



CHAPTER 13 – BIODIVERSITY OFFSETS

STANMORE ID EXTENSION PTY LTD
ISAAC DOWNS EXTENSION PROJECT

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13. BIODIVERSITY OFFSETS

13.1 Introduction

This chapter describes the biodiversity offsets proposed for the Project for those matters of national environmental significance (MNES) and matters of state environmental significance (MSES) which were assessed as likely to be significantly impacted by the Project.

Offsets for MNES are based on the offset area management plan (OAMP) prepared by Trend Environmental (Trend) provided in **Appendix R**. Offsets for MSES are based on the offset delivery plan (ODP) prepared by Trend provided in **Appendix S**. The OAMP and ODP have been prepared in accordance with the respective Commonwealth and State policies and guidelines for biodiversity offsets, as well as the terms of reference (ToR) for the Project's environmental impact statement (EIS).

The proposed offset area is located on the Mulgrave and Tootoolah properties, comprising multiple adjacent lots, owned by a wholly owned subsidiary of Stanmore Resources Ltd (Stanmore) (Figure 13-1). The proponent for the Project is also a wholly owned subsidiary of Stanmore.

The OAMP and ODP were informed by an offset ecological assessment report (OEAR) for the proposed offset area, which provides the results of all field surveys undertaken at Mulgrave and Tootoolah. The OEAR is provided as Appendix B of **Appendix R**. The OAMP and ODP describes the potential offset area for relevant MNES and MSES, and the management and monitoring measures to achieve the proposed performance targets and completion criteria.

The OAMP and ODP demonstrate that the proposed offset area can fully acquit the Project's offset requirements for MNES and MSES, respectively, as a proponent driven, direct, land based offset.

13.2 Regulatory Framework

13.2.1 Commonwealth

13.2.1.1 Environment Protection and Biodiversity Conservation Act 1999

Any action that is likely to have a significant impact on MNES is subject to assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) by the Department of Climate Change, Energy, the Environment and Water (DCCEEW). The Project is subject to a Referral under the EPBC Act, with the controlling provisions being listed threatened species and communities (s18 and 18A), and water resources (s24D & 24E).

Significant residual impacts to threatened species and threatened ecological communities (TECs) listed under the EPBC Act that require offsets are discussed in this chapter, based on the assessments provided in **Chapter 11**.

It is intended that the OAMP commences on approval of the Project, and is specifically linked to the offsets required for the Project's significant impacts. However, should offsets be secured prior to Project approval, the proponent will determine whether the proposed offsets would be considered an advanced offset in accordance with the 'Policy statement: Advanced environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999'¹.

¹ <https://www.dcceew.gov.au/sites/default/files/documents/advanced-offsets-policy-statement.pdf>

13.2.1.2 Environmental Offsets Policy

The EPBC Act Environmental Offsets Policy (DSEWPaC, 2012) discusses the role of offsets in impact assessments as well as outlining the policy principles to determine the suitability of a proposed offset package. The policy defines an offset package as a “*suite of actions that a proponent undertakes in order to compensate for the residual significant impact of a project*”. An assessment of how the OAMP meets the policy principles of the EPBC Act Environmental Offsets Policy is provided in Section 2.1 of **Appendix R**. Note that the approval holder declaration in the OAMP will be completed following acceptance of the OAMP by DCCEEW as part of the approval’s process.

An offset can be in the form of a direct offset or other compensatory measure. The proponent proposes providing 100% direct offsets for significant impacts to MNES from the Project.

The OAMP has been developed to acquit 100% of likely significant impacts to MNES from the Project. The OAMP has been prepared by a suitability qualified ecologist (Table 1-3 of **Chapter 1**).

The surveys of the proposed offset area were undertaken in accordance with the How to Use the Offsets Assessment Guide (DCCEEW, n.d.) to collect sufficient ecological data to determine habitat quality scores for input into the Commonwealth’s Offset Assessment Guide (DSEWPaC, 2012) (also referred to as ‘the offsets calculator’) to determine offset potential, area availability and acquittal rates.

13.2.2 State

13.2.2.1 Environmental Protection Act 1994

An environmental authority (EA), under the *Environmental Protection Act 1994* (EP Act), will be required for the Project’s mining leases (MLs). The EA is likely to set conditions requiring biodiversity offsets for significant impacts to MSES from the Project.

13.2.2.2 Environmental Offsets Act 2014

The Queensland environmental offsets framework consists of the *Environmental Offsets Act 2014* (EO Act), *Environmental Offsets Regulation 2014* (EO Regulation) and the Queensland Environmental Offsets Policy (Version 1.17) (DETSI 2025). The offsets framework requires environmental offsets to be delivered when an activity is likely to result in a significant residual impact on a prescribed environmental matter. The Significant Residual Impact Guideline (DEHP 2014) is used to assess whether the Project will result in a significant residual impact. MSES are matters protected and regulated under Queensland legislation and are listed in schedule 2 of the EO Regulation.

The Queensland Environmental Offsets Policy establishes an environmental offset hierarchy to avoid duplication of offset conditions between jurisdictions. In accordance with the EO Act, State and local governments may only impose an offset condition if ‘the same, or substantially the same, impact and the same, or substantially the same, matter’ has not been subject to assessment under the Commonwealth.

Many of the MSES assessed for potential Project impacts are the same, or substantially the same, matter as the MNES assessed for the Project (see Section 13.3).

13.3 Biodiversity Values Requiring Offsets

13.3.1 Summary

13.3.1.1 MNES

The terrestrial ecology assessment (refer to **Chapter 11**) determined that there would be significant impacts to the listed threatened TECs and species, as identified in Table 13-1.

The aquatic ecology assessment (refer to **Chapter 12**) determined that there would not be significant impacts on MNES that were not already assessed as part of the terrestrial ecology assessment (refer to **Chapter 11**).

13.3.1.2 MSES

The terrestrial ecology assessment (refer to **Chapter 11**) determined that there would be significant residual impacts to some MSES, that were not the same or substantially the same as a MNES, as identified in Table 13-2.

The aquatic ecology assessment (refer to **Chapter 12**) determined that there would not be significant impacts on MSES that were not already assessed as part of the terrestrial ecology assessment (refer to **Chapter 11**). This includes listed aquatic species and waterways providing for fish passage.

13.3.2 Impact Area Habitat Quality

13.3.2.1 MNES

Table 13-1 summarises the extent of habitat proposed to be impacted by the Project for each MNES, for which there are likely to be significant impacts, together with the habitat quality score determined for that habitat within the impact area. The assessment of habitat quality scores for the impact site is described in detail in Appendix H of **Appendix P**. Habitat quality assessments at the impact site followed the same methodology adopted for the proposed offset area, as described in Section 13.5.2.

Overall, that habitat in the impact area is assessed as moderate to good quality, and these values form the basis for the corresponding offset requirements.

Table 13-1 *Impact Area Habitat Quality Scores - MNES*

MNES		Impact Area	
		Impact (ha)	Habitat Quality Score
TECs	Brigalow TEC	52.72	6
	Poplar Box TEC	15.45	5
Threatened Species	Squatter Pigeon habitat	334.15	6
	Greater Glider habitat	318.02	5
	Koala habitat	318.03	6
	Ornamental Snake habitat	75.97	5

13.3.2.2 MSES

Table 13-2 summarises the extent of habitat proposed to be impacted by the Project for each MSES, for which there are likely to be significant residual impacts, together with the habitat quality score determined for that habitat within the impact area. Table 13-2 described the 'matter' (MSES) requiring offsets, the broad vegetation group (BVG) to which it belongs and the relevant bioregion and subregion.

Under the Queensland Environmental Offsets Policy, an environmental offset for an impact on regulated vegetation can be provided in an ecosystem in the same BVG and within the same bioregion.

Table 13-2 Impact Area Habitat Quality Scores – MSES

Matter	Matter Group	Bioregion	Subregion	Area (ha)	Habitat Quality Score
RE11.3.1 (BVG 25a)	Regional ecosystem	Brigalow Belt	Northern Bowen Basin	9.08	7
RE11.3.2 (BVG 17a)	Regional ecosystem	Brigalow Belt	Northern Bowen Basin	20.82	5
RE11.3.3 (BVG 16c)	Regional ecosystem	Brigalow Belt	Northern Bowen Basin	40.17	6
RE11.3.3 (BVG 16c)	Defined bank	Brigalow Belt	Northern Bowen Basin	4.68	6
RE11.3.25 (BVG 16a)	Defined bank	Brigalow Belt	Northern Bowen Basin	6.38	6
Connectivity area	Connectivity	Brigalow Belt	Northern Bowen Basin	347.55	6

13.4 Properties for Offsets

13.4.1 Property Details and Location

The Mulgrave and Tootoolah properties are proposed for Commonwealth and State offsets, and are shown in Figure 13-1. These properties are approximately 35 km northeast of the Project area (see Figure 13-1) and are located in the same bioregion as the Project area, namely the Brigalow Belt bioregion. The landholder for both properties is a wholly owned subsidiary of Stanmore.

The Mulgrave property is made up of three land lease lots (Lot 3 SP238564, Lot 3 SP162563 and Lot 2 WHS16) totalling 14,338 ha. The Tootoolah property is made up of two freehold lots (Lot 7 SP155252 and Lot 8 SP155252) totalling of 17,965 ha.

