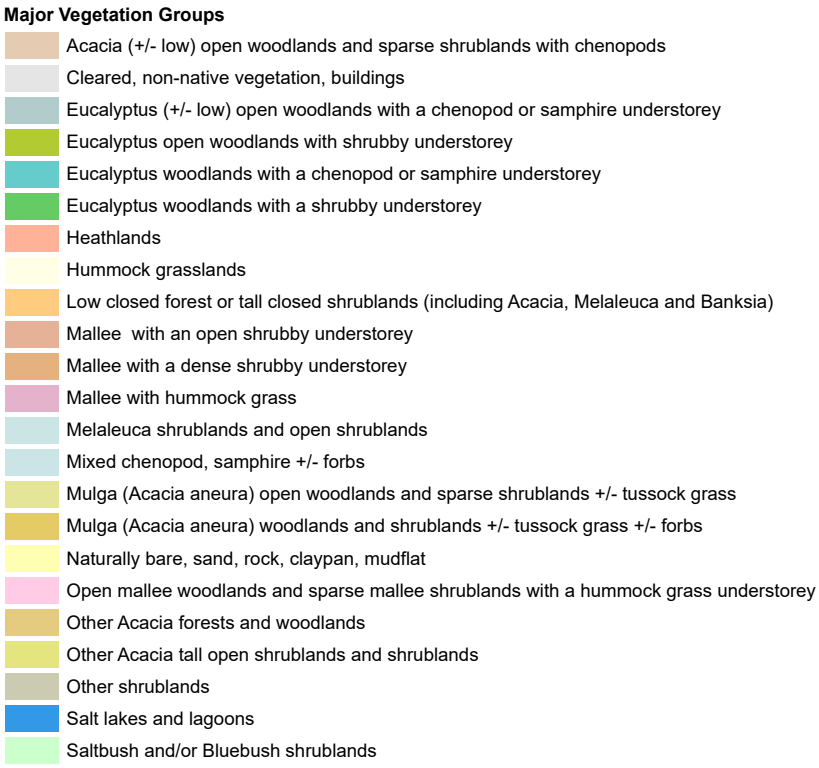

FIGURE 3.1

LEGEND: Major Vegetation Groups for the Tallering IBRA subregion

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Image Source: ESRI Basemap (2025) | **Data Source:** MRWA (2024), DCCEEW (2023, 2025), KML (2025)

3.2 Project Area Land Use and Vegetation

The Mine Area is known to have historic disturbance from mining and exploration activities (e.g. drill lines) and historical grazing with evidence of use of the area as a pastoral station. The *2023 and 2024 Detailed and Targeted Flora and Vegetation Assessment* (Umwelt, 2025) had also recorded historical and current evidence of kangaroo, rabbit, goat and cattle activity throughout the Mine Area.

Previous surveys for the Proposal mapped a total of 38 Vegetation Types (VTs) defined via floristic analysis of quadrat and relevé data within the Survey Area. Full VT descriptions/photos are provided in Section 5.2.6 of the *2023 and 2024 Detailed and Targeted Flora and Vegetation Assessment* (Umwelt, 2025), along with an overview of the Survey Area in Section 1.2. Mapping described VTs at the NVIS Sub-Association level, which is considered most appropriate for the vegetation of the Survey Area, as often the vegetation possessed one or more additional strata to the traditional three-stratum classification system used at the Association level. The use of NVIS mapping standards on a local scale result in data that is compatible with assessment against national vegetation mapping. A total of 14 VTs are present within the KIOP MLE mitigated disturbance footprint (**Table 3.3**).

Table 3.3 Vegetation Associations Mapped in the KIOP MLE Mitigated Disturbance Footprint

Vegetation Type	Description	Extent in KIOP MLE mitigated disturbance footprint
A	Tall sparse shrubland to isolated shrubs of mixed species including *Acacia acuminata/Acacia burkittii, Acacia tetragonophylla, Melaleuca hamata* and/or *Acacia umbraculiformis* over mid sparse shrubland of mixed species including *Thryptomene costata* and *Malleostemon tuberculatus*, over low sparse shrubland of mixed species including *Mirbelia microphylla*, *Solanum lasiophyllum* and *Eremophila eriocalyx*, over low sparse forbland of mixed species including *Schoenia cassiniana*, *Borya sphaerocephala*, *Erodium cygnorum* and *Rhodanthe chlorocephala* subsp. *splendida*, on red-brown clay loam, sometimes with granite surface stones, on plains and gentle slopes.	65.93
B	Low open forbland of *Borya sphaerocephala* and other species including *Rhodanthe chlorocephala* subsp. *splendida, Calandrinia granulifera, Calotis hispidula* and *Chthonocephalus pseudevax*, in pockets of red clayey sand on and immediately adjacent to granite sheet outcropping.	3.82
C	Low open woodland of *Eucalyptus kochii* subsp. *plenissima* or *Eucalyptus loxophleba* subsp. *supralaevis*, over occasional tall isolated clumps of shrubs of *Acacia ramulosa* var. *ramulosa*, *Melaleuca eleuterostachya, Acacia assimilis* subsp. *assimilis*, *Acacia burkittii*, and/or *Acacia colletioides*, over low isolated clumps of shrubs of *Ptilotus obovatus* and *Solanum lasiophyllum*, over low open tussock grassland of *Monachather paradoxus*, over low isolated clumps of forbs of mixed species including *Erodium cygnorum, Crassula colorata* var. *colorata, Helipterum craspedioides, Cephalipterum drummondii* and *Chthonocephalus pseudevax*, on red clayey sand or clay loam, sometimes with ironstone or quartz surface stones, on flats and plains.	0.74
D	Occasional low woodland to open woodland of *Eucalyptus kochii, Callitris columellaris*, and/or *Eucalyptus loxophleba* subsp. *supralaevis*, over tall open shrubland of mixed species including *Acacia tetragonophylla, Acacia ramulosa* var. *ramulosa, Acacia acuminata, Acacia obtecta* and *Exocarpos aphyllus*, over mid sparse shrubland of mixed species including *Hakea recurva* subsp. *recurva, Senna artemisioides* subsp. *filifolia, Eremophila clarkei* and *Acacia assimilis* subsp. *assimilis*, over low sparse shrubland of mixed species including *Rhagodia drummondii, Ptilotus obovatus* and *Olearia humilis*, over low sparse tussock grassland of *Austrostipa elegantissima* and *Monachather paradoxus*, over low sparse forbland of mixed species including *Erodium cygnorum, Cephalipterum drummondii* and *Gilruthia osbornei*, on red or red-brown sandy clay loam, sometimes with occasional ironstone or quartz surface stones, on flats and plains.	342.40