The portion of the properties proposed for the offset area is shown on Figure 13-2. MNES offset areas are located on Lot 2 WHS16 and Lot 7 SP155252. Offset areas for each MNES are co-located wherever possible, based on the habitat and ecological community requirements.

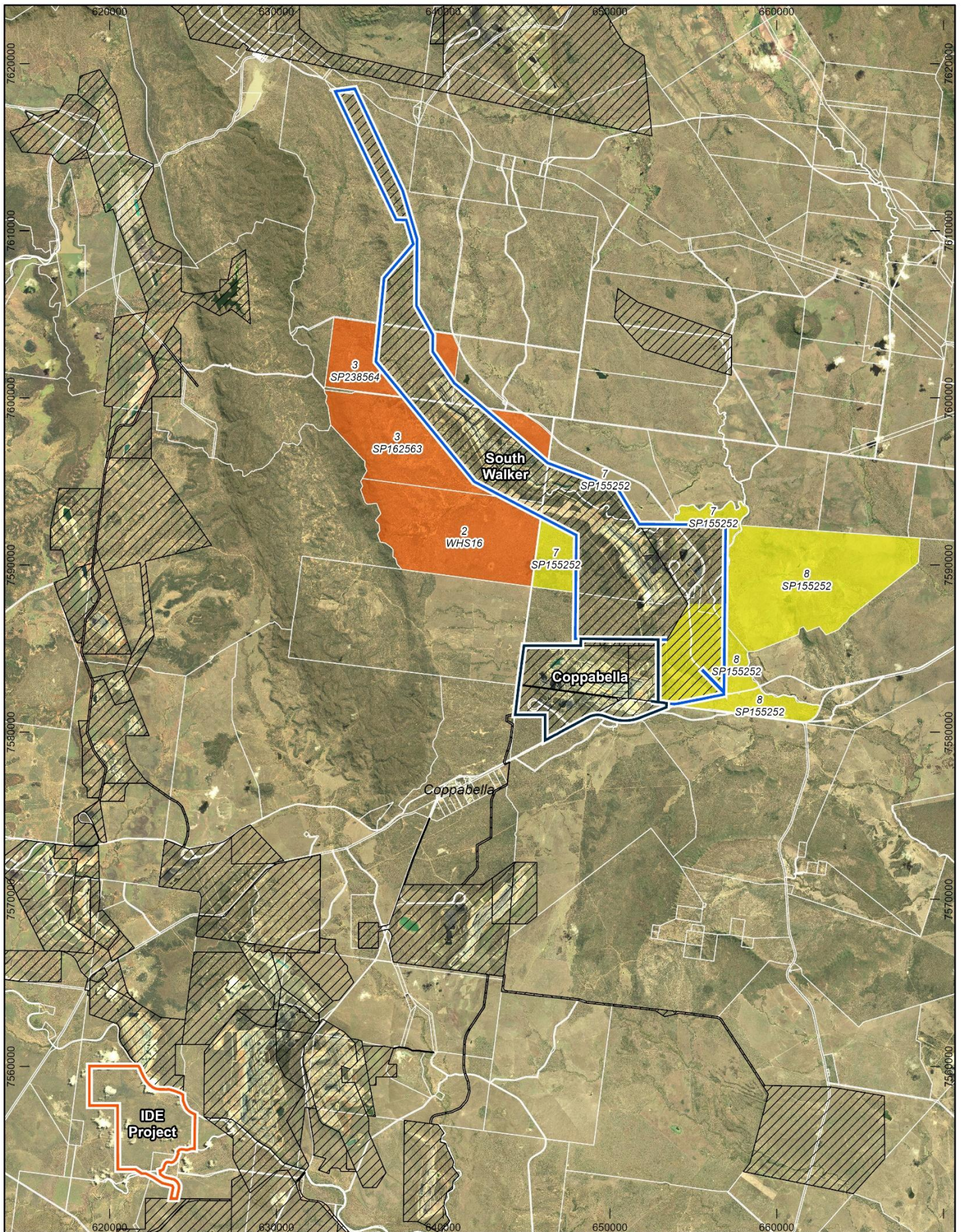
MSES offset areas are located on Lot 2 WHS16, Lot 7 SP155252 and Lot 8 SP155252. Offset areas for each MSES are co-located wherever possible with other MSES and MNES, based on the habitat and ecological community requirements.

South Walker Creek (SWC) Mine, owned by a Stanmore subsidiary, has MLs across parts of the Mulgrave and Tootoolah properties, as shown in Figure 13-2. Other mining companies have MLs to the southern east of the SWC MLs, but which are not located on the Mulgrave and Tootoolah properties. As shown on Figure 13-2, the offset areas are proposed on those parts of the Mulgrave and Tootoolah that are not within any ML boundaries. Further, no parts of the properties proposed for offsets are subject to ML applications or any other production resource tenement.

The proposed offset area intersects exploration tenements under the *Mineral Resources Act 1989* (MR Act), namely two mineral development licences (MDLs) held by third parties. Where the legal security mechanism for a proposed offset area is a voluntary declaration (VDec) under the *Vegetation Management Act 1999* (VM Act) (see Section 13.5.10), this is not a registered interest in the land for which consent is required from the MDL holders.

A buffer area has been maintained between the SWC MLs, other MLs and the proposed offset areas, as shown in Figure 13-2, to mitigate against any potential edge effects from mining operations.

As the owner of the Mulgrave and Tootoolah properties, Stanmore does not need to enter into an agreement with a third party to secure the land for the purposes of offsets or to manage the offset areas in accordance with a defined management plan. There are no mortgages or encumbrances over the land.



Datum: GDA2020 Zone 55
 Scale: See Scale Bar
 Date: 21/05/2026 7:11 AM
 Drawn: Minserv
 Source: Trend Environmental Consultants
 File: 20260515 Proposed Offset Properties.aprx

DISCLAIMER: Third party data sources are used in this map compilation.
 Minserv makes no warranty regarding this data's accuracy or currency.

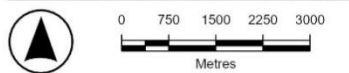
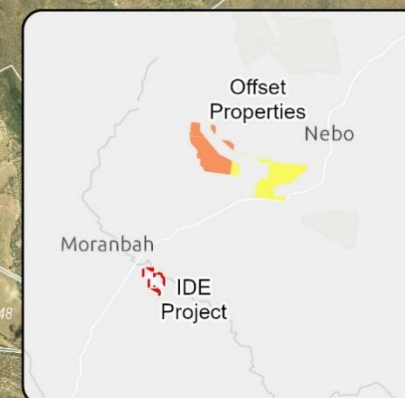
LEGEND

- ML
- IDE Project MLAs
- Coppabella MLs
- South Walker MLs
- Offset Properties**
- Mulgrave
- Tootoolah



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Properties Proposed for Offsets



Datum: GDA2020 Zone 55
 Scale: See Scale Bar
 Date: 3/06/2026 9:57 AM
 Drawn: Minserv
 Source: Trend Environmental Consultants
 File: 20260515 Proposed Offset Areas.aprx

- LEGEND**
- ML
 - MNES Offset Area Boundary
 - Ecology Survey Area
 - MSES Offset Area Boundary

DISCLAIMER: Third party data sources are used in this map compilation.
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Proposed Offset Areas on
Nominated Properties for Offsets

13.4.2 Historical Changes in Habitat Quality

The Commonwealth's Offset Assessment Guide (i.e. offset calculator) requires the future habitat quality of the offset area. To support assessment of whether future expected habitat quality of the proposed offset area is likely to remain the same without offsets or show a decline, vegetation and habitat condition over the previous 20 year time frame was assessed through the use of Normalised Difference Vegetation Index (NDVI) and Modified Soil Adjusted Vegetation Index (MSAVI) mapping. The NDVI and MSAVI mapping for the proposed MNES offset area were reviewed for wet and dry season imagery from 2001 to 2025.

These indices were used as complementary indicators of vegetation condition across the offset areas. NDVI provides a broad measure of live green vegetation and is most responsive where there is relatively greater photosynthetically active biomass, such as more developed shrub and tree canopy. In contrast, MSAVI was used to better assess areas with sparser vegetation cover, including early regrowth, low woody cover and ground-layer vegetation, because it reduces the influence of exposed soil background and is therefore more informative in areas where vegetation is patchy or ground cover is limited. Together, NDVI and MSAVI provide a useful basis for interpreting both canopy vigour and more open or early successional vegetation condition across the offset areas. Comparative wet and dry season mapping is shown in Figure 1 to Figure 3 of Appendix B of **Appendix R**.

Analysis of the NDVI and MSAVI indicates a measurable decline in native vegetation quality across the monitoring period from 2001 to 2025.

While elevated indices during periods of high rainfall (2007 – 2012) may superficially suggest improved vegetation condition, the persistence of high dry season greenness, equal to or exceeding wet season values, is inconsistent with native vegetation dynamics and instead indicative of the establishment and proliferation of exotic weed species. *Cenchrus ciliaris* (Buffel Grass)*, *Lantana camara* (Lantana)*, and *Melinis repens* (Red Natal Grass)* are the primary weed species of concern within the Mulgrave and Tootoolah properties, all of which maintain canopy greenness through dry periods when native vegetation would typically senesce.

Subsequent monitoring periods that were assessed (2012 – 2021 and 2021 - 2025) failed to return to baseline vegetation condition. The results strongly indicate that exotic weed cover has become structurally established across the proposed offset area and is now contributing substantially to the vegetation signal detected by satellite. The progressive increase in the frequency and magnitude of high dry season NDVI events from 2012 onwards suggests that weed cover has continued to expand rather than stabilise. Taken together, the remote sensing evidence indicates a significant decline in native vegetation quality across the offset areas over the 24 year monitoring period, driven primarily by exotic weed invasion that has progressively displaced native grass and understorey communities from the mid-2000s onwards. As described in Section 13.6.7, based on field surveys, weed cover in the offset area is high.

Accordingly, the NDVI and MSAVI assessment provides strong evidence that habitat quality within the proposed offset area has declined over the previous 20 years, even within the context of the legislative framework for land and vegetation management that has applied over that period. The scale and consistency of the mapped decline is clearly indicative of at least a 1-point reduction in habitat quality value over the 20-year period. On that basis, and in the absence of active offset management, a continued decline in habitat quality would be expected over the next 20 years.

13.4.3 Connectivity Values

The Mulgrave and Tootoolah properties are situated within the catchments of Carborough Creek, Walker Creek and Bee Creek. These creeks contain riparian vegetation of high value, providing suitable habitat for Brigalow TEC and Poplar Box TEC, Squatter Pigeon, Greater Glider, Koala and Ornamental Snake.

Directly to the east, Carborough Creek joins Walker Creek and Bee Creek which support relatively intact riparian vegetation that extends into Denison Creek and the Connors River (stream order 7), approximately 30 km south east of the properties.

Map 3 of **Appendix R** shows the connectivity of the offset area and the greater Mulgrave and Tootoolah properties with the surrounding landscape. At a landscape scale, Mulgrave and Tootoolah properties are situated adjacent to a state biodiversity corridor, which follows the Carborough Range. This state biodiversity corridor connects the offset properties to the Dipperu National Park, and the Hamilton Park property, which is owned by Stanmore and currently secured for offsets for Black Ironbox (*Eucalyptus raveretiana*), Squatter Pigeon, Greater Glider and Koala habitat.

The Mulgrave and Tootoolah properties possess a high level of biodiversity, which retains substantial connectivity with the surrounding landscape to the west along Carborough Range. Due to this, it is deemed that the property possesses a high conservation value and is ideal for the provision of environmental offsets, which will ensure a conservation gain for the impacts to Brigalow TEC, Poplar Box TEC, and habitat for Squatter Pigeon, Greater Glider, Koala and Ornamental Snake, resulting from the Project.

13.4.4 Threatening Processes

The Mulgrave and Tootoolah properties are subject to the following threatening processes:

- degradation of habitat
- habitat loss through vegetation clearing
- degradation of habitat by livestock overgrazing
- predation of protected fauna by wild dogs, feral cats and european foxes
- degradation of habitat by european rabbits and feral pigs
- invasion of habitat by weed species
- decrease in the habitat quality score for any offset value from baseline and subsequent monitoring events as a result of fire management measures, or an unplanned fire.

13.5 Suitability of Habitat in the Proposed Offset Area

13.5.1 Field Surveys Methods, Timing and Effort

Field surveys of the Mulgrave and Tootoolah properties, including the proposed offset areas were completed in August / September 2023, and July 2025. Detailed information on field surveys is provided in Section 2 of the OEAR (Appendix B to **Appendix R**). Surveys were undertaken in accordance with the following methods:

- The regional ecosystem (RE) mapping and vegetation communities using quaternary survey methods, as described in the Methodology for surveying and mapping regional ecosystems (Neldner et al., 2023).
- TEC assessments to detect:
 - presence of corresponding REs for the Brigalow TEC and features that met the key diagnostic criteria and condition thresholds within the Approved Conservation Advice for the TEC (TSSC, 2013)
 - presence of corresponding REs for the Poplar Box TEC and features that met the key diagnostic criteria and condition thresholds within the Approved Conservation Advice for the TEC (DoEE, 2019).
- Targeted surveys to detect presence of Koala, Greater Glider, Squatter Pigeon and Ornamental Snake on the property.

- Habitat suitability assessments to assess the potential for vegetation communities to support habitat for the threatened species as per the habitat definitions for each species (see Table 2 of Appendix B to **Appendix R**), and to detect the presence of specific habitat features preferred by each offset matter.
- Habitat quality assessments of each assessment unit (AU) in accordance with the Guide to Determining Terrestrial Habitat Quality: Methods for assessing habitat quality under the Queensland Environmental Offsets Policy, Version 1.2 (DEHP, 2017) (the ‘Guide to Determining Terrestrial Habitat Quality’) to be consistent with DCCEEW’s Modified Habitat Quality Assessment (MHQA) scoring spreadsheet.

Survey effort, showing quaternary survey sites and habitat quality assessment sites, is shown in Map 2a 2b of the OEAR (Appendix B to **Appendix R**). Surveys occurred within and surrounding the proposed offset areas. Where field-verification was not undertaken (outside of the proposed offset area), desktop REs have been shown in Map 2a and 2b of Appendix B to **Appendix R**.

Final TEC habitat quality scores, derived from site condition and site context attributes for each site, are provided in the OEAR (Appendix B to **Appendix R**).

For habitat for each species, final habitat quality scores, derived from site condition, site context attributes and species stocking rates for each AU, are provided in the OEAR (Appendix B to **Appendix R**).

13.5.2 Habitat Quality Scoring Methodology - MNES

The impact and offset sites were surveyed in accordance with the site condition and context methodology referred to in the Guide to Determining Terrestrial Habitat Quality to be consistent with the DCCEEW’s MHQA scoring spreadsheet. This habitat quality scoring methodology, however, does not include species stocking rates or weighted scoring which is inconsistent with the methodology described within the How to Use the Offsets Assessment Guide. Hence, species stocking rates and weighted scoring was derived from the How to Use the Offsets Assessment Guide.

Three components (site condition, site context and species stocking rate) contribute to the final habitat quality score, with weightings given depending on the ecological requirements of the impacted species or TECs. The final habitat quality scores were derived by adding the weighted values (out of 10) for site condition, site context and species stocking rates together.

For TECs, species stocking rates were not applied, and weighted 70% for site condition and 30% for site context. For all four MNES species (Squatter Pigeon, Greater Glider, Koala and Ornamental Snake), the species stocking rate was given a greater weighting, as the stocking rate is what contributes to the long-term viability of the species. Therefore, site condition was weighted 30%, site context was weighted 30%, and species stocking rate was weighted 40% for the final habitat quality scores.

Detailed information on habitat quality scoring methodologies are provided in Section 2 of the OEAR (Appendix B to **Appendix R**).

13.5.3 Habitat Quality Results - MNES

13.5.3.1 Offset Area Extent

The proposed MNES offset areas are shown on Figure 13-3, based on the results of field surveys (described in this section) and subsequent inputs into the Commonwealth’s Offset Assessment Guide (i.e. the offsets calculators) (see Section 13.6).

Section 3.2 of the OAMP (**Appendix R**) and Section 3.2 of the OEAR (Appendix B to **Appendix R**) provide detailed descriptions of the habitat quality for results for MNES, summarised below.

13.5.3.2 Brigalow TEC

Field surveys on the Mulgrave and Tootoolah properties were conducted to confirm the presence of Brigalow TEC. Ground-truthing was done by conducting quaternary surveys and TEC assessments to confirm the presence of Brigalow TEC. Brigalow TEC was recorded within REs 11.4.8a and 11.4.9. The starting habitat quality score for the proposed offset area is 7. The proposed offset area for Brigalow TEC is 198.00 ha.

13.5.3.3 Poplar Box TEC

Field surveys on the Mulgrave and Tootoolah properties were conducted to confirm the presence of Poplar Box TEC. Ground-truthing was done by conducting quaternary surveys to confirm presence of Poplar Box TEC, with the TEC confirmed based on a corresponding RE (11.3.2). The starting habitat quality score for the proposed offset area is 7. The proposed offset area for Poplar Box TEC is 48.40 ha.

13.5.3.4 Squatter Pigeon

Field surveys on the Mulgrave and Tootoolah properties were conducted to confirm the presence of the Squatter Pigeon and the species habitat. Targeted surveys included flushing surveys and incidental recordings. The species habitat was confirmed based on presence of suitable REs within land zone 3 and 5, which are known to be suitable for breeding and foraging for the species. Once the species and species habitat was confirmed on the site, terrestrial habitat quality assessments were completed in accordance with the required methodologies.

The Squatter Pigeon was directly recorded on seven occasions within woodland habitats on the offset properties (see Map 5 of **Appendix R**). Three of these observations were within the proposed offset area for Squatter Pigeon, with others recorded adjacent.

The proposed offset area for Squatter Pigeon is 946.9 ha of remnant REs, and contains alluvial areas and ephemeral wetlands which provide water sources for the Squatter Pigeon which need to drink daily. The starting Squatter Pigeon habitat quality score for the proposed offset area is 6.