Vegetation Type	Description	Extent in KIOP MLE mitigated disturbance footprint
E	Tall open to sparse shrubland of mixed species including *Acacia ramulosa* var. *ramulosa, Acacia tetragonophylla*, *Hakea recurva* subsp. *recurva, Acacia assimilis* subsp. *assimilis* and *Eremophila clarkei*, over low isolated clumps of shrubs of mixed species including *Maireana planifolia*, *Ptilotus obovatus, Solanum lasiophyllum* and *Sida* sp. dark green fruits (S. van Leeuwen 2260), over low isolated clumps of grasses of *Austrostipa elegantissima,* over low sparse forbland of mixed species including *Erodium cygnorum, Gilruthia osbornei, Cephalipterum drummondii, Calotis multicaulis* and *Panaetia lessonii*, on red clay loam, usually with ironstone, granite and/or quartz surface stones, on undulating plains and flats.	28.26
F	Tall sparse shrubland of *Acacia tetragonophylla, Acacia umbraculiformis, Acacia ramulosa* var. *ramulosa* and occasionally *Acacia burkittii* and *Thryptomene costata*, over mid isolated shrubs of mixed species including *Hakea recurva* subsp. *recurva* and *Acacia kochii*, over low sparse shrubland of *Solanum lasiophyllum* and *Ptilotus obovatus*, over low sparse forbland of mixed species including *Borya sphaerocephala, Rhodanthe chlorocephala, Myriocephalus gueriniae* and *Goodenia cycnopotamica*, on red or red-brown clay loam or silty loam, sometimes with small amounts of granite outcropping and granite surface stones, on simple slopes and plains.	13.18
G	Mid to low woodland to open woodland of *Eucalyptus loxophleba* subsp. *supralaevis* and occasionally *Eucalyptus kochii*, over tall sparse shrubland of mixed species including *Acacia tetragonophylla* and occasionally *Acacia ramulosa* var. *ramulosa, Exocarpos aphyllus*, *Acacia obtecta* and *Acacia burkittii*, over an occasional mid sparse shrubland of *Senna* sp. Austin (A. Strid 20210), *Scaevola spinescens* and/or *Dodonaea inaequifolia*, over low isolated clumps of shrubs of mixed species including *Senna artemisioides* subsp. *filifolia, Ptilotus obovatus* and *Pimelea microcephala* subsp. *microcephala,* over low isolated clumps of chenopod shrubs of mixed species including *Rhagodia drummondii*, *Sclerolaena fusiformis, Maireana georgei, Maireana carnosa and Enchylaena lanata*, over low isolated clumps of tussock grasses of *Austrostipa elegantissima*, over low isolated clumps of forbs of mixed species including *Me*sembryanthemum nodiflorum, *Cephalipterum drummondii, Erodium cygnorum* and *Gilruthia osbornei*, on red or red-brown clay loam or silty clay loam, usually with ironstone and/or granite and/or quartz surface stones, on flats and plains.	209.57
H	Occasional low open woodland to isolated trees of mixed species including *Eucalyptus loxophleba* subsp. *supralaevis*, *Eucalyptus salubris, Eucalyptus clelandiorum* or *Eucalyptus kochii* subsp. *amaryssia*, over tall open to sparse shrubland of mixed species including *Acacia obtecta*, *Acacia ramulosa* var. *ramulosa, Acacia latior* and *Melaleuca leiocarpa*, over mid isolated shrubs of mixed species including *Acacia tetragonophylla, Exocarpos aphyllus* and *Acacia exocarpoides*, over occasional low isolated clumps of shrubs of *Ptilotus obovatus, Senna charlesiana, Persoonia pentasticha* (P3) and *Olearia pimeleoides*, over low isolated clumps of chenopod shrubs of mixed species dominated by *Rhagodia drummondii* and *Sclerolaena fusiformis* and occasionally *Maireana georgei* and *Enchylaena lanata*, on red-brown clay loam, with occasional ironstone surface stones, on flats and plains.	70.25