13.5.3.5 Greater Glider

Field surveys on the Mulgrave and Tootoolah properties were conducted to confirm the presence of the Greater Glider and the species habitat. Targeted surveys included spotlighting, with multiple individuals being recorded (Map 6 of **Appendix R**). Confirmation of species habitat was based on presence of suitable trees used for shelter and foraging. Once the species and species habitat was confirmed, terrestrial habitat quality assessments were completed in accordance with the required methodologies.

The Greater Glider was directly recorded with RE11.3.25b. These observations were directly adjacent to the proposed offset area for Greater Glider, within a buffer zone to the SWC MLs that is not proposed for inclusion in the offset area.

The proposed offset area for Greater Glider is 995.3 ha of remnant REs. The starting Greater Glider habitat quality score for the proposed offset area is 6.

13.5.3.6 Koala

Field surveys on the Mulgrave and Tootoolah properties were conducted to confirm the presence of Koala and the species habitat. Targeted surveys included spotlighting, scat and sign searches and incidental recordings. The species habitat was confirmed based on direct sightings and the presence of locally important food trees and ancillary habitat trees. Once the species and species habitat was confirmed on the site, terrestrial habitat quality assessments were completed in accordance with the required methodologies.

The Koala was directly recorded on two occasions, and scratches on food trees were recorded on multiple occasions (Map 7 of **Appendix R**). All direct and indirect observations of Koalas were made outside of the

proposed offset area, but within the offset properties and with vegetation connections to the proposed offset areas. Therefore, it is expected with high certainty, that the species would utilise the proposed offset area, with it including REs preferred by the species for both breeding and foraging.

The proposed offset area is 1,194.4 ha of remnant REs. The starting Koala habitat quality score for the proposed offset area is 6.

13.5.3.7 Ornamental Snake

Field surveys on the Mulgrave and Tootoolah properties were conducted to confirm the presence of the species and the species habitat. Targeted surveys included spotlighting. The species habitat was confirmed based on the presence of suitable REs within land zone 4 (11.4.8a and 11.4.9), which is known to be suitable breeding and foraging habitat for the species. Once the species and species habitat was confirmed on the site, terrestrial habitat quality assessments were completed in accordance with the required methodologies.

The Ornamental Snake was directly recorded on one occasion within Brigalow habitat (Map 8 of **Appendix R**). This observation was located within the proposed offset area for Ornamental Snake.

The proposed offset area is 215.3 ha of remnant REs. The starting Ornamental Snake habitat quality score for the proposed offset area is 6.

13.5.4 Land Based Offsets – MSES

Under the Queensland Environmental Offsets Policy, the offset must be of a size and scale proportionate to the significant residual impact on a prescribed environmental matter with the offset requirement set at a maximum multiplier of 4 (i.e. a maximum of four times the area of the residual impact) for regulated vegetation impacts.

For connectivity significant residual impacts, the offset area must be a non-remnant ecosystem and be in the same subregion (if a fragmented subregion). The size and scale of the connectivity offset area is set at a multiplier of 1.

The extent and scale of MSES offsets for the Mulgrave and Tootoolah properties were determined using the Guide to Determining Terrestrial Habitat Quality and the State's land-based offset multiplier calculator.

By using these requirements, offsets to compensate for the Project's impacts to MSES were identified. Based on the land-based offset multiplier calculator, all regulated vegetation impacts required an offset area four times the size of the impact area, while the connectivity impacts required an offset area one times (i.e. equal to) the size of the impact.

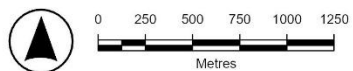
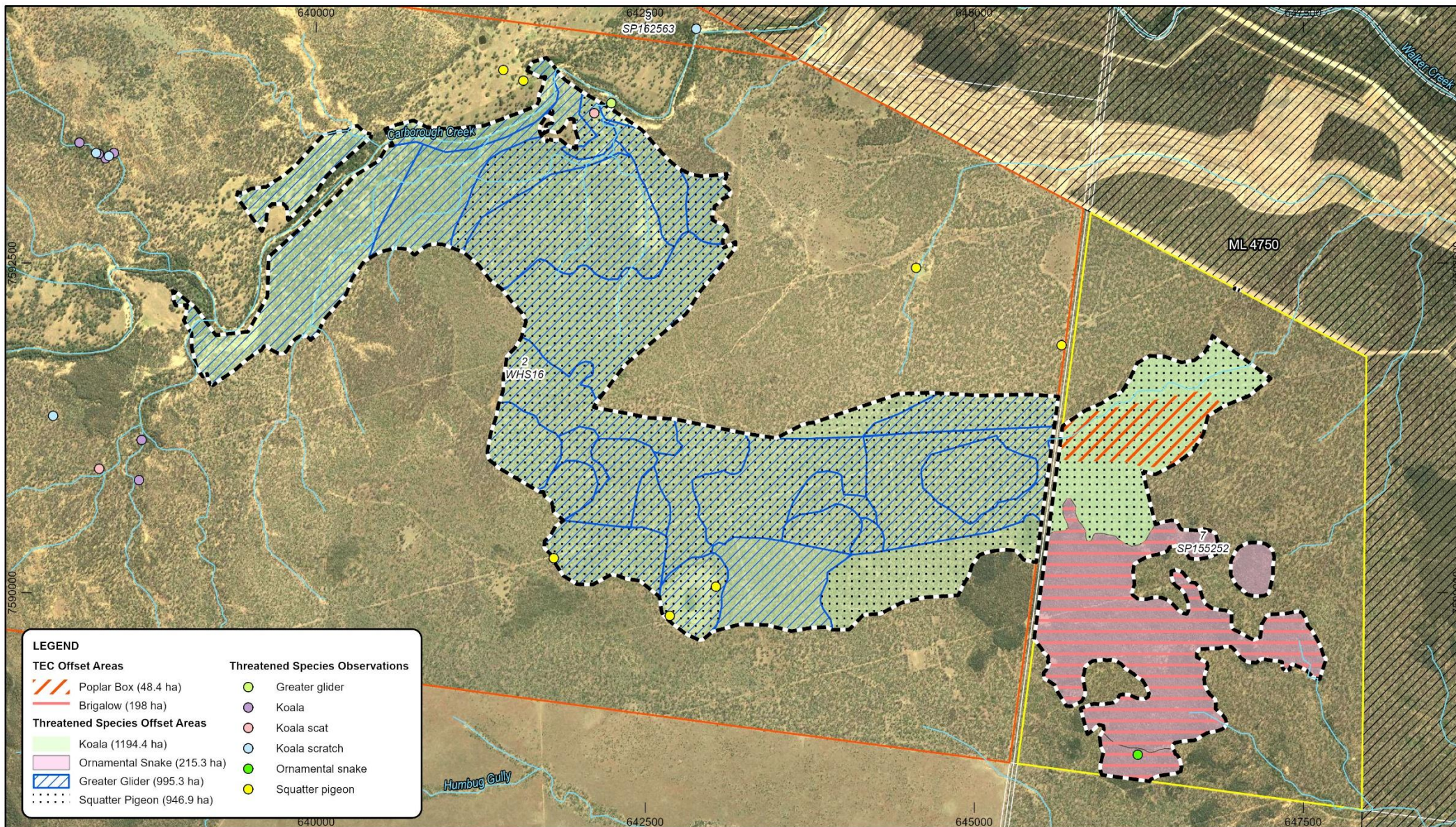
The MSES offset areas proposed on Mulgrave and Tootoolah are described in Table 13-3 and shown in Figure 13-4, which also shows the overlap between MNES and MSES offset areas. BVGs, bioregions and subregions in the offset areas have been aligned with those of the impact areas Table 13-2). The starting habitat quality scores for each of the MSES ('matters') in the offset area is provided in Table 13-3.

Offsets for connectivity areas are split across the two properties, but combined total 347.55 ha.

Table 13-3 MSES Offset Areas

Matter	Matter Group	Bioregion	Subregion	Area (ha)	Start Habitat Quality Score
Mulgrave Property					
RE 11.3.4 (BVG 16c)	Regional ecosystem	Brigalow Belt Bioregion	Northern Bowen Basin	179.4	6

Matter	Matter Group	Bioregion	Subregion	Area (ha)	Habitat Quality Score
RE 11.3.25b (BVG 16a)	Regional ecosystem	Brigalow Belt Bioregion	Northern Bowen Basin	25.52	7
Connectivity	Connectivity	Brigalow Belt Bioregion	Northern Bowen Basin	74.76	2
Total MSES Offset Area for Mulgrave Property				279.68 ha	
Tootoolah Property					
RE 11.3.2 (BVG 17a)	Regional ecosystem	Brigalow Belt Bioregion	Northern Bowen Basin	83.28	7
RE 11.4.9 (BVG 25a)	Regional ecosystem	Brigalow Belt Bioregion	Northern Bowen Basin	36.32	6
Connectivity	Connectivity	Brigalow Belt Bioregion	Northern Bowen Basin	272.79	2
Total MSES Offset Area for Tootoolah Property				392.39 ha	