Vegetation Type	Description	Extent in KIOP MLE mitigated disturbance footprint
K	Occasional low woodland to open woodland of mixed species including *Eucalyptus clelandiorum, Eucalyptus loxophleba* subsp. *supralaevis* and/or *Eucalyptus salubris*, over tall sparse shrubland of mixed species including *Eremophila oppositifolia* subsp. *angustifolia, Acacia erinacea, Exocarpos aphyllus* and *Eremophila pantonii*, over low isolated clumps of shrubs of mixed species including *Senna stowardii, Scaevola spinescens, Ptilotus obovatus* and *Olearia pimeleoides*, over low isolated clumps of chenopod shrubs of *Sclerolaena fusiformis, Rhagodia drummondii, Maireana thesioides, Maireana georgei* and *Maireana marginata*, on red-brown silty clay loam or clay loam, sometimes with ironstone surface stones, on plains.	29.50
O	Occasional low isolated trees of *Allocasuarina acutivalvis* subsp. *prinsepiana*, over tall sparse shrubland of mixed species including *Acacia assimilis* subsp. *assimilis, Calycopeplus paucifolius, Melaleuca nematophylla,* and/or *Acacia ramulosa* var. *ramulosa*, over mid sparse shrubland of mixed species including *Eremophila clarkei, Philotheca brucei* subsp. *brucei, Philotheca sericea, Aluta aspera* subsp. *aspera* and *Eremophila latrobei* subsp. *latrobei*, over low isolated shrubs of *Xanthosia kochii, Sida* sp. dark green fruits (S. van Leeuwen 2260) and *Hibbertia arcuata*, over low isolated clumps of forbs of mixed species including *Waitzia acuminata* var. *acuminata, Podolepis lessonii* and *Lawrencella rosea*, on red-brown silty loam or silty clay loam with ironstone, BIF or granite stones, and sometimes with ironstone, BIF or granite outcropping, on slopes and crests.	86.94
P	Occasional low isolated trees of *Allocasuarina acutivalvis* subsp. *prinsepiana,* over tall shrubland to open shrubland of mixed species including *Acacia assimilis* subsp. *assimilis, Melaleuca nematophylla, Acacia latior, Calycopeplus paucifolius* and *Acacia sibina*, over mid shrubland to open shrubland dominated by *Aluta aspera* subsp. *hesperia* and occasionally with *Philotheca sericea, Hibbertia arcuata* and/or *Grevillea paradoxa,* over occasional low open shrubland of mixed species including *Philotheca deserti* subsp. *deserti* and *Xanthosia kochii*, over low isolated clumps of tussock grasses of *Monachather paradoxus* and *Amphipogon caricinus* var. *caricinus*, over low sparse forbland of mixed species including *Erodium cygnorum*, *Bellida graminea, Trachymene ornata, Cheilanthes sieberi* subsp. *sieberi* and *Lawrencella rosea*, on red or red-brown clay loam or silty loam with ironstone or BIF surface stones, and occasionally with ironstone or BIF outcropping, on lower to upper slopes.	47.63
Q	Occasional low open woodland of *Eucalyptus arctata* and/or *Eucalyptus kochii* subsp. *amaryssia*, over tall shrubland to open shrubland of mixed species dominated by *Acacia latior, Acacia sibina*, and occasionally *Melaleuca leiocarpa, Acacia longispinea* and *Melaleuca hamata*, over occasional mid isolated shrubs of mixed species including *Aluta aspera* subsp. *hesperia and Hakea recurva* subsp. *recurva*, over low isolated shrubs of mixed species including *Philotheca deserti* subsp. *deserti, Cryptandra imbricata, Prostanthera prostantheroides* and *Enekbatus stowardii*, over low sparse tussock grassland of *Monachather paradoxus*, *Amphipogon caricinus* var. *caricinus* and occasionally *Austrostipa elegantissima*, over low sparse forbland to isolated clumps of forbs of mixed species including *Bellida graminea, Erodium cygnorum, Dianella revoluta* var. *divaricata* and *Cheilanthes sieberi* subsp. *sieberi*, on brown or red clay loam, sandy clay loam or silty loam with ironstone surface stones, on lower slopes, plains and flats.	101.52

Vegetation Type	Description	Extent in KIOP MLE mitigated disturbance footprint
R	Occasional low open woodland of *Allocasuarina acutivalvis* subsp. *prinsepiana* and/or *Eucalyptus kochii*, over tall shrubland to open shrubland of mixed species including *Acacia ramulosa* var. *ramulosa, Melaleuca hamata, Acacia latior, Acacia incognita* and *Acacia sibina,* over mid sparse shrubland to isolated clumps of shrubs of mixed species including *Eremophila clarkei, Acacia tetragonophylla, Eremophila eriocalyx, Aluta aspera* subsp. *hesperia* and *Eremophila latrobei* subsp. *latrobei*, over low sparse shrubland to isolated clumps of shrubs of mixed species including *Philotheca deserti* subsp. *deserti, Leucopogon* sp. Clyde Hill (M.A. Burgman 1207), *Hibbertia arcuata*, and occasionally *Chamelaucium pauciflorum* subsp. Perenjori (B.J. Conn 2181) and Olearia humilis, over low sparse tussock grassland of *Amphipogon caricinus* var. *caricinus,* over low sparse forbland to isolated clumps of forbs of mixed species including *Erodium cygnorum, Cheilanthes* sieberi subsp. *sieberi, Bellida graminea, Waitzia acuminata* var. *acuminata* and *Gilruthia osbornei*, on red or red-brown clay loam with ironstone and sometimes quartz surface stones, on plains and simple slopes.	104.38
S	Tall sparse shrubland to isolated clumps of shrubs of mixed species including *Acacia sibina, Acacia ramulosa* var. *ramulosa, Acacia tetragonophylla, Hakea recurva* subsp. *recurva* and *Acacia burkittii*, over mid shrubland to sparse shrubland of mixed species including *Aluta aspera* subsp. *hesperia, Eremophila forrestii* subsp. *forrestii, Malleostemon tuberculatus* and *Leucopogon* sp. Clyde Hill (M.A. Burgman 1207), over low sparse shrubland to isolated clumps of shrubs of mixed species including *Pimelea spiculigera* var. *thesioides, Mirbelia microphylla, Hibbertia arcuata* and *Grevillea pityophylla*, over low isolated clumps of tussock grasses of *Amphipogon caricinus* var. *caricinus, Monachather paradoxus* and/or *Austrostipa elegantissima*, over low sparse forbland to isolated clumps of forbs of mixed species including *Chthonocephalus pseudevax, Bellida graminea, Goodenia rosea, Brachyscome ciliocarpa* and *Podolepis lessonii*, on red or brown clay loam, sandy clay loam or silty loam with ironstone or BIF surface stones, on flats, plains and slopes.	80.69
CL	Land cleared for roads, tracks, mining, infrastructure and agriculture. May contain occasional isolated native or introduced plants.	1.53

'*' Indicates an introduced taxon.

4.0 Southern Whiteface

This section describes the conservation status and ecological considerations for the Southern Whiteface.

4.1 Conservation Status

The Southern Whiteface (*Aphelocephala leucopsis*) was listed as Vulnerable under the EPBC Act on 31 March 2023. Refer to the Conservation Advice for *Aphelocephala leucopsis* (Southern Whiteface) (DCCEEW, 2023) (the Conservation Advice) for more information on listing information. The species is also listed as Vulnerable under the *Biodiversity Conservation Act 2016* (WA).

4.2 Description

The Southern Whiteface is a compact, thornbill-like species distinguished by its brown upperparts, white underbody, dark brown wings and a black tail tipped with a narrow white stripe (DCCEEW, 2023). At times, a subtle grey wash may appear across the belly, and the flanks can show hints of grey or rufous (**Figure 4.1**). The species also exhibits the characteristic facial patterning of its genus, including a white band across the forehead bordered above by a darker streak. Adults measure roughly 11.5 cm in length and have cream-coloured eyes, grey legs and a short, finch-like dark grey bill (DCCEEW, 2023). While adults do not differ between sexes, juveniles can be identified by the absence of the black rear facial band.

4.3 Distribution

The Southern Whiteface occurs throughout Australia, extending across much of the semi-arid and arid inland regions, including the northeastern edge of the Western Australian wheatbelt (**Figure 4.2**) (DCCEEW, 2023). Within WA, the subspecies *Aphelocephala leucopsis* subsp. *castaneiventris* is widespread, with its range extending from the wheatbelt northwards toward Carnarvon and throughout southern inland habitats. While the subspecies is known to be morphologically different from *Aphelocephala leucopsis*, with adults displaying rufous mottling on flanks, it is currently unknown if there are any genetic differences between the two (BirdLife International, 2022; DCCEEW, 2023). Research is currently being undertaken by Umwelt to further study population distribution and genetic differentiation of the species on a national scale (**Section 4.8**). This broad distribution indicates no documented regional-scale decline within Western Australia.

Figure 4.1 **Southern Whiteface (photo by D. Hoadley)**

4.3.1 Extent of Occurrence and Area of Occupancy

The EOO and AOO for the Southern Whiteface has been estimated as presented in **Table 4.1**. These areas are shown on the map in **Figure 4.3**. The AOO has been calculated using a collection of historical records sourced from the ALA (2026), which produced similar results to that of Garnett and Baker (2021) and the approved conservation advice (DCCEEW, 2023).

Table 4.1 **Estimated Extent of Occurrence (EOO) and Area of Occupancy (AOO) of Southern (Umwelt, 2024)**

Source	Year of Calculation	EOO (ha)	AOO (ha)
Umwelt	2024	461,613,000	6,286,400
Action Plan for Australian Birds (Garnett & Baker, 2021)	2021	480,000,000	7,000,000
Approved Conservation Advice (DCCEEW, 2023)	2021	491,000,000	6,500,000

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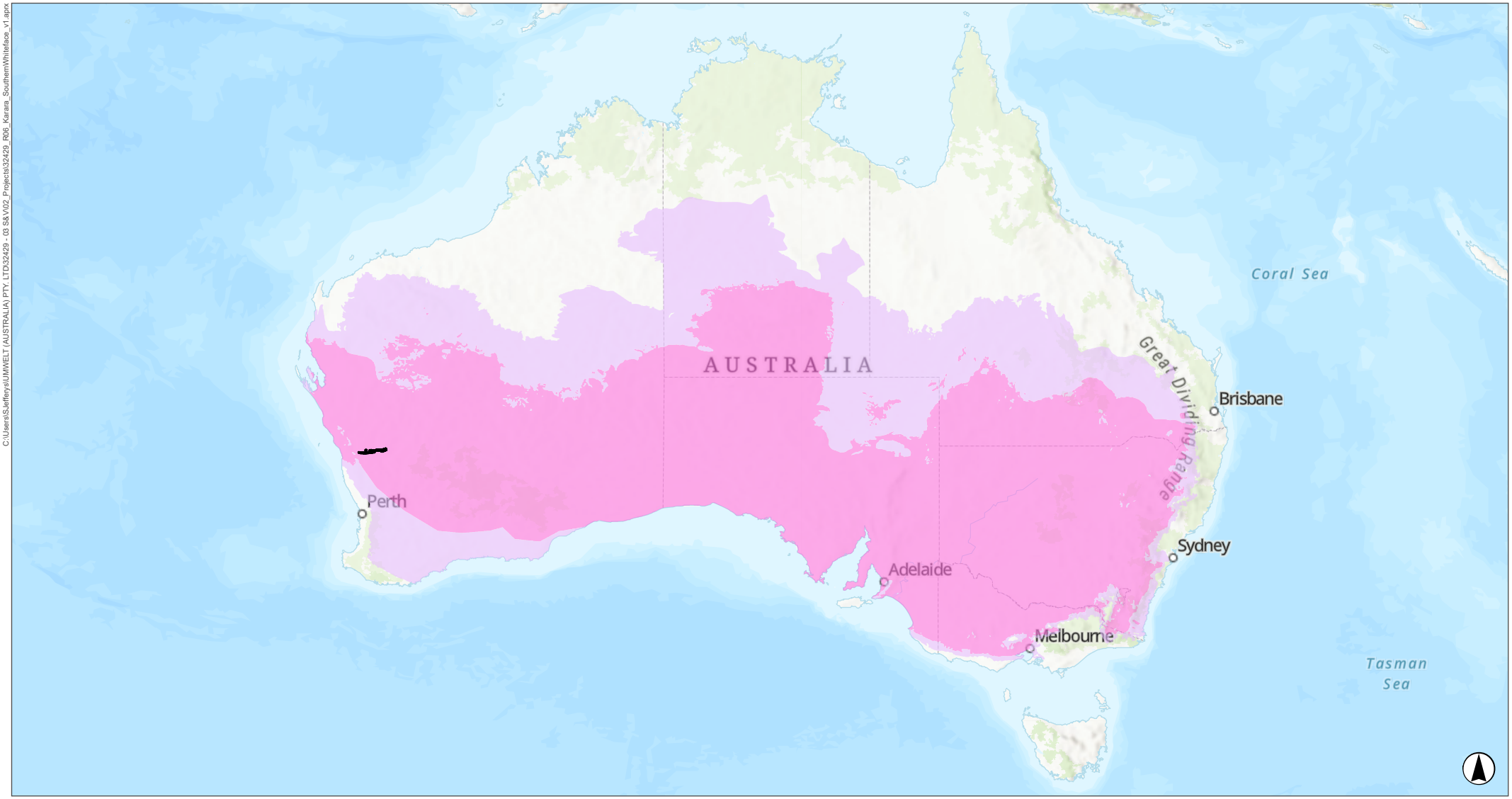