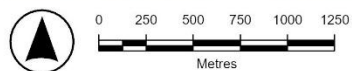
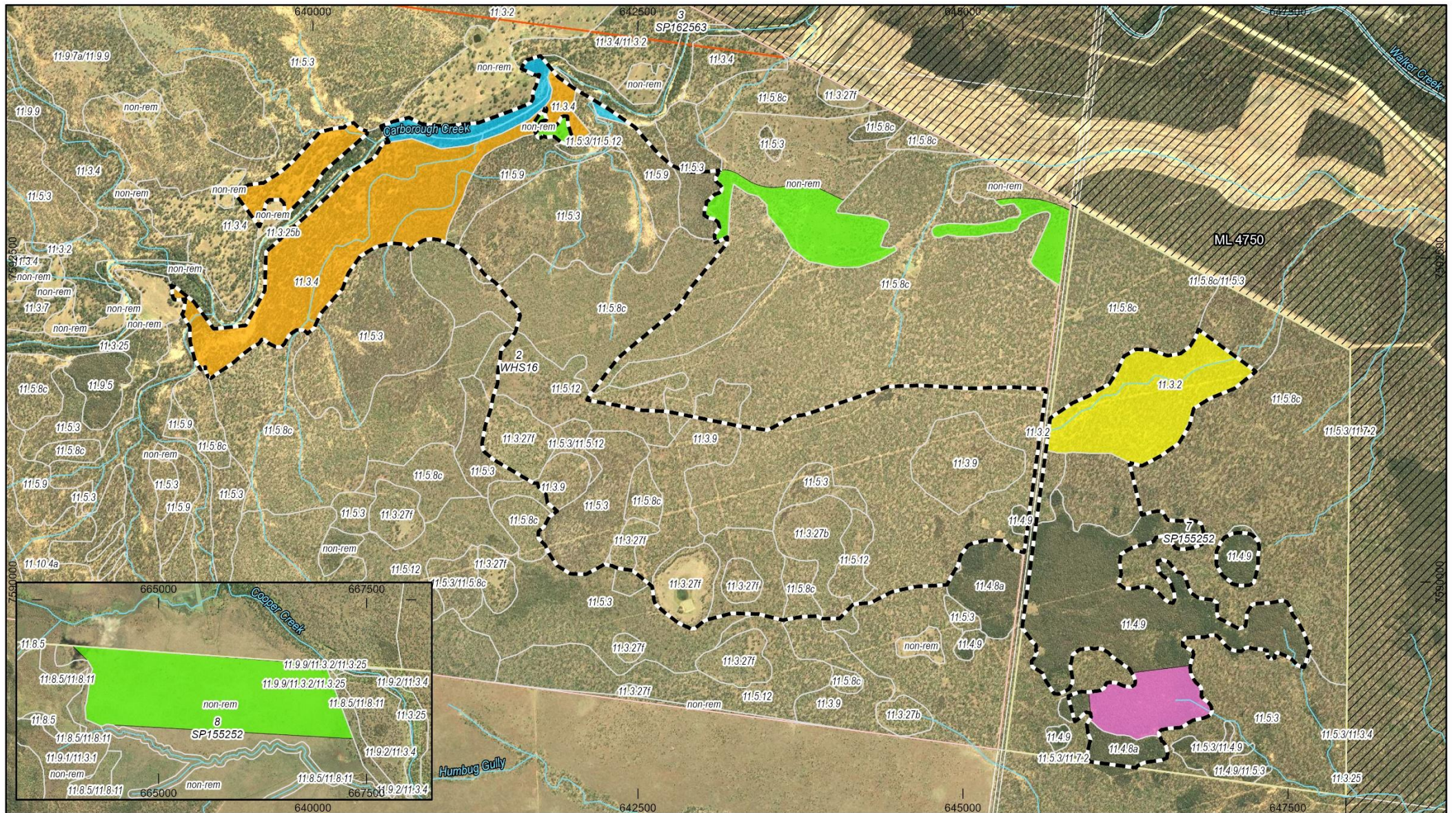
Datum: GDA2020 Zone 55
 Scale: See Scale Bar
 Date: 21/05/2026 10:15 AM
 Drawn: Minserv
 Source: Trend Environmental Consultants
 File: 20260515 MNES Offset Areas.aprx

DISCLAIMER: Third party data sources are used in this map compilation. Minserv makes no warranty regarding this data's accuracy or currency.



ISAAC DOWNS EXTENSION

MNES Offset Areas



Datum: GDA2020 Zone 55
 Scale: See Scale Bar
 Date: 3/06/2026 1:02 PM
 Drawn: Minserv
 Source: Trend Environmental Consultants
 File: 20260515 MSES Offset Areas.aprx

DISCLAIMER: Third party data sources are used in this map compilation. Minserv makes no warranty regarding this data's accuracy or currency.

LEGEND

- ML
- Vegetation Management Watercourses
- MNES Offset Area Boundary
- Ground-truthed Regional Ecosystems
- Offset Properties**
- Mulgrave
- Tootoolah

MSES Offset Areas

- MSES 16a (25.52 ha)
- MSES 16c (179.44 ha)
- MSES 17a (83.28 ha)
- MSES 25a (36.32 ha)
- Connectivity Areas (347.55 ha)



ISAAC DOWNS EXTENSION

MSES Offset Areas

Figure | 13-4

13.5.5 Offset Management and Delivery

13.5.6 Overview

The majority of the MSES offset areas have been positioned within the MNES offset area (see Figure 13-4). The exception is the connectivity offset areas, which is based on offsets in non-remnant vegetation. Whilst there is a separate OAMP for MNES (**Appendix R**) and ODP for MSES (**Appendix S**), offset area management actions, as described in the OAMP, are relevant to both MNES and MSES offset requirements. The OAMP describes the proposed management actions, the frequency of implementation and of inspections, monitoring requirements, responsibility, triggers for remedial action and corrective actions.

13.5.7 Management Measures

The offset area management measures proposed in the OAMP (Section 4 of **Appendix R**) are considered achievable environmental outcomes, and include the following:

- Restrict unauthorised access and prevent alternative land uses.
- Prevent unauthorised vegetation clearing.
- Control invasive weed species to reduce impacts and improve habitat quality.
- Minimise habitat degradation caused by feral animals, in particular feral pigs, wild dogs and rabbits.
- Reduce the risk of unplanned fire causing adverse impacts to the habitat, through strategic fire management.
- Strategically graze to reduce and manage understorey fuel loads and reduce the risk of nest trampling in Squatter Pigeon breeding habitat.

Detailed descriptions of management objectives, management actions, frequency, inspections, monitoring and reporting, responsibilities, triggers for remedial action and corrective actions are provided in Table 8 of **Appendix R**.

These management measures relate directly to the management of Brigalow TEC, Poplar TEC, and habitat for Squatter Pigeon, Greater Glider, Koala and Ornamental Snake within the offset properties. They are designed to improve the habitat quality for each offset matter, thus attaining and maintaining the proposed completion criteria (see Section 13.5.11). None of the proposed management actions are considered detrimental to the other protected matters.

Management actions will be undertaken by the landholder and / or appointed Offset Area Manager, noting that a wholly owned subsidiary of Stanmore is the landholder for the nominated offset properties. Ecological monitoring and reporting will be undertaken by a suitably qualified ecologist. The roles and responsibilities of personnel are defined in Section 4.2 of **Appendix R**.

The proposed monitoring and reporting provides transparency over how the management actions will be implemented, where management actions require improvement, where remedial actions are triggered, and provides for the identification of any non-compliance issues, to ensure that completion remains on track over the 20-year period.

The proposed management actions are considered additional to the existing requirements of the landholder because they go beyond the baseline duties that already apply under general land management and biosecurity legislation.

The proposed offset area management involves a targeted, long-term, and measurable package of actions designed specifically to improve the condition of the offset matters and achieve the conservation outcome required by the offset. These actions include sustained weed and pest animal control directed to habitat condition outcomes, grazing exclusion or strategic grazing for ecological purposes rather than

production purposes, active fire management to maintain or restore remnant ecological values, ecological monitoring against performance criteria, reporting, and adaptive management if targets are not met. These actions would not be required solely to comply with legislation on weed and pest management, or to continue existing pastoral land management and are therefore additional within the meaning of the offsets framework. Further examples of the additionality of management actions compared to existing land management requirements is provided in Section 4.2 of **Appendix R**.

13.5.8 MSES Connectivity Area Management Measures

Whilst the MSES connectivity offset areas are located outside of the MNES offset area, all management actions within the OAMP are still relevant to the connectivity offset area. These actions are expected to improve habitat condition and ecological function by addressing key threats such as weed invasion, inappropriate fire regimes, grazing pressure, erosion and limited native vegetation recruitment.

The only additional management action specific to connectivity offsets relates to active regeneration where natural regeneration is not successful. This is required because the connectivity offset areas occur in non-remnant vegetation, which differs from the other MNES and MSES offset areas that are located within remnant vegetation. Active regeneration may therefore be required to support the development of native vegetation structure and function, improve connectivity values and assist in achieving the intended habitat quality gain over the 20-year management period.

This additional management measures for connectivity areas are described in Section 3.1.6 of **Appendix S**. All management actions have been designed to improve the habitat quality for MSES offset matters, thus attaining and maintaining the required completion criteria.