Scale: 1:26,000,000 at A4, GDA2020

Legend

Combined Proposal Mitigated Disturbance Footprint

Aphelocephala leucopsis

Species or species habitat likely to occur

Species or species habitat may occur

FIGURE 4.2

Modelled Distribution of Southern Whiteface

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0 520 1,040 km

Image Source: ESRI Basemap (2025) | **Data Source:** DCCEEW (2026)

umwelt

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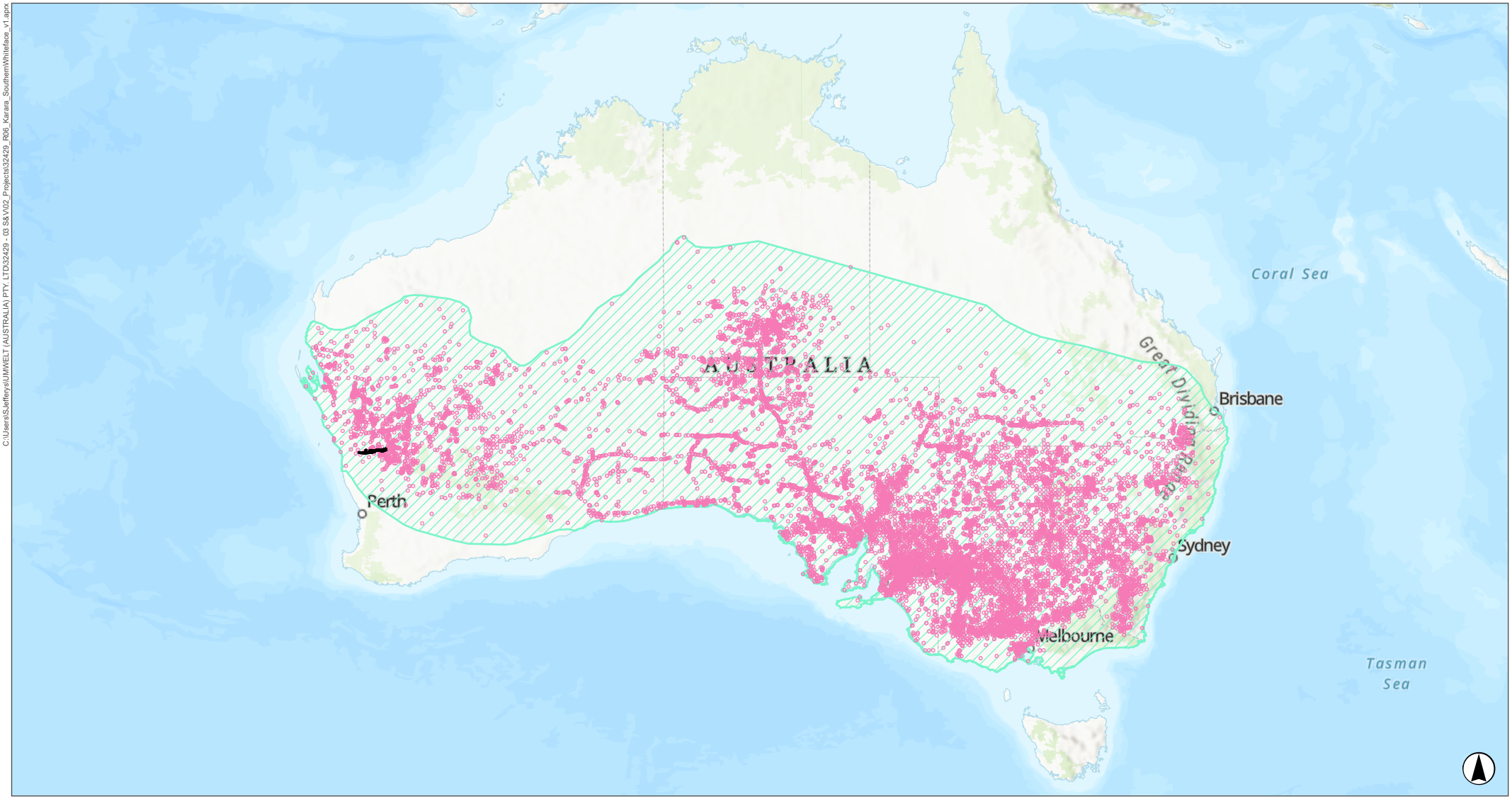

Scale: 1:26,000,000 at A4, GDA2020

Legend

- Combined Proposal Mitigated Disturbance Footprint
- Southern Whiteface Area of Occupancy
- Southern Whiteface Extent of Occurrence

FIGURE 4.3

Extent of Occurrence and Area of Occupancy of Southern Whiteface in Australia

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0 520 1,040 km

Image Source: ESRI Basemap (2025) | **Data Source:** DCCEEW (2026)

4.4 Biology and Ecology

According to the approved conservation advice, Southern Whiteface occupy a broad variety of open woodland and shrubland environments, typically where grasses or shrubs form the understorey (DCCEEW, 2023). These habitats are generally dominated by acacias or eucalypts across plains, lowlands, foothills and ranges (DCCEEW, 2023). Southern Whiteface are generally regarded as sedentary. However, research suggests that during drought they may shift into wetter areas beyond their usual distribution (DCCEEW, 2023).

The species feeds predominantly at ground level, favouring sites with sparse tree cover and a litter-rich herbaceous understorey. Their diet largely consists of insects, spiders and seeds obtained from bare soil or leaf litter (DCCEEW, 2023). Although they are most often recorded in small groups of two to eight birds, flocks can increase substantially outside the breeding season, with up to around 70 individuals observed in winter foraging groups (DCCEEW, 2023). They also commonly join mixed-species feeding assemblages with other whitefaces and thornbills.

Breeding typically occurs from July through October across much of the species' range, though rainfall patterns in arid regions can influence timing, sometimes enabling off-season breeding or suppressing breeding during drought (DCCEEW, 2023). Nests are usually bulky, domed structures composed of grass, bark and root fibres, positioned within hollows or crevices, but occasionally placed within low shrubs (DCCEEW, 2023). While nesting is most frequently observed in pairs, cooperative breeding has been documented, with as many as four adults assisting in raising young (DCCEEW, 2023). Clutch sizes of three to four eggs are typical, and although the incubation period is not known, fledging generally occurs 14–19 days post-hatching (DCCEEW, 2023). The species' generation length is estimated at approximately 2.8 years (BirdLife International, 2022; DCCEEW, 2023).

4.5 Population

The approved Conservation Advice (DCCEEW, 2023) reports an estimated 477,000 mature Southern Whiteface individuals in the wild across Australia.

Population breakdown (Garnett, 2021):

- *Aphelocephala leucopsis castaneiventris*: ~67,000 individuals
    - Range: 36,000–134,000
- *Aphelocephala leucopsis leucopsis*: ~410,000 individuals
    - Range: 200,000–820,000.

4.6 Habitat Critical to the Survival of the Species

The approved Conservation Advice (DCCEEW, 2023) identifies several habitats features that are critical for the survival of the Southern Whiteface. These include:

- relatively undisturbed open woodlands and shrublands that support an understorey of grasses and/or shrubs

- areas with low tree density and an herbaceous, litter-rich understorey that provides essential foraging opportunities
- the presence of both living and dead trees containing hollows or crevices suitable for roosting and nesting.

The Conservation Advice (DCCEEW, 2023) emphasises that "habitat critical to the survival should not be cleared, fragmented or degraded and any known or likely habitat (**Figure 3.1**) should be considered as habitat critical to the survival of the species".

The approved Conservation Advice (DCCEEW, 2023) also states that "areas that are not currently occupied by the species due to recent disturbance (e.g. fire, grazing or human activity), but should become suitable again in the future, should also be considered habitat critical to the survival of the species."

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat.

4.7 Threats to the Species

Two principal threats to the species are highlighted in the approved Conservation Advice (DCCEEW, 2023), including:

- Loss, degradation and fragmentation of habitat, driven largely by land clearing for agriculture and by degradation associated with domestic livestock grazing.
- Climate-related pressures, such as more frequent or prolonged drought conditions and a heightened risk of extreme events including wildfire, drought and heatwaves.

4.8 Renewables Environmental Research Initiative

Currently Umwelt is involved in DCCEEW's Renewables Environmental Research Initiative (RERI), undertaking targeted research on Southern Whiteface. This work is being led by Dr Marina Louter and includes field studies across the country throughout the species' distribution.

As of February 2026, fieldwork has been conducted in Western Australia, South Australia and New South Wales. This work aims to collect morphological and genetic data to answer various genetic and population questions, including determining species' subspecies status throughout the current range and determine whether the western populations' decline is as severe as its eastern counterpart.

Coupled with other research objectives, the project will contribute to a better understanding of this species so that appropriate regulatory guidance and information can be delivered. The team has also partnered with scientists at James Cook University to deliver the technical aspect of this project to ensure a high-quality and reliable outcome.