13.5.9 Relation to Approved Conservation Advices, Recovery Plans and Threat Abatement Plans

The proposed management actions and corrective actions have been developed having regard to the relevant Commonwealth conservation planning framework for the offset matters, and are considered consistent with the intent of the applicable approved conservation advices, recovery planning documents and threat abatement plans (see Section 4.1 of **Appendix R**). At a broad level, the management regime directly targets the principal threatening processes affecting the relevant TECs and species at the offset site, including habitat degradation associated with weeds and non-native pasture, grazing pressure, pest animals, inappropriate fire regimes, reduced habitat quality and, where relevant, reduced habitat connectivity. This is consistent with Commonwealth conservation planning for the Brigalow region, which identifies habitat loss and degradation, invasive species, altered fire regimes and climate change as key threats, and identifies habitat restoration through weed control, improved grazing practices, fire management and pest control as priority actions.

13.5.10 Legal Security

The proposed offset areas identified in the OAMP (**Appendix R**) and ODP (**Appendix S**) will be protected through a VDec as an area of high conservation value under the VM Act. The proponent notes that, through discussions with DCCEW, VDecs, which have been used to provide legal security for offsets in Queensland for many years, may be considered an ‘interim measure’, while an alternate mechanism for legal security is sought to protect the offset areas for at least 20 years to provide enduring protection for the offset area (as specified in the ToR). This outcome depends on the regulatory and policy positions of the State and Commonwealth for legal security of offsets at the time of Project approval.

Once the VDec has been registered on the land titles, the offset areas will be mapped as a category A on the Property Map of Assessable Vegetation (PMAV). An area mapped as category A on a PMAV is described as an ‘area subject to compliance notices, offsets and voluntary declarations’.

Once approved under the EPBC Act and EP Act / EO Act, the OAMP and ODP, respectively, will be attached to the VDec. Management and monitoring of the offset area will be undertaken in accordance with commitments provided in the approved OAMP and ODP.

The VDec will remain in place as the legally securing mechanism for the offset areas, or until such time as an alternative legal security mechanism is prescribed. The VDec and approved OAMP and ODP will ensure the offset completion criteria are attained and then maintained.

It is expected that State approval for a VDec can be obtained within 12 months of approval of the OAMP and ODP.

13.5.11 Performance Targets and Completion Criteria

Offset completion criteria and interim performance targets have been developed as a way to measure whether the offset conservation gains are on track and ensure the final habitat quality scores are achieved. The completion criteria have been determined based on an understanding of the Brigalow TEC and Poplar Box TEC, habitat for Squatter Pigeon, Greater Glider, Koala and Ornamental Snake within the offset areas, the baseline habitat scores, landscape connectivity of the property, and what management outcomes are achievable.

Over the course of the 20-year management period, three interim target periods have been chosen to track the trajectory of habitat quality towards the desired final completion criteria. These are based on 5 yearly intervals, with the expected commencement date for the Project in 2028; and will be adjusted based on the actual commencement date. The interim performance targets allow for the offset to be assessed, management actions revised if required, and the OAMP amended so that the completion criteria can be attained within the 20-year time frame. If interim performance targets are not met, corrective actions can be implemented. Interim targets were derived by identifying whether attributes were likely to improve in the short or long term. Annual reports will provide transparency on the implementation of the management actions and will allow for any non-compliance with the OAMP to be rectified to ensure the completion criteria remain on track.

It is anticipated that the proposed management actions will improve the habitat quality of each of the offset areas by one point over the 20-year period.

Where completion criteria are not achieved by the 20-year period, management actions will continue until the offset conservation gains are realised. Should the completion criteria be met prior to the 20-year period, management actions and monitoring will continue until the end of the approval period (20 years) to ensure conservation gains are maintained or further improved.

Additional detail on interim performance targets and completion criteria, including at 5 yearly intervals over a 20 year period for each MNES requiring offsets, is provided in Section 4.4 of **Appendix R**.

13.5.12 Risk Assessment

A risk analysis has been completed to assess the risks associated with failing to achieve the management objectives provided in the OAMP (see Section 4.5 of **Appendix R**). For each identified risk, the risk level has been determined using the qualitative measures of likelihood and consequence, as defined in the Environmental Management Plan Guidelines². Table 15 of **Appendix R** describes the risk event, initial risk rating (before risk minimisation actions), actions to minimise risk, remedial actions if risks occur and a residual risk ranking. The risks evaluated are:

- failure to achieve offset completion criteria
- alternative land uses (involving land clearing)

² DCCEE 2024, Environmental Management Plan Guidelines, Department of Climate Change, Energy, the Environment and Water, Canberra

- weed presence above baseline condition
- pest animal presence above baseline condition
- fire
- grazing, degrading habitat
- erosion
- cyclones
- heavy rain/floods
- drought
- death or injury of native fauna due to entanglement in barbed wire
- chemical impact and spray drift
- nutrient enrichment
- thickening of understorey vegetation
- trampling of habitat by livestock and pest species
- illegal shooting
- over abundant native species
- disease
- climate change.

All risks, and risk management, identified in the OAMP are applicable to MSES in the ODP, as described in Section 3.2.1 of **Appendix S**.

The residual risk is assessed as low or medium (i.e. acceptable) for all identified risks.

13.6 Offset Assessment Guide Inputs - MNES

This section describes the inputs used in the EPBC Act Offsets Assessment Guide (i.e. offsets calculator) for each of the MNES protected matters for which offsets are proposed. Additional detail is provided in Section 3.3 of Appendix B to **Appendix R**.

13.6.1 Impact Areas and Habitat Quality Scores

Impact areas and habitat quality scores are described in Section 13.3.2.

13.6.2 Offset Area Habitat Quality Scores

The starting habitat quality scores for all MNES are described in Section 13.5.3.

13.6.3 Time Over Which Loss is Averted

A period of 20 years was adopted in the Offsets Assessment Guide for the time over which loss is averted for all protected matters. This reflects the maximum period that can be entered in Offsets Assessment Guide for this parameter, as DCCEEW states that the time over which loss is averted is capped at 20 years or the life of the offset, whichever is shorter. In this case, the proposed offset is intended to secure and manage the offset area for the full assessment period, and there is no shorter limiting duration applicable to the offset arrangement. On that basis, adoption of the maximum 20-year period is considered appropriate and reflects the full period over which the offset is expected to avert the risk of complete habitat loss at the site.

13.6.4 Time Until Ecological Benefit

A period of 10 years was adopted in the Offsets Assessment Guide for the time until ecological benefit is realised. This reflects the estimated period required for the proposed management actions to produce a measurable improvement in habitat quality at the offset site. DCCEEW's guidance indicates that this input should represent the time taken for the offset to achieve the predicted ecological gain, noting that

benefits from actions such as weed control, grazing management, assisted natural regeneration and improvement in vegetation structure are not immediate and may take a number of years to be realised.

A 10-year ecological benefit timeframe is supported by ecological restoration literature showing that measurable improvements in vegetation structure, condition and biodiversity can occur over about a decade where threatening processes are reduced or removed. A 10-year period was considered an appropriate and realistic estimate of the time required for these management actions to result in a discernible improvement in habitat condition, while still being achievable within the broader 20-year offset assessment period.

13.6.5 Risk of Loss

A risk of loss of 0% was adopted for both the without offset and with offset scenarios in the Offsets Assessment Guide for each protected matter. This reflects the approach taken in the assessment not to claim any offset benefit from averted loss of habitat area. DCCEEW's guidance states that the difference between the without-offset and with-offset risk of loss values represents the level of averted loss provided by the proposed offset. As no such averted-loss benefit has been assumed here, both values were entered as 0%.

This approach is considered appropriate where the offset justification is based on the maintenance and improvement of habitat condition through active management, rather than on reducing an existing likelihood that the offset site would otherwise be completely lost. In this context, the expected conservation benefit of the offset is represented through the habitat quality inputs, including current quality, future quality without offset, future quality with offset, and the time until ecological benefit, rather than through a claimed reduction in the probability of complete habitat loss. DCCEEW's guidance distinguishes risk of loss from changes in habitat quality, noting that decline in habitat condition under current management is dealt with through the quality scores rather than the risk-of-loss input.

For the risk of loss without the offset, a value of 0% was entered. This reflects the conclusion that, over the 20-year assessment period, the offset site is not expected to be completely lost in the absence of the proposed offset, e.g., broad-scale clearing associated with agriculture or mining. While habitat quality may decline under a business-as-usual scenario due to threats such as weed increase, grazing pressure, inappropriate fire regimes and other degrading processes, these factors are expected to affect condition rather than result in complete removal or total loss of the habitat area. Accordingly, no averted-loss credit was claimed under the without-offset scenario.

For the risk of loss with the offset, a value of 0% was entered. This reflects that the assessment does not attribute any additional offset gain to a reduction in the likelihood of complete habitat loss under the managed offset scenario. Instead, the offset benefit is derived from protection, maintenance and improvement of habitat quality through the proposed management regime. Because both with-offset and without-offset risk of loss values are 0%, the calculator does not assign any gain from averted loss of habitat area, and the offset outcome is therefore based solely on habitat quality improvement and associated confidence assumptions.

The risk of losing the habitat if under a legally secured offset area is negligible. The offset area will be bound by the Commonwealth approval of the OAMP, which ensures active management to achieve offset completion criteria.