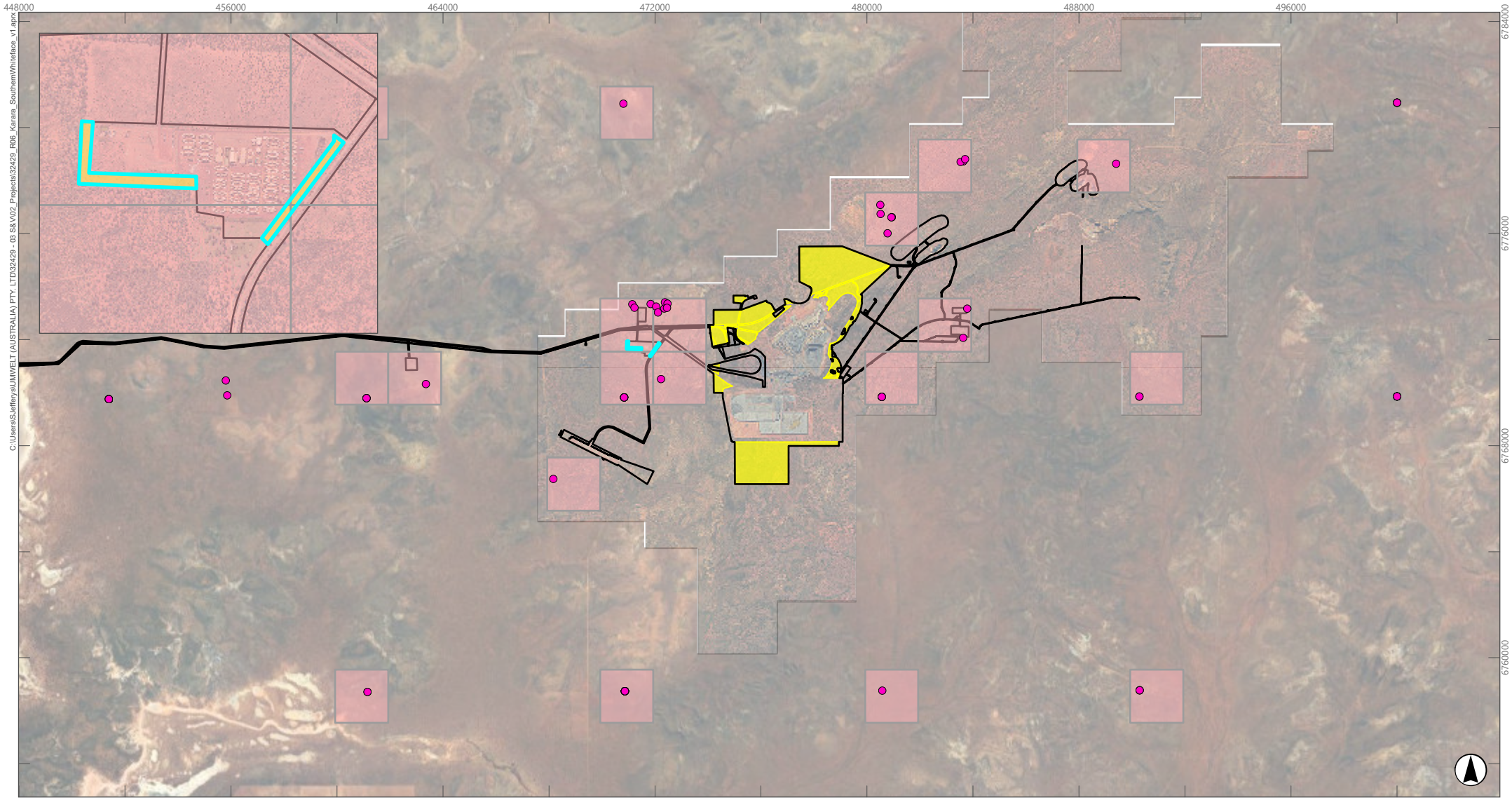
5.0 Regional Assessment

5.1 Occurrence in the Project Area and Surrounding Region

In June 2024, BCE targeted the Southern Whiteface during walked transects, and while the vegetation was consistent with the broad description of the Conservation Advice (DCCEEW, 2023)for Southern Whiteface habitat, the distribution of the species was very patchy. The species was found at multiple locations across the Mine Area and on the edge of cleared land west of Weelhamby Lake which with was consistent with the database records from ALA (BCE, 2025).

A full description of current and historic terrestrial fauna survey effort, in which the Southern Whiteface was a target species, can be found in Section 3.2.4.1.1 and Section 2.2 of BCE's Fauna assessment of proposed disturbance areas 2020 and 2024 (2025).

Southern Whiteface recorded by BCE and ALA for the Mine area are displayed in **Figure 5.1**.



Scale: 1:200,000 at A4, GDA2020 MGA Zone 50

Legend

- Combined Proposal Mitigated Disturbance Footprint
- KIOP MLE Mitigated Disturbance Footprint
- Southern Whiteface Area of Occupancy in Mine Area
- KIOP MLE Mitigated Disturbance Footprint Impact on Southern Whiteface Area of Occupancy
- Southern Whiteface Record (Bamford Consulting Ecologists and Atlas of Living Australia)

FIGURE 5.1

Southern Whiteface Records and Area of Occupancy Relevant to KIOP MLE Mitigated Disturbance Footprint

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0 4 8 km

Image Source: KML (2024), ESRI Basemap (2025) | **Data Source:** Landgate (2025), KML (2025)

5.2 Suitable Habitat in the KIOP MLE Mitigated Disturbance Footprint

BCE (2025) categorised 12 broad Vegetation and Substrate Associations (VSAs) based upon the VTs mapped by Umwelt (2025) for the Survey Area. BCE concluded that the Southern Whiteface generally preferred VSAs 3, 4, 5, 6 and 9 (**Table 5.1**), which is represented by VTs A, C, D, E, H, P, Q, R and S (**Table 5.2**). A total of 842 ha of preferred habitat was identified within the KIOP MLE mitigated disturbance footprint.

However, Southern Whiteface is not expected to utilise the entire extent of each suitable VT. BCE (REF) identified from their survey and report that they tend to occur within a patchily distributed ecotone between VTs rather than being constrained within them. As it is impractical to map the areas between VTs, the total areas of relevant VTs were utilised to represent potentially suitable habitat. Thus, impact to the species is likely to be overpredicted in this assessment based on the full extent of the relevant VTs (BCE, 2025).

Table 5.1 Southern Whiteface Preferred Habitat (BCE, 2025)

VSA	Description
3	Acacia tall shrubland on moderately deep sandy loam, often with scattered small rocks on surface. Abundant annuals in winter and spring. Scattered York Gum and other eucalypts. Extensive and generally low in the landscape. This VSA includes Umwelt VTs A, AA, C, E, H, R, T, Z, HMVT B, HMVT C and HMVT G.
4	Acacia shrubland with scattered Sand Pine on sandy loam flats. This VSA includes Umwelt VT D.
5	Mixed shrubland and tall thicket of Acacia and Melaleuca on clay-loam flats with little understorey. This VSA includes Umwelt VTs P and Q.
6	Acacia low shrubland on gravelly-loam rises. Shrubs tend to be low (<1.5m) and dense. This VSA includes Umwelt VTs S, V, W, X and Y.
9	Chenopod shrublands and salt lakes, with a large system in the central north of the mine area. Also includes areas of clay pans. This VSA includes Umwelt VTs J, L, M, N and HMVT A.

Table 5.2 Summary of Suitable Habitat for Southern Whiteface and Estimated Impacts Associated with the KIOP MLE Mitigated Disturbance Footprint

Vegetation Type	Total (ha)
A	65.93
C	0.74
D	342.40
E	28.26
H	70.25
P	47.63
Q	101.52
R	104.38
S	80.69
Total suitable habitat	**841.79**

5.3 Suitable Habitat in the Bioregion

5.3.1 Extent of Suitable Habitat

The Southern Whiteface is known to occur throughout the Tallering IBRA subregion, which provides the boundary for vegetation mapping at a regional scale. This broad mapping has been assessed to understand the extent of suitable habitat by reviewing the NVIS MVGs for habitat suitability, as outlined in **Table 5.3**.

The table shows a total 3,498,926 ha of vegetation and maps the entire Tallering subregion. Of this area, 3,338,251 ha, or 95.4% is considered potential habitat for Southern Whiteface based on NVIS MVG suitability.

Table 5.3 Suitable Southern Whiteface Habitat

NVIS Major Vegetation Group	Suitable habitat for the Southern Whiteface (yes/no)	Total extent of suitable Southern Whiteface habitat in subregion (ha)
Acacia Forests and Woodlands	yes	445,967
Acacia Shrublands	yes	2,400,597
Chenopod Shrublands, Samphire Shrublands and Forblands	yes	120,237
Cleared, non-native vegetation, buildings	no	111,843
Eucalypt Open Woodlands	yes	1,447
Eucalypt Woodlands	yes	150,643
Heathlands	yes	141
Hummock Grasslands	no	48
Inland aquatic - freshwater, salt lakes, lagoons	no	42,047
Low Closed Forests and Tall Closed Shrublands	yes	104
Mallee Open Woodlands and Sparse Mallee Shrublands	yes	206,654
Mallee Woodlands and Shrublands	yes	2,747
Naturally bare - sand, rock, claypan, mudflat	no	6,737
Other Shrublands	yes	9,714
Total suitable Southern Whiteface habitat in subregion		**3,338,251**

5.3.2 Impact to Suitable Habitat

The Proposal will impact up to 842 ha of VTs mapped as suitable Southern Whiteface habitat. Overall, this represents 0.03% of suitable habitat across the IBRA subregion (**Table 5.4**).

Table 5.4 Proportion of Southern Whiteface habitat impacted

IBRA subregion	Habitat in KIOP MLE mitigated disturbance footprint (ha)	Habitat in IBRA Subregion (ha)	% of habitat impacted
Tallering	842	3,338,251	0.03

5.4 Impact to Area of Occupancy

The AOO was mapped in the KIOP Mine Area using a 2 km x 2 km grid applied to Southern Whiteface records (sourced from BCE survey data and Atlas of Living Australia records). The area of intersect between the mapped local Southern Whiteface AOO and the KIOP MLE mitigated disturbance footprint was calculated.

The AOO for the Southern Whiteface in Australia and in the KIOP MLE mitigated disturbance footprint is shown in **Table 5.6**. The AOO calculated for the KIOP MLE mitigated disturbance footprint is estimated to be approximately 7 ha and only intersect two small areas associated with the mining camp accommodation (**Figure 5.1**).

Table 5.5 Area of Occupancy (AOO) of the Southern Whiteface in Australia, the Disturbance

National AOO (ha)	KIOP MLE mitigated disturbance footprint AOO (ha)	Proportion of AOO Impacted (%)
6,286,400	7	0.0001

5.5 Conclusion

No Southern Whiteface have been recorded in the proposed KIOP MLE disturbance footprint, although they have been recorded in the broader Mine Area.

The proposed KIOP MLE disturbance footprint will impact less than 0.03% of suitable habitat for Southern Whiteface in the Tallering IBRA subregion and less than 0.0001% of the national AOO of the species.

This information was applied in assessment against the significant impact criteria for MNES fauna species as detailed in the *MNES – Significant impact guidelines 1.1 EPBC Act* (Department of the Environment, 2013) which is presented in the *KIOP MLE Review of Significance of Residual Impacts* (Umwelt, 2026b).

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