13.6.6 Confidence in Result

A confidence in result value of 90% was adopted in the Offsets Assessment Guide for each protected matter. This reflects a high level of confidence that the proposed offset will achieve the predicted conservation outcome, while still recognising that some uncertainty is inherent in any ecological restoration or habitat management program. DCCEEW's guidance indicates that, for area of habitat and area of community offsets, confidence in result relates to the certainty that the proposed offset will

deliver the predicted change in habitat quality and any averted loss outcome. In this case, no gain has been claimed from averted loss, and the confidence assessment therefore primarily relates to the likelihood that the proposed management actions will achieve the forecast improvement in habitat condition.

A value of 90% is considered justified because the proposed offset actions are well-established land management measures with a strong ecological basis, including weed control, grazing management, fire management, pest animal control, and ongoing monitoring and adaptive management. These are conventional and widely applied management responses to the key threats affecting the offset site and are directed at improving attributes such as native groundcover condition, regeneration, floristic composition, and structural habitat values. The proposed offset is also to be implemented over a substantial management period, with performance monitored and corrective actions available if required. Collectively, these factors support a high degree of confidence that the predicted habitat quality gains are achievable, while acknowledging a residual degree of uncertainty associated with seasonal conditions, climatic variability, and ecological response over time.

13.6.7 Future Expected Quality without Management

A reduction of one habitat quality unit has been adopted for all offset matters under the future quality without offset management scenario, based on the reasonable expectation that the ecological condition of the remnant vegetation would decline over time in the absence of active management, and historical evidence of a decline over time (see Section 13.4.2). This assumption is supported by the current condition of the offset properties compared to the previous 20-year period in the context of existing land use and management.

The analysis of wet and dry season imagery from 2006 and 2025 (see Section 13.4.2) provides empirical historical evidence of declining habitat quality and supports the adoption of a future quality without offset management score that is one habitat quality unit lower than the current score as a realistic and appropriately precautionary assumption.

Management practices for the land would continue in a similar manner as historical management practices in the absence of a requirement for alternative land management practices. This includes current management practices related to cattle grazing, pasture management, weed and pest control, fire management and timber management.

The offset properties have an extensive history of cattle grazing, which has contributed to ongoing disturbance of the understorey and ground layer, reduced regeneration capacity, and the continued dominance of non-native pasture and weed species. In the absence of management intervention, these existing pressures are likely to continue to influence the condition trajectory of the remnant vegetation. Collectively, these factors indicate that the current condition of the offset areas is unlikely to be maintained over the 20-year assessment period and is more likely to continue to decline gradually.

Within the offset areas, weed cover is already high and includes restricted matters under the *Biosecurity Act 2014*, non-native pasture species associated with historical sowing for cattle grazing, together with a range of other weed species that are not currently recognised under biosecurity regulatory frameworks, and are therefore unlikely to be subject to coordinated control in the absence of a specific management commitment. Without targeted weed management, these species are likely to persist and increase in cover and extent, with associated adverse effects on habitat quality, particularly floristic composition, native recruitment, and ground layer condition.

Fire regimes are currently unmanaged, or managed primarily to support grazing outcomes rather than the persistence, recovery, and resilience of remnant ecological values. This increases the risk of fire frequencies, intensities, or seasonal timing that are not conducive to maintaining ecosystem structure, species composition, and regeneration processes.

There is a reasonable prospect that further degradation could occur through thinning or timber harvesting within mapped remnant vegetation. Where remnant vegetation has thickened over time, this may support future applications for thinning in areas not previously subject to clearing. On freehold land, timber harvesting from remnant vegetation may occur as an exempt activity and may not require approval under the VM Act. In the absence of offset management and associated protection measures, this creates an additional risk of reduction in vegetation structure, canopy cover and habitat values, particularly for species dependent on remnant woodland structure such as Squatter Pigeon, Greater Glider, Koala and Ornamental Snake. This potential for further structural modification provides additional support for the conclusion that habitat quality is more likely to decline than remain stable over the assessment period.

Taken together, the historical evidence of decline in habitat quality, existing weed burden, legacy grazing impacts, lack of ecological management, inappropriate or absent fire management, and the potential for further structural disturbance provide a sound basis for concluding that habitat condition is likely to decline over the next 20 years in the absence of offset management. On that basis, adoption of a future quality without offset management score that is one habitat quality unit lower than the current score is considered a realistic and appropriately precautionary assumption.

13.6.8 Future Expected Quality with Management

An increase of one habitat quality unit has been adopted for all offset matters under the future quality with offset management scenario, based on the reasonable expectation that the ecological condition of the remnant vegetation would improve over the 20-year offset period if active and sustained management is implemented. This assumption reflects the capacity for measurable ecological improvement where the key degrading processes currently affecting the offset areas are reduced or controlled through targeted management actions.

The principal factors currently constraining condition at the offset properties are high weed abundance, the legacy effects of historical cattle grazing, disturbance to the understorey and ground layer, and the absence of ecological management directed at maintaining and improving remnant values. These are all factors that can be addressed, at least in part, through implementation of the OAMP. In particular, targeted weed control has the potential to reduce the cover and spread of non-native pasture grasses and other invasive species, thereby improving ground layer composition, reducing competition with native flora, and promoting native recruitment. Over time, this is expected to improve vegetation structure, species composition and habitat function.

Exclusion or substantial reduction of grazing pressure would also be expected to improve the condition trajectory of the remnant vegetation. Reduced stock access would decrease trampling and soil disturbance, support recovery of the understorey and ground layer, and allow regeneration processes to occur with less ongoing disturbance. Where combined with appropriate monitoring and adaptive management, these measures would improve the capacity of the remnant vegetation to recover from past land use pressures and progressively increase in condition over time.

Improved ecological management of fire would also contribute to condition gains. Fire regimes designed to support the persistence, recovery and resilience of remnant ecological values, rather than production outcomes, would provide greater opportunity to maintain appropriate vegetation structure and composition and to support natural regeneration processes. While recovery would be gradual, implementation of a more suitable fire regime would reduce one of the key ongoing risks to condition decline.

Although the offset areas are constrained by landscape isolation, active management would still be expected to improve the condition of the remnant vegetation at the patch scale. Management would not remove all external pressures or completely overcome the limitations associated with fragmentation and reduced connectivity. However, it would improve the integrity, resilience and functional condition of the

vegetation that remains, which is an appropriate basis for predicting a modest but measurable improvement in habitat quality over the 20-year assessment period.

Taken together, sustained implementation of weed control, grazing exclusion or reduction, ecologically appropriate fire management, and monitoring and adaptive management provides a sound basis for concluding that the habitat quality of the offset areas would improve over time with management. On that basis, adoption of a future quality with offset management score that is one habitat quality unit higher than the current score is considered realistic, achievable, and appropriately conservative over a 20-year timeframe.

13.6.9 Summary of Offset Assessment Guide Inputs and Outputs

Table 13-4 provides the inputs into the offset assessment guide where these vary between protected matters, and the resulting offset area required to acquit to 100% of the impact.

Offset assessment guide inputs that are common for all protected matters, as described in Section 13.6, are:

- confidence in result – future quality: 90%
- risk of loss without offset: 0%
- risk of loss with offset: 0%
- confidence in result – risk of loss: 90%
- time over with loss is averted: 20 years
- time until ecological benefit: 10 years.

Table 13-4 **Offset Assessment Guide Inputs and Outputs**

Input / Output	Brigalow TEC	Poplar Box TEC	Squatter Pigeon	Greater Glider	Koala	Ornamental Snake
Impact area (ha)	52.72 ha	15.45 ha	334.15 ha	318.02 ha	318.03 ha	75.97 ha
Quality of impact area	6	5	5	5	6	5
Quality of offset area	7	7	6	6	6	6
Future quality without offset management	6	6	5	5	5	5
Future quality with offset management	8	8	7	7	7	7
Offset area to acquit 100% of impacts	198.0 ha	48.4 ha	946.9 ha	995.3 ha	1194.4 ha	215.3 ha

13.7 Conservation Outcome and Completion Criteria – MSES

13.7.1 Conservation Outcome

For MSES regulated vegetation offsets, it is proposed they will achieve a conservation outcome by achieving a 2 point condition gain in habitat quality score for the offset area in 20 years. For the connectivity offsets, it is proposed to achieve a conservation outcome by achieving a 3 point condition

gain in habitat quality score for the offset site in 20 years. These gains will be achieved by managing the identified threatening processes, with specific focus on weed and pest eradication.

The offsets proposed will acquit 100% of the Project's required offsets for MSES. Calculations have been undertaken based on ecological surveys conducted on both the impact and offset properties informing inputs into the land-based offset multiplier calculator (See Appendix B and Appendix C of **Appendix S**).

The Mulgrave and Tootoolah properties contain suitable habitat for all relevant offset matters. The offset areas were selected on the basis of suitable BVG and RE class for regulated vegetation offsets, and non-remnant status, landscape position and connectivity values for the connectivity offsets.

The proposed offset areas are considered to be highly valuable within the landscape due to connectivity with other habitats within a state-wide biodiversity corridor and its close proximity to a National Park and State Forests, and other Category A offset areas (section 13.4.3).

The proposed offset areas will be managed to improve the condition of the habitat, through the implementation of appropriate management actions described in the OAMP and the ODP, where offsets are proposed outside the MNES offset areas (i.e., the connectivity offsets).

The management actions proposed under the OAMP are expected to be suitable for improving the condition and function of the MSES offset areas where they overlap. Although the OAMP has been prepared to address MNES offset requirements, the proposed management actions target the same ecological pressures that affect MSES values, including weed invasion, inappropriate fire regimes, grazing pressure, erosion, habitat degradation and loss of native vegetation recruitment.

Accordingly, implementation of the management actions for the OAMP is expected to contribute to improved habitat quality across overlapping MNES and MSES offset areas. These actions are also expected to support the intended 2-point gain in habitat quality score for the MSES regulated vegetation offset matters over the 20-year management period, where the same management areas and ecological threats apply. Where MSES-specific requirements differ from the OAMP (i.e. connectivity areas), additional management actions are described.

The conservation outcomes for MSES will be achieved in accordance with the performance targets and completion.

Upon the approval and implementation of the ODP, final completion criteria are expected to be achieved within 20 years. The management actions set out in the OAMP and this ODP are intended to minimise the likelihood of identified threats to MSES, while improving habitat conditions for the offset matters across the offset area.

13.7.2 Completion Criteria

Offset completion criteria and interim performance targets have been developed as a way to measure whether the offset conservation gains are on track and ensure the final habitat quality scores are achieved. The completion criteria have been determined based on an understanding of the regulated vegetation and connectivity areas within the offset areas, the baseline habitat scores, landscape connectivity of the property, and what management outcomes are achievable. Completion criteria are described in Section 3.1.7 of **Appendix S**

Over the course of the 20-year management period, three interim target periods have been chosen to track the trajectory of habitat quality towards the desired final completion criteria. These are based on the expected commencement date for the Project in 2028; and will be adjusted based on the actual commencement date. The timing for these interim targets corresponds with the suggested reporting (five-year reports). The interim performance targets allow for the offset to be assessed, management actions revised if required, and the ODP amended so that the completion criteria can be attained within the 20-year time frame. If interim performance targets are not met, corrective actions can be implemented. Interim targets were derived by identifying whether attributes were likely to improve in the short or long

term. The annual reports will provide transparency on the implementation of the management actions and will allow for any non-compliance with the ODP to be rectified to ensure the completion criteria can be achieved.

It is anticipated that the proposed management actions will improve the habitat quality of each of the regulated vegetation offset areas by two points over the 20-year period, as a result of the following improvements:

- Increase in tree canopy cover due to the growth of biomass of tree species over time.
- Managing the key threats to regulated vegetation and connectivity values through:
 - Actively managing fire and strategically grazing cattle to reduce fuel loads. This will reduce the risk of a hot fire destroying the habitat in the offset areas.
 - Excluding cattle during the wet season to promote re-establishment of native groundcover species during their active growth period.
 - Feral animal control to mitigate degradation of the ground habitat.
 - Ensuring no unauthorised vegetation clearing.

The offset areas will acquit 100% of impacts to connectivity from the Project. Field surveys determined that the properties are capable of satisfying the offset requirements, with 347.55 ha of non-remnant areas required as offsets.

Where completion criteria are not achieved by the 20-year period, management actions will continue until the offset conservation gains are realised. Should the completion criteria be met prior to the 20-year period, management actions and monitoring will continue until the end of the approval period to ensure conservation gains are maintained or further improved.

13.8 Monitoring and Reporting

13.8.1 Monitoring

Ongoing monitoring is required to ensure the OAMP and ODP achieve the objectives and the completion criteria. Monitoring activities have been designed to measure the success of the OAMP and ODP management actions. The monitoring methods have been developed to specifically assess the interim performance targets and completion criteria and will determine whether these are being achieved or whether corrective actions need to be implemented.

The monitoring proposed uses best practice methodologies to quantitatively assess the quality of the Koala, Greater Glider, Squatter Pigeon, Ornamental Snake, Brigalow TEC and Poplar Box TEC habitat within the offset area over time. This allows collected data to be comparable to track the progress towards the completion criteria. The objectives of the monitoring program are to:

- evaluate the performance of the OAMP against the interim performance targets and completion criteria
- detect triggers for remedial actions and allow for the timely implementation of corrective actions
- inform amendments of the OAMP to ensure continued compliance toward the completion criteria.

The monitoring program includes:

- baseline surveys for habitat quality; and weed and pest identification and mapping
- habitat quality assessments and photo monitoring
- fauna, weed and pest animal monitoring.

The monitoring activities in the OAMP apply to MSES regulated vegetation offsets given they are co-located within the MNES offset area. Additional inspection and monitoring requirements specific to the

connectivity offset areas are provided in the ODP, particularly where inspections and monitoring are required to assess active regeneration success (see Section 3.3 of **Appendix S**).

These monitoring events and associated reporting will be undertaken by a suitably qualified ecologist. Section 5 (Table 17) of **Appendix R** and Section 3.3 of **Appendix S** describe the proposed monitoring actions, best practice monitoring methods to be used, site locations, monitoring frequency, responsibility and reporting requirements.

Alongside monitoring events, regular inspections of the offset area will be undertaken by the land manager or appointed Offset Area Manager to ensure compliance with the management actions. Such inspections will assess but may not be limited to fencing, signage, grazing, firebreaks and access tracks, weather damage and incidental weed and pest animal identification. Section 5 (Table 16) of **Appendix R** and Section 3.3 of **Appendix S** outline the inspections required and the timing of these inspections.

13.8.2 Reporting

Following the completion of each monitoring event, a report will be provided that outlines the results of each monitoring survey. An ecological condition assessment report will be developed in Years 1, 2, 3, 4, 5, 7, 10, 13, 15, 17 and 20, and include results of monitoring surveys.

A baseline ecological condition assessment report will be developed following the baseline surveys in Year 1 and will incorporate species-specific treatment and control methods for weed and pest species observed on the site, which will inform control programs within the offset area. All subsequent ecological condition assessment reports will comply with relevant conditions of approval.

It is likely that the EPBC Act approval for the Project will include a condition requiring compliance to be monitored, recorded and provided to DCCEEW on request. As required by conditions of approval, potentially annually, a compliance report will include a summary on performance of the OAMP for the period of the offset. Each compliance report will include the following information as a minimum:

- Summary of the monitoring results for any monitoring undertaken within that year period, with monitoring reports (described above) to be included as appendices.
- Recommendations for modifications to the OAMP or weed and pest control programs.
- Assessment of progress toward completion criteria.
- Reporting of any incidents.
- Description of any new risks or potential threats to the offset area and recommended actions to be undertaken to manage these threats or risks.
- Details of any routine inspections, control programs implemented etc.

Compliance reports will be developed and provided to DCCEEW within timeframes specified in the EPBC approval conditions.

The OAMP and ODP, once approved, will remain effective for the life of the approval but will be updated whenever required, including after monitoring events, any incident or non-compliance event, or on request by regulators, to ensure it contains best practice information and to achieve completion criteria.

13.9 Conclusion

In response to identified significant impacts to MNES and MSES a comprehensive OAMP and ODP, respectively, have been developed. Offsets for MSES are required where the protected matters are not the same or substantially the same as MNES.

The OAMP and ODP have been developed in accordance with relevant Commonwealth and State legislation, policies and guidelines for the provision of offsets.

Suitable adjoining properties, within the same bioregion as the Project, have been identified for direct, land based offsets. These are Stanmore owned properties, with the proposed offset areas not located within any production resource tenement. The properties have the necessary habitat values to acquit all MNES and MSES offset requirements.

Comprehensive ecological surveys have been completed of the offset properties within and surrounding the proposed offset areas, with survey and habitat quality assessment methodologies in accordance with Commonwealth and State requirements. Habitat quality scoring methodologies were consistent across the proposed impact and offset areas.

A comprehensive set of management measures has been developed to improve the habitat quality within the offset areas for each of the protected matters. This comprises restricting unauthorised access, preventing alternative land uses, preventing unauthorised vegetation clearing, controlling invasive weed species, minimising habitat degradation caused by feral animals, strategic fire management, and strategic management of grazing to achieve ecological outcomes.

Risk assessments have been completed demonstrating that residual risks associated with failing to achieve the offset area management objectives are low or medium (i.e. acceptable) for all identified risks. Legal security mechanisms are proposed to provide legal security for the offset areas.

The Commonwealth's and State's offset calculators has been completed for all MNES and MSES, with justification provided for all inputs into the calculators. The resultant offset areas for each MNES and MSES, some of which are co-located, and which fully acquit the offset requirements are:

- Brigalow TEC – 198 ha
- Poplar Box TEC – 48.4 ha
- Squatter Pigeon – 946.9 ha
- Greater Glider – 995.3 ha
- Koala – 1194.4 ha
- Ornamental Snake – 215.3 ha
- Regulated vegetation (RE11.3.4, RE11.3.25, RE11.3.2, RE11.4.9) – 324.5 ha
- Connectivity areas – 347.55 ha.

A comprehensive monitoring and reporting program is proposed to inform ongoing and adaptive management of the offset areas, so that the proposed completion criteria are achieved.

The proposed OAMP and ODP for the Project demonstrate that offsets for all significant impacts to MNES and MSES can be acquitted.

13.10 References

